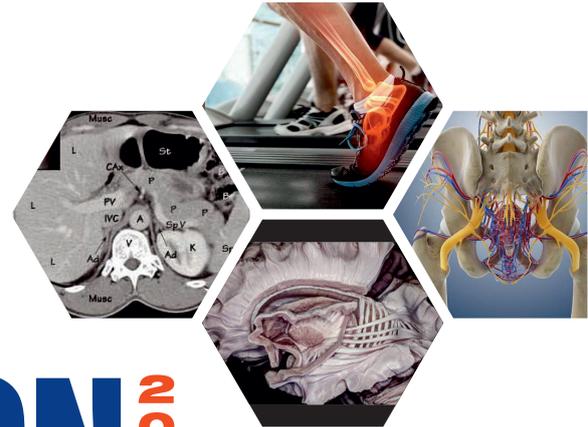




KASTURBA MEDICAL COLLEGE
MANIPAL
(A constituent unit of MAHE, Manipal)



Dr. TMA Pai
 1898 - 1979
 Padmashree Awardee



23rd **KCACON** 2023

Conference of the Karnataka Chapter of Anatomists

Organized by

Department of Anatomy

Kasturba Medical College Manipal

Manipal Academy of Higher Education

Manipal - 576104, Karnataka, India

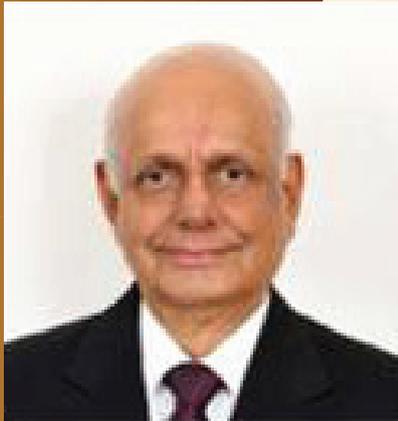


CONFERENCE SOUVENIR

THEME OF THE CONFERENCE

The Department of Anatomy, Kasturba Medical College, Manipal Academy of Higher Education, Manipal is organizing “23rd Annual Conference of Karnataka Chapter of Anatomists-2023”. The theme is “Exploring the Grey Areas in Anatomy” to unearth clinically important but least concentrated areas in anatomy. The conference provides a unique platform for academicians, researchers, postgraduate & undergraduate students, to present, interact, and network with peers. A series of hands-on workshops, keynote presentations, and scientific presentations are planned for this conference.

Message



Dr. H S Ballal
Pro-Chancellor, MAHE

Manipal Academy of Higher Education, Manipal in Udupi District of Karnataka, has been selected as an 'Institute of Eminence' by the Ministry of Human Resource Development, Government of India. It was because of the excellent standards maintained by its constituent units. Among them, Kasturba Medical College, its flagship, is the first-ever non-missionary, self-supporting, private medical college in India, started in 1953, consistently being ranked as among the top 10 medical colleges in India.

The convening of the "23rd Annual Conference of Karnataka Chapter of Anatomists-2023" at Manipal will provide a good opportunity to the delegates to go round the Manipal campus and see for themselves the facilities. My greetings and best wishes to all the delegates for a successful deliberation, and my congratulations to the members of the Organizing Committee

Message



Lt. Gen. Dr. M D Venkatesh Vice Chancellor, MAHE

Dear Friends,

It is indeed a matter of great pride that KCAACON-2023 is being hosted at Manipal, and it is one of the calendar events which is also a part of our 125th Birth Anniversary Celebrations of Dr. TMA Pai. I cordially invite you to present your research and contribute your invaluable experience at our conference.

With the theme of "Exploring the Grey Areas in Anatomy" to unearth clinically significant but least concentrated areas in Anatomy, KCAACON-2023 will aid in discussing the practical challenges, concerns, and strategies in this field, promote collaborations and information exchange and share the new findings. It offers an excellent opportunity for teachers, and researchers to develop their research and network with other experts in their field.

Apart from the invigorating academic sessions, this conference will undoubtedly offer its attendees an unforgettable cultural experience.

All the best.

Message



Dr. Sharath Kumar Rao
Pro Vice Chancellor-Health Sciences, MAHE

It gives me immense pleasure to convey my greetings and best wishes to all the esteemed speakers and resource persons as well as the delegates who are here at MAHE, Manipal for the “23rd Annual Conference of Karnataka Chapter of Anatomists-2023” (KCACON 2023).

It is indeed heartening to note that this conference is hosted as a part of the 125th Birth Anniversary Celebrations of Dr. TMA Pai at the Manipal Academy of Higher Education [MAHE] an Institute of Eminence conferred by the Government of India.

I am very happy to note that the Department of Anatomy, Kasturba Medical College is organizing the KCACON 2023 here at MAHE, Manipal.

Hearty congratulations to the organizing team and my best wishes to all members for an enjoyable experience in Manipal.

Message



Dr. P. Giridhar Kini
Registrar, MAHE

It gives me immense pleasure to convey my greetings and best wishes to all the resource persons and delegates who are here at MAHE, Manipal for the “23rd Annual Conference of Karnataka Chapter of Anatomists (KCACON-2023)”. I wish them all a very highly enriching academic experience from the deliberations during the conference.

I wish to congratulate the organizing team from the Department of Anatomy, Kasturba Medical College Manipal for successfully organizing KCACON 2023 here at MAHE, Manipal, India.

Message

Dr Padmaraj Hegde
Dean , Kasturba Medical College Manipal, MAHE

It gives me immense pleasure to welcome all the esteemed teachers, scientists, KCACON executive members, speakers, resource persons, delegates and guests who are here for the “23rd Annual Conference of Karnataka Chapter of Anatomists” (KCACON-2023). This conference is an important event from Anatomy that marks the 125th Birth Anniversary Celebrations of Dr. TMA Pai at the Manipal Academy of Higher Education [MAHE] Manipal which incidentally has been conferred the Institute of Eminence by the Government of India.

My best wishes to the organizing team from the Department of Anatomy, Kasturba Medical College, MAHE, Manipal, India for successfully arranging the pre-conference workshops as well as the events of the conference highlighting the theme of the conference “Exploring the Grey Areas in Anatomy”.

Wishing all an enjoyable experience in intense academic deliberations as well as the diverse cultural ethos in Manipal.

Message



Dr. Prasanna L.C.
Organizing Chairperson - KCAACON 2023
Professor & Head, Dept. of Anatomy, KMC Manipal

It gives me great pleasure to extend a warm welcome to each and every one of you for this the “23rd Annual Conference of Karnataka Chapter of Anatomists” (KCAACON-2023), jointly organized and hosted by our Department of Anatomy, Kasturba Medical College, Manipal Academy of Higher Education [MAHE], Manipal, Karnataka, India.

This one-day pre conference workshop and two-day conference will feature exciting and thought-provoking key note addresses, plenary lectures and several symposia by eminent national and international scientists, as well as free paper and e-poster presentations by more than 250 delegates from all over India. Seven preconference hands-on workshops have also been arranged and conducted by expert resource personnel from the host institutes and others.

As we are looking forward at the “Exploring the Grey Areas in Anatomy” to unearth clinically important but least concentrated areas in anatomy, it is clear that our focus is to hone the knowledge and skills of our young and curious learners in both medical education and research for better health care delivery in the next millennium.

We hope this conference will provide in-depth thought-provoking insights to all the young at-heart participants in advancing and expanding their horizons of experience.

I whole heartedly thank each and every member of our entire organizing team who have worked hard together along with encouraging constant support from KCA executive members and our management in making this event a great success.

Patrons

- Dr. Ramdas M Pai**, Chancellor, MAHE, Manipal
Dr. Ranjan R Pai, Chairman, Manipal Education and Medical Group (MEMG)
Dr. H S Ballal, Pro-Chancellor, MAHE, Manipal
Lt. Gen. (Dr) M D Venkatesh, Vice Chancellor, MAHE, Manipal
Dr. Sharath Kumar Rao, Pro Vice Chancellor- Health Sciences, MAHE, Manipal
Dr. P Giridhar Kini, Registrar, MAHE, Manipal
Dr. Padmaraj Hegde, Dean, Kasturba Medical College, Manipal, MAHE

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Preconference Workshop Program Schedule

DAY 1: 14th September 2023 (Thursday) |

Venue: Department of Anatomy, Centre for Basic Sciences, KMC, Manipal

8:00 am – 9:00 am	Registration & Breakfast (Department of Anatomy, Centre for Basic Science Building, 1st Floor)		
9:00 am	Assemble in Demonstration room – 1 (Department of Anatomy, Centre for Basic Science Building, 1st Floor)		
9:05 am	Group photograph and disperse to workshop venue		
1:00 pm	Lunch (Department of Anatomy, Centre for Basic Science Building, 1st Floor)		
Workshop number	Title	Facilitator	Venue
Workshop 1	Clinical anthropometry – Present & Future	<p>Dr Vina Vaswani Professor, Dept. of Forensic Medicine & Toxicology, Yenepoya (Deemed to be) University</p> <p>Dr Muhammad Nasir Ahmad Associate Professor, Dept. of Forensic Medicine & Toxicology (Forensic Anthropology), Yenepoya (Deemed to be) University</p> <p>Dr Leena Pramod Assistant Professor, Dept. of Forensic Medicine & Toxicology, Yenepoya (Deemed to be) University</p>	Anatomy demonstration room
Workshop 2	Primer to animal research	<p>Mr Shridhar Prabhu Retired in-charge of Central Animal Research Facility</p>	Central Animal Research Facility
Workshop 3	Adding immunochemistry to histology	<p>Dr Dinesh Upadhya Co-ordinator, Centre for Molecular Neurosciences, Associate Professor, Dept. of Anatomy, KMC Manipal</p>	Centre for Molecular Neurosciences
Workshop 4	Museum techniques – from Embalming to Mounting	<p>Mr Manohar In-charge, Museum of Anatomy & Pathology, KMC Manipal</p>	Anatomy Demonstration room
Workshop 5	Clinical procedures in anatomy curriculum	<p>Dr Vimal Krishnan S Associate Professor, Dept. of Emergency Medicine, KMC Manipal</p> <p>Dr Saktthi Sellayee Shanmuganathan Assistant Professor, Dept. of Orthopaedics, KMC Manipal</p>	Simulation Centre
Workshop 6	Creation of e-content development for blended learning in anatomy & Innovative model making	<p>Dr Manjula Patil Associate Professor, Dept. of Anatomy, Sri Nijalingappa Medical College, Bagalkot</p>	Board room, Department of Anatomy
Workshop 7	Mastering the art of histology techniques	<p>Dr Biswabina Ray Professor & Head, Dept. of Anatomy, AIIMS, Kalyani</p>	Histology lab, Department of Anatomy

Preconference Workshop Details

WORKSHOP 1

Clinical anthropometry – Present & Future

Anthropometry is the technique of quantifying the human body's shape and size. The applicability of Anthropometry varies from non-clinical to clinical settings. Taking Anthropometrical parameters requires skill, and It becomes easy if a person gets trained and has to do it regularly. The workshop combines hands-on training and lectures by renowned experts in Forensic Anthropology and Forensic Medicine. In the workshop, participants will learn the use and application of Anthropometry in various clinical and non-clinical fields. Along with it, there will be two hands-on sessions. First, hands-on focuses on demonstrating various Anthropometrical Instruments and their functioning with their application in Clinical Anthropometry. The second will be demonstrations of different Anthropometrical parameters to measure the human body.

WORKSHOP 2

Primer to animal research

Rodents such as mouse and rats are essential components used for preclinical research. In this preconference workshop we will demonstrate how to use mouse and rats for research. This include mouse and rat handling, different routes of injection in rodents, dissection of mice and rats, collection of brain, heart, liver, spleen, kidney, lungs, reproductive organs, etc for histopathological and molecular studies. We will allow interested participants to perform all of these procedures.

WORKSHOP 3**Adding immunochemistry to histology**

Majority of the anatomists are familiar with histology techniques. In this preconference workshop we will demonstrate how histology sections can be used for immunohistochemistry. The demonstration includes tissue preparation for immunostaining, antigen retrieval, blocking procedure, labeling with primary antibody, washing steps, labeling with secondary antibody, and microscopic visualization of immunostained sections. We will allow interested participants to perform all of these procedures.

WORKSHOP 4**Museum techniques – from Embalming to Mounting**

The purpose of the museum technique is to collect, preserve, interpret and display specimens for scientific significance for the education of the public as well as to medical students. This workshop aims to give an insight into Human body preservation and the steps involving the preparation and preservation of wet specimens for educational purposes in the Anatomy Department.

WORKSHOP 5**Clinical procedures in anatomy curriculum**

Anatomy, being the cornerstone for the medical and healthcare professionals, paves way for clinical skills. The learning in anatomy becomes more appropriate when applied in the clinical testing. CBME mandates that an Indian Medical Graduate (IMG), applies the knowledge into clinical practice. In this workshop on clinical skills, the participant would be familiarized with the following skills:

- Muscle testing on a simulated patient
- Skills in Basic Life support
- Sites of intramuscular injection
- Sites of Intravenous injection/ drawing of blood
- Sites of peripheral pulse
- Sites of lumbar puncture
- Tracheostomy
- Importance of bony landmarks
- Endotracheal intubation

WORKSHOP 6**Creation of e-content development for blended learning in anatomy & Innovative model making**

Blended learning addresses all the types of learners and makes them more self-responsible towards their learning. Effective e- content (E-content includes all kinds of content created and delivered through various electronic media) development is the heart of blended learning. We can create e - content in anatomy using the cost-effective tools and innovative teaching techniques which enriches students with better understanding of the subject. This workshop is organized to demonstrate following things to develop effective e-content in anatomy.

Effective use of e- learning tools like Adobe captivate, Google slides and others

Creating personalized websites

Innovative teaching learning methods using simplest materials like clay, playdough to more advanced 3D printing

WORKSHOP 7**Mastering the art of histology techniques**

Our histology laboratory strives to produce high quality work for both teaching and research purposes within the Department of Anatomy. In addition to routine histology, we perform special histochemical stains and training courses. This includes a brief theoretical concept on basic rules of preparation of slides and maximum time stressed on to learn practical skills on paraffin sectioning, routine H & E and few special staining techniques used in undergraduate histology.

KCACON 2023 - Program at a Glance

DAY 2: 15th September 2023 (Friday) | Venue: Dr TMA Pai Auditorium (3rd Floor)

Time	Topic	Speaker
8:00 am – 9:00 am	Registration & Breakfast (Dr TMA Pai Hall – 1)	
Plenary sessions		
9:00 am – 9:30 am	Intrinsic anatomy of brain – surgical implications	<p>Speaker: Dr Girish Menon Professor & Head, Department of Neurosurgery, KMC, Manipal</p> <p>Moderators: Dr. Sanjeev Kolagi Department of Anatomy S Nijalingappa Medical College, Bagalkot</p> <p>Dr. Vidya CS Department of Anatomy JSS Medical College, Mysore</p>
9:40 am – 10:10 am	Biomechanics of ankle and foot	<p>Speaker: Dr Benjamin Joseph Adjunct Professor of Paediatric Orthopaedics, KMC, Manipal</p> <p>Moderators: Dr. Mangala M Pai Department of Anatomy KMC Mangalore</p> <p>Dr. NM Suresh Department of Anatomy Sri Chamundeshwari Medical College, Channapatna</p>
10:10 am – 10:30 am	Tea break (Dr TMA Pai Hall – 1)	
10:30 am – 11:30 am	Inauguration	
11:30 am – 12:00 noon	Anatomy 3D: Develop and Deploy low-fidelity digital models into anatomy teaching	<p>Speaker: Dr Vivek Perumal Lecturer Lee Kong Chian School of Medicine, Singapore</p> <p>Moderators: Dr. Martin Lucas Department of Anatomy Dr. Chandramma Dayananda Sagar Institute of Medical Education and Research, Bengaluru</p> <p>Dr. Prakash BS Department of Anatomy Hassan Institute of Medical Sciences, Hassan</p>
12:00 noon – 1 pm	Award papers presentation (Dr TMA Pai Auditorium)	
1:00 pm – 2:00 pm	Lunch break (Dr TMA Pai Hall – 1)	
2:00 pm – 5:00 pm	Scientific sessions (Oral presentations) (Dr TMA Pai Hall – 2)	
5:00 pm – 6:00 pm	General body meeting (Dr TMA Pai Auditorium)	

KCACON 2023 - Program at a Glance

DAY 3: 16th September 2023 (Saturday) | Venue: Dr TMA Pai Auditorium (3rd Floor)

Time	Topic	Speaker
8:00 am – 9:00 am	Breakfast (Dr TMA Pai Hall – 1)	
9:00 am – 9:30 am	Imaging anatomy of male and female pelvic organs and common pathology	<p>Speaker: Dr Rajagopal KV Professor Department of Radiodiagnosis & Imaging KMC, Manipal</p> <p>Moderators: Dr. Subhash K Deshpande Department of Anatomy SDM College of Medical Sciences and Hospital Dharwad</p> <p>Dr. Varsha Shenoy Department of Anatomy Father Muller Medical College Mangalore</p>
9:40 am – 10:10 am	Systematic review: An introductory overview	<p>Speaker: Dr Baby S Nayak Professor & Head Department of Paediatric Nursing, MCON, Manipal</p> <p>Moderators: Dr. Chythra R Rao Department of Community Medicine KMC Manipal</p> <p>Dr. R. Sarah Department of Anatomy AIIMS, Madhurai</p>
10:10 am – 10:30 am	Tea break (Dr TMA Pai Hall – 1)	
10:30 am – 12:00 noon	Scientific sessions (Poster presentations) (Dr TMA Pai Hall – 2)	
12:00 noon	Valedictory (Dr TMA Pai Auditorium)	
1:00 pm onwards	Lunch (Dr TMA Pai Hall – 1)	

Abstracts of Guest Speakers

INTRINSIC ANATOMY OF BRAIN – SURGICAL IMPLICATIONS

Dr Girish Menon

Professor & Head

Department of Neurosurgery, Kasturba Medical College, Manipal
Manipal Academy of Higher Education, Manipal

Understanding the intrinsic anatomy of the brain and the fundamental white matter framework is essential for performing precision neurosurgery. Advances in high-resolution diffusion tensor imaging (DTI) and the Human Connectome Project has significantly advanced our knowledge of the axonal wiring system and white matter tracts of the brain. In-depth knowledge of the intrinsic anatomy of the brain, accurate DTI images, precise presurgical planning and intraoperative monitoring have ushered in an era of, “zero-footprint” subcortical surgery. Zero-foot print surgery is an advanced version of minimally invasive surgery which aims to minimise the functional impact on the patient, maximally preserve function and decrease surgical complications while ensuring adequate tumour resection. This presentation seeks to briefly provide an overview of the three-dimensional structure of the white matter of the brain by means of the fibre-dissection technique and diffusion-tensor magnetic resonance imaging. The talk will also focus on the practical implementation of these techniques in white matter preservation in improving surgical outcomes for lesions situated in the eloquent subcortical areas of the brain.



BIOMECHANICS OF ANKLE & FOOT

Dr Benjamin Joseph

Adjunct Professor of Paediatric Orthopaedics

This illustrated review describes the normal mechanics of the ankle and foot. The foot functions as a flexible structure during the initial part of stance phase but changes into a rigid structure in the terminal part of stance to enable a powerful push-off.

During inversion and eversion, the calcaneum moves under a stationary talus in three planes simultaneously around a single oblique axis. During eversion, the calcaneum dorsiflexes, abducts, and pronates while it plantarflexes, adducts, and supinates during inversion. The talus remains static while the rest of the foot moves as a unit, referred to as the “calcaneo-pedal unit” (CPU), around the head of the talus. The socket-like hollow in the CPU consisting of the anterior and middle articular facets of the calcaneum, the articular facet of the navicular and the spring ligament constitute the “acetabulum pedis” which rotates around the talus.

On occasion, the foot functions like a twisted plate influencing the inter-relationship between the hindfoot and forefoot as a forefoot deformity may cause a secondary compensatory deformity of the hindfoot.

Understanding normal foot mechanics facilitates a greater understanding of altered mechanics seen in foot deformities.

ANATOMY 3D: DEVELOPING AND DEPLOY LOW FIDELITY DIGITAL MODELS INTO ANATOMY TEACHING

Dr Vivek Perumal

Lee Kong Chian School of Medicine
Singapore



Digital 3D resources have long been utilised in anatomy learning. The downside of several commercially available 3D anatomy apps is that they often present overwhelming details and are not feeding to specific student expectations. Simplified ‘low fidelity’ versions of 3D anatomy models could be a suitable alternate; they are affordable, content specific, simple, yet correct in terms of anatomical accuracy. These models are easy to develop, distribute and utilise for anatomy teaching. This presentation discusses how effective these low-fidelity models are in anatomy learning, and can they cater different student preferences.



IMAGING ANATOMY OF MALE AND FEMALE PELVIC ORGANS AND COMMON PATHOLOGY

Dr Rajagopal KV

Professor,

Department of Radiodiagnosis & Imaging, Kasturba Medical College, Manipal
Manipal Academy of Higher Education, Manipal

The cross-sectional anatomy of the pelvic organs are exquisitely delineated by MRI due to its excellent soft tissue resolution and multiplanar acquisition without using ionizing radiation.

The MRI cross sectional anatomy of rectum, anal canal, urinary bladder, prostate and uterus will be discussed during the keynote address. The applied anatomy related to common pathologies of these will be discussed, with special reference to oncology. Knowing the imaging anatomy is crucial in understanding the abnormal altered morphology related to various diseases.

MRI is extremely useful in the evaluation of different pelvic pathologies and helps in evaluating the characteristics of the masses, their extent and relationship to surrounding structures, multiplicity, and their composition.

SYSTEMATIC REVIEW: AN INTRODUCTORY OVERVIEW

Dr Baby S Nayak

Professor & Head,

Department of Paediatric Nursing, Manipal College of Nursing, Manipal
Manipal Academy of Higher Education, Manipal



The evidence-based medicine has made an enormous impact on decision-making in the health care system. Systematic Review (SR) is the key component in the evidence synthesis. The session will provide the participants with an insight into the methodology of Systematic review

TEACHING FACULTY
Department of Anatomy
KMC Manipal



NON-TEACHING FACULTY

Department of Anatomy

KMC Manipal



POSTGRADUATES
Department of Anatomy
KMC Manipal



Scientific Sessions Schedule

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY	
Scientific Session 1			
Sl. No	PSID	TITLE	Presenting Author
1	OR01001	Variations of Common Hepatic artery in cadavers - A Case Study	Alex Bhanu
2	OR01002	Morphometric variations of coronary ostia in adult human heart: A cadaveric study	Anupama K
3	OR01003	Variations in number of branches of Median Nerve Supplying Pronator Teres Muscle-A Human Cadaveric Case Study	Aruni C S
4	OR01004	Variation in the course of brachiocephalic and right common carotid artery: A case report	Ashok K R
5	OR01005	Bilateral Symmetry of Eye Biometry in Immature Cataract	Chaithra Rao B R
6	OR01006	Anatomy of Rouviere's sulcus of Liver and its clinical significance in laparoscopic cholecystectomy	Divya C
7	OR01007	Morphometry of dorsalis pedis artery and its clinical significance: A cadaveric study	Gali Harika
8	OR01008	Langer's Axillary Arch – A variant of latissimus dorsi	Geethanjali B.S
9	OR01009	A Cross Sectional Study of Abdominal Aortic Bifurcation and its Geometric Anatomy	Isha Jaiswal
10	OR01010	Variations in the branches of 3rd part of axillary artery	Jayaprakash T

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY	
Scientific Session 2			
Sl. No	PSID	TITLE	Presenting Author
11	OR02018	Unveiling the anatomical diversity in the formation of the external jugular vein	Khizer Hussain Afroze M
12	OR02019	Morphological and Morphometrical study of long thoracic nerve - A guidance in supraclavicular nerve block	Kotakonda Priyanka
13	OR02020	Locating the facial nerve trunk within the parotid gland by utilizing the anatomical landmarks: A cadaveric study	Mamatha T
14	OR02021	Birth weight: placental weight ratio as an indicator of placental efficiency in pregnancies complicated with gestational diabetes	Meera Jacob
15	OR02022	A cadaveric study on the morphology of Psoas minor muscle and its clinical insight.	Najma Mobin
16	OR02023	A Study of variations in the gross features of lungs and its clinical implications.	Nidhi. S
17	OR02024	Anatomical Study of Median Nerve in the Arm- A Cadaveric Study	Prameela MD
18	OR02025	Study Of Left Coronary Artery In Cadaveric Human Hearts	Pramod Rangasubhe
19	OR02026	Toxic effects of formalin on health care professionals - A cross-sectional Study	Qudusia Sultana
20	OR02027	Diaphragmatic Fissure Of Liver-A Case Report	Rafeeq P

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm		Category:	
Venue: TMA Pai Hall 2		GROSS ANATOMY	
Scientific Session 3			
Sl. No	PSID	TITLE	Presenting Author
21	OR03038	A Cadaveric Study on the Morphological Variations and Congenital Anomaly in Spleen	Agamdeep Singh Bedi
22	OR03039	The morphological variations of thyroid gland with embryological interpretation	Arushi Simha N J
23	OR03040	Study on Zuckerkandl tubercle of thyroid gland and Recurrent Laryngeal Nerve in South Indian Population	Dharshini S.S.
24	OR03041	Variations In Triangle of Brocq and Mouchet – A Cadaveric Study	Dhruv Gireesh
25	OR03042	A study of morphological and morphometric analysis of palatine rugae patterns	G Thrisha
26	OR03043	Stature Estimation from Handprint Anthropometry in the Students of a Tertiary Health Care Center	Harshita Siddineni
27	OR03044	Dermatoglyphics study on finger print ridge density among 1st year medical students	Harshitha K
28	OR03046	Genu valgum in Ichthyosis	Inesh Vij
29	OR03047	Extensor tendons of the thumb and its clinical relevance: A cadaveric study	Ishanvi Baranwal

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm		Category:	
Venue: TMA Pai Hall 2		GROSS ANATOMY	
Scientific Session 4			
Sl. No	PSID	TITLE	Presenting Author
30	OR04058	The Anatomical Variations of the Hilum of the Lungs - A Cadaveric Study	Jigisha Chhallani
31	OR04060	A Morphometric study of gracilis and semitendinosus muscles and its vascular pedicles: A Cadaveric Study	Keerthi B B
32	OR04061	A Morphological study on the Presence of the Medial and Lateral Slips of the Extensor Hallucis Longus in Human Beings: A cadaveric study	Khushi Rakesh Shah
33	OR04062	Correlation of Carrying Angle, Hand Grip Strength and Subcutaneous Body Fat Percentage.	Lavanya K
34	OR04063	Morphological and morphometric parameters of tricuspid valve - A cadaveric study	M. Anu Rohitha
35	OR04064	Study of anomalous origin of vertebral artery with its embryological and clinical significance.	Malavika VS
36	OR04066	Anatomical variations in the hilar structures of human lung – A cadaveric study	Nayana C
37	OR04067	A Cadaveric Study on The Anatomical Variations of The Common Carotid Artery and its Branches	Nirmiti Bhaven Mahadevia

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: MEDICAL EDUCATION, BODY DONATION & MUSEUM TECHNIQUES	
Scientific Session 5			
Sl. No	PSID	TITLE	Presenting Author
38	OR05078	Visualization and Annotation of digital slides in histology for collaborative education for undergraduate medical students	Bharathi D
39	OR05079	Exploring the Feasibility of Orthopedic Procedures on Soft Embalmed Cadavers	Joseph Abraham
40	OR05080	The effectiveness of case-based learning compared to traditional teaching of histology for phase i mbbs students: an interventional study.	Maheshwari Myageri
41	OR05081	3D Models using 3D printer and its advantages in teaching and learning	Martin Lucas A
42	OR05082	Knowledge and attitude of Ist Year MBBS Students regarding Medical Ethics: A cross-sectional Study	Qudusia Sultana
43	OR05083	Mounting of museum specimens using Liquid silicone - A novel method	Sangeetha. S
44	OR05084	Initial impact of dissection on first year MBBS students - Analytical study	Suma MP
45	OR05085	"Fascinating World of Human Anatomy" - The Usefulness of Conducting A Hands-on Workshop in Human Anatomy for Biology School Teachers	Sushma Prabhath
46	OR05086	An Active Learning Approach for Gross Anatomy of the Lower Limb Sessions Using Flipped Classroom	Vasudha Kulkarni

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2 Scientific Session 6		Category: MICROSCOPIC ANATOMY, EMBRYOLOGY & GENETICS	
Sl. No	PSID	TITLE	Presenting Author
47	OR06097	Phenotypic characterization and multilineage differentiation of articular cartilage derived mesenchymal progenitor cells from osteoarthritis and rheumatoid arthritis patients	Akshay B M
48	OR06098	Unveiling the Shadows: Deciphering the Molecular Enigma of Inhibitory Interneurons in the Brain	Divya C
49	OR06099	Novel insights into the benefits of supplementation of anti-snake venom with methanolic extract of <i>Andrographis paniculata</i> in mitigating hepatotoxicity in envenomation with <i>Najanaja</i>	Maya Roche
50	OR06100	Assessing the Morphology, histology, and Microscopic Composition of the triangular fibrocartilage complex [TFCC] of the wrist joint: A cadaveric observational study	Nandini R
51	OR06101	Unilateral true hermaphroditism with 46, XX/46, XY chimerism- a case report	Santosh Bhosale
52	OR06102	Embryological basis of a case of gastroschisis in a preterm newborn	Sheetal. V. Pattanshetti
53	OR06103	Constitutional Reciprocal Balanced Translocation t(11;22)(q25;q13) in a couple with recurrent foetal loss: A case report	Shivaleela C
54	OR06104	Deleterious Effects of Pyrethroid Pesticides on Kidneys: Exploring Potential Health Implications	Shubhangi Yadav
55	OR06105	Histological assay & molecular analysis evaluating neuroprotective effect of pongamia pinnata leaf on cerebral ischemia of rat model.	Suganitha B
56	OR06106	A rare case report of iniencephaly and its embryological basis	Vinutha. S. P
57	OR06107	A study to assess the micronuclei count and metanuclear abnormalities in exfoliated buccal epithelial cells of Covid-19 suspected patients	Vishnu B

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: NEUROANATOMY & RADIOLOGY	
Scientific Session 7			
Sl. No	PSID	TITLE	Presenting Author
58	OR07120	Evaluation of optic nerve sheath diameter using CT imaging modality: A retrospective study.	Archana B J
59	OR07121	Morphometric study of Lateral ventricle of brain by Computerized Tomography: A retrospective observational study.	Asha. K. R.
60	OR07122	Implications of Maternal Vitamin D Levels on the cognitive functions of their progeny – An experimental study	Ashwija Shetty
61	OR07123	Morphometric analysis of Corpus Callosum of human brain in South Indian Population- A cadaveric study	Ashwini. N.S
62	OR07124	Morphometric Study of Cerebral Cortical Thickness for Determining Normative Ranges Among Non-Morbid Individuals of Indian Population	Eilene Basu
63	OR07126	Effect of resveratrol and donepezil on cognitive function in colchicine induced Alzheimer's disease rat model	Murlimanju B.V.
64	OR07127	Morphological Analysis of patterns of sulci during normal ageing process using MRI	Padmalatha K
65	OR07128	Morphometric analysis of Lower Thoracic And Lumbar Vertebrae pedicles Using Computed Tomography	Radhika PM
66	OR07129	Association of homocysteine level with brain atrophy changes in alzheimer's disease patients - case series	Ram Prakash Sah

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: OSTEOLOGY & APPLIED ASPECTS	
Scientific Session 8			
Sl. No	PSID	TITLE	Presenting Author
67	OR08143	An Insight Towards Lateral Malleolar Crest - Surgical Point of View: An Anatomical Study	Jyothi S.R
68	OR08144	A cross-sectional study of trabecular pattern of calcaneus through high resolution radiographs in normal & menopausal women	Manisha Sachin Chougule
69	OR08145	Relationship of carrying angle with grip strength in various parameters – A cross-sectional study	P. Bhavya Sree
70	OR08146	Evaluation of Proximal Femur geometry in the Indian population using digital Radiography and dry bone measurements with its clinical implications.	Poulomi Banik
71	OR08147	A study of vascularity of dry radii bones with reference to vascular foramina	Pramod Rangasubhe
72	OR08148	A Study of Nutrient Foramina in Dry Adult Ulna of South Indian Population	Pratik Khona
73	OR08149	A Morphometric study of nutrient foramen in dry adult human fibula bone	Rajapur Parashuram
74	OR08150	Dimensional analysis of the Intertubercular sulcus and its association with handedness in South Indian population	Showri.R
75	OR08151	Anterior curvature of femur bone and its surgical implications	Sunil.O
76	OR08152	Mental foramen – A dry bone analysis.	Uma Shivanal
77	OR06107	A study to assess the micronuclei count and metanuclear abnormalities in exfoliated buccal epithelial cells of covid-19 suspected patients	Vishnu B

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY	
Scientific Session 9			
Sl. No	PSID	TITLE	Presenting Author
78	OR09165	Morphometric analysis of oblique popliteal ligament and its significance on knee joint	Shreya Saha
79	OR09166	Cheiloscopy a comparative analysis of patterns and variations in thyroid disorders	Srishti Gupta
80	OR09167	Study of morphologic and morphometric variations in liver	Shyasri Nandakumar
81	OR09168	Morphometric Analysis of Gastrocnemius Muscle and Its Anatomical Localization of The Motor Points	Thrisha Sajeeth
82	OR09169	A Cross Sectional Study to Correlate Human Auricular Morphometry and Golden Phi Ratio of Face	Veena Rathod
83	OR09170	Cheiloscopy: A diagnostic factor for person identification and gender discrimination	Yashwanth M
84	OR09171	Morphometry of the digastric muscle and its neurovascular supply : A cadaveric study	Zohra Fathima
85	OR09172	Cadaveric Study on Variations of Cystic Artery	Mohammad Saad Anjum
86	OR09173	Morphometry of rectus abdominis and its clinical implication in grafting	Vasundhara Choudhary
87	OR09193	Unveiling the morphological insights of accessory tendon of abductor pollicis longus (APL)	Kumudhakshi D

ORAL PRESENTATIONS - I

DAY 1 15th September 2023 (Friday)

Time: 2.00-3.30 pm Venue: TMA Pai Hall 2		Category: OSTEOLOGY & APPLIED ASPECTS	
Scientific Session 10			
Sl. No	PSID	TITLE	Presenting Author
88	OR10182	Study of pterion morphology and position to reappraise its neurosurgical significance using adult dry skull.	Laavanya Gupta
89	OR10183	Morphometric and morphological evaluation of human navicular bone	Nandini R
90	OR10184	Estimation of Humeral Length by Anthropometric Measurements of Its Proximal Segments	Niriksha B
91	OR10185	Case study on nutrient foramina of femur in south indian population	Revathy R
92	OR10186	A Morphometric study of nutrient foramen in dry adult human humerus bone	Robert Justin Raj
93	OR10187	Morphometry of Cranial Sutures and their Anthropontic Significance	S Gayathri
94	OR10188	Study of morphometric and morphological features of lower end of femur	Sahana
95	OR10189	A study of variations in the superior orbital fissure in 50 human skulls	Shreeaadityaa S
96	OR10190	Anatomical Relationship of Pterygospinous Bar and Foramen Ovale	Sinchana Varna
97	OR10191	Morphometric study of Pterygomaxillary fissure in dry skulls & its clinical importance.	Sneha J M

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm		Category:	
Venue: TMA Pai Hall 2		GROSS ANATOMY AND APPLIED ASPECTS	
Scientific Session 1			
Sl. No	PSID	TITLE	Presenting Author
1	OR01011	Anatomical Study of Genicular Branches of Popliteal Artery	Swapnali Shamkuwar
2	OR01012	Case Report - Variation in the branching pattern of coeliac artery	Vidya K S
3	OR01013	A study of origin of coronary arteries in human cadaveric hearts of South Karnataka region	Shashidhar K
4	OR01014	Absence of palmaris longus- a variation with applied anatomical implication	Uma B. Gopal
5	OR01015	A case study on the morphological variations of the thyroid gland	Drishya Surendran
6	OR09192	Caspase 3 and HSP90 Expression in Oligoasthenospermic patients after semen processing and Cryopreservation	Sivarajaganesan B
7	OR09193	Anatomical variations in the labial branches of facial artery in face	Veeresh
8	OR09195	Study of metopic sutures in adult skulls in Karnataka region	Ravikumar V.
9	OR09196	Duplication of Great Saphenous Vein - A rare occurrence	Siri A. M.
10	OR09197	Morphology and morphometrical study of intercostobrachial nerve - A guide in axillary regional block	Meenakshi Parthasarathy

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY AND APPLIED ASPECTS	
Scientific Session 2			
Sl. No	PSID	TITLE	Presenting Author
11	OR02028	An anatomical study of para-nasal sinus ostia and its clinical relevance	Raghavendra A Y
12	OR02029	Study of variations in the course of brachial artery: A cadaveric study	Raghavendra D R
13	OR02030	Dwarf Kidneys -A case report	Roshni Sadashiv
14	OR02031	Morphological Variation of liver and it's clinical importance	Sangeetha. V
15	OR02033	Anatomic Evaluation to Compare the Dye Spread with Ultrasound-Guided Pericapsular Nerve Group (PENG) Injection with or Without an Additional Suprainguinal Fascia Iliaca (SIFI) Injection in Soft Embalmed Cadavers.	Shivaprakash S.
16	OR02034	Morphometry of Accessory head of Flexor pollicis longus – A Cadaveric study	Shwetha K
17	OR02036	A radiological and cadaveric study on the anatomy of the Sapheno-popliteal junction, its variations and implications.	Sreya Bheemesh
18	OR02037	A cadaveric study on tortuosity of the cervical segment of the internal carotid artery	Supraja Srivatsava.

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY AND APPLIED ASPECTS	
Scientific Session 4			
Sl. No	PSID	TITLE	Presenting Author
19	OR04068	Morphometric Analysis of Anterior Cruciate Ligament of Knee: A Cadaveric Study	Pranavi Poddar
20	OR04069	Palm Crease Analysis In individuals with Different Blood Groups	Prateek Manjunath
21	OR04070	Morphometric and Morphological Profiling of Spleen Variability	Rhea M
22	OR04072	A cadaveric study on morphology of fossa ovalis	Saasha Sanjiv Desai
23	OR04073	Morphometry of Tibial Collateral Ligament and its Clinical Aspects	Sahiti Aggarwal
24	OR04074	A Cross Sectional Study to Correlate Placental and Fetal Liver Morphometry in 2nd and 3rd Trimester Ultrasound Findings	Sapna. D
25	OR04075	Morphometric study on lateral sulcus(Is): A Cadaveric Study	Sarthak Pandey
26	OR04076	Variations in carrying angle among male and female students studying at Medical College	Satyam Vastrad
27	OR04077	Study of Distinctive vascular supply of Head and Neck	Saurav Arora

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm Venue: TMA Pai Hall 2		Category: MEDICAL EDUCATION, BODY DONATION & MUSEUM TECHNIQUES	
Scientific Session 5			
Sl. No	PSID	TITLE	Presenting Author
28	OR05088	The impact of using 3D printed models in learning osteology among first-year medical undergraduate students	Abhishek Agarwal
29	OR05089	Menstrual cup cognizance: Unveiling the perception and barriers among medical students	Harshitha MD
30	OR05090	A Cross-Sectional Study to Correlate Cognitive Ability and Learning Styles using Wechsler Adult Intelligence Scale and VARK Questionnaire Tools	Krishna Sree Yalamanchili
31	OR05091	Perception and attitude towards body donation in general adult population: A cross-sectional study	Pratheeksha
32	OR05092	Team Assessment In Laboratory Setting (TAILS) : A novel approach for collaborative learning in dissection hall	Saju Binu Cherian
33	OR05094	Finding the key to your academic stress in 1st Professional Year	Laabhanya Mohpal
34	OR05095	Psychology and Attitude regarding Voluntary Body Donation in registered body donors and non-body donors: A comparative study	Shambhavi Vivek Joshi
35	OR05096	Concept of Clinical Cadaver: Learner' satisfaction in practising procedural skills for medical undergraduates	Elvin Joshua Pinto

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm Venue: TMA Pai Hall 2		Category: MICROSCOPIC ANATOMY, EMBRYOLOGY & GENETICS	
Scientific Session 6			
Sl. No	PSID	TITLE	Presenting Author
36	OR06108	Histological Analysis of Human Cervical Transformation Zone using IKOSA AI tool	Akshaya S
37	OR06109	A Cross Sectional Study of Cord Index and Morphological Variations of Placenta and Umbilical Cord	Aman Jain
38	OR06110	Holoprosencephaly	Bhargavaram
39	OR06111	Exploring the Pathological Implications of Tuberous Sclerosis on Anatomy: A Case Study	Deepali Malik
40	OR06112	Foetal Cardiac Anatomical Evaluation as a Biomarker for Chromosomal Anomalies: A Case Series	Eshaan U Jalihal
41	OR06113	A cross-sectional study to correlate Nuclear Fixative properties of Formal Saline and Clarke's Fluid for histomorphological evaluation of Human tissues	Lakshya V
42	OR06114	Histological assessment of Pacinian Corpuscles in Human Pancreas: A cross-sectional study	Sai Adithi Amarnath
43	OR06115	Study of epidermal and dermal changes in papulosquamous disorders using dermoscope	Sumukha Chetan C
44	OR06116	Histological study of oesophagus and its Developmental aspects	Syed Zohair Husain Rizvi
45	OR06117	Morphometric analysis of placentas among deliveries in tertiary care centre: A cross sectional study	Tanisha N
46	OR06118	Collagen and elastic fiber frequency in tortous arteries by microscopy.	Thanush P
47	OR06119	The Morphometric and Morphological Study on Fossa Ovalis	Saanya Chhabra
48	OR09194	Histological study on the therapeutic effect of Cynodon.dactylon in Letrozole induced PCOS rats.	Anandaramajayan Nallathambi

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm Venue: TMA Pai Hall 2		Category: NEUROANATOMY & RADIOLOGY	
Scientific Session 7			
Sl. No	PSID	TITLE	Presenting Author
49	OR07130	Morphometry of corpus callosum: a cadaveric study	Devishi Choudhary
50	OR07131	Morphometry of internal capsule: A Cadaveric Study	Dhriti Goyal
51	OR07132	Transverse process of Atlas as a surgical land mark for various head and neck surgeries- A CT assisted study	Madhu P Raj
52	OR07133	Agenesis of corpus callosum	Manjunath C U
53	OR07134	A Morphological study of Interthalamic Adhesions in Northern Karnataka brains: A cadaveric study	Navya Sharma
54	OR07135	Evaluation of Circle of Wills variant in patient going Mrangiography and its association with CVA in Tertiary Hospital	P N Gajan
55	OR07136	Anatomical variations in Coronary Arteries and Veins in patients undergoing CT Angiography in a Tertiary Hospital in Bangalore	Paridhi M C
56	OR07137	A cross-sectional study of Sulcogyral morphometry of language zone of human brain	Prapoorna R
57	OR07138	Imaging spectrum in vascular malformations	Rishab Raghavendra
58	OR07140	Role of Biparietal Diameter and Abdomen Circumference on Fetal Growth: A Retrospective Observational Study	Sanjana P
59	OR07141	Spectrum of morphometric analysis of Paranasal sinuses- anatomical variations and clinical implications	Shanmish C Bannur
60	OR07142	Anatomical and radiological exploration of sellaturcica –it's surgical implications	V Kurian Varughese

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm Venue: TMA Pai Hall 2		Category: OSTEOLOGY & APPLIED ASPECTS	
Scientific Session 8			
Sl. No	PSID	TITLE	Presenting Author
61	OR08153	Morphometric correlation of Atlas and Axis articular surfaces for Atlantoaxial stability	Sampurna Saha
62	OR08154	A study on symmetry of important paired foramina in human skulls	Aditya Krishna Murthy
63	OR08155	Morphometric study of human mandible	Akshitha M Shetty
64	OR08156	Study on incidence of Wormian Bones and their relation to cranial sutures of the human skull	Ananya Jhamb
65	OR08157	Morphometric study of the Atlas vertebrae	Anushree
66	OR08158	Morphometric analysis of Foramen Magnum: An anatomic study using Artificial Intelligence	Bharath R
67	OR08159	Morphometric analysis of the pterion on adult dry human skulls	Chandan S Prabhu
68	OR08160	A study on morphology of Suprascapular notch and its clinical significance.	Dhanvin B M
69	OR08162	Morphology of suprameatal triangle and its clinical relevance	Eesha Kharade
70	OR08163	Morphometry of distal fragments of Humerus: A tool for reconstruction of Humeral length.	Yasaswini Udayagiri
71	OR08164	Study of morphometric and morphological features of dry mandible	Suhas B R

ORAL PRESENTATIONS - II

DAY 1 15th September 2023 (Friday)

Time: 3.30-5.00 pm		Category:	
Venue: TMA Pai Hall 2		NEUROANATOMY & RADIOLOGY	
Scientific Session 9			
Sl. No	PSID	TITLE	Presenting Author
72	OR09174	Clinical Scenario of non-fusion of amnion & Chorion	Shubha Nivargi
73	OR09175	Aortic knuckle and it's contribution to left cardiac outline: A radiographic study	Sunil.O
74	OR09176	Changes in the seahorse of brain due to Chronic stress-A critical review	Supriya
75	OR09178	Effect of metformin on behavioral changes and inflammatory markers in brain in bacterial lipopolysaccharide induced neuroinflammatory model of Albino Wistar rats.	Vandana Blossom
76	OR09179	Morphometric evaluation, variations and sexual dimorphism of Frontal Air Sinuses by Computed Tomography	Vidya H K
77	OR09180	Identifying Grey Areas of Brain Fungal Pathogenesis Using 3-D Cerebral Organoids	Aswathi Ramesh. I
78	OR09181	Lipid composition of developing central nervous system	Sumukha Hegde

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY & APPLIED ASPECTS	
Scientific Session 1			
Sl. No	PSID	TITLE	Presenting Author
1	PO01001	Aberrant head of triceps and biceps brachii muscle with vascular variation: A case report.	Aamna Kausar
2	PO01002	Anthropometric study of human ear auricle in North Indian population	Amoldeep Singh
3	PO01003	Formation of Median nerve from single root – A Case Report	Brijesh Kumar
4	PO01004	Arteria Lusoria-A Rare anatomical variation - Case report	Hemalatha Bangera
5	PO01005	A study on morphometric analysis of mitral valve in embalmed human hearts: An insight into its clinical implications	Pallavi
6	PO01006	Duplication of Inferior Vena Cava - A Case Report	Pratik Khona
7	PO01007	Morphological study of the popliteus muscle in formalin embalmed adult cadavers	Rajanigandha Vadgaonkar
8	PO01009	The nerve supply to Extensor Carpi Radialis Brevis in 30 cadaveric upper limbs	Roshni Bajpe
9	PO01010	Caval variants - Imaging spectrum in Superior and Inferior venacava	Shyamala B Y
10	PO01011	'Pons Hepatis' - A morphological variation of Umbilical Fissure in a cadaver- A case report	Sudha. M
11	PO01012	Hypoplasia of 4th Part of Vertebral Artery Distal to Origin of Posterior Inferior Cerebellar Artery	Sumit T. Patil

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY & APPLIED ASPECTS	
Scientific Session 2			
Sl. No	PSID	TITLE	Presenting Author
12	PO02013	Absent mirror-image of azygos venous system: A case report with embryological correlation	Anita. L
13	PO02014	“Unilateral high division of sciatic nerve – a case report”	Dinesh R
14	PO02015	Anatomical variation in origin of Medial and Lateral circumflex femoral artery found in cadaver- A case Report	Gundigi Varshitha
15	PO02016	Unilateral absence of median cubital vein in a 70-year-old male cadaver: A case report	Harshitha B.M
16	PO02017	A rare case report of tubular stomach in a 80 year old female cadaver	Monalisa Mandal
17	PO02018	Trifurcation of left coronary artery with absent left circumflex artery and superdominant right coronary artery in the heart.	Nikilesh S
18	PO02019	Embryological basis of polydactyly in 56 year old male patient: Case report	Sarayu M
19	PO08088	An unusual branch of axillary artery communicating with radial artery: A case report	Sonal
20	PO08089	Variations in the size of the right kidney and branching pattern of right and left renal artery and its hilar structures with its clinical correlations - A case report.	Febina FK
21	PO08091	Variant origin of Ulnar Artery from the Brachial Artery in the arm and its Superficial Course – A Case report	Arya K

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm		Category:	
Venue: TMA Pai Hall 2		GROSS ANATOMY & APPLIED ASPECTS	
Scientific Session 3			
Sl. No	PSID	TITLE	Presenting Author
22	PO03020	Arteriovenous fistula between the Inferior Mesenteric artery and vein	Agamdeep Singh Bedi
23	PO03021	Volvulus of the Meckels Diverticulum: Untying of the mystery knot!	Arpita Navarasu
24	PO03022	Xanthomatosis of Tendoachilles - A Case Report	Brunda D Reddy
25	PO03023	A case report of subdiaphragmatic right kidney as a positional variant of cephalad renal ectopia	Chandana A Reddy
26	PO03024	Hypoplasia of quadrate lobe of liver: A case report	Harini Shree Subburaj
27	PO03025	A Case Report on Tricipital Tendon of Biceps Brachii Muscle	Harsh Raj
28	PO03026	Bilateral accessory bellies of the Anterior Belly of the Digastric Muscle: Anatomical variations and clinical implications	Harshavardhan Sai Sadineni
29	PO03027	Case of variation in origin of left gastric artery	Jasneet Kaur Narang
30	PO03028	Normal growth of various Aortic Segments and Pulmonary Trunk in Human Foetuses: An anatomical study	Juvena Jebeleen Tony Dsouza
31	PO03029	Bilateral presence of an Unidentified Muscle in the Anterior Compartment of the lower limb: A case report	Khushi Rakesh Shah

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY & APPLIED ASPECTS	
Scientific Session 4			
Sl. No	PSID	TITLE	Presenting Author
32	PO04030	Anencephaly	Kimaya Kamat
33	PO04031	Bilateral presence of an accessory tendon of the Flexor Hallucis Longus and the Accessory Flexor Digitorum Longus: A Case Report	Krish Bhambhani
34	PO04033	Variations in the great vessels with modified bovine aortic arch – a case report	Lokesh Katiwal
35	PO04034	Importance of the mystery muscle rectus sternalis – A comprehensive anatomical review and the incidence of a new variant.	M Mohit
36	PO04035	Bilateral accessory renal artery: A case report	Maanas Varun Mahesh
37	PO04036	Thyroglossal Duct Cyst : A Case Presentation.	Maanasi Srinivas
38	PO04037	Study of anomalous origin of vertebral artery with its embryological and clinical significance.	Malavika VS
39	PO04038	Anatomically variant origin of anterior belly of Digastric, with its embryological and clinical significance	Manoj S
40	PO04039	Anatomical Variation in the Formation of Median Nerve and its Communication with the Musculocutaneous Nerve in the Axilla: A Case Report	Nikhil S

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm Venue: TMA Pai Hall 2		Category: GROSS ANATOMY & APPLIED ASPECTS	
Scientific Session 5			
Sl. No	PSID	TITLE	Presenting Author
41	PO05040	Anatomical Variation in branching pattern of Subclavian artery – A Cadaveric Study	P. Manu Pradhaan
42	PO05041	Horseshoe kidney : A Fusion Anomaly	Pranav Reddy L
43	PO05042	Role of Fetoplacental ratio and placental parameters towards maternal and fetal outcome.	Rishabh IR
44	PO05043	Anomalous Termination of the Short Saphenous Vein Distal to the Popliteal Region: A Case Report	Samit Sen
45	PO05044	Morphologic and Morphometric Analysis of the Sphenoid Air Sinus using Computed Tomography	Shreya Reddy Pulli
46	PO05045	Anatomical variation in branching pattern of axillary artery: A case report	Shreyas Pai M
47	PO05046	Imperforate hymen	Tanya Vijay Jadhav
48	PO05047	A Bifid attachment of Latissimus Dorsi to Humerus Enclosing Neuro-vascular Structures: A Case Report	Yaajnavalkya Hebbar K
49	PO08085	A variation in the branches of arch of aorta - a case report	Manas Maddheshiya
50	PO08090	Morphology and morphometry of human external ear – A comparative study	Shwetha

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm		Category:	
Venue: TMA Pai Hall 2		MICROSCOPIC ANATOMY, EMBRYOLOGY & GENETICS	
Scientific Session 6			
Sl. No	PSID	TITLE	Presenting Author
51	PO06049	Heart connections - endocardial cushion defects	Akshatha Jois Y A
52	PO06050	A histological examination of LevatorGlandulaeThyroidae - Case Report	Alex Bhanu
53	PO06051	Cyclopia, a variant of holoprosencephaly: A case report	Amogha G Shetty
54	PO06052	Understanding the role of Senataxin in sporadic and familial Amyotrophic Lateral Sclerosis.	B. Sindhu Sree
55	PO06053	Transposition of great arteries	Bilva Teja
56	PO06054	The effect of single dose cyclophosphamide on development of testis in rat	Biswabina Ray
57	PO06055	Absent Pulmonary Valve Syndrome	Dhanush M
58	PO06056	Congenital Lung Anomalies Spectrum	Durga Prasada S
59	PO06057	Situs inversustotalis: A rare congenital abnormality	Kaushik Rajesh Joshi
60	PO06058	A Case Report on Situs InversusTotalis	Manya Dhari
61	PO06059	The Procedure of Nephron Number Counting Using Image Analysis Method	Megha Nagaraj Nayak
62	PO06060	Evaluation of the fetal abdominal cysts and its embryological significance	Neeraj Kashyap H J
63	PO06061	Unlocking the secrets of an anatomical marvel - patent ductus arteriosus	Poorna Kruthik M
64	PO06062	Juvenile Granulosa Cell Tumor (JGCT)	Shreyas V
65	PO06063	Thyroglossal cyst with papillary carcinoma of thyroid	Veerendra Kumar M Magi

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm		Category:	
Venue: TMA Pai Hall 2		OSTEOLOGY & APPLIED ASPECTS	
Scientific Session 7			
Sl. No	PSID	TITLE	Presenting Author
66	PO07064	The study of morphometric and morphological features of Coracoid Process in Scapula	Aishwarya S L
67	PO07065	A study of morphometric and morphological variations of Lister's tubercle	Ameen Hussain
68	PO07066	Comparison of anthropometric craniofacial measurements in young adults sleeping in different positions	Anjali Sethi
69	PO07068	A study of hypoglossal canal variations in 50 skulls.	Jia Golecha
70	PO07070	Elongated styloid process-A case study.	Nidhi. S
71	PO07071	The study of morphology and morphometric parameters of Greater Sciatic Notch in dry hip bones	Olivia Mary John
72	PO07072	Incidence of the Infraorbital Sulcus in 50 Human Skulls	Preethi Praveen
73	PO07073	Concurrent appearance of rare sacral hiatus with sacrococcygeal synostosis -A case report	Sharanya Rao
74	PO07074	Morphology and morphometric analysis of glenoid cavity: Its implications on shoulder arthroplasty	Shaun Thomas Shajan
75	PO07075	Morphology of supra-meatal region and the surgical implications of its morphometric analysis	Shreedeeep Padaru
76	PO07076	Morphometric Analysis of Orbital Dimensions, Fissures and Foramina of South Indian Skulls	Vasudev Murthy K

POSTER PRESENTATIONS

DAY 2 16th September 2023 (Saturday)

Time: 10.30am-12.00 pm Venue: TMA Pai Hall 2		Category: NEUROANATOMY & RADIOLOGY	
Scientific Session 8			
Sl. No	PSID	TITLE	Presenting Author
77	PO08077	Radio-anatomical approach to fundamentals of peritoneal spaces using Multidetector Computed Tomography.	Anika Tiku
78	PO08078	Sellar and suprasellar pituitary macroadenoma in 32 years aged woman- a case report	Jacqueline Kim J
79	PO08079	Congenital absence of left common iliac vein and it's embryological significance	Khushi Khandelwal
80	PO08080	Assessment and Analysis of Human Laterality for Manipulation and Communication gestures using Renne's Laterality Questionnaire.	Leya. H.M
81	PO08081	Study of cardiac situs anomalies and its embryological and clinical implications -case series	Medha Kakde
82	PO08082	Dual Dilemma: An Unusual Pediatric Case of Cryptorchidism with Testicular Torsion	Rhea M
83	PO08083	Morphometric analysis of floor of fourth ventricle in cadaveric brain specimens	Sristi Chakraborty
84	PO08084	Cross sectional study on normal parameters of cruciate ligaments of adult knee joints using MRI scan.	Varsha Shenoy
85	PO08086	Virgin coconut oil- A review of its extraction, properties and health benefits	Mangala M. Pai

Conference Abstracts

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 1

Variations of Common Hepatic artery in cadavers - A Case Study

Alex Bhanu, Prakash B.S.

Department of Anatomy, HIMS Hassan

Email: lxbhanu@gmail.com

Background: Anatomical variations of the common hepatic artery are important in planning and performance of abdominal surgical procedures. Normal hepatic artery occurs in approximately 80% of cases, for remaining 20% multiple variations have been described.

Methods: The purpose of this is to analyze the variations in hepatic artery in 20 cadavers dissected during routine dissection classes conducted for 1st year MBBS students in Department of Anatomy, HIMS Hassan. The abdominal wall and the peritoneum covering the porta hepatis is dissected as per the instructions provided in Cunningham's Manual of Practical Anatomy (15th edition) and the hepatic artery is exposed and traced till its origin and its course and length is documented.

Results: The results of the study will be discussed during the presentation.

Conclusion: Changes in hepatic arteries are frequently found and caution during surgical interventions should be applied to several procedures from cholecystectomy to gastrectomy and pancreatectomy to prevent iatrogenic injuries and complications.

Keywords: Common hepatic artery, Hepatic artery, Porta hepatis, Coeliac trunk, Superior mesenteric artery.

Morphometric variations of coronary ostia in adult human heart: cadaveric study

Kedar U K, Anupama K, Shailaja Shetty

Department of Anatomy, Ramaiah Medical College

Email: dranukodial@yahoo.co.in

Introduction: The coronary arteries originate from the ascending aorta above the aortic valves as coronary ostia. Their variations can be correlated with various cardiovascular anomalies and morbidities which are therefore of clinical significance. Hence this study was undertaken to

- To determine the number and location of coronary ostia
- To compare the internal diameter of the coronary ostia.
- To assess the distance of ostia from the sinotubular junction and from the floor of the sinus.

Methods: 52 adult human cadaveric hearts collected from the anatomy department, M S Ramaiah Medical College were used in this study. The measurements were taken using a digital Vernier caliper. Statistical analysis was done to compare the parameters of right and left coronary ostia.

Result: In this study we found that 4 hearts out of 52 had anomalous ostia. The internal diameter of the right coronary artery was significantly lesser compared to that of left coronary artery and distance of the ostia from the floor of the sinus was also significantly more for right coronary ostia than the left.

Conclusion: The precise measurements of coronary ostia like the internal diameter, distance from the sinotubular junction and the distance from the floor of the sinus can aid interventional cardiologists and radiologists during angiographic procedures and help to avoid complications.

Key words: Coronary ostia, Sinotubular junction, Angiography, Interventional cardiology

Variations in Number of Branches of Median Nerve Supplying Pronator Teres Muscle - A Human Cadaveric Case Study

Aruni C S, C Lavanya Varma, Priya Ranganath

Dept of Anatomy, BMC & RI, Bangalore

Email: arunimedico7@gmail.com

Background: Median nerve is a major nerve which supplies the muscles of forearm. It passes between the two heads of pronator teres muscle which is a superficial muscle of forearm and supplies the muscle. Several variations have been found in the number of branches to pronator teres. And this area is more common for nerve entrapment.

Aim: To understand branches given off by the median nerve in relation to the pronator teres muscle.

Materials and Methods: Present study was done by dissecting the human cadavers available in the Department of Anatomy, Bangalore Medical College and research institute, Bangalore. The total number of 60 specimens were studied in the present work (30 right upper limbs and 30 left upper limbs) number of branches to the pronator teres was recorded.

Results: In the present study 60 formalin fixed adult cadaveric upper limbs, it was observed that 28 pronator teres muscles with two branches of median nerve, 18 muscles with 3 branches, 12 muscles with 4 branches and 2 muscles with 5 branches. Out of 60 specimens, 58 had the nerve passing between the two heads of the muscle.

Conclusion: Number of branches of median nerve to the pronator teres muscle and their level of origin is of significance for various surgical procedures involving this muscle. Relation of the median nerve to pronator teres muscle is to be analysed for diagnosis of entrapment neuropathies.

Key words: Median Nerve, Pronator Teres.

Variation in the course of brachiocephalic and right common carotid artery: A case report

Ashok K R, Vidya K S, Rohini K R

Department of Anatomy, BGS Global Institute of Medical Sciences, Bengaluru, Karnataka

Email: hingyake@gmail.com

Background: Brachiocephalic artery arises from the arch of aorta, crosses the trachea from left to right as it ascends towards the posterior aspect of right sternoclavicular joint. It terminates by dividing into right common carotid and subclavian artery. Right common carotid artery ascends within the carotid sheath lateral to trachea and terminates at the level of upper border of thyroid cartilage into external and internal carotid artery. Variations in the course of these great vessels can occur due to altered developmental processes and can lead to severe complications during surgical procedures.

Case report: During routine dissection for undergraduate students in BGS GIMS we observed variation in the course of brachiocephalic artery and right common carotid artery. Brachiocephalic artery originated from the arch of aorta slightly to the left of midline and ascended up in front of the trachea and reached the suprasternal notch. Right common carotid artery ascended in front of the trachea towards the base of the right lobe of the thyroid gland and then passed towards the posterolateral surface of the gland.

Conclusion: Vascular variations of large blood vessels remain asymptomatic in most cases and are detected incidentally during surgical procedures in the neck. Such variations are significant as they can become a major cause of accidental haemorrhage when performing tracheotomy, surgeries of the thyroid gland, tumour excisions.

Keywords: brachiocephalic artery, common carotid artery, tracheotomy

Anatomy of Rouviere's sulcus of Liver and its clinical significance in laparoscopic cholecystectomy

Divya C

Department of Anatomy, Yenepoya Medical College

Email: dr.divyac@yahoo.com

Background: Rouviere's sulcus is a cleft extending to the right of the porta hepatis, anterior to caudate lobe of the liver. Cystic duct and artery lie anterosuperior while the common bile duct lies anterior to this sulcus, making it an important landmark in laparoscopic cholecystectomy.

Aim: To determine the frequency of the Rouviere's Sulcus (RS) and its morphology.

Material and Methods: The study was conducted in the Department of Anatomy, Yenepoya Medical College in Mangalore, on 50 cadaveric livers. The morphological observations made were: presence of RS, direction, sulcus type, length, width and depth; presence of right hepatic pedicle, distance of the hepatic vessels from edge of the sulcus. All measurements were carried out using vernier calipers, metric scale and thread.

Results: The RS was present in 85% of the cases. Direction was horizontal in 42%, oblique in 55% and vertical in 3%. 31 livers showed a deep type of sulcus, 16 showed slit type and 3 showed scar type. 34 livers showed the right hepatic pedicle entering the RS. Average length, depth of the RS was 2.42 cm and 1.1 cm respectively. The average width was 0.35 cm at medial end, 0.23 cm at midpoint and 0.2 cm at lateral end. Depth of vessels from the edge of the sulcus was average 6 mm (0.6 cm) for the right branch of the hepatic artery and was 13 mm (1.3 cm) for the right branch of portal vein.

Conclusion: This study provides detailed morphological data of the Rouviere's Sulcus to the hepatobiliary surgeons, including depth of hepatic vessels in the RS as an added parameter to aid them in their surgical endeavor.

Keywords: Rouviere's sulcus, Morphology, Hepatobiliary Surgery.

Morphometry of Dorsalis Pedis Artery and its Clinical Significance: A Cadaveric Study

Gali. Harika, Vrinda Hari Ankolekar

Department of Anatomy, KMC, Manipal, Karnataka

Email: galiharika20@gmail.com

Background: Dorsalis pedis artery is the chief arterial supply for dorsum of foot and plays a vital role in clinical assessment. Its palpation helps in assessing the conditions like atherosclerosis, deep vein thrombosis.

Aim: To study the Morphometrics of Dorsalis pedis artery. **Materials and methods:** The study was conducted on 20 lower limbs of unknown age and sex obtained from the Department of Anatomy, Kasturba Medical College, Manipal and was dissected by removing skin and fascia. The length of Dorsalis pedis artery was measured till its terminal point at 1st metatarsal space along with the length of Arcuate artery and its distance from Dorsalis pedis artery.

Result: In this study, the average length and diameter of Dorsalis pedis artery was found as 7.53 cm and 0.3 cm, average length of Arcuate artery was found 4.8 cm and the average distance of Arcuate artery from Dorsalis pedis artery was found 4.41 cm.

Conclusion: The knowledge of Measurement of dorsalis pedis artery is essential in Ankle surgeries and to evaluate peripheral arterial diseases like diabetes, buerger's disease, Dorsalis pedis Aneurysm.

Langer's Axillary Arch – A variant of latissimus dorsi

Geethanjali B.S, Chandramma Dayanad Sagar

Department of Anatomy, Institute of Medical Education and Research Centre, Ramanagar, Karnataka

Email: geethamohan76@gmail.com

Background: A muscular anatomic variation within the axilla is the axillary arch or the axillopectoral muscle also known as Langer's axillary arch, the muscle of Langer, Achselbogen and pectorodorsalis muscle. It is found as a slip of muscle or fascia extending between the latissimus dorsi muscle and the pectoralis major or coracobrachialis or over the fascia of biceps brachii, teres major or to lesser tubercle or coracoid process. It plays a role in entrapment of neurovascular structures, difficulty in staging lymph node, axillary surgery, thoracic outlet syndrome.

Materials & Methods: During routine dissection of 30 upper limbs of both male & female cadavers for undergraduate medical students in the department of anatomy, Dr Chandramma Dayanad Sagar Institute of Medical Education and Research Ramnagar Karnataka, we found a Axillary arch in 3 male cadaver of right & left axillary region while dissecting through the layers of skin, fascia and muscles.

Results: Out of 20 upper limbs dissected, a fibrous type of axillary arch was found in 2 male cadavers on right & left upper limb of 60 yrs & 63 yrs male cadaver respectively & muscular type of axillary arch was found in left upper limb of 58 yrs male cadaver. It was found to be originating from the latissimus dorsi and attached to the pectoralis major & was related to overlying the brachial plexus and the axillary vessels. The neurovascular bundle was normal on opposite axilla respectively in all the cases.

Conclusion: It is important that surgeons operating in the axilla and physicians treating vague unexplained neurovascular symptoms of upper limb to be aware of this uncommon anatomic variant. When present, Langer's arch should always be accurately identified and formally divided to allow adequate exposure of axillary contents to achieve a complete lymphatic dissection and preserve vascular, lymphatic and nervous structures.

Key words: Langer's arch, axillopectoral muscle, Achselbogen, pectorodorsalis muscle, latissimus dorsi muscle and the pectoralis major.

A Cross Sectional Study of Abdominal Aortic Bifurcation and its Geometric Anatomy

Dr. Isha Jaiswal, Dr. Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences & Research Centre, Devanahalli, Bangalore

Email: jaiswalisha89@gmail.com

Background: Aorto-iliac occlusive disease is predicted to affect 3.56 – 14% of the general population, 14 – 20% of people over 70 years & about 23% of people over 80 years. An important factor for developing atherosclerosis could be the geometry of arteries at the arterial bifurcation which influences the blood flow fields. Each individual's unique arterial geometry might influence the risk of developing arterial diseases. Anatomy of aorto-iliac bifurcation is extremely important for various procedures like interbody fusion surgery (for spinal problems like segmental lordosis & spondylolisthesis).

Aim: The current study aims to study the abdominal aortic bifurcation & its geometric anatomy in South Indian population.

Methods: A cross sectional study was performed on convenient samples of 10 dissected cadaveric specimens & 20 CT angiograms. Digital vernier calipers & goniometer were used for measuring the aorto-iliac bifurcation angle, take off angles, angle of aortic planarity & laterality, length & diameter of abdominal aorta & common iliac arteries. Soft copies of CT angiograms of abdominal aorta were analyzed for aorto-iliac diameters & angle of laterality.

Results: Statistical analysis was performed using the SPSS (Version 20). Frequency, percentage, mean & standard deviation were calculated for the relevant parameters. Association between the different parameters of geometric anatomy of abdominal aortic bifurcation was analyzed by ANOVA. Chi-square test was applied for variables like diameter & take off angles. P – values of <0.01 were considered statistically significant.

Conclusion: The knowledge of abdominal aorta & its bifurcation is extremely important for surgeons & orthopaedicians to avoid intraoperative injury of the arteries. It has got immense importance in invasive procedures like laparoscopic lumbosacral total disc arthroplasty. The angular asymmetry has significant effect on flow fields near bifurcation affecting wall shear stress, thus also helpful for researchers performing haemodynamic studies of abdominal aorta.

Keywords: Aorto-iliac bifurcation, geometric anatomy, atherosclerosis

Variations in the branches of 3rd part of axillary artery

Jayaprakash T, Sharada B M

Adi Chunchanagiri Institute of Medical Sciences, B G Nagar

Email: jpthal79@gmail.com

Introduction: Axillary artery is a continuation of sub clavian artery, it gives off six branches. Variations in the branches of axillary artery is common. Knowledge about the variation is of importance to the surgeons operating around this region.

Aim: To study the variations in the branches of third part of axillary artery among south Indian population

Materials and methods: 37 upper limbs were dissected between March 2023 to May 2023 in the department of Anatomy, Adi chunchanagiri institute of medical sciences, B G Nagara. Cunningham's manual was followed for dissection. The branching pattern in the third part of axillary artery was noted and documented

Results: In 17 limbs, Sub scapular artery emerged as a separately whereas anterior & posterior circumflex arteries emerged from a common trunk. In 11 limbs, Anterior circumflex artery emerged separately, whereas sub scapular artery and posterior circumflex branches emerged from a common trunk. In 8 limbs, all the three branches emerged separately. In 1 limb, anterior & posterior circumflex arteries arose from sub scapular artery.

Conclusion: Variations in the branches of Axillary artery is a common occurrence. The study was carried out to detect the variations in the third part of axillary artery

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 2

Unveiling the anatomical diversity in the formation of the external jugular vein

Khizer Hussain Afroze M

Department of Anatomy, MVJ Medical College and Research Hospital

Email: drafroze.homoeo@gmail.com

Background: The external jugular vein (EJV) is formed by the union of the posterior division of the retromandibular vein and posterior auricular vein. Since clinical and surgical procedures involve the external jugular and common face veins, a precise and structured preoperative classification of variants may prevent intraoperative surprises and subsequent complications.

Aim: The aim of the present study was to characterize possible variations in the formation of external jugular vein and to propose an accurate classification.

Materials and Methods: This study included the bilateral dissection of the neck region in 41 adult cadavers (29 males and 12 females), was conducted in the Department of Anatomy, MVJ Medical College and Research Hospital

Results: EJV was found in all the specimen (100%). In the present study, 16 specimens demonstrate the variability in the EJV pattern. We discovered variations including 'Y'-shaped EJVs, short EJVs, duplicate EJVs, and confluences of 3 and 4 vessels.

Conclusions: The knowledge of the variable patterns of the external jugular veins are important to clinicians performing micro-vascular surgeries in head and neck region.

Keywords: External Jugular vein, facial vein, Common facial vein, retromandibular vein, vein of neck.

Morphological and Morphometrical study of long thoracic nerve – A guidance in supraclavicular nerve block

Priyanka Kotakonda

Shri Atal Bihari Vajpayee Medical College and Research Institute

Email: Priyaroyal225@outlook.com

Aim: To study the Morphological & Morphometrical anatomy of the long thoracic nerve in relation with the scalenus medius muscle in order to assess the point of supraclavicular regional anaesthesia

Methods: The long thoracic nerve and the scalenus medius muscle were studied in 30 fresh cadavers i.e 60 specimens with various measurements in Department of Anatomy, SABVMCRI, Bengaluru.

Results: The long thoracic nerve was formed by branches arising from the C5, C6, and C7 nerve roots. The C5 and C6 branches joined beneath the scalenus medius muscle to form the upper division of the long thoracic nerve, which was located 1 cm posteriorly and superiorly to the upper trunk origin. The union of the upper division with the branch from C7 occurred caudally, in the axillary region.

Conclusions and Clinical Relevance: In the supraclavicular region, the long thoracic nerve has a trajectory parallel to the brachial plexus, which can be damaged in supraclavicular nerve block.

Locating the facial nerve trunk within the parotid gland by utilizing the anatomical landmarks: A cadaveric study**Mamatha T, Neelam Bhavishya**

Department of Anatomy, Kasturba Medical College, Mangalore
Manipal Academy of Higher Education, Manipal, Karnataka, INDIA
Email: mamatha.t@manipal.edu

Background: Facial paralysis due to facial nerve injury while performing parotid surgery is often reported. Identifying the accurate location of the facial nerve trunk prior to surgery will greatly reduce this occurrence. Easily accessible anatomical landmarks in the vicinity can be utilized to locate the facial nerve trunk.

Aim: To measure the distance of the facial nerve trunk just before its bifurcation into temporo-facial and cervico-facial division, from the tragal cartilage, external acoustic meatus, mastoid process, styloid process, posterior belly of digastric, mandibular angle and from the lateral oral commissure.

Methods: The study was conducted on cadaveric formalin fixed head and neck specimens. Forty parotid glands were dissected to expose the facial nerve trunk and the measurements were made by using the Vernier caliper.

Results: Distance from the mastoid and styloid processes of temporal bone to the facial nerve trunk was 5.24 0.82 cm and 5.09 0.82 cm respectively. Distance from tragal cartilage to the facial nerve was 1.39 0.75 cm. Distance from external auditory meatus to facial nerve was 2.22 0.75 cm. Distance from the angle of the mandible to facial nerve was 4.9 1.24 cm. Distance from posterior belly of the digastric to facial nerve was 6.82 1.01 cm. Distance from lateral oral commissure to the facial nerve was 8.71 0.72 cm.

Conclusion: It is believed that the data obtained from this study will be beneficial to surgeons in localizing the facial nerve trunk during parotid surgery. This has implications in superficial and deep parotidectomy.

Key words: Parotid surgery, Facial nerve trunk, anatomical landmarks.

Birth weight: placental weight ratio as an indicator of placental efficiency in pregnancies complicated with gestational diabetes**Meera Jacob**

Department of Anatomy, Yenepoya Medical College
Email: meerajacob@yenepoya.edu.in

Background: Placenta translates the maternal environment and the genetic factors that influence the birth weight. The growth of placenta is directly proportional to the nutrient transfer as it is the only foetal source for oxygen and nutrients. The present study was done to find any correlation that exists between the placental measurements and its association with birth weight.

Methods: 80 placentae were studied 40 from diabetic mothers and 40 from normal gestation. The gestational age and fetal weight were taken from the case sheets. Placental measurements were weight, central thickness, shape and placental ratio was calculated. The analysis of association of placental weight and birth weight were done with multiple linear regression.

Results: Our study demonstrates that there is a significant increase in weight and central thickness of placenta. Neonatal weight and placental ratio were also increased; there was no change in shape and site of attachment of umbilical cord in case of diabetic placenta when compared to normal. Birth weight and central thickness correlated with the placental weight ($r=0.733$, $p < 0.0001$) and ($r=0.836$, $p < 0.0001$) for diabetic and normal placenta.

Conclusion: measurements of placental parameters are reliable in predicting the placental growth and in estimating the foetal birth weight and it will help in understanding of maternal-placental programming of chronic diseases.

Key words: diabetic placenta, placental ratio, foetal birth weight

A cadaveric study on the morphology of PSO as minor muscle and its clinical insight

Najma Mobin

Department of Anatomy, JSS Medical College. JSS Academy of Higher Education & Research. S S Nagara. Mysore-570015. Karnataka

Email: najmamobin@jssuni.edu.in

Background: The Psoas minor muscle is a small inconstant vestigial muscle with a small belly and a flat long tendon. When present it lies in front of the Psoas major muscle in the posterior abdominal wall. It arises from the bodies of T12 & L1 vertebrae and inserted into pectineal line and iliopectineal eminence. It helps in bending of the lumbar spine and is supplied by ventral ramus of L1. It is well developed among quadrupeds and leaping animals.

Aim: This study is aimed to obtain more detailed information about the incidence of Psoas minor muscle among the South Indian population, its clinical and functional significance, since very little information is present in the previous literature.

Methods: The study was carried out in the Department of Anatomy of JSS Medical College, Mysore. 30 embalmed cadavers were used for this study for a period of 3 years. Its prevalence or agenesis was noted, morphology and morphometric analysis was done.

Results: The prevalence of Psoas minor muscle was found to be higher among males (50%) than females (20%). The mean values of muscle belly length were 70.7mm, width of the muscle belly was 14.8 mm, length of tendon was 138.6mm and thickness of the muscle was 3.8mm. Total average length of the muscle was 212.14mm. No other anatomical variations were noted.

Conclusion: This study provides valuable information about the Psoas minor muscle; its functional and clinical relevance is highlighted. The Psoas minor muscle is not only important for Anatomist, but also for Physiotherapists, Sports medicine & Orthopedic surgeons in reference to Psoas minor syndrome.

Keywords: Psoas minor muscle, Variations, Morphometry.

A Study of variations in the gross features of lungs and its clinical implications

Nidhi.S, Divia Paul A, Jazeela B F

Department of Anatomy, Father Muller Medical College, Mangalore

Email: nidhis2777@gmail.com

Background: Lungs are respiratory organs situated on either side of the heart in the thoracic cavity. The right lung has 3 lobes –superior, middle and inferior lobes divided by oblique and horizontal fissures. Left lung is divided into 2 lobes –Superior and inferior lobes divided by an oblique fissure. Incomplete formations of the fissures leads to a merging of lobes and conversely accessory lobes form due to the formation of new fissures. Studying about lung fissures and accessory lobes helps in planning pulmonary surgeries. Grading the fissures of both lungs can prevent post operative haemorrhage and complications.

Aim: To study the variations in the gross features of cadaveric lungs.

Methods: Forty one formalin fixed cadaveric specimens (20 right and 21 left lungs) were selected for the study in the Department of Anatomy, Yenepoya Medical College, Mangalore. Variations in the gross features of the lungs were noted.

Results: Three right sided and five left sided lungs showed incomplete oblique fissure. Incomplete horizontal fissure of right lung was observed in eight lungs. Two right sided and 2 left sided lungs showed absence of fissures. No accessory fissures or lobes were noted

Conclusion: Awareness regarding anatomical variations of lungs is essential for performing lobectomies and segmental resection and interpreting radiological images. In incomplete fissures where there is a fusion of lung parenchymas, more dissection has to be performed to reach the bronchi and pulmonary vessels which may cause haemorrhage and post operative complications during surgical resections. Genetic and environmental factors during the development of lungs may result in variations in the oblique and horizontal fissures in the lungs.

Key words: Lungs, lobes, fissures.

Anatomical Study of Median Nerve in the Arm- A Cadaveric Study

Prameela MD, Nikita Bandekar

Department of Anatomy, Kasturba Medical College, Mangalore

Manipal Academy of Higher Education, Manipal, Karnataka, INDIA

Email: prameela.md@manipal.edu

Background: The median nerve (MN) is formed in the axilla by the union of lateral and medial roots arising from the lateral (C5, C6) and medial cord (C8, T1) of brachial plexus (BP). It embraces the third part of axillary artery (AA) and unite anterior or lateral to it. Initially the nerve is lateral to BA, and then crosses in front of it from lateral to medial side. Variations in the formation of MN is important for the surgeons and the anaesthetist while dealing with surgeries around the axilla to avoid nerve damage. Additional roots of MN may compress the AA and cause ischemia in the upper limb.

AIM: To explore the formation, relation and communications of MN in arm

Methodology: Forty cadaveric upper limbs were dissected from axilla to cubital fossa. Number of roots and level of formation of MN, relation of MN with AA and BA and communications of MN with the other nerves in the arm were observed.

Result: The number of roots of MN were two in 31 (77%), three in 8 (20%) and four in only one specimen (3%). The MN was formed in the axilla in 35 (87%) and at upper part of arm in 3 (5%) specimens. MN crossed the BA from lateral to medial side in 39 (97%) and posterior to BA in 1 (3%) specimen. MN was communicating with MCN in the arm in 11 (28%) specimen.

Conclusion: This study presents the formation, relations of MN with the AA and BA, and communications of MN with MCN. This information is important for the surgeons and the anaesthetist while dealing with surgeries around the axilla to avoid nerve damage and post-operative complications.

Key words: Median nerve, Axillary artery, Brachial artery.

Study of Left Coronary Artery in Cadaveric Human Hearts

Dr. Pramod Rangasubhe, Dr. Pratik Khona, Dr. Pavan P Havaladar

Department of Anatomy, Gadag Institute of Medical Sciences, Gadag, Karnataka

Email: dr.pramodrangasubhe@gmail.com

Aims & Objectives: The coronary artery disease and their management modalities have gained increasing importance in developing countries; hence the left coronary artery (LCA) was studied under the headings of origin, dimensions, course, branching pattern, angle of bifurcation and termination to add more insight.

Materials & Methods: The present study was done on 100 adult heart specimens obtained from routine dissection conducted for undergraduate students in the Department of Gadag Institute of Medical Sciences, Gadag. The origin, dimensions, course, branching pattern, angle of bifurcation and termination of LCA was noted and photographs were taken. The data obtained was tabulated and analyzed statistically.

Results: In all the specimens LCA had a single ostium which was seen in left posterior aortic sinus. Out of 100 specimens studied in 88.23 % specimens the ostium was present below the supra-ventricular ridge. The mean length of LCA was 1.65 ± 0.436 cms and its outer diameter was 0.48 ± 0.097 cms. The LCA terminated as bifurcation (57.66%), trifurcation (37.66%), quadrifurcation (3.5%) and penatfurcation (1.18%). The angle of bifurcation of main trunk of LCA was 72.0 ± 15.77 degrees. The left circumflex artery (LCx) terminated before crux in 90.59% specimens. The left anterior descending artery (LAD) terminated before apex in 9.41% specimens. The posterior interventricular artery (PIVA) originated from LCx in 10.59% specimens.

Conclusion: This study will help the Cardiologists, Radiologists and Cardiothoracic surgeons in proper planning of coronary angiography, interventional procedures and myocardial revascularization.

Toxic effects of formalin on health care professionals - A cross-sectional study

Qudusia Sultana

Department of Anatomy, Yenepoya Medical College, Mangalore

Email: qudsia.shariff@yahoo.co.in

Background: Formalin 37% by weight or 40% by volume of formaldehyde gas in water. 1 It is a chemical commonly used in departments of anatomy and Pathology for embalming and for fixation of the tissues. 2 Formaldehyde can cause toxic, allergic and carcinogenic effects. 3,4 During the daily 2 hours of dissection class, formaldehyde exposure from the cadavers can have many negative effects on students and instructors which can not only affect the teaching learning but also their health. Therefore this study intends to find the toxic effects of formalin on students of I MBBS and staff exposed to formalin

Aim: To know the effects of formalin on the Phase I MBBS students exposed to it during dissection, through questionnaire

Methods: A self-administered questionnaire designed from literature and validated by experts was given to 150 MBBS students who were exposed to formalin released from cadavers in daily two hours of dissection and also to 20 Health professionals: both teaching staff and non-teaching staff of Anatomy

Observation and Results: It was observed that majority of the students had the acute symptoms on exposure to formaldehyde comprising of burning and watering of the eyes (95.9%), running nose (43.2%), skin irritation (7.5%) and after prolonged exposure developed headaches (47.9%), nausea (25.3%), and loss of appetite (22.6%)

Conclusion: Despite its toxic effects, formaldehyde is still a popular choice of tissue fixative because of its effectiveness, low cost, and consistent results. To prevent the lethal effects of formalin on the health care professionals exposed to it, alternative embalming fluids should be tried, the use of personal protective devices should be promoted,

Key words: Formalin, fixation, toxic effect, health professionals, protective devices

Diaphragmatic Fissure of Liver - A Case Report

Rafeeq P, Sudha M, Ashalatha PR

Department of Anatomy, Malabar Medical College

Email: rafeanat@gmail.com

Background: Morphological variations of the liver are common and is a concern for Clinicians to diagnose and manage hepatobiliary disorders. Accessory fissures of the liver are common and may lead to misdiagnosis and surgical complications.

Materials and Methods: We report a case of Diaphragmatic fissure of liver seen in an adult male cadaver at Department of Anatomy, Malabar Medical College. The fissure is vertically extending in the middle of the anterior surface and extends till the inferior border. Length of the fissure is 9 cm and depth is 1.2 cm. Ponshepatis with 13mm length also seen in the same liver.

Discussion: Incidence of Accessory fissures of liver is 25% and frequency increases from 7th decade. 15% of the cadaveric livers may show accessory fissure. These are named as "cough furrows" appearing due to chronic cough and hypertrophy of the diaphragm.

Conclusion: The knowledge of the diaphragmatic fissures and accessory sulci may be utilized by Anatomists, Surgeons, Forensic specialists and Radiologists. When peritoneally disseminated tumor cells implant in such fissures, it may mimic intrahepatic lesions.

Keywords: Accessory fissure of liver, diaphragmatic fissure, accessory sulcus, cough furrow.

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 3

A Cadaveric Study on the Morphological Variations and Congenital Anomaly in Spleen

Agamdeep Singh Bedi, Dharmil Chetan Shah, Saasha Sanjiv Desai, Suresh P. Desai, Shilpa M. Bhimalli

Department of Anatomy, Kaher's J.N. Medical College, Belagavi

Email: agamdeepsbedi@gmail.com

Background: Spleen is situated in the left hypochondrium and epigastrium beneath the left half of the diaphragm close to the 9th, 10th, and 11th ribs. Its shape varies from a curved wedge to a domed tetrahedron. The spleen has two surfaces, two poles, three borders, two angles, and a hilum. The superior border, may have one or two notches.

Aim: To study the dimensions (height, breadth, thickness) and weight, along with the congenital anomalies of human spleen.

Materials and Methods: 50 human adult spleens were obtained from embalmed cadavers of both sex from Dept. Of Anatomy, KAHER's J.N. Medical College, Belagavi. The dimensions were measured using a vernier caliper and the weight was noted. Congenital anomalies were also observed.

Results: The present study included 50 human cadaveric spleens. Different shapes of the spleens were observed - wedge shaped (48%) followed by Tetrahedral (18%), Semilunar (6%), dome (2%), oval (10%), Triangular (10%), Irregular (6%) and weight of spleen varies between 23.9 to 391.7 gm in almost all the specimens. The variation in length, Breadth and width were also observed and noted. Congenital anomalies like central notch (2%) and bilobed spleen (2%) were also observed.

Conclusion: Splenic morphology and its variations can help anatomists in their routine cadaveric dissections. The findings of the study can help imaging specialists to avoid errors in interpretations and further diagnosis and aid surgeons in planning appropriate surgical methods.

Keywords: Spleen, Anomaly, Dimensions, Cadaver.

The morphological variations of thyroid gland with embryological interpretation

Arushi Simha N J, Shivapriya, Chitra, Seema S R

Department of Anatomy, ESIC MC & PGIMS, Rajajinagar, Bengaluru-10

Email: arushibackup29@gmail.com

Background: Thyroid gland is a butterfly shaped, highly vascular endocrine gland, located anteriorly in the neck, extending opposite the C5-T1 vertebrae. It has 2 lobes and is interconnected by a isthmus, usually located against 2nd to 4th tracheal rings. The thyroid gland develops in the 3rd week of IUL as an epithelial proliferation of the endodermal diverticulum/thyroglossal duct in the floor of the primitive pharynx, between the tuberculum impar and the copula lingulae. It displays numerous variations in its anatomy. A wide range of morphological alterations were emphasized.

Aim: A cadaveric study was carried out to identify these morphological variations, correlate it and reason it out using embryological evidence and study their clinical and functional importance.

Methods: Present study was carried out on 4 cadavers aged 55-65 years, and about 20 dissected head and neck specimens, gathering a specimen count of 24. This study was conducted from January 2023 to May 2023.

Result: 4 variations were reported. CASE 1: A W-shaped thyroid gland. CASE 2: Agnesis of isthmus and Ectopic thyroid. CASE 3: Presence of levator glandulae thyroidea muscle and Agnesis of isthmus CASE 4: Presence of an accessory lobe, pyramidal lobe and levator glandulae thyroidea muscle.

Conclusion: A thorough knowledge of the thyroid anatomy and its associated anatomical variations is very important for the clinicians so as to avoid undue complications pre-operatively and while performing a tracheostomy.

Key Words: W-shaped thyroid, agnesis of isthmus, ectopic thyroid, Levator glandulae thyroidea

Study on Zuckerkandl tubercle of thyroid gland and Recurrent Laryngeal Nerve in South Indian Population

Dharshini S.S, Geetha Rani, Balachandra

Dr. B R Ambedkar Medical College, Bengaluru

Email: Dharshi.med@gmail.com

Objective: Thyroid Surgeries are frequently performed worldwide (Total thyroidectomy, 81.9% in women and 21.7% in men) carrying a complication rate of 2-50%. During these surgeries, the structures of safety concerns are Recurrent Laryngeal Nerve (RLN) and parathyroid gland. Zuckerkandl tubercle serves as one of the critical anatomical landmarks for locating the Recurrent Laryngeal Nerve.

Methods: Cadaveric Study was conducted on 22 hemineck specimens between July 2015-June 2022.

Results: Study showed an incidence of 16/22 (72.2%) of Zuckerkandl tubercle with 9/16 (56.25%) on right side and 2/16 (12.5%) on left side. The Recurrent Laryngeal Nerve was found to be 15/16 (93.75%) posterior to the thyroid gland and 6.25% medial to the tubercle.

Conclusion: In our study, the Zuckerkandl tubercle is a critical anatomic landmark during the thyroid surgery, which is present in most of the thyroid lobes. We believe that the knowledge of recognizing the Zuckerkandl tubercle (ZT) and its relation to the RLN is essential for performing safe and effective thyroidectomies.

Variations in Triangle of Brocq and Mouchet – A Cadaveric Study

Dhruv Gireesh, P. Vaibhavee Patnaik, Dr. Manisha S. More, Shilpa M. Bhimalli

Department of Anatomy, Jawaharlal Nehru Medical College, KAHER, Belagavi

Email: dhruvpg04@gmail.com

Background: The Triangle of Brocq and Mouchet is an arteriovenous triangle found on the left, upper part of the sternocostal aspect of the left ventricle. The Left Coronary Artery (LCA) usually gives two branches, the Anterior Interventricular Branch (AIB) and the Left Circumflex Branch (LCB). This triangle is formed by these two branches and the Great Cardiac Vein (GCV). The arrangements of these boundaries have various variations in the terms of arrangement, length and area.

Aim: The aim of this study is to analyze the variations and lengths of the boundaries and the area of the Triangle of Brocq and Mouchet in human cadavers.

Methods: The study was conducted on 30 hearts of human adult cadavers of both sexes which were formalin fixed in the Department of Anatomy, Jawaharlal Nehru Medical College, Belagavi. The triangle was observed, measured and photographed.

Results: During the study, a significant variety of variations in all the parameters have been observed and they match with the results of the previous projects. The details of the final results will be explained at the time of presentation.

Conclusion: The results of this study add to the existing knowledge on the relation of AIB, LCB and GCV. The anatomy and variations of the triangle are helpful in intravascular ultrasound procedures of coronary arteries. The base of the triangle is a suitable area for catheter ablation procedure. The triangle is also a potential epicardial route to the fibrous ring around the mitral valve. The variations noted will help cardiac surgeons in various existing and new interventional procedures.

Keywords: Heart, Arteriovenous, Great Cardiac Vein, Triangle of Brocq and Mouchet.

A study of morphological and morphometric analysis of palatine rugae patterns

G. Thrisha, Shivapriya, Seema SR

Department of Anatomy, ESICMC and PGIMSR, Rajajinagar, Bengaluru - 560010

Email: thrishagunthati29@gmail.com

Background: The palatine rugae refer to the mucosal folds situated on the front portion of the palate, behind the incisive papillae in the roof of the mouth. They are also known as the "Plica palatine." Understanding the characteristics of these rugae can have valuable applications in various fields, including sex determination, forensic odontology, and orthodontics. The examination and analysis of these patterns are commonly referred to as palatoscopy. It is noteworthy that the development of palatal rugae patterns takes place during the third month of intrauterine life.

Aim: To identify the various patterns of rugae using maxillary mould. To evaluate the number and shape of the rugae pattern and its variation among genders of the same population.

Methodology: Thirty maxillary cast will be procured from the dental department of ESIC, Bangalore. To observe rugae pattern standard classification will be followed according to Thomas and Kotze. To assess the measurement digital vernier caliper will be used.

Result: The shape of the rugae will be carefully assessed by using magnifying hand lens. Measurements will be taken by using digital vernier caliper and detailed morphological and morphometric valuation with statistics will be discussed during presentation.

Conclusion: The primary objective of this study was to establish the prevalence of various biometric features associated with palatal rugae. These features hold significant value in the biological profiling of individuals and can serve as an alternative method of identification when conventional techniques like fingerprinting, dental recording, and DNA analysis are not applicable. It is worth noting that the characteristics of palatal rugae are distinct and vary between individuals.

Keywords: Palatal rugae, Maxillary mould, Plica palatine, Mucosal folds, Palatoscopy

Stature Estimation from Handprint Anthropometry in the Students of a Tertiary Health Care Center

Harshita Siddineni, Shwetha B, Asha K R

Department of Anatomy, Siddaganga Medical College and Research Institute, Tumakuru

Email: harshita.siddineni@gmail.com

Background: Studies on the estimation of stature from various body measurements help in identifying individuals from handprints and dismembered body parts. These studies are useful in medicolegal and forensic investigation. Regional variations in body dimensions and proportions affect the estimation. Thus, there is a need for population-specific databases and studies.

Objectives:

- To measure stature, finger length, hand length, and hand breadth
- To find the correlation between stature and handprint anthropometry for each gender in the students of a tertiary health care center in Tumakuru

Materials and Methodology: The present study was conducted on 157 students after obtaining informed consent from the subjects and Institutional Ethics Committee clearance. Height, hand breadth, hand length, and the length of each finger were measured using a stadiometer, digital sliding caliper, and handprints. Using these measurements, regression graphs will be plotted and analyzed separately for each gender. Equations will be derived to estimate stature from the anthropometric measurements. The most accurate anthropometric measurement for this estimation will be found by comparing the calculated Pearson's correlation coefficients (R) and coefficients of determination (R squared).

Statistical method: Data will be analyzed using IBM SPSS software (version 16). Descriptive statistics including mean, standard deviation, range, frequencies and proportions will be calculated. Statistical tests of significance like Karl Pearson's Correlation Coefficient between stature and handprint measurements will be obtained. The simple and multiple linear regression analysis method will be employed. P-values < 0.05 will be considered statistically significant.

Results and Conclusion: To be discussed during the conference.

Keywords: Forensic anthropology; Stature estimation; handprint anthropometry; Regression analysis

Dermatoglyphics study on finger print ridge density among 1st year medical students

Harshitha K, Vidya H K, Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: harshithakrishnamurthy555@gmail.com

Background: Fingerprint is an impression made by the papillary ridges present on the palmar aspect of the finger balls. The pattern of Epidermal ridges is unique in each individual. They are fully developed in the intrauterine life and remain unaltered except in case of injury. This has been playing a very significant role in personal identification. The number of epidermal ridges present in a unit area of a fingerprint is termed as Fingerprint Ridge Density (FPRD). In the present study we compared the FPRD in male and female individuals. Sex is one of the most important information that discriminates individuals. Hence this study may be helpful in forensic investigation and criminology.

Aim: To categorize the fingerprints into male and female based on the fingerprint ridge densities.

Materials and methods: The present study was approved by Institutional Ethical Committee. After obtaining informed consent from the participants, the present study was conducted on 70 1st year medical students of Siddaganga Medical College and Research Institute. Students with scars on their fingertip's, distorted fingerprints were excluded. Palm prints of the students were taken using rolled print method with the help of a co-investigator. An area of 5mm x 5mm, 25mm² was selected on each fingerprint and epidermal ridges were counted carefully from one corner to the diagonally opposite corner using magnifying lens. The epidermal ridge density can be determined by examining: Ridge width and Distance between ridges. After finding the FPRDs the mean value in both the sexes was calculated. The data was statistically analysed using IBM SPSS software (Version 16).

Results and Conclusion: Shall be discussed during the presentation.

Key words: Fingerprint, Ridge density, Sex determination.

Genu valgum in Ichthyosis

Inesh Vij

Kasturba Medical College, Manipal

Email: ineshvij@yahoo.com

Introduction: Ichthyosis is a group of chronic keratinization disorders characterized by the accumulation of large scales over the skin. Lamellar ichthyosis (LI) is usually manifested at birth where a collodion membrane covers the entire surface of the baby which results from a dysfunction in epidermal development, causing impaired growth because of a defective skin permeability. This causes impaired vitamin-D production resulting in Genu Valgum, an angular deformity of the knee. It is often treated surgically by osteotomy or growth modulation.

Case report: A 13-year-old female with generalized ichthyosis presented with insidious onset painless progressive genu valgum right side. She had a generalized scaly skin condition that was noted to affect the whole body. Genu valgum was due to femoral and tibia components.

Vitamin D levels were noted to be low. The child underwent growth modulation with medial hemiepiphyseodesis of the tibia and femur with 8 plates. The patient was lost for follow-up due to the covid pandemic. She presented again after 3 years with genu varum deformity. She was evaluated and underwent implant removal from the Right proximal tibia and right distal femur.

At the last follow-up, she is skeletally mature with well align both lower limbs.

Discussion: In the presence of ultraviolet radiation between wavelengths of 290 and 315 nm, 7-dehydrocholesterol in the skin is converted to previtamin D3 which is then converted to vitamin D3 in the skin. This step is missed in patients with Ichthyosis. Osteotomies have traditionally been the gold standard for the correction of angular deformities, but it had its complications and limitations. Osteotomy is reserved for skeletally mature patients. The impact of COVID has also been severe as it had caused delays in follow-up of the patient causing overcorrection.

Conclusion: Vitamin D supplementation in Ichthyosis is essential to prevent complications like rickets. Growth Modulation is a simple, easy method for deformity correction in such settings.

Extensor tendons of the thumb and its clinical relevance: A cadaveric study

Ishanvi Baranwal, Vrinda Hari Ankolekar

Kasturba Medical College, Manipal

Email: ishanvi.kmcmpl2022@learner.manipal.edu

Background: Extensor pollicis longus (EPL), extensor pollicis brevis (EPB), and abductor pollicis longus (APL) are three long extensor muscles that attach to the thumb, providing vital support, stability.

Aim: This study aims to examine and evaluate the anatomical differences and measurements of the long extensor tendons in the thumb.

Method: The research was carried out on 20 upper limbs of formalin embalmed adult cadavers of both genders, obtained from the Department of Anatomy at Kasturba Medical College Manipal. The dissection focused on the dorsal aspect of the distal forearm and hand. Various measurements, including length and width in the proximal, middle, and distal segments, were recorded, along with the number of divisions in each tendon.

Results: The mean length calculated for the EPL, EPB, APL are 15.5 cm, 9.54 cm, 8.47 cm respectively. The average thickness of the EPL tendon measured at proximal, middle and distal level are 0.26 cm, 0.31 cm, 0.61 cm. The average thickness of the EPB tendon measured at proximal, middle and distal level are 0.25 cm, 0.16 cm, 0.29 cm. The average thickness of the APL tendon measured at proximal, middle and distal level are 0.63 cm, 0.42 cm, 0.43 cm respectively.

Conclusion: The knowledge regarding morphometry of these tendons is crucial in facilitating successful repair or reconstruction surgeries, ultimately leading to the restoration of normal thumb functionality. Procedures such as tendon transfer and tendon graft can be employed based on the assessed length and thickness at different levels for the aforementioned purposes of repair or reconstruction surgery.

Keywords: Extensor pollicis longus - Extensor pollicis brevis - Abductor pollicis longus - Surgical Reconstruction

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 4

The Anatomical Variations of the Hilum of the Lungs - A Cadaveric Study

Jigisha Chhallani, Krish Bhambhani, Rachana Kulkarni, Shilpa M. Bhimalli

Department of Anatomy, KAHER's J. N. Medical College, Belagavi, Karnataka

Email: jigishachh@gmail.com

Background: Lungs are situated in the thoracic cavity on either side of the heart. Root of the lung is formed by the structures which either enter or exit the lungs at the hilum.

Aim: The purpose of this study is to find and report anatomical variations in the arrangements of the hilar structures of the lungs and to provide insights on clinical complications that arise due to such variations.

Materials and Methods: 25 Pairs (50) adult human lungs were obtained from Dept. of Anatomy, KAHER's J.N. Medical College, Belagavi during a routine undergraduate dissection. They were exposed from the hilum and were observed on the basis of the variations of the hilar structures.

Result: Out of the 25 right lungs only 24% were normal and the following variations were observed: 1 pulmonary artery = 56%, 2 pulmonary artery = 32%, 3 pulmonary artery = 8%, pulmonary artery = 4% ; 1 pulmonary vein = 32%, 2 pulmonary vein = 52%, 3 pulmonary vein = 8%, 4 pulmonary vein = 8% ; 1 bronchus = 40%, 2 bronchus = 44%, 3 bronchus = 16%. Out of the 25 left lungs, 28% were normal and the following variation were observed: 1 pulmonary artery = 76%, 2 pulmonary artery = 16%, 3 pulmonary artery = 8% ; 1 pulmonary vein = 28%, 2 pulmonary vein = 40%, 3 pulmonary vein = 28%, 4 pulmonary vein = 4% ; 1 bronchus = 52%, 2 bronchus = 44%, 3 bronchus = 4%.

Conclusion: The data accumulated by the study has suggested that the hilar structures of the lung are highly variable.

Keywords: Lungs, Hilar Structures, Cadaver.

A Morphometric study of gracilis and semitendinosus muscles and its vascular pedicles:**A Cadaveric Study**

Keerthi B B, Jyothi K C, Ashok Kumar P, Shailaja Shetty

Department of Anatomy, Department of Orthopaedics, Ramaiah Medical College, Bangalore

Email: keerthibb02@gmail.com

Introduction: The gracilis and semitendinosus are the most extensively used muscles in reconstructive surgeries because of its easy accessibility and minimum donor site morbidity. The tendons of these muscles have its clinical application as autografts for anterior cruciate ligament reconstruction. The muscle belly of Gr and ST is also used in the repair of various plastic surgeries since it has plenty of arterial and nerve supply.

Aim & Objectives: To study the morphometry of gracilis and semitendinosus tendons, their muscle bellies and their vascular pedicles. To study the correlation between cross sectional area of tendon with its length, and length and width of the muscle belly.

Study design: A cross sectional cadaveric study

Study period: 2 Months (From June 2023 to July 2023).

Materials & Methods: The gracilis and semitendinosus muscle bellies, tendons and their vascular pedicles in 32 cadaveric limb specimens preserved in the Department of anatomy, Ramaiah Medical College will be used in the study. Medial compartment of the thigh will be dissected to identify the gracilis and semitendinosus muscles. The length and maximum width of the muscle bellies, maximum cross-sectional area and length of the tendons, lengths of vascular pedicles supplying the muscles and number of vascular pedicles will be measured using measuring tape and vernier caliper.

Implications of the study: The knowledge of the normal anatomy and variations of the muscles and vascular supply under our study will help in creating awareness among surgeons about the possibility of encountering the insufficient length of the graft material and to decide proper treatment plans which may help in preventing intraoperative as well as postoperative complications.

Results: Semitendinosus muscle :No of vascular pedicles grossly visible range from 2 to 4
Gracilis muscle: No of vascular pedicles vary from 1 to 4

Conclusion: The knowledge of the normal anatomy and variations of the muscles and vascular supply under our study will help in creating awareness among surgeons about the possibility of encountering the insufficient length of the graft material and to decide proper treatment plans which may help in preventing intraoperative as well as postoperative complications.

A Morphological study on the Presence of the Medial and Lateral Slips of the Extensor Hallucis Longus in Human Beings: A cadaveric study

Khushi Shah, Krish Bhambhani, Dr. Sheetal Pattanshetti, Shilpa M Bhimali

Department of Anatomy, KAHER's Jawaharlal Nehru Medical College, Belagavi, Karnataka

Email: khushishah004@gmail.com

Introduction: The Extensor Hallucis Longus, one of the four muscles in the anterior compartment of the leg. Originating from the anterior surface of the Fibula and inserts on the base of the distal phalanx of the hallux. The tendon of the Extensor Hallucis Longus is prone to variations in terms of its insertion and the presence of medial and lateral slips.

Aim: To deduce the presence or absence along with the varied attachments and prevalence of tendinous medial and lateral slips of the Extensor Hallucis Longus.

Materials and Methods: Thirty six cadaveric lower limbs were carefully dissected to examine the presence and attachments of tendinous slips of the Extensor Hallucis Longus, of which 22 samples were of right limb and 14 of left limb.

Result: Out of the 36 samples, tendinous slips were found in 13 specimens (36.11%). 9 out of 22 (40.9%) specimens of the right lower limb and 4 out of 14 (28.57%) specimens of left lower limbs showed its presence.

Conclusion: Medial slips are more prevalent than lateral slips of the Extensor Hallucis Longus. Moreover, lateral slips are only present along with medial slips i.e. they rarely exist independently.

Keywords: Extensor Hallucis Longus, tendinous slips, cadaveric, lower limb.

Correlation of Carrying Angle, Hand Grip Strength and Subcutaneous Body Fat Percentage.

Lavanya K, Swapnali Shamkuwar, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru

Email: lavanyak05072002@gmail.com

Background: The carrying angle is the angle of elbow when arm is fully extended and forearm is fully supinated. Hand grip strength is the ability of fingers to hold objects, which requires the proper functioning of the fingers, wrist, forearm, pre-scapular, and shoulder muscles. Subcutaneous body fat percentage is the proportion of body fat located directly under the skin. Carrying angle, grip strength, and subcutaneous body fat percentage determine the static muscle endurance, bone strength, tendency for sarcopenic obesity. Thus there is need to establish association between these parameters.

Aim: The present study is conducted to establish association between Carrying Angle, Hand grip Strength and Subcutaneous Body Fat Percentage.

Methods: A cross-sectional study was conducted on 80 participants, aged 18 to 30 years. The carrying angle was measured by a goniometer, grip strength measured by a dynamometer, and subcutaneous fat percentage (Triceps skin fold thickness) was measured by skinfold callipers and mid arm circumference by measuring tape.

Result: Mean and standard deviation of all parameters were obtained according to gender group, laterality and age. The laterality and age group were compared using T test. The correlation between variables was established using ANOVA (Analysis of variance). p value < 0.05 was considered as statistically significant. Carrying angle, subcutaneous body fat percentage were inversely proportional to hand grip strength.

Conclusion: Cubitus valgus is associated with conditions like elbow ligament injuries, fractures, osteoarthritis and neuromuscular disorders. Cubitus varus is seen in conditions like congenital radial head dislocation or growth plate injuries. Evaluating the carrying angle can assist in diagnosing and monitoring these conditions and determining the appropriate treatment approaches. The correlation between carrying angle, subcutaneous body fat percentage, hand grip strength is useful in identification and prevention of biomechanical alteration in sports activity.

Key words: Carrying Angle, Hand Grip Strength, Subcutaneous Body Fat Percentage.

Morphological and Morphometric Parameters of Tricuspid Valve - A Cadaveric Study

M. Anu Rohitha, Hema N, Shivapriya, Seema SR

Department of Anatomy, ESICMC and PGIMSR, Rajajinagar, Bengaluru

Email: anurohithamanne@gmail.com

Background: The heart is a hollow conical muscular organ situated in middle mediastinum. It consists of 2 atria and 2 ventricles. The Right atrioventricular (AV) orifice is oval or circular in outline. The Tricuspid valve complex guards it. The valve complex includes AV orifice, tricuspid annulus, leaflets or cusps, papillary muscles and chordae tendineae. There are 3 leaflets - anterior, posterior and septal. It allows the passage of blood from right atrium to right ventricle and prevents the backflow of blood into right atrium. Atrio-ventricular valves are developed from endocardial cushions.

Aim: To measure the circumference, anteroposterior (AP), transverse diameter of leaflets of Tricuspid valve To report and document any variations in the leaflets

Methods: The study was conducted on 26 formalin fixed cadaveric hearts. The circumference of the Tricuspid valve was measured and recorded using a thread and a ruler. The anteroposterior and transverse diameter of each leaflet was measured using digital vernier caliper.

Results: The average circumference of Tricuspid valve was 10.138cm. The average anteroposterior and transverse diameters of anterior leaflet are 14.59mm and 18.20mm respectively. The average anteroposterior and transverse diameters of posterior leaflet are 17.08mm and 22.26mm respectively. The average anteroposterior and transverse diameters of septal leaflet are 16.29mm and 26.10mm respectively. Different morphological variations like conjoint cusp, raphe (non divided leaflets) and multiple cusps (quadricusp and pentacusp) were observed and reported.

Conclusion: The measurements of Tricuspid valve is important in valve replacement surgeries

Key words: Tricuspid valve, Morphometry, Surgeries, Cusps, Chordae tendinae, Endocardial cushions

The study of anomalous origin of vertebral artery with its embryological and clinical significance**Malavika VS, Shivapriya, Hema N, Seema SR**

Department of Anatomy ESIC Medical College and PGIMSR, Rajajinagar, Bangalore

Email: malavikavs19@gmail.com

Background: The left vertebral artery arises from the upper surface of first part of subclavian artery medial to the scalenus medius muscle. It enters the foramen transversarium of C6, passes through the transverse foramen of all the above cervical vertebra and finally enter the foramen magnum to supply the brainstem and spinal cord. The first part of the Left Vertebral Artery develops close to the origin of the dorsal branch of the 7th cervical intersegmental artery.

Aim: To report and document the aberrant pattern of vertebral artery

Methods: The study was carried out in formalin fixed 50 year old female cadaver and the formalin fixed heart specimens. Dissection was done as per the instructions of Cunningham's manual of practical Anatomy. Variations of branching pattern of arch of aorta was studied.

Result: Two cases of abnormal origin of Vertebral artery were noted arising as a direct branch from aortic arch.

Conclusion: Anomalies of branching pattern of aortic arch can lead to unexpected difficulties and complications if previously undetected. Knowledge of such variation is important in aortic arch surgery to prevent iatrogenic injury of the vertebral artery, and their clinical importance for diagnostic procedures in head and neck surgery.

Keywords: left vertebral artery, aortic arch, branching pattern, head and neck surgery.

Anatomical variations in the hilar structures of human lung – A cadaveric study**Nayana C, Padmalatha K, Nishaa P, Shyamala B Y, Chitra N, Seema S R**

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: enncee01@gmail.com

Background: Lungs are the primary organs involved in respiration. Lungs are divided into lobes by fissures. The right lung has 3 lobes and left lung has 2 lobes separated by 2 and 1 fissures respectively. Pulmonary hilum is a triangular depression present in the mediastinal surface of the lung. The root of the lung is present at the hilum which are formed by the structures entering and leaving the lung. The structures present from above downwards in a normal right lung are eparterial bronchus, pulmonary artery, hyparterial bronchus and pulmonary vein whereas in the left lung, the epiarterial bronchus is absent and thus the structures from above downwards are pulmonary artery, hyparterial bronchus and pulmonary vein. Previous studies reported variations in the morphology of pulmonary hila which contributes significant consequences in the field of pulmonary resection.

Aim: To analyse the anatomical variations of the structures at the pulmonary hilum.

Materials And Methods: Fifty-three lung specimens from the Department of Anatomy were taken for the study. Specimens were fixed in 10% formalin. Specimens with any pathological lesions were excluded. The lung specimens were examined at the hilum. The number and relation of bronchi, pulmonary artery and pulmonary vein were noted. Any variations in number and relations were documented. All the specimens were photographed.

Results: Would be discussed during the presentation.

Conclusion: Would be discussed during the presentation.

Key words: Pulmonary hilum, cadaveric study, anatomical variation, pulmonary artery

A Cadaveric Study on the Anatomical Variations of the Common Carotid Artery and its Branches**Nirmiti Bhaven Mahadevia, Harshit Kumar, Dr. Sheetal Pattanshetti, Shilpa Bhimalli**

Department of Anatomy, Jawaharlal Nehru Medical College, Belagavi, Karnataka

Email: nirmiti124@gmail.com

Background: Common Carotid arteries (CCA) are the chief blood supply of the head and neck. They usually divide at the upper border of thyroid cartilage to give off two branches, Internal Carotid (ICA) and External Carotid Arteries (ECA).

Aim: To check for variations in the level of bifurcation of CCA, origin of superior thyroid artery (STA), lateral positioning of ECA and trifurcation of CCA.

Materials and Methods: A total of 32 CCA from 16 cadavers were examined. Dissection was performed to expose the branches. A section of one left CCA was taken to check for trifurcation at the carotid sinus.

Result: Variations in levels of bifurcation were found as: Upper border of thyroid cartilage- 9 cases (28.13%), greater cornu of hyoid bone - 9 cases (28.13%), laryngeal prominence - 7 cases (21.88%), between upper border of thyroid cartilage and greater cornu - 3 cases (9.38%), above level of greater cornu - 4 cases (12.5%). 2 in 32 cases - origin of STA before bifurcation. 1 in 32 cases - trifurcation of CCA, ECA and STA at bifurcation level.

Conclusion: High level of bifurcation- above the border of thyroid cartilage was most commonly found in 16 arteries (50%). Low level of bifurcation in 7 cases (21.9%), while usual level of bifurcation was observed in 9 out of 32 arteries (28.1%). An uncommon variation of the lateral placement of ECA was observed.

Key words: Common carotid artery, Superior thyroid artery, External carotid artery

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 5

Visualization and Annotation of digital slides in histology for collaborative education for undergraduate medical students**Bharathi D, Shruthi B**

Rajarajeswari Medical College and Hospital

Email: bharathidhananjaya@gmail.com

Background: The novel educational strategy to use digital slides for learning histology, in which the students can have access to the slide, visualize and annotate the area of interest. Web based histology slides are vendor-dependant with restricted functionalities. These are computer-based programs in which the data is retrieved or updated using artificial intelligence. To foster learning the faculty and the students simultaneously view, discuss and annotate the digital slides.

Aims & Objectives: The objective of this study is to enable the faculty and students to create and annotate the digital histology slides

Materials & Methods: We used google maps JavaScript application programming interface (API) which is free for academic use and is student friendly. This API was used to visualize the slide-images. To create and edit annotation OpenLayers library was used. Initially a script was designed to convert digital images of slides into Google maps format and a web-based viewer application for easy access and remote learning of histology slides. This is a preliminary evaluation in which we have chosen lung to evaluate. To enable team based learning, students identified same structures at the same time in collaborative groups.

Results: We are currently teaching Hematoxylin and eosin stained General (n=25) and systemic histology slides (n=34). Once a user has drawn annotation geometry on image, the algorithm automatically suggests the term from the database.

Conclusion: The use of web based collaborative learning enables the student to access the content and annotate for better understanding of the subject. The students and the faculty can simultaneously view the slide and discuss.

Key words: Microscopic anatomy, Teaching and learning, Software, Digital slides, Annotation

Exploring the Feasibility of Orthopedic Procedures on Soft Embalmed Cadavers**Joseph Abraham*, Anne D'Souza*, Anil K Bhat*, Sneha Guruprasad Kalthur*, Ranganath Vallabhajosyula#, Ashwath Acharya*, Akhilesh Kumar Pandey*, Lokandolalu C Prasanna***

Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Udupi, India*, Lee Kong Chian School of Medicine, Singapore#

Email: joseph.abraham1@learner.manipal.edu

Introduction: A soft embalmed cadaver is an alternative to fresh, and formalin embalmed cadavers for performing surgical training procedures such as intubation, lumbar puncture, central line installation, thoracocentesis, and all fields of surgery, including pelvic floor restoration and facelift. Soft-embalmed cadavers offer advantages over un-embalmed cadavers or simulations. Most characteristics of a living body are present in the soft-embalmed cadavers, especially in terms of color, tissue consistency, and flexibility. Soft embalming has enormous potential for innovative educational applications in cadaver-based anatomy and clinical instruction. But formalin embalmed cadaver has a lot of health hazards and can't be used for surgical training for various reasons. Hence, we aimed to explore how feasible it is to conduct orthopedic procedures on modified salt-saturated (MSSS) soft embalmed cadavers compared to formalin embalmed cadavers.

Materials and methods: Department of Orthopaedics, Kasturba Medical College (KMC), Manipal, conducted two days of surgical training workshops on the 15 and 16th of October 2022 on one MSSS soft embalmed adult cadaver and five formalin embalmed cadavers. Around 20 postgraduates from KMC Manipal and KMC Mangalore participated in surgical training. At the end of the session, participants compared the feasibility of performing surgical training on both cadavers by filling out a checklist, which was analyzed by the Mann-Whitney U test.

Results: Most procedures, such as exposure of humerus shaft, proximal ulna, proximal femur, proximal tibia, wrist, elbow, and ankle joints, were effectively performed on soft embalmed cadavers compared to formalin cadavers with a significant statistical difference ($P < 0.05$).

Conclusion: The soft embalmed cadavers were better suited for various orthopedic procedures than traditional formalin embalmed cadavers.

Keywords: Modified salt-saturated solution, embalming, adult cadavers, surgical training procedures

The effectiveness of case-based learning compared to Traditional teaching of histology for Phase I MBBS students: an interventional study

Maheshwari Myageri, Rizwana B Shaikh

Department of Anatomy, Medical Education Unit, KAHER's JGMM Medical College, Hubballi

Email: mayuri.myageri@gmail.com

Background: In Competency Based Medical Education, teaching-learning methodology is students centric. Case-based learning makes students learn the subject at a higher cognitive level. Clinical case-based learning can make the students recognize the relevance between basic medical sciences subjects like histology with histopathology and clinical signs and symptoms.

Aim: The aim of the present study are to compare the effectiveness of learning histology and the learning satisfaction of the students in the case based learning with traditional teaching methods for Phase I MBBS students

Methods: The study was conducted among 85 Phase I MBBS students in Anatomy department, JGMM Medical college, Hubballi for a period of 3 months. The histology sessions were thought using both traditional lecture based (N=35) and case based learning methodology (N=40). Student's performance was assessed by comparing between pre test and post test marks. The effectiveness of learning methodology was assessed by comparison between post test marks of traditional and case based learning methodology using paired t-test and SPSS software version 26.

Results: There was a significant increment in the post test scores of both traditional and case based learning groups when compared with the pre test scores. Post test scores of the CBL group (6.05+1.5) was significantly higher than the post-test score of the traditional teaching group (4.28 + 1.4) $P = < 0.0001$. A feedback survey showed case based learning was a more satisfactory teaching and learning methodology when compared to traditional lecture based teaching methodology.

Conclusion: We believe that our study will encourage case-based learning over traditional learning of histology for Phase I MBBS as it enhances their learning on higher cognitive work.

Keywords: Case based learning, traditional teaching, histology, anatomy, competency based medical education.

3D Models using 3D printer and its advantages in teaching and learning

Martin Lucas A

Department of Anatomy, CDSIMER

Email: drmartinlucas@gmail.com

Background: Models have played a great role in learning Anatomy. Models helps in the better understanding the anatomical structure of a tissue or a organ. Commercially 2D and 3D models are available and these models are made of wood, plaster of paris, general purpose resin, and other materials. With advancement in the technology, 3D printers have become latest equipment for making 3D models incorporated with all the features.

Materials and Methods: In our study we have customised and designed a low cost 3D printer with help of an engineer to make the models. These models are printed using UV cured resin filaments. These models were designed using an app incorporating all the required specifications. Two models of right and left lungs were made using the above technique.

Results and Conclusion: Teaching and learning with 3D models helps the students to understand the subject in a deeper way and also to remember for a longer duration. The right and the left lung 3D models made using the above technique had all the surface details and was light weight. The Anatomy of the External features of both right and left lungs were taught using these 3D models to the slow learners and their performance were analysed. There was substantial improvement in their understanding and their performance.

Knowledge and attitude of 1st Year MBBS Students regarding Medical Ethics: A cross-sectional study

Qudusia Sultana

Associate Professor, Department of Anatomy, Yenepoya Medical College, Mangalore

Email: qudsia.shariff@yahoo.co.in

Introduction: Medical ethics play a vital role in the life of a medical practitioner and involve an important set of principles like autonomy, beneficence, non-maleficence and justice which are needed to be abided throughout our journey as students and practitioners of this noble professions, Though this training has been made mandatory by the National Medical Commission of India, most students in the 1st year fail to realize the basic goals and awareness of these ethics. Hence it is important to inculcate medical ethics to produce quality and efficient practitioners of this profession.

Results: A total of 109 1st year students participated voluntarily in the study and the following graphs were obtained. A large number of students [98.2%] viewed medical ethics to be very important. The response rate was 72.66% that indicates majority of the students had to be a part of this study and had a positive attitude towards ethics. A vast majority of students [87.1%] had a general interest in learning about medical ethics while only about 2% of the students had contradictory opinions.

Conclusion: The goal of ethical education is to enable students to identify difficult situations and deal with them in a rational and principled manner, thus ethical training of medical practitioners from first year MBBS itself plays a vital role in maintaining the integrity of the medical profession as these ethics go a long way in producing excellent doctors who will uphold the values of this imperial profession.

Keywords: Ethics, MBBS Students, Medical Practitioner, National Medical Commission, Ethical principles.

Mounting of museum specimens using Liquid silicone - A novel method**Sangeetha.S, Martin Lucas. A**

Department of Anatomy, CDSIMER

Email: sangeethavenkat33@gmail.com

Introduction: Museum specimens display meticulously dissected specimens of body parts and organs. The preparation, mounting, and maintenance should be in such a way that it enhances the quality of specimens in the museum. A major drawback of dissected wet specimens is the connective tissue fibers floating all around it and discoloration of the specimen. Due to paucity of data pertaining to these issues, we used a novel method of painting silicone over the specimen and then mounting them.

Aim: To determine if silicon painted specimens are advantageous over traditional methods of mounting specimens

Methods: This study was conducted in the Department of Anatomy, Dr.Chandramma Dayanada Sagar of Medical Education and Research (CDSIMER). Formalin preserved specimens (abdominal organs and disarticulated lower limbs) were dissected and dried. Liquid silicone was procured and mixed with hardener and applied over the specimens followed by mounting in acrylic jars.

Results: The silicone painted specimens gave a realistic appearance without any discoloration, shrinkage and connective tissue fibers floating around it. This novel method accentuated the visual appearance of the mounted specimens.

Conclusion: Liquid silicone has high mechanical strength and easily cures at room temperature. Silicone painting of specimens is a non-laborious, cost and time effective method of mounting.

Keywords: Liquid silicone, Preservation, Mounting

Initial impact of dissection on first year MBBS students - Analytical study**Suma MP, Jayashree Thambargi, Suresh N M.**

TOMCH & RC, Yadvanahalli, Bengaluru

Email: mpsumaanat@gmail.com

Background: Anatomy is the first year subject of MBBS course, which is very important for the entire Medical education & profession. Learning Anatomy through the dissected cadaver is very essential in understanding the various parts of human body and their relations. Dissection is become one of the important method of teaching Anatomy which is difficult to replace by any other method. Dissection has been labeled as royal road and the cadaver first patient. When the students first exposed to the sight of cadaver dissection has the potential to be an actual stressor that can cause psychological trauma and Physical symptoms also like cause nausea, vomiting etc.

Aim: To analyse the initial impact (both physical and emotional) of dissection on first year MBBS students.

Material & Method: 150 students of first year MBBS students from batch 2019-2020 studied in The Oxford Medical College Hospital & Research Center, Yadvanahalli, Bengaluru were taken for this study. Students were given questionnaire in 2 sets. First set was given at the first week of exposure to cadaver dissection, second set was given at the Last week of dissection. The answer collected in yes or no form was analysed and compared with other author's study.

Results: 91.3% were excited to see the cadaver. 14% of them had fear. First exposure for 84.7% students to cadaver. 50% had irritable for formaline. Physically 15.3% had nausea, 8.7% had vomiting

Conclusion: Cadaveric dissection is indispensable teaching method to study the Gross Anatomy. Students were adopting to the untoward situations of dissection and learning the Anatomy in a better way.

“Fascinating World of Human Anatomy” - The Usefulness of Conducting A Hands-on Workshop in Human Anatomy for Biology School Teachers**Sushma Prabhath, Lydia Andrade, Anne D Souza, Prasanna L.C.**

Department of Anatomy, Kasturba Medical College Manipal, Manipal Academy of Higher Education (MAHE), India

Email: sushma.rk@manipal.edu

Background: Basic knowledge of human anatomy and exposure to its various components is helpful for school teachers dealing with subjects such as biology. It helps in clearing the fundamental concepts as to how our bodies function. It would make teaching-learning practices more enjoyable and realistic for teachers and students.

Aim: The workshop targeted the biology teachers of primary and high schools interested in exploring human Anatomy & its intricacies. It aimed to provide a general idea about the essential structural organization of the human body and to help clarify the fundamental concepts of how our bodies function.

Methods: In connection with the workshop, the primary and high schools in and around Kasturba Medical College Manipal were identified and approached after seeking administrative permissions. Before the workshop, a needs assessment was carried out with the help of pre-workshop arrival surveys to record the participants' expectations from the workshop. During the workshop, the participants were familiarized with the primary structural organization of the human body using anatomical (cadaveric) specimens. The effectiveness of the workshop was assessed using a post-session questionnaire.

Results: Fifty-two school teachers (49 females and 3 males) participated in the workshop. Based on the needs assessment, the one-day workshop included lectures and hands-on demonstration sessions on the various organ systems of Human Anatomy, such as musculoskeletal, nervous, cardiovascular, respiratory, gastrointestinal, renal, reproductive, and endocrine systems. It was followed by a complimentary guided tour of the Museum of Anatomy & Pathology (MAP). They were also acquainted with the process and importance of Body Donation. Post-session feedback from the participants revealed that the sessions were well organized. The content was presented effectively (97.78%), and the participants were actively engaged during the sessions (100%). Most participants stated that the workshop helped them gain the knowledge they could apply at work (97.78%). Open-ended responses on the usefulness of the workshops identified the following themes: 'Informative & Interesting,' 'effective explanation,' 'practical application,' and 'concepts clarified.'

Conclusion: Hands-on learning in Anatomy aids in biology school teachers & professional development and instructional improvement. Thus, learning can be made error-free and more enjoyable for budding students and could further encourage them to opt for professional courses in medicine in the future.

Key words: Human Anatomy, hands-on workshop, Biology School Teachers, fundamental concepts, teaching-learning

An Active Learning Approach for Gross Anatomy of the Lower Limb Sessions using Flipped Classroom

Vasudha Kulkarni

Akash Institute of Medical Sciences and Research Centre, Bengaluru

Email: kulkarni.drvasudha@gmail.com

Background: An Indian medical graduate has multidimensional roles of being a competent clinician, life-long learner, professional, communicator, and leader. The burden of incorporating active learning strategies for improved knowledge retention and the growth of clinical reasoning abilities thus falls on the facilitators. One such active teaching strategy is the flipped classroom model, in which students are required to alternate between in-class and at-home learning activities by completing pre-class homework like watching videos, listening to talk, or reading journal articles. During class time, students attempt to solidify and make connections to their newfound knowledge through discussions and interactive activities.

Aim: Our aim was to assess how well the flipped classroom encourages first-year medical students to engage in active learning.

Methods: The flipped classroom sessions for lower limb gross anatomy included 142 students. The learning resources for the pre-class preparation included online videos and presentations. By contrasting the posttest scores with end-of-term scores, we assessed the efficacy of flipped classroom sessions in promoting long-term memory of information.

Results: At p value of 0.05, the results of the student t test analysis were statistically significant.

Students' feedback was gathered to rate the sessions on Likert scale of 1 to 5. 89% of students indicated that they were extremely satisfied with the sessions.

Conclusion: Most students felt that the flipped classroom format helped them to handle their cognitive load. They claimed that the self-paced, sessions were created with their specific learning needs in mind. The learner's internal motivation, sense of autonomy in completing assignments, and the extrinsic drive they experience from relating to peers and feeling competent all play a role in how effective flipped classrooms are. There is a need for uniform guidelines to be included in the undergraduate curriculum for anatomy because the methods utilized to flip classes are varied.

Key words: Active learning, Flipped Classroom, Inverted classroom

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 6

Phenotypic characterization and multilineage differentiation of articular cartilage derived mesenchymal progenitor cells from osteoarthritis and rheumatoid arthritis patients**Akshay Bairapura Manjappa, Siddharth Shetty, Reshma Shetty, Shantharam Shetty M, Ananthram Shetty A, Pretty Rathnakar, Mohana Kumar Basavarajappa**

Department of Anatomy, KS Hegde Medical Academy, Nitte (Deemed to be University), Mangaluru, Karnataka, India

Email: akshaybm2020@gmail.com

Background: Over the years, mesenchymal progenitor cells (MPCs) are depicted as a potentially powerful putative cell source for cartilage repair over conventional sources, such as chondrocytes or bone marrow-derived mesenchymal stem/stromal cells (BM-MSCs), chiefly due to their superiority in chondrogenesis and their resistance to hypertrophy. Even though much has been investigated on articular cartilage, limited information is known about the presence and accessibility of MPCs due to the paucity of specific biomarkers and abilities for multilineage potential. The present in vitro study aimed to characterize cellular and biological properties, phenotype, and plasticity of articular cartilage-derived MPCs from osteoarthritis (OA) and rheumatoid arthritis (RA) cartilage.

Methods: Primary explant culture method was used to establish MPCs cell lines from OA (OA-MPCs) and RA (RA-MPCs) articular cartilage samples (n=5 each). MPCs from the confluent primary cultures were propagated until passage 5 (P5) for further cellular and biological characterization. MPCs were immunophenotypically characterized for surface antigens using cluster differentiation (CD) markers such as CD73, CD90, CD105, CD146, CD166, CD271, COL2- α 1, ACAN, CD34, CD45, and HLA-DR. Later, MPCs plasticity was assessed in both 2D and 3D cultures by inducing them to differentiate into osteocytes, adipocytes, and chondrocytes. In addition, their plasticity towards a specific lineage was affirmed by mRNA expression of a panel of mesenchymal lineage-specific markers.

Results: The cellular and biological parameters assessed did not significantly differ between OA and RA. At the period when the absence of unambiguous MPCs markers been a primary setback to phenotypically characterize MPCs, the current study findings substantiate the presence of a heterogeneous niche of MPCs through a wide range of MSC markers, progenitor cell markers, and differentiated chondrocyte markers. In addition, the intrinsic MPCs potential to exhibit MSC-like characteristics and elevated chondrogenic differentiation reveal their committed progeny towards homotypic articular cartilage formation.

Additionally, the expression of a panel of marker genes by qPCR analysis targeted not only articular chondrocytes but also cytoskeletal, and ECM-specific functions.

Conclusion: The phenotypic marker analysis and mRNA expression confirmed the presence of MPCs with multilineage differentiation ability. Collectively, the results demonstrated that the inherent MPCs would serve as an efficient source for preventive or therapeutic options in treating articular cartilage diseases.

Keywords: Articular cartilage, Mesenchymal progenitor cells, Phenotypic markers, Arthritis, Trilineage differentiation

Unveiling the Shadows: Deciphering the Molecular Enigma of Inhibitory Interneurons in the Brain**Divya Chandran, Dinesh Upadhya**

Centre for Molecular Neurosciences, Kasturba Medical College, Manipal Academy of Higher Education, Manipal 576104, Karnataka, India

Email: divya.c3@learner.manipal.edu

Background: Throughout the process of brain development, specialized groups of interneurons emerge within the precursor regions of the ventral telencephalon. From their origins, interneuron progenitors undergo long-distance migration to the neocortex, hippocampus, striatum, and olfactory bulb of the developing telencephalon to form the central inhibitory system of the brain. Abnormal migration and development of these interneurons often results in neurodevelopmental disorders.

Aim: Deciphering the molecular regulators that guide and act as cues in long distance migration of inhibitory interneurons during development
Methods: We have utilized directed differentiation of human pluripotent stem cells to identify interneuron migration during the developmental stages through a 25-day in-vitro cell culturing protocol. Individual neurospheres starting at day 17, containing interneuron progenitors were evaluated for their migratory potential using radial migration assay at different time points. Next generation sequencing was performed to identify the molecular cues that regulate neuronal migration at time points of maximum and minimum migration.

Results: The migration assay data defined the periods of null, minimum, and maximum migration potential of interneuron progenitors during their period of patterning. RNA sequencing data identified 247 genes with >2 log fold change and 416 genes >1.5 log fold change with significant P-value. 325 genes were downregulated, and 91 genes were upregulated in Day 25 compared to Day 19. Trim67 (tripartite motif-containing 67) and OTP (Orthopedia homeobox) genes were more than 3-fold upregulated on Day 25. This data paves a way to decipher if these genes can be key factors which direct migration in GABA interneurons.

Conclusion: The study aids in identifying the pattern of migration of interneuron progenitors as they gradually mature into GABA interneurons. It also paves a way to explore if Trim67 and OTP are key in guiding normal neuronal migration in the developing human brain.

Keywords: iPSC, neuronal migration, cellular factors, neurodevelopment.

Novel insights into the benefits of supplementation of anti-snake venom with methanolic extract of *Andrographis paniculata* in mitigating hepatotoxicity in envenomation with *Naja naja***Maya Roche, Akshatha G. Nayak, Nitesh Kumar and Smita Shenoy**

Department of Biochemistry, Manipal University College Malaysia, Bukit Baru, 75150, Melaka, Malaysia

Department of Basic Medical Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, India

Department of Pharmacology and Toxicology, National Institute of Pharmaceutical Education and Research, Hajipur, Bihar, India

Department of Pharmacology, Kasturba Medical College, Manipal Academy of Higher education, Manipal, Karnataka, India

Email: mayaroche2011@gmail.com

Background: A multipronged strategy using anti-snake venom (ASV) and the methanolic extract of *Andrographis paniculata* (MAP) has proven significantly effective in combating hemostatic changes, neutralizing venom enzymes and protecting alpha 2-macroglobulin in envenomation with *Naja naja*.

Aim: Assessment of the effect of supplementation of ASV with MAP on hepatotoxicity of the venom.

Methods: Wistar rats (n=80), 8 groups. Group 1: CMC control, Group 2: venom control, Group 3, 4: venom (i.m) + ASV (i.p), Group 5, 6: Venom+ MAP (oral). Group 7, 8: Venom + 50% reduced ASV+MAP (Groups 3 to 8 had 30- and 90-minute treatment groups). Animals were observed for 30 minutes, 4 hours and daily for 14 days. Hepatic markers estimated after 24 hours. Treatment with MAP continued for 14 days for Group 5 to 8. At day 7 and 14, estimation of biochemical parameters was repeated. On day 14, animals were sacrificed, and tissues processed for histopathological studies.

Results: The significantly elevated ($p < 0.001$) AST, ALT and bilirubin levels in envenomed rats were significantly improved in the groups treated with ASV/MAP. Combination of 50% reduced ASV + MAP showed the best results ($p < 0.001$) Microscopy of liver sections of Group 2 showed inflammatory, degenerative changes in liver with congestion of sinusoidal spaces with focal areas of necrosis around central vein (CV). Group 3 showed normal hepatocytes with dilation of sinusoidal space around CV with no necrosis. Group 4 showed dilation of the sinusoids with inflammatory changes and necrosis in some areas. Group 5 and 6 showed hepatocytes with distinct nuclei and dilation of sinusoidal space. Group 7 and 8 showed the best results, with normal liver histology.

Conclusion: Normalization of hepatic architecture and biochemical parameters prove the superiority of supplementation of ASV with MAP in the treatment of hepatotoxicity in *Naja naja* envenomation.

Key words: *Naja naja*, *Andrographis*, anti-snake venom

Assessing the Morphology, histology, and Microscopic Composition of the triangular fibrocartilage complex [TFCC] of the wrist joint: A cadaveric observational study

Nandini R, Dinesh Kumar V.

Department of Anatomy, JIPMER, Puducherry

Email: nandinirajaram11@gmail.com

Background: TFCC, being a complicated structure, located on the ulnar side of the wrist is composed of multiple distinct anatomic entities which together play a critical role in wrist biomechanics. The anatomy of TFCC has not been extensively studied in the Indian population. The outcomes of the study would serve as much-needed data while planning arthroscopic procedures and radiological investigations.

Aim/Objective: To elucidate the microscopic anatomy and composition of the triangular fibrocartilage complex of the wrist joint using haematoxylin-eosin and Verhoff Van Gieson staining methods.

Methodology: Samples collected from 40 specimens including 20 right and 20 left limbs were placed in 10% neutral buffered formalin for fixation. Paraffin-embedded blocks were prepared and tissue sections were taken at 7-micron thickness. The slides were subjected to H& E and VVG staining following standardized protocol.

Results: The morphological structure of the seven components of triangular fibrocartilage complexes were assessed. The articular disc consisted of tightly interlaced fibrocartilage with fewer blood vessels. Radioulnar ligaments showed densely parallel collagen bundles. A mixture of tight and loose parallel tissue was observed in the sub-sheath of the extensor carpi ulnar muscle, the ulnar-triquetral, and the ulnar-lunate ligaments. Irregular morphological composition and loose connective tissue predominated in the ulnar-carpal meniscus. Blood vessels were observed in the epi-fascicular/ fascicular areas of the ulnar-triquetral ligament and interstitial region of ulnar-lunate ligaments.

Conclusion: The microscopic anatomy of TFCC was complex owing to the varied nature of its entities. An understanding of the distribution of connective tissue, blood vessels, and elastic fibres would be of immense help in planning out the approaches for arthroscopic procedures.

Keywords: Wrist joint, Triangular fibrocartilage complex, microscopic composition.

Unilateral true hermaphroditism 46, XX/ 46, XY chimerism: A case Report**Santosh Bhosale**

SSIMS & RC, Davangere

Email: drsantoshbhosale07@gmail.com

Case Report: Here we describe a case of late diagnosed true hermaphrodite who is sixteen year old maleborn to non-consanguineous couple referred to the Human Genetics lab for chromosomal analysis with the chief complaint of abnormal urethral opening and undescended testis on the left side without ambiguous genitalia. Patient was subjected to the series of investigations including family history, physical examination, ultrasonography, histopathology, Karyotyping and FISH. Chromosomal analysis was done by G banding technique analyzing more than 25 metaphase spreads. The index case was first born and reared as male, he was moderately built and moderately nourished, physical examination revealed abnormal urethral opening which was found to be perineo-scrotal hypospadias with absence of testis on left side since birth, penis was 2.5cm long. Ultrasonographic examination revealed normal testis on the right and an intraabdominal mass above the internal ring on the left side, Biopsy of the mass with histopathological study suggested it to be ovarian tissue containing follicular cysts, primordial follicle with fallopian tube and tubular structures resembling epididymis. Chromosomal analysis of cultured peripheral blood from this patient revealed an abnormal karyotype showing chimerism with one cell line having 46, XY chromosome complement (10%) and second cell line having 46, XX chromosome complement (90%). Chimerism is again confirmed by fluorescent in situ hybridization using CEP X/Y probes which localised to p11.1-q11.1 of both X and Y chromosomes.

Embryological basis of a case of gastroschisis in a preterm newborn**Sheetal V. Pattanshetti, Swapnil Pattanshetti**

KAHER's, Jawaharlal Nehru Medical College, Belagavi and KLES Dr. Prabhakar Kore Hospital and MRC, Belagavi

Email: sheetalpattanshetti@gmail.com

Introduction/ Background: Gastroschisis is a congenital malformation, characterised by herniation of the viscera through an anterior abdominal wall defect, alongside an intact umbilical cord. The viscera here, are not covered by membrane.

Case description: A preterm male baby 35 weeks 3 days with birth weight of 1.7 kg born to a primi gravida mother by normal vaginal delivery at a Government Hospital was referred and immediately transferred to KLES Dr. Prabhakar Kore Hospital for further management. The baby was ante-natally diagnosed to have anterior abdominal wall defect suspecting gastroschisis at 19 weeks gestational age. The baby, which was sent to casualty was clinically examined and the bowel loops were covered with wet sterile gauze dressing and immediately shifted to neonatal intensive care unit for further management and subsequently posted for surgery, where in a staged repair was planned and meticulously performed. The baby was discharged on day 23 with a weight of 1.85 kg. On follow up after 2 months the baby was doing well and put on weight of 2.8kg.

Discussion: Embryological basis of Gastroschisis and how it differs from omphalocele would be discussed during the presentation and the interesting surgical management of this case would be also be put forth.

Conclusion: Gastroschisis needs to be categorised into simple or complex and surgical management accordingly planned which determines length of hospital stay, duration of parenteral nutrition and requires long term followup which significantly ensures reduction in morbidity and generalised well being of the infant.

Key words: Gastroschisis, congenital, malformation, herniation, viscera, omphalocele

Constitutional Reciprocal Balanced Translocation t(11;22)(q25;q13) in a couple with recurrent foetal loss: A case report**Shivaleela C, Lakshmiprabha R, Harshal K L, Jayarama K, Meenakshi Bhat**

Sri Siddhartha Academy of Higher Education, Tumkur, Karnataka

Email: drshivaleela83@yahoo.co.in

Introduction/ Background: Recurrent pregnancy loss is classically defined as the occurrence of three or more consecutive abortions; however, the American Society of Reproductive Medicine has redefined recurrent pregnancy loss as two or more abortions. Pregnancy loss is a clinically recognized pregnancy, involuntarily ending before 20 weeks of gestation. About 10 and 15% of the clinically recognizable pregnancies result in spontaneous miscarriages, with an additional preclinical loss of 22%. Constitutional balanced translocations are seen in about 1 in 600 live births.

Case description: A 28 yrs old female with non consanguineous marriage came with a history of 3 spontaneous first trimester abortions. Her married life was 3 years and her family history revealed that her elder sister had secondary infertility and her mother also had history of 3 spontaneous abortions in the first trimester. Clinical examination, lab investigations and her follicular study of the couple were within normal limits. Hence the chromosomal study was advised.

Results: The karyotyping of the women showed 46XX,t(11;22)(q25;q13) and her husband's karyotyping was normal 46XY. Her mother's and her sister's karyotyping also revealed the similar translocation.

Conclusion: It is important to be aware of this translocation, its inheritance pattern and the diverse effects, so that parents and/or siblings and members of the extended family can be studied. This would help to predict the likelihood of other carriers in the family having children with chromosomal imbalance as a result of this translocation.

Key words: Recurrent foetal loss, Karyotyping, Reciprocal translocation

Deleterious Effects of Pyrethroid Pesticides on Kidneys: Exploring Potential Health Implications**Shubhangi Yadav**

Department of Anatomy, All India Institute of Medical Sciences–Raebareli-229405, Uttar Pradesh, India

Email: dr_shubhangi4@rediffmail.com

Background: Pyrethroids are synthetic chemical compounds that are derived from pyrethrins, which naturally occur in chrysanthemum flowers. These compounds are widely used in agricultural and residential settings to effectively control various pests. This research study takes a multidisciplinary approach to investigate the potential toxic effects of Cypermethrin on the kidneys of adult mice, employing physiological, biochemical, and histopathological parameters.

Methodology: The study involved 126 adult Swiss albino mice weighing between 20-25 grams, following the approval of the institutional ethical committee. Low doses of Cypermethrin were administered orally to the mice. Cymbush 25 EC, containing 25% EC Cypermethrin, was utilized, with a recommended dosage of 3-5ml for foliage spraying. On the day of sacrifice, blood samples were collected from the retro-orbital sinus of mice using a capillary tube.

Results: The analysis of biochemical parameters revealed an increase in plasma levels of urea and creatinine in the treated mice, corresponding to the dosage and duration of the drug administration. Histological examination of the kidneys in the treated mice exhibited inflammation in renal tubules, enlargement of renal spaces, shrinkage of glomeruli, erosion of Bowman's capsule, and significant congestion of renal glomerulus accompanied by hemorrhage.

Conclusion: Cypermethrin has detrimental effects on public health; however, the severity of damage depends on the duration and dosage of exposure and may result in severe functional problems in the kidneys.

Histological assay & molecular analysis evaluating neuroprotective effect of pongamia pinnata leaf on cerebral ischemia of rat model

Suganitha B, Vijayakumar J, Priya R, & Vasudha K

Akash Institute of Medical Sciences & Research Centre, Bangalore, India

Email: nithakeyan@gmail.com

Background: Cerebral ischemic stroke is the most common cause of disability worldwide. The concept of Neuroprotection is gaining a lot of attention in the hunt for innovative therapies that have the ability to enhance the cognitive and motor abilities. The aim of this study is to compare and determine the efficacy of hydroalcoholic extract of Pongamia pinnata leaves on ischemia induced rat brain.

Method: In a male Wistar rat model of brain, ischemia/reperfusion (I/R) was incorporated by occlusion of Bilateral common carotid occlusion method for 60 minutes followed by reperfusion for 72 hours. Rats were divided into 4 groups. They are (G1-Control+NS), G2-Sham (Sh+NS), G3-induced (BCCAO+ NS), G4- (400mg p.pinnata+NS). The effect of her was examined by using a various histological staining such as Cresyl violet staining for quantification of normal neurons, acridine staining for detecting apoptotic cells present and Hematoxylin & Eosin staining was used to understand the changes occurred in the brain infarct. The mRNA levels of GDNF, BDNF analysed by RTPCR.

Results: The results of Cresyl violet staining, Acridine orange, and H& E were observed. When compared to the G1 & G2 group, G4 showing near equal histological representation than induced group (G3). The mRNA levels (GDNF, BDNF) were increased in stroke model exposed to P. Pinnata leaf extract compared to induced model.

Conclusion: The study concludes that the leaf extract of P. pinnata leaf extract has neuroprotective potential in ischemic injury, by increasing vascularity reducing the cell death.

Key words: Pongamia pinnata leaf, cresyl violet, Acridine orange, Neuro protective.

A rare case report of Iniencephaly and its embryological basis

Vinutha. S. P

JSS Medical College, JSS Academy of Higher Education and Research, Mysuru, Karnataka

Email: vinuthasp@jssuni.edu.in

Background: Iniencephaly is a rare and severe neural tube defect characterized by a combination of structural abnormalities in the head and neck region, leading to a distinct appearance where the head is excessively tilted backward. "Inion" is the Greek term for the back of the neck. Here, the inion (external occipital protuberance) joins the back, causing the head to retroflex and the neck to disappear. Lewis classified them as iniencephaly apertus and iniencephaly clausus based on the presence or absence of encephalocele respectively. Its incidence ranges from 0.1 to 10 in 10,000 pregnancies. It is nearly 4 times more common in females and has a recurrence risk of 1–5% in next pregnancies.

Case Report: We report a case of preterm fresh stillborn female fetus of 22 weeks gestation born to a primigravida. She had a history of nonconsanguineous marriage. She had no history of iron and folic acid supplementation. Prenatal ultrasound showed prominent retroflexion of head which is described as "star gaze posture." In the case of iniencephaly, there is a failure of the neural tube to close properly in the cervico-occipital region, which is the area where the neck meets the back of the head. This failure of closure results in an extreme retroflexion of the head, leading to a fusion of the cervical vertebrae (bones of the neck) with the occipital bone (bone at the back of the skull). As a result, the neck is fixed in a severely extended position, and the head appears to be merged with the spine.

Conclusion: The malformation seen in iniencephaly is thought to be a result of disruptions in the complex interplay of genetic and environmental factors during embryonic development. Iniencephaly is associated with poor prognosis and other structural anomalies.

Keywords: Congenital, neural tube defect, iniencephaly.

A study to assess the cytogenetic toxicity in buccal epithelial cells of Covid-19 suspected patients

Vishnu B, P K Sankaran, Senthilmurugan, Bakshi

AIIMS, Mangalagiri

Email: m01020118@aiismangalagiri.edu.in

Background: SARS CoV 2 virus causes COVID 19 by infecting nasal and oral cavities primarily by attaching its spike proteins to angiotensin converting enzyme 2 receptors expressed in epithelial cells.

Objectives: This study is to evaluate the micronucleated cell count, metanuclear abnormalities and Genotoxic factor in exfoliated buccal mucosal cell among the COVID-19 suspected patients.

Methodology: This cross-sectional study was conducted in 100 (AIIMS/MG/IEC/2022-23/177) symptomatic COVID 19 suspected patients from the institute. The sample size 100 was divided into Group 1: RT-PCR positive patients (n= 25); Group 2: RT-PCR negative patients (n=75). The buccal swab taken using wooden spatula was smeared in marked glass slides and stained with RAPID-PAP. Statistical analysis was done using Chi-square test.

Result and Discussion: The micronuclei count and metanuclear abnormalities were significantly higher in COVID 19 patients compared to negative patients (Table 1, Table 2, figure 2). The genotoxic factor was 2.68 which indicates positive genotoxicity effect of COVID 19 infection on buccal mucosal cells. The micronuclei occurs due to mal segregation of sister chromatids during mitotic division [1] (Figure 1). The possible mechanism for appearance of nuclear changes is shown in Figure 3 [2].

Conclusion: SARS CoV 2 has positive genotoxicity effect and expresses its carcinogenic toxicity effect on buccal mucosal cells by increasing the expression of micronucleated cells, pyknotic cells, karyolytic cells and karyorhexic cells. These micronuclei and metanuclear changes can be used as a reliable marker to identify the early genomic damage caused by SARS CoV2 virus expressing on buccal mucosal cells.

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 7

Evaluation of optic nerve sheath diameter using CT imaging modality: A retrospective study

Archana B J, Asha K R, Vidya H K

Department of Anatomy, Siddaganga Medical College and Research Institute, Tumakuru

Email: drarchanabelavadi@gmail.com

Background: The optic nerve is a direct continuation of the diencephalon, surrounded by subarachnoid space and is subject to alterations in its diameter due changes in intracranial pressure (ICP). A spectrum of diseases comprising congenital and acquired conditions affect the morphometry of the anterior visual pathway structures. Evaluation of optic nerve sheath diameter (ONSD) using Computerized Tomography (CT) scans can be a non-invasive and indirect method of assessing intracranial pressure. This study aims to provide the normative CT imaging data with respect to the optic nerve sheath diameter and its clinical implications as a diagnostic marker for changes in intracranial pressure.

Aim: To study the optic nerve sheath diameter and to determine age and gender wise reference norms.

Materials and methods: The present study was approved by the Institutional Ethical Committee. Data was collected from 126 CT scans of patients who reported to the Department of Radiology and Imaging, SMCRI, Tumakuru for head CT examination for various indications between 1 st January 2023 to 30 th June 2023. CT scans with facial or cranial fractures or surgeries, conditions disturbing the optic nerve anatomy were excluded from the study. The CT images were viewed on the computer monitor, and the optic nerve sheath diameter was taken 3, 8 mm from the globe, and 3 mm from the anterior opening of the optic canal with in-built linear calipers. Data will be analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: Optic nerve sheath diameter, Computerized tomography, Raised intracranial pressure

Morphometric study of Lateral ventricle of brain by Computerized Tomography: A retrospective observational study

Asha K R, Dr Archana B J, Dr Vidya H K, Dr Prasad T N

Department of Anatomy, Department of Radiology, Siddaganga Medical College & Research Institute, Tumakuru

Email: drashakeshavraj@gmail.com

Background: Ventricles are the cavities present within the brain, filled with Cerebrospinal Fluid (CSF). The lateral ventricles are the largest paired ventricles present within the cerebrum. The digital CT scan machines currently in use, allow direct visualization of ventricles in cross sectional images and direct real time measurement of various dimensions of the ventricular system thus assisting in understanding its anatomy. Morphometric analysis of lateral ventricles is essential for evaluating changes due to ageing, growth, and the various intrinsic and extrinsic pathologies.

Aim: To determine the morphometric measurements of lateral ventricle of the brain in different age group individuals of both genders.

Materials and methods: The present study was approved by Institutional Ethical Committee. Data were collected from 118 CT scans of patients who reported to the Department of Radiology and Imaging, SMCRI, Tumakuru for head CT examination for various indications between 1 st January 2023 to 30 th June 2023. CT scans with history of head injuries, cerebral infarctions, local mass lesions or prior intracranial procedures were excluded from the study. The CT images were viewed on the computer monitor, and the measurements of lateral ventricle were taken with in-built linear calipers. Data will be analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: Lateral ventricle, Computerized tomography, Morphometric study.

Implications of Maternal Vitamin D Levels on the cognitive functions of their progeny – An experimental study

Ashwija Shetty, Sudarshan S, Shivakumar K Reddy, Pugazhandhi Bakthavatchalam, Poornima Adhikari, Dinesh Upadhyay

Kasturba Medical College, Manipal

Email: ashwija.shetty@manipal.edu

Background: Deficiency in Vitamin D has been noticed globally due to lifestyle changes and food habits. supplementation of Vitamin D during pregnancy, the pregnant population and feeding mothers have vitamin D deficiency worldwide. Monitoring and supplementing vitamin D during pregnancy is not only important for the mothers in maintaining calcium homeostasis but also for fetal bone development. Vitamin D is also believed to be a neurosteroid that induces nerve growth factors and prevents apoptosis of neurons in the hippocampus. A well-balanced diet that includes micronutrients (vitamins) during pregnancy and lactation is critical for the healthy development of the offspring.

Aim: To assess the hippocampus-dependent learning, memory, and mood functions in rats born to dams fed with different amounts of vitamin D along with the possible changes in the cytoarchitecture of the hippocampus.

Methods: Female Wistar rats were divided into four groups (n=6): control, moderate, overdose, and deficient and were fed a regular diet containing 1000 IU, 500 IU, 10000 IU, and 0 IU of vitamin D/kg diet respectively for 4 to 6 weeks. Following this, the pups were generated from the female rats of each group. All the pups were retained with the biological mothers until weaning. The litters were randomly culled into eight pups from each group for the study. The pups were housed separately with food and water ad libitum. The offspring continued to be fed with the same diet assigned to their dams and were allowed to reach the age of 2 months. The behavioral experiments were conducted after postnatal day 60. Following the behavioral experiment, the animals were sacrificed for neuronal quantification in the CA1 and CA3 regions of the hippocampus.

Results: All the results will be presented during the conference.

Conclusion: Prenatal vitamin D levels play a vital role in the cognitive functions of their progeny. Further, the changes in the cytoarchitecture of hippocampal regions suggest the influence of maternal nutrition on the brain development of the offspring. The data obtained emphasizes monitoring the levels of vitamin D status during pregnancy.

Key Words: Vitamin D, hippocampus, behavior, maternal, deficiency

Morphometric analysis of Corpus Callosum of human brain in South Indian Population - A cadaveric study

Ashwini N.S, Dr. Poulami Banik, Ms. P Bhavyasree

Academy of Higher Education & Research, Kolar, Karnataka

Email: drashwini2000@gmail.com

Introduction: The corpus callosum (CC) is a connecting bridge between two cerebral hemispheres and helps in interhemispheric integration of information. Anatomy of the CC has gained new interest in recent years owing to an increasing number of callosotomies performed to treat intraventricular lesions, as well as for the treatment of certain forms of generalised epilepsy. There are very few studies reported from South India. Familiarity with its anatomy and pathology is important to the radiologist in order to recognise its disease at an early stage and help the clinician establish the optimal therapeutic approach.

Materials and Method: In the study, 50 formalin fixed, full brain specimens were cut in midsagittal plane and CC was measured along with its relation to the brain. The major diameters considered were longitudinal dimension of corpus callosum (LC), distance of CC from frontal pole to genu (AS), distance of CC occipital pole to splenium (PS), and longitudinal dimension of brain (LB) from frontal pole to occipital pole.

Results: The length of the brain (LB) has a positive linear correlation with all the parameters of the brain with a strong correlation with PS. In our study, new parameters were also considered and measured, along with the parameters considered in other studies, which helps in increasing their reference index values.

Conclusion: The precise anatomical knowledge regarding the morphology and growth of corpus callosum structure will provide baseline data for the diagnosis and assessment of progression of a disease affecting it. Also, the reference values help in cross-referencing with other populations and ethnic group and helps in planning surgical interventions.

Key Words: Corpus callosum, schizophrenia, bipolar disorders, stroke, epilepsy

Morphometric Study of Cerebral Cortical Thickness for Determining Normative Ranges Among Non-Morbid Individuals of Indian Population

Eilene Basu, Prathap Kumar J

Department of Anatomy, Chikkamagaluru Institute of Medical Sciences, Chikkamagaluru

Email: eilenebasu@gmail.com

Background: The estimation of cortical thickness to evaluate grey matter atrophy is an important aspect of neuroanatomy but is less extensively used due to inconsistent data on the normal cerebral cortical thickness. It is imperative to study the normal morphometry of the different regions of the cerebral cortex to differentiate healthy cortex from pathological thinning of cortex.

Methodology: In this cross-sectional study, motor cortex in the frontal lobe, sensory cortex in the parietal lobe, auditory cortex in the temporal lobe, and visual cortex in the occipital lobe were studied using magnetic resonance imaging (MRI). The study population was divided into three age groups: Group I- 18-40 years, II- 40.1- 60 years, and III- >60 years. Statistical analysis including descriptive statistics, ANOVA, and paired and independent t-tests were carried out and analysed.

Results: The overall highest and lowest means of thickness in both the right and left hemispheres across all age groups, irrespective of genders were observed in the frontal and occipital lobes respectively. Significant associations of right frontal, temporal, parietal, and right and left occipital lobes in males and females. Comparing both male and female cortical thickness, the female right frontal and left occipital lobes had the highest and lowest means respectively. The cortical thickness decreases with age. The highest mean of Group I was higher than that of Group III, with both being that of right frontal lobe. Further details of the results will be discussed during the presentation.

Conclusions: We have established a range of values of cerebral cortical thickness to aid in the anatomical knowledge of cortical thickness. The lack of significant associations between the male and female left hemispheres may be due to the dominance of the hemisphere, and future studies are required in this area.

Keywords: Cortical thickness, Cerebral hemispheres, Brain MRI

Effect of resveratrol and donepezil on cognitive function in colchicine induced Alzheimer's disease rat model

Y. Lakshmisha Rao, B. Ganaraja, B.V. Murlimanju

Departments of Anatomy 1 and Physiology 2, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal

Email: flutemist@gmail.com

Background: Alzheimer's Disease (AD) is a neurodegenerative disorder, which is characterized by cognitive dysfunction leading to dementia.

Aim: The aim of this study was to evaluate the effect of resveratrol (RS) and donepezil(DPZ) on learning and memory abilities in animal model of AD.

Methods: Three months old male albino Wistar rats were used. Colchicine was injected into the lateral ventricle by the stereotaxic surgery to induce the AD model. RS and DPZ treatment were started from the next day of surgery for one week for the treatment groups and one week before surgery for the prophylactic groups. The open field test and active avoidance test were performed to assess the behavioural changes.

Results: Number of peripheral squares crossed and retention score were significantly decreased in the AD group, when compared to the other groups as per the open field test and active avoidance test, respectively. However, the crossing of squares and retention score were increased in the RS and DPZ treated groups.

Conclusion: It was observed that, DPZ+RS group showed maximum crossing of squares and score amongst all the groups, suggesting that RS and DPZ combination showed maximum potency in retaining the memory.

Key words: cognitive dysfunction; memory and learning tests; open field test

Morphological Analysis of patterns of sulci during normal ageing process using MRI

Padmalatha K, Nishaa P

ESIC Medical College & PGIMSR, Rajajinagar, Bengaluru

Email: padduanat@gmail.com

Background: The cerebral cortex is a highly convoluted structure with distinct morphologic features, the gyri and sulci, which are associated with the functional segregation and integration in the human brain. The detailed patterns of cortical folding change during aging, especially the changing age-dependencies of gyri and sulci, which is essential to brain functioning, remain unclear. Neurodegenerative diseases are a devastating group of disorders that can be difficult to accurately diagnose, correct diagnosis can help with managing symptoms and coping with the later stages of these disease processes.

Aim: This study aims to record the age related changes of central sulcus, lateral sulcus, parieto-occipital sulcus, cingulate sulcus and cerebellar folia using the MRI images of adult patients

Methods: In this study, A retrospective analysis was conducted on a series of 100 patients for a period of 3 months referred to the radiology department of ESIC Model hospital, Rajajinagar. We investigated the morphology of the sulcal regions and cerebellar folia from pial and white matter surfaces using MR imaging data of participants across adulthood to old age. The patients were categorized into six groups as per their age. Group 1(20-30years), Group 2(30-40years), Group 3(40-50years), Group 4(50-60years), Group 5(60-70years), Group 6(More than 70years)

Result: The details of the results of the study have been recorded and will be discussed during the presentation in detail.

Conclusion: Awareness of normal ageing pattern and its recognition is important to assess the pathology, identify the lobe involved and to see if recognizing this further can differentiate normal ageing and associated dementia based atrophy.

Key words: Central sulcus, Lateral sulcus, Parieto-occipital sulcus, Calcarine sulcus, Neurodegenerative disorders

Morphometric analysis of Lower Thoracic And Lumbar Vertebrae pedicles using Computed Tomography

Radhika PM, Manasa S, Shailaja Shetty

M S Ramaiah Medical College, Bangalore, Karnataka

Email: parameshradhika@gmail.com

Introduction: Pedicle dimensions has implications in spinal fusion using transpedicular screw insertion of appropriate size in conditions like degenerative disc disease, spondylolisthesis, fractures, deformity (scoliosis) to achieve stability and minimize motion. Thoracolumbar junction being mobile is more vulnerable to trauma. Insertion of a pedicle screw of larger diameter has shown to expand the pedicle & cause spinal stenosis resulting in spinal cord compression. Lack of knowledge on pedicle inclination leads to breach in medial or inferior cortex and subsequent damage to dura mater or root.

Aim: To study morphometric variations of pedicle dimensions and its angulations of lower thoracic vertebrae.

Objectives: To study sexual difference and age related changes in morphometric measurements of pedicles and to find morphometric and inclinational asymmetry between right and left pedicles.

Materials and methods: This study is done with sample size of 64 CT scans procured from Department of Radiology, Ramaiah Medical College & Hospitals, Bangalore. Pedicle length, height, breadth, transverse pedicle angle (medio-lateral), sagittal angle (cephalo-caudal) and canal diameters (Antero-posterior and medio-lateral) of vertebral canal of T10 – L5 vertebrae are parameters measured and tabulated in terms of mean \pm SD and statistically analyzed.

Result: The results will be discussed in detail during presentation

Conclusion: The height & width of pedicle helps in deciding pedicle screw diameter. The transverse and sagittal angle decide the screw path & trajectory. Detailed morphometric analysis will be useful for the anatomist, neurosurgeon and spine surgeons.

Key words: pedicle length, pedicle breadth, pedicle angle, pedicle screw entry point

Association of homocysteine level with brain atrophy changes in Alzheimer's disease patients - case series

Ram Prakash Sah, Vidya CS, Pratibha Pereira, Subha Jayaram

Department of Geriatric Medicine, Medical College & Hospital, JSS AHER, Mysuru

Department of Biochemistry, Mysore Medical College and Research Institute, Mysuru

Email: pramprakash12@gmail.com

Background: Homocysteine (Hcy) has been implicated as a risk factor for Alzheimer's disease, vascular disease as well as brain atrophy. Plethora of evidences to witness that the raised homocysteine level leads to oxidative stress, DNA damage, triggering of apoptosis and excitotoxicity, in turn it leads to neurodegeneration. Homocysteine also acts as a prothrombotic and proatherogenic, causing damage to the vessel wall as well as linked to brain atrophy in older individuals, and possibly shows white matter hyperintensities (WMH) in brain MRI images.

Aim: The aim of this study was to observe the relationship between serum homocysteine level and the degree of cortical-subcortical white matter atrophy changes in Alzheimer's disease. Methodology: Case (n=4) elderly cognitive impaired patients who satisfied the DSM-V criteria underwent an interview for general health followed by a standard assessment including general, physical and neurological examination as well as cognitive, functional and behavioural tests at the outpatient department, Department of geriatrics, JSS hospital, Mysuru. Cognitive impaired Patients underwent MRI imaging procedure and later 2ml of blood was collected to estimate level of serum homocysteine, folate and vitamin B12 by Roche cobas C 6000 analyser to determine association between homocysteine and brain atrophy. Observation: Elevated homocysteine levels for (n=2) patients were 21 and 23 $\mu\text{mol/L}$ were significantly associated with the brain atrophy changes among Alzheimer's patients. MRI of the Alzheimer's patients revealed that White matter Hyperintensities noted in the bilateral frontal, parietal and temporal lobes as well as periventricular deep white matter. Cerebral atrophy with chronic small ischaemic changes.

Conclusion: Our observations also confirm the association between high homocysteine levels and severe cortical-subcortical white matter atrophy changes in brain MRI. Estimation of serum homocysteine will help in the early indication for pathologic process and biological response to therapeutic intervention and drug development.

Key words: Alzheimer's disease, brain atrophy, homocysteine, dementia.

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 8

An Insight Towards Lateral Malleolar Crest - Surgical Point of View: An Anatomical Study

Jyothi S.R

Department of Anatomy, Chikkaballapur Institute of Medical Sciences, Chikkaballapura

Email: jyothisir39@gmail.com

Background: Fibula is the slenderest lateral bone of the leg. Lateral malleolus forms bony mortise for the ankle joint. Ankle is one of the most commonly injured joints. During CT scan of posterior malleolar fracture, a prominent crest on lateral malleolus was observed.

Aim: The focus on, the study of anatomy of Lateral Malleolar Crest (LMC) is in view of its clinical importance in fractured posterior malleolus of the ankle. This clinically important structure is only briefly mentioned by few authors without an official term. Hence study was carried out to know in detail about LMC.

Materials & Methods: The study was carried out in Chikkaballapur Institute of Medical Sciences, Chikkaballapura. 100 dry fibulae collected from Department of Anatomy and 1 st MBBS students, were analyzed. The following parameters were measured using Vernier Calipers.

- (1) Length of fibula (F),
- (2) Total length of LMC (LMC)
- (3) Length of part of examined crest from superior border of Articular Facet of Lateral Malleolus (AFLM) to its most proximal intersection with midline of Fibula(A)
- (4) Height of the medial triangular rough surface(B)
- (5) (A/F) - A/F ratio

Results: Results of these different parameters will be discussed on the day of presentation.

Conclusion: Lateral malleolar crest is an important structure on lateral malleolus. The knowledge of its anatomy is essential for placement of syndesmotic screws or/and the fibular plate.

Key words: Fibula, Lateral Malleolar Crest, Syndesmotic screws.

A Cross-Sectional Study of Trabecular Pattern of Calcaneus through High Resolution Radiographs in Normal & Menopausal Women

Manisha Sachin Chougule, Drakshayini B. Kokati, Roshni Sadashiv.

JGMMMC, Gabbur Cross Adargunchi Hubli

Email: drmanishasc23@gmail.com

Introduction: Human skeletal bones are having different distribution of cortical & trabecular bone. Arrangement of bony elements of trabecular bone mainly influenced by line of stress on that particular bone during weight bearing. Many investigators were interested to reveal this wealth of architectural variety. Trabecular pattern of the calcaneus is comprised of 5 trabecular lamellae and Ward's neutral triangle enclosed within trabeculae. This trabecular pattern is influenced by various factors like age, sex, hormones & disturbances in calcium metabolism. Present study is aimed to find out the influence of hormones on trabecular pattern of calcaneus with the help of high-resolution radiographs as fracture of this bone accounts to 2% of all the fractures & 60% of tarsal fractures.

Material and methods: With consideration of inclusion & exclusion criteria total 50 high resolution radiographs of lateral view of ankle joint of patients between 25-35 years & 50-60 years each, had been collected. Images were procured from PAX database & information about patients retrieved from medical records. Comparison of 5 types of trabecular pattern & Ward's triangle of calcaneus in normal & menopausal women was done. Qualitative analysis of trabecular pattern & Ward's triangle was done with the help of graphs & pie chart. Quantitative analysis of modified calcaneal index was done by applying chi square test & p-value was calculated.

Results: In reproductive age group, trabeculae like tendotuberosity trabeculae, primary compressive & tensile trabeculae were seen in all images. Secondary compressive trabeculae were absent in 9(18%) and secondary tensile trabeculae in 3 (6%) radiographs. In menopausal age group secondary compressive trabeculae was absent in 32(64%), secondary tensile trabeculae in 28(56%), primary tensile trabeculae in 22(44%), primary compressive trabeculae in 18(36%) and tendotuberosity trabeculae in 7(14%) radiographs. In menopausal age group large size Ward's triangle was observed in 44% radiographs, medium size in 32% of the sample and in the remaining (24%) it was of small size. In reproductive age group only in 8% Ward's triangle was medium size and the remaining were having small size triangle. Grading of Calcaneal index done for both the groups. For statistical analysis we combined grade I & II and IV & V. Chi square test applied and p-value was calculated. p-value was significant for the calcaneal index.

Conclusion: The present study would help to understand the biomechanics & its relation with disappearance of compressive & tensile trabecular with age in female. It is hoped that the present study will enlighten in designing & development of prosthesis for the ankle in managing the condition associated with calcaneum.

Keywords: Calcaneum, compressive Trabeculae, tension trabeculae, Ward's triangle, Calcaneal index.

Relationship of carrying angle with grip strength in various parameters – A cross-sectional study

P Bhavya Sree, Poulami Banik, Ashwini N.S

Sri Devaraj Urs Medical College, Kolar, Karnataka

Email: sreebhavya517@gmail.com

Introduction: The carrying angle is defined as the acute angle between the median axis of arm and median axis of forearm in fully extended and supinated position. Increase or decrease in the carrying angle may affect the functional activity and leads to pain during the daily activity. Grip strength is commonly evaluated as a component of hand function.

Materials And Methods: The cross-sectional study was conducted among 240 (male and female) individuals between age group of 18 to 30 and the carrying angle is measured by using goniometer in fully extended and supinated arm. The grip strength is measured by using the hand-held dynamometer. Anthropometric data like forearm length and hand span is measured by using ruler scale. The height and weight of the individual are also recorded.

Result: The measurements were taken for the carrying angle and analysed. According to the study the height of the person is also inversely related with the carrying angle. The angle is more in females when compared with males and also more in left hand when compared with right side.

Conclusion: The knowledge about the carrying angle is helpful in elbow surgeries. As the carrying angle is inversely proportional with grip strength, length of the forearm, hand span and height of the individual. The grip strength correlates with the length of the forearm and hand span. The carrying angle is more in females when compared with males.

Key Words: Carrying angle, Grip strength, Hand span, Goniometer, Hand Dynamometer

Evaluation of Proximal Femur geometry in the Indian population using digital Radiography and dry bone measurements with its clinical implications

Poulomi Banik, P Bhavyasree, Ashwini N S

Sri Devaraj Urs Medical College, Kolar, Karnataka

Email: guddybds90.pb@gmail.com

Background: Numerous orthopaedic procedures are carried out on the proximal femur. Knowledge of proximal femur's geometry in the Indian population by means of aradiographic and dry bone study can be helpful in reducing the risk of complications linked to surgery.

Aim: The present study aims to evaluate the morphology of the proximal femur in relation to its various diameters and angles and compare the external and internal geometry of femur as obtained from radiographs with actual measurements on dry specimens in Indian population.

Methods: A prospective and cross sectional study with total of 308 samples (dry bone 154 and x-ray radiograph 154) of unknown age and gender without any defect or damage were collected from the Department of Anatomy and Radiology, SDUMC, Kolar. With the aid of the Vernier calliper, goniometer for dry bone and Antero-posterior pelvic x-ray, measurements such as femoral head diameter, femoral neck length, diameter and anteversion, neck shaft angle, femoral head and vertical offset, femoral axis length, intertrochanteric line length. Mean and standard deviation were calculated. Student's t-test was applied to ascertain the statistical difference between right and left femur.

Results: The mean values and standard deviation of femoral head diameter, femoral neck length, diameter and ante version, neck shaft angle, femoral head and vertical offset, femoral axis length, intertrochanteric line length were measured and compared with previous studies.

Conclusion: We conclude that the accuracy and success of the hip replacement surgery and designing of implant demands complete knowledge of the morphometry of the proximal femur and offers data for orthopedicians, radiologists and surgeons for the overall success of Arthroscopic surgeries and prognosis of the patient.

Key Words: proximal femur, neck shaft angle, Arthroscopy, Hip replacement

A Study of Vascularity of Dry Radii Bones with reference to Vascular Foramina

Pramod Rangasubhe, P S Bhusaraddi, Pratik Khona, Pavan P Havaladar

Department of Anatomy, Gadag Institute of Medical Sciences, Gadag, Karnataka

Email: dr.pramodrangasubhe@gmail.com

Background & Aims: The radius being the long bone receives nutrition via epiphyseal, diaphyseal and periosteal arteries along with nutrient artery. Different segments of Radii present numerous foramina through which arteries supplying it will enter, such foramina are named as vascular foramina. Recent studies on vascularity of radii bones concentrate only on diaphyseal nutrient foramina. During conservative operative procedures of the bone the knowledge regarding the vascular foramina will help to concentrate upon the viability of the fractured fragments, hence it is worth to study the size and number of vascular foramina.

Material & Methods: 100 dry human radii bones in our Institute Anatomy Department were divided into various segments for studying vascular foramina.

Result: We found in the present study that maximum numbers of vascular foramina were seen in the lower end of the radius which were large sized. Most of the vascular foramina in other segments of radius were of small size.

Conclusion: The present study concludes that the different segments of radius have differences in the intensities of blood flow to them, as revealed by densities of vascular foramina. The knowledge of number, site and direction of vascular foramina of radii bones will help Orthopaedicians and Oncologists in planning the procedures related to radius (Fractures, Transplant segments).

Key-words: Radius; Vascular foramina; Epiphyseal; Periosteal; Fracture.

A Study of Nutrient Foramina in Dry Adult Ulna of South Indian Population

Pratik Khona, Pramod Rangasubhe, Pavan Havaladar, P S Bhusaraddi

Department of Anatomy, Gadag Institute of Medical Sciences, Gadag, Karnataka

Email: drpratikkhona@gmail.com

Background: Vascular insults to the ulna either during fracture dislocation or during surgical correction of fracture may result in delayed healing or non-union of fracture. It is worth to find the number, location and size of nutrient foramina. The knowledge regarding nutrient foramina helps to protect them during conservative operative procedures of the bone, thus to concentrate upon the viability of the fractured segments.

Aims & Objectives: To observe the location of nutrient foramina with reference to the different segments of shaft of ulna, to note variations in number, direction and size of nutrient foramina. Further to examine if a correlation exists between the length of ulna and number of nutrient foramina.

Materials and Methods: The study was undertaken on 200 dry normal adult ulna. Observations were made using Hepburn's osteometric board and hypodermic needles of different gauges. Statistical methods (SPSS) were used to analyze these observations.

Results: The common site of location of diaphyseal nutrient foramina in ulna was in upper third of shaft on anterior surface. Majority of nutrient foramina were of medium size and directed upper oblique.

Conclusions: The study will help in planning the surgical treatment of ulna which will possibly reduce the post-operative complications.

Key Words: Ulna, Nutrient foramen, Nutrient artery, Fracture.

A Morphometric study of nutrient foramen in dry adult human fibula bone

Rajapur Parashuram

Department of Anatomy, Mysore Medical College & Research Institute, Mysore, Karnataka

Email: drparashurammmc@gmail.com

Background: It is the lateral and smaller bone of the leg. The fibula is much more slender than the tibia and is not directly involved in transmission of weight. The nutrition & growth of the bone depends mainly on the nutrient artery. A little proximal to the midpoint of the posterior surface, a distally directed nutrient foramen on the fibular shaft receives a branch of the fibular artery. The Topographical knowledge about these foramina is useful in certain surgical procedures to preserve the circulation.

Methodology: The study was conducted on 100 dry adult human fibulae of both sides of unknown sex, collected from department of Anatomy, Mysore medical college & research institute, Mysuru, Karnataka. Total fibular length along with the location, number, and direction of all the nutrient foramen present were recorded. The bones were photographed & data obtained was tabulated, results noted and the inference was drawn.

Result: The present study showed that 95 fibulae had a single nutrient foramen & 5 bones had two. The most common location of nutrient foramen was on the medial crest (60 bones), followed by between medial crest & posterior border (25 bones), between the medial crest & interosseous border (12 bones), & on the posterior border (3 bones). The most common location of nutrient foramen was in the middle 1/3 rd of the shaft.

Conclusion: The morphometric & topographical knowledge of the nutrient foramen and its variations is of immense importance for surgical procedures like fracture healing & bone grafting.

Key words: Nutrient foramen, Nutrient artery, Fibula, Foraminal Index, Free vascularised bone graft.

Dimensional analysis of the Intertubercular sulcus and its association with handedness in South Indian population

Showri.R, Sangeetha.S, Martin Lucas. A

Department of Anatomy, CDSIMER

Email: showri.123@gmail.com

Background: Intertubercular sulcus (ITS) is a vertical concavity in the proximal end of humerus between the greater tubercle laterally and lesser tubercle medially. It lodges the long head of Biceps brachii tendon (LHBT) and ascending branch of circumflex humeral artery.

The transverse humeral ligament converts ITS into a canal and positions over LHBT by providing stability and preventing subluxation during movements of the arm. The biomechanics of LHBT and complications of the shoulder region (inflammation, impingement, degeneration and dislocation) may impact the morphology of ITS.

Aim: To analyse the dimensions and associated parameters of intertubercular sulcus of humerus and to determine the handedness from it.

Methods: This observational study was conducted in the Department of Anatomy, Dr.Chandramma Dayananda Sagar Institute of Medical Education and Research (CDSIMER). Eighty humeri (47 right and 33 left sided) of unknown sex and age were included in the study and those with obvious deformities were excluded. Morphometric parameters such as length, width and depth of the ITS, lengths of the walls (medial & lateral) were measured using Vernier Calipers and medial and opening angle with a goniometer. Handedness and Incidence of Supratubercular ridge of Meyer was also noted.

Results: Mean and Standard deviation for each independent variable (Length, breadth, depth of ITS, medial and lateral wall length, medial and opening angle) was calculated and t-test was used to compare the same for right and left side. p-value of <0.05 was considered statistically significant. Incidence of Supratubercular ridge of Meyer was noted and handedness was determined by discriminant function analysis.

Conclusion: Intertubercular sulcus serves as an important anatomical landmark for aligning prosthesis in shoulder arthroplasty. Its morphometry is significant as anomalies of LHBT has been linked to shoulder pain. And hence, understanding the dimensional variations and handedness is crucial for comprehending the functional nature of the shoulder region.

Key words: Humerus, Handedness, Shoulder arthroplasty

Anterior curvature of femur bone and its surgical implications

Sunil O, Balachandra N

Department of Anatomy, Dr. B.R. Ambedkar Medical College

Email: sunilobulesh013@gmail.com

Background: The femur is the longest and strongest bone in the human body. Its shaft, almost cylindrical along most of its length and is bowed forwards. Several anthropological studies have dealt with the compatibility of femoral prostheses. Intramedullary nailing is currently accepted as the gold standard in the treatment of diaphyseal femur fractures. Mismatch between the radii of curvature of the intramedullary nails and the anterior bowing of femur result in angular defects, iatrogenic fractures, and penetration of the distal anterior femoral cortical bone.

Aims and objectives: To measure the radius and angle of curvature of femur bones and compare it with the contemporary intramedullary nails available for routine surgical procedures.

Materials and methods: 104 dry human femur bones specimens without structural deformities were studied to measure the radii and angle of curvature in the department of Anatomy, Dr. B.R.Ambedkar Medical College, Bengaluru. The radius and angle of curvature of femur bones were measured, tabulated and compared with intramedullary nails. Statistical analysis was carried out with the help of IBM-SPSS (IBM Corporation) and Microsoft Excel.

Results and Conclusion: The mean radii of curvature and mean angle of curvature of femur was 68.7 cm and 29.8° respectively. The radii of curvature and angle of curvature of intramedullary nails were between 180 - 200 cm and 15-25° respectively. The difference between the anterior concavity of the femur and the intramedullary femoral nails that are in use in current clinical practice implicates the inadequacy of the design for at least the Indian population. Intramedullary nails should be redesigned accordingly to prevent the complications.

Keywords: Anthropological, Fracture, Iatrogenic, Intramedullary, Prosthesis

Mental foramen – A dry bone analysis

Uma Shivanal, Shwetha K

Department of Anatomy, JSS Medical College, Mysuru

Email: umavijay15@gmail.com

Introduction/Background: The Mental Foramen (MF) is a passageway on the external surface of the body of mandible. It transmits the mental nerve and arteries that supply the lower lip. The comprehensive knowledge of MF is required to avoid post-operative complication in the vicinity of mental region in surgical procedures i.e. apical curettage of mandibular premolars, amalgam filling, periodontal surgery. Ranging from maxillofacial to oral surgeries, knowledge about distance between surrounding structure and mental foramen is essential to fulfil successful procedure.

Aim:

1. To examine the multiplicity of foramen.
2. Determining the position of mental foramen with respect to mandibular teeth position.
3. Measurement of distance from mental foramen to symphysis menti.

Methods: The study on the mental foramen was conducted on 140 dry human mandibles. The number of foramina were noted. The position of mental foramen with respect to mandibular teeth position and measurement of distance from mental foramen to symphysis menti was noted.

Results: Mental foramen was present as single, double and triple also. Maximum were single and bilaterally symmetrical. The position of mental foramen with respect to teeth position was at the level of second premolar in greater number. Mean distance from foramen to symphysis menti right side 26.72 mm, left side 26.73 mm.

Conclusion: Verification of the existence of accessory mental foramina would prevent accessory nerve injury during periapical surgery. These foramina have been found to vary in position in different ethnic groups. Therefore, knowledge of morphology of mental foramen will enable effective mental block anaesthesia.

Key words: Accessory mental foramen, mandibular teeth, symphysis menti, maxillofacial surgery, mental nerve anaesthesia.

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 9

Morphometric analysis of oblique popliteal ligament and its significance on stability of knee joint

Shreya Saha, Mamatha H, Rohini Punja

Department of Anatomy, Kasturba Medical College, Manipal, 576104

Email: sahashreya481@gmail.com

Background: The oblique popliteal ligament is a broad flat, fibrous band. It is derived from the tendon of the semimembranosus passing from the back part of the medial condyle of the tibia obliquely upwards and lateral to the back part of the lateral condyle of the femur. The oblique popliteal ligament forms part of the floor of the popliteal fossa.

Aim: The aim of the cadaveric study is to find the length, width, shape and type of oblique popliteal ligament.

Material and Method: The study is done on 20 cadaveric knee joint specimens, the length of the oblique popliteal ligament is measured from origin to insertion, width of the oblique popliteal ligament is measured at its origin and midpoint, shape and nature of the oblique popliteal ligament is observed, all measurements are done using vernier calliper. Length and width of band are used to map important nerves and vessels present in popliteal fossa.

Result: According to the study done on oblique popliteal ligament, most commonly found shape of oblique popliteal ligament is the band shape, most commonly found type of oblique popliteal ligament is the type 1 where the ligament spans from the origin to insertion in a straight manner, average length of the oblique popliteal ligament from the origin to insertion is 28.97 ± 3.66 mm, width of the oblique popliteal ligament at the origin is 17.47 ± 4.29 mm, the width of oblique popliteal ligament at midpoint is 18.30 ± 4.43 mm.

Conclusion: Based on the result the length, width, shape and nature of the band we are able to determine the role of oblique popliteal ligament on maintaining the stability of knee joint.

Key words: Oblique popliteal ligament, knee joint, popliteal fossa.

Cheiloscopy: A comparative study of patterns and variations in thyroid disorders

Srishti Gupta, Hema N, Nanda K, Mamatha

ESIC Medical College & PGIMS, Rajajinagar, Bengaluru

Email: srishtianita1@gmail.com

Background: Cheiloscopy (Greek word: Cheilo-lips; skopien-to see) is the study of lip prints. Lip prints are the patterns or grooves along the vermilion border which are unique for each individual. Based on these patterns they are classified into 5 types as per the Y. Tsuchihashi and T. Suzuki classification. Thyroid disease is a clinically significant condition which affects both men and women with higher frequency in the latter. It has several manifestations major ones being the Graves disease and Hashimoto's thyroiditis. Thyroid autoimmunity is a multifactorial condition involving HLA complex and CTLA 4 genes. This taken as a basis for co-relation between cheiloscopy and thyroid disorders might prove to be a turning point in the field of medicine.

Aim: In the present time several studies have been conducted to associate cheiloscopy to diabetes mellitus. Therefore, this is a case control study that aims to find and establish any relation between lip prints and thyroid disorders in a similar manner.

Method: Sample to be collected using glued scotch tape after application of lipstick on the voluntary subjects (both case and control) and preserved. Samples will then be used to study the pattern under magnifying glass and classify them based on Suzuki and Tsuchihashi classification.

Results and Conclusion: Samples were collected and differences were noted, the details of which will be discussed during presentation.

Study of Morphologic and Morphometric variations in Liver

Shyasri Nandakumar, Hema N, Shivapriya, Seema S R

Department of Anatomy, ESICMC and PGIMSR, Rajajinagar, Bengaluru-560010, Karnataka

Email: shyasrin@gmail.com

Background: The liver is the largest gland in the body occupying the right hypochondrium, upper part of the epigastrium and part of left hypochondrium. The liver presents anatomical and physiological right and left lobes, caudate and quadrate lobes, and sometimes Reidel's lobe. Accessory lobes may be present. Physiologic lobes are divided by Cantlie's plane. The liver develops as a hepatic bud from distal end of foregut.

Aim:

- To study the shape and size of the liver.
- To measure the length and transverse diameter of different lobes
- To document any variations of the lobes- accessory lobes, fissures and pons hepatis.

Method: The study was conducted on 40 liver specimens of adult human cadavers. The liver specimens were removed during the routine dissection for undergraduate teaching and preserved in 10% formalin. Measurements were taken using measuring tape, digital vernier calliper and weighing machine. They were tabulated in Excel sheet and were analysed in SPSS software.

Result: The morphological variations included presence of elongated left lobe or Beaver's lobe (10%), presence of accessory lobes (15%), accessory fissures (30%) and pons hepatis (20%). The morphometric variations were also recorded. The details of these will be discussed during presentation.

Conclusion: Knowledge of these variations would be helpful during radiological and surgical procedures.

Key words: Caudate lobe, Quadrate lobe, Reidel's lobe, Accessory lobes

Morphometric Analysis of Gastrocnemius Muscle and its Anatomical Localization of the Motor Points

Thrisha Sajeeth, Radhika PM, Shailaja Shetty

Department of Anatomy, Ramaiah Medical College SIMSRC 2

Email: thrishasajeeth30@gmail.com

Background: The triceps surae muscle consists of the medial, lateral gastrocnemius and the soleus muscles. These three muscles also contribute to the formation of the tendo calcaneus. These muscles are supplied by the tibial nerve which is a branch of sciatic nerve. Being able to locate the motor points in these muscles helps to improve the efficiency of the neurolytic drug given for spasticity during stroke.

Aim: To morphometrically analyze the gastrocnemius muscle and its motor points.

Material and Methods: 45 lower limb specimens were studied in the Department of Anatomy. The tibial nerve was identified and the branch to the muscle was identified. The morphometric measurements such as length of the gastrocnemius muscle, tendo achilles, width of the tendon at proximal, middle and distal near insertion were measured. The distances from the tibial nerve to the motor branch and from motor branch to the motor point were measured. The angle from tibial nerve to the nerves of medial and lateral branch heads was studied.

Results: For the medial head, distances from the tibial nerve to the motor branch and from motor branch to the motor point were 72.07+ 41.9 mm and 43.41+ 17.49mm and for lateral head the same parameters were 63.16+ 36.72mm and 11.43+ 3.37mm respectively. The angles studied were 11.26+ 3.89 0 and 11.42+ 3.37 0 on the medial and lateral sides respectively.

Conclusion: Careful considerations of the motor points in the gastrocnemius tendon will help in reducing the complications during the chemical blockage of the nerves during injection of the toxin. Morphometric measurement of tendocalcaneus is imperative and opens management options to orthopedicians, podiatrists, sports physicians and physiotherapists.

Key words: spasticity, gastrocnemius, motor points

A Cross Sectional Study to Correlate Human Auricular Morphometry and Golden Phi Ratio of Face

Veena Rathod, Swapnali Shamkuwar, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru

Email: veenarathod0718@gmail.com

Background: Approximately 1 in every 6,000 newborns have an outer ear deformity. According to WHO, 60 to 80% of children with Down syndrome have hearing loss. Recent studies have shown that the ear malformations constitute 50% decrease in ear volume, 19% decrease in ear length, and 28% decrease in ear width. Thus ear dimensions are vital for planning ear reconstruction. In facial aesthetics, there is a specific mathematical proportion which is called golden proportion or golden phi ratio. It is rational for surgeons to propose this ratio as a planning tool for the reconstruction of facial deformities. There is a need for establishing association between golden phi ratio and ear morphometry.

Aim: The present study aims at determining the normal anthropometric measurements of human auricles in males and females and their comparison on either sides and to correlate the dimensions with the golden phi ratio of the face.

Methods: A cross sectional study was conducted on 320 medical students of Akash Institute of Medical Sciences and Research Center Bengaluru, aged 18-25 years. Total auricular height, total auricular width, lobular height, lobular width, facial height, facial width and facial proportion were recorded using Vernier Calipers and DICOM Viewer software.

Results: Mean and Standard deviation were calculated for all the parameters. Comparison between the variables were analyzed using independent sample T test. The correlation between the auricular index and golden phi ratio was established using linear regression analysis.

Conclusion: Clinical applications of the golden phi ratio are mostly employed in dental prosthesis, aesthetic surgery, orthodontics and facial mask fields. Ear morphometry like fingerprints (dermatoglyphics) is useful for different purposes like hearing prosthesis, Beautification, Recognition and Medico – legal application. In addition the association between golden phi ratio of face and auricular morphometry can be useful for soft ear biometric and in genomewide association studies.

Key Words: Auricular height, Auricular width, Golden phi ratio.

Cheiloscopy: A diagnostic factor for person identification and gender discrimination

Yashwanth M, Dr. Asha K R

Department of Anatomy, Siddaganga Medical College and Research Institute, Tumakuru

Email: yashwanthyashas124@gmail.com

Background: Identification of human being poses difficulty for scientists and is based upon scientific principles. Finger prints, dental data, anthropometry & DNA analysis are the tools used for identification purposes. The novel tool in the field of personal identity is, cheiloscopy. Cheiloscopy is derived from Greek word "Cheilos" which meaning lips. It is the study of characteristic pattern of elevations and depressions on labial mucosa. It is unique for every individual like fingerprints and hence can be used to determine the gender and for personal identity.

Aim: To evaluate the uniqueness of lip prints for gender and personal identification of an individual.

Materials and methods: The present study was approved Institutional Ethical Committee. The present study was conducted on 94 First year medical students from Siddaganga Medical College and Research Institute. Materials used for study were lipstick (A bright red color of a standard brand), brush, cellophane tape, bond paper and magnifying lens. Students with sensitivity to lipstick, presence of inflammatory lip disease, evidence of trauma to the lip, malformation, deformity and scarring over lips and cleft lip were excluded from study. After obtaining informed consent, the lips were cleaned using a cleanser. Then the subject is requested to separate the lips while maintaining distance between two lips and uniform application of lipstick was done using a lip brush. Now both the lips of the subject were gently rubbed together uniformly. The lip colour is permitted to dry approximately for 2-3min. Then, lip designs were drafted on a piece of white bond paper. Lip prints will be classified according to Suzuki and Tsuchihashi's classification. Data will be analyzed using IBM SPSS (version 16) for statistical analysis.

Results and conclusion: Shall be discussed during the presentation.

Keywords: Cheiloscopy, Personal identification, Suzuki and Tsuchihashi's classification.

Morphometry of digastric muscle and its neurovascular supply: A cadaveric Study

Ms Zohra Fathima, Anupama K

Department of Anatomy, Ramaiah Medical College, MSRIT Nagar, Mathikere, Bangalore

Email: zohrafathima2001@gmail.com

Introduction: The digastric muscle is one of the suprahyoid muscles consisting of anterior and posterior bellies connected to each other by an intermediate tendon. This muscle has drawn special interest of the anatomist, radiologist, physicians and surgeons due to its unique morphology.

Aim & Objectives:

1. To study the morphometry and determine the frequency of variations in the anterior and posterior bellies of the digastric muscle
2. To identify the site of innervation and arterial supply to the anterior and posterior bellies of digastric muscle.

Methodology: The digastric muscles of 34 cadavers obtained from the Anatomy Department of Ramaiah Medical College were dissected. The length and width of the muscle bellies and the intermediate tendon were taken using a digital Vernier caliper. The innervation and arterial supply of the two bellies were noted.

Results: There was no significant difference in the mean distance of the site of innervation from the origin of both the bellies between the right and left sides. The mean distance of the site of the arterial supply for the anterior belly was also insignificant. Variations in the form of muscle fibers, interconnecting the anterior bellies of both sides were observed in 4 specimens. No accessory muscle bellies were noted.

Conclusion: This study has given better understanding of the neurovascular supply of digastric muscle as most of the previously conducted studies only featured its morphological variations and morphometric parameters. This information is important for the plastic surgeons to raise the flap during reconstructive procedures.

Keywords: Digastric muscle, Neurovascular supply, Rhytidectomy

Cadaveric Study on Variations of Cystic Artery

Mohammad Saad Anjum, Vrinda Hari Ankolekar

Kasturba Medical College, Manipal

Email: mohammad.kmcmpl2022@learner.manipal.edu

Background: The chief source of blood supply to the gallbladder is the cystic artery. It usually arises from the right hepatic artery within the cystohepatic triangle. Variations in the origin and location of cystic artery with respect to the cystohepatic triangle are frequent. Knowledge about these variations is essential for surgeons performing conventional and laparoscopic cholecystectomy.

Aim: To determine the incidence of some of the common variations of cystic artery.

Method: This descriptive cross-section study was carried out in the Department of Anatomy, Kasturba Medical College Manipal, using 41 cadaveric specimens. The peritoneal covering of the cystohepatic triangle was removed, exposing the cystic artery and cystic duct. The cystic artery was then traced to its origin. The origin and location of cystic artery with respect to the cystohepatic triangle was noted.

Results: Out of the 41 cadaveric specimens studied, cystic artery originated from the right hepatic artery in thirty-nine (95.1%), hepatic artery proper in one (2.4%) and directly from the liver substance in one (2.4%). According to the location the variations were divided into two groups: (1) cystic artery present within the cystohepatic triangle, found in thirty-two specimens (78%); (2) cystic artery lying outside the cystohepatic triangle, found in nine specimens (22%). In none of the specimens, the right hepatic artery formed a Moynihan's loop within the cystohepatic triangle.

Conclusion: Based on the results we have obtained, it is evident that variations in the cystic artery can frequently be found. Cystic artery bleeding is a known complication in laparoscopic cholecystectomy. It can be avoided if the surgeon has good knowledge about these variations.

Keywords: cystic artery, cystohepatic triangle, Calot's triangle cholecystectomy,

Morphometry of Rectus Abdominis and its Clinical Implication in Grafting

Vasundhara Choudhary, Piyush Bhardwaj, Dr. Chandni Gupta

Kasturba Medical College, Manipal, 576104

Email: vasundhara.c1208@gmail.com

Background: Rectus abdominis consists of two flat and parallel muscles separated by linea alba. The muscle extends from the pubic crest to the 5th to 7th costal cartilage and xiphoid process. It flexes the trunk, tenses the anterior wall and plays a role in core stability. It plays a key role in grafting to reconstruct breast defects as a pedicled flap. It is also used to repair soft tissue defects in the head and neck.

Aim: The aim of the cadaveric study is to find the length and width of the muscle along with the number of tendinous intersections and their distance from bony prominences and the distance of twigs of thoracic spinal segments to the muscle.

Material And Method: The study was conducted on 20 cadaveric specimens. The length of the muscle was measured from origin to insertion, width from the two margins at the level of umbilicus. The number of tendinous intersections were counted throughout the length of the muscle and their distances were measured from pubic symphysis, umbilicus and xiphisternum. The number of nerve twigs were counted and their distance from xiphisternum and umbilicus was measured.

Result: According to study done on rectus abdominis muscle, mean length is 34.2 cm, mean breadth is 13.7cm and the average number of tendinous intersections is 4.

Conclusion: Based on the length, width, number and distances of tendinous intersections, number of twigs and their distances we conclude that Rectus abdominis is an important muscle in the abdomen that can be used for grafting.

Key Words: Rectus abdominis, Tendinous intersection, Nerve twigs

Unveiling the morphological insights of accessory tendon of abductor pollicis longus (APL)

Kumudhakshi D, Khizer Hussain Afroze M

Department of Anatomy, MVJ Medical College and Research Hospital

Email: kumudhakshid@gmail.com

Introduction: The abductor pollicis longus (APL) is the tendon of 1st extensor compartment of the wrist. It helps in movement and stabilization of the thumb. Among all, the APL muscle presents with numerous variations. The anatomical variation may remain asymptomatic or may present with painful conditions like de Quervain tenosynovitis (DQT). Recent studies used the accessory tendons of the APL as grafting material for the reconstruction of ruptured extensor pollicis longus tendon. The primary aim of this study is documentation of the morphology and variation of the APL tendon and its accessory bands.

Materials and methods: This observational study was conducted on 64 embalmed, disarticulated upper limb specimens (40 right and 24 left) obtained from adult cadavers of unknown age and sex collected from Department of Anatomy, MVJ-MC & RH, Karnataka.

Result: The APL tendon variation was recorded in 16 right and 9 left upper limb specimens accounting for 39% variation out of 64 dissected specimens. The Abductor pollicis longus was found with double tendon in 8%, triple in 20% and quadruple in 48%. Maximum of 6 tendon slips were found in one cadaveric hand. The right limb presented with more variation comparatively. The frequency of communicating tendon from APL to abductor brevis muscle was found to be 21.8% in right and 10.9% in left extremities.

Conclusion: In hand surgery, a prior anatomical knowledge of the presence of accessory APL tendons would be helpful in interventional radiology in diagnosing tendon rupture, and also during orthopaedic surgery during tendon transfer.

Key words: Abductor pollicis longus, Extensor, Abductor brevis, Variations.

DAY 1 15th September 2023 (Friday)

ORAL 1

2.00-3.30 pm

Scientific Session 10

Study of pterion morphology and position to reappraise its neurosurgical significance using adult dry skull**Laavanya Gupta, Varsha Shenoy**

Department of Anatomy, Father Muller Medical College, Mangalore

Email: laavanya1kr@gmail.com

Background: Pterion is an important anatomical landmark on the lateral aspect of skull. Pterion is "H shaped" sutural area, where four skull bones namely frontal, parietal, temporal and greater wing of sphenoid bones meet. According to Murphy's classification pterion is classified as speno-parietal (SP), fronto-temporal (FT), stellate (ST) and epipteric (EP). Pterion is internally related to anterior division of middle meningeal artery, lateral sulcus of cerebrum and Broca's motor speech area. It is an important landmark used in practice by neurosurgeons, maxillofacial surgeons. Injury at pterion can rupture the middle meningeal artery resulting in extradural hematoma. This is drained by burr hole approach through pterion.

Aim:

- To study the prevalence of different morphological types of pterions according to Murphy's classification of pterion.
- To measure the distance of midpoint of pterion from fronto-zygomatic suture (PF) and midpoint of zygomatic arch (PZ).
- To measure the prevalence of low-high lying pterion ($PZ \geq 40\text{mm}$)
- To measure the prevalence of posterior pterion ($PF \geq 35\text{mm}$)

Methods: After obtaining institutional ethical clearance, 75 adult dry skulls with well-defined pterion sutures were included and skulls with fused sutures, damaged skull were excluded from the study. The skulls were studied for pterion morphology according to Murphy's classification. The morphometric data was collected using vernier callipers. PF and PZ distances were measured and tabulated.

Results: In the present study SP type of pterion was the most common (124 out of 150), this was followed by EP (20 in number) and FT (6 in number). PF measurement was found to be ranging from 28mm to 43 mm with an average value of 30.2 ± 4.4 mm. PZ measurement was ranging between 27-52 mm with a mean value of $39.05 \pm 3.92\text{mm}$.

Conclusion: SP variety was the commonest which was followed in frequency was EP type of pterion. Pterion location with respect to FZS and ZA is of clinical significance to neurosurgeons.

Key words: pterion, neurosurgery, burr hole

Morphometric and morphological evaluation of human navicular bone**Nandini R, Srinivasan, Suman Verma**

Department of Anatomy, JIPMER, Puducherry

Email: nandinirajaram11@gmail.com

Background: The composition of navicular joint complex is crucial to perform surgical interventions for multiple pathologic foot aetiologies. The data on human navicular bone and its facets from Indian population remain scarce in literature.

Aims and objectives: To evaluate the morphometry and morphology of navicular bone.

Methodology: A total of 77 (right-40; left-37) dried human navicular bones were used. The collected data was entered and analysed in SPSS software and results were represented as median and range in millimetre.

Results: The anteroposterior diameter on right side was 15.19 (13.92, 16.77) and left side was 15.87 (13.83, 17.27). The transverse diameter on right and left were 34.21 (31.74, 36.6) and 33.59 (30.23, 35.43) respectively. The vertical diameter measured on the right was 22.31 (21.19, 23.94) and left 22.53 (20.8, 24.24). Morphometric evaluation showed no significant difference between right and left navicular bones. The commonest shape for posterior facet was quadrilateral, on the right (62.5%) and left (40.5%). The most common shape of anterior facet for medial cuneiform is quadrilateral, on the right (85%) and left (89.1%). For intermediate cuneiform, triangular facet was common on the right side (72.5%) and on the left (59.5%). The lateral cuneiform facet was bean shaped on right side (72.5%) and quadrilateral on the left side (32.5%). There was a significant difference in shape distribution between right and left ($P < 0.05$). The median length of the groove for tibialis posterior tendon was 18.01 and 16.19 mm on right and left side, respectively. Cuboid facet was observed in 28 (70%) and 26 (65.9%) on the navicular bone on right and left sides, respectively.

Conclusion: There is no significant difference between right and left bones with regards to morphometric parameters. Morphological evaluation revealed significant difference in the distribution of shape between right and left bones.

Key words: Navicular bone, Morphology and Morphometry, navicular joint complex.

Estimation of Humeral Length by Anthropometric Measurements of its Proximal Segments

Niriksha B, Dr Vidya H K, Dr Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: bniriksha789@gmail.com

Background: Anthropometric examination of skeletal remains of long bones is important in medico legal investigations in the absence of pelvis or cranium to estimate the stature and the gender of the individual. Long bones such as humerus, radius and ulna can be considered. In many forensic situations, long bones are often encountered in different fragments due to the decomposition and mutilation. This poses a need to estimate the length of the long bone from the available fragments. In case of fracture of the proximal humerus, the contralateral head dimensions are used as template for making prosthesis in replacement surgery.

Aim: To estimate the length of the humerus by using its proximal segments measurements.

Materials and methods: the present study was approved by Institutional Ethical Committee. Present study was conducted on 130 fully ossified and processed dry humeri of unknown gender and age were collected from the skeletal sets of medical students from the Department of Anatomy, Siddaganga Medical College and Research Institute, Tumkuru. Humeri with no damage & deformities were selected and damaged & deformed bones were excluded. Various Parameters of the proximal segments were taken using vernier caliper and length of the humerus was determined. Various parameters such as a) Maximum length of humerus (MLH) b) Vertical diameter of head (VDH) c) Transverse diameter of the head (TDH) was measured. The data obtained were statically analyzed using IBM SPSS software, version 16. After obtaining mean and standard deviation association between the variables and the length of humerus was studied by simple linear regression analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: Humerus, Proximal fragments, Estimation of length, long bones.

Case Study on Nutrient Foramina of Femur in South Indian Population

Revathy R, Sumathi S, Priya Ranganath

Department of Anatomy, Bangalore Medical College & Research Institute, Bangalore

Email: revathyrpillai313@gmail.com

Background: Femur is the strongest and longest weight bearing bone in the human body. Adequate knowledge of blood supply and nutrient foramina of bone is essential to prevent complications in orthopaedic, plastic, reconstructive and microvascular surgeries.

Aims & Objectives: To study the morphological features of nutrient foramina of femur such as number, direction and position in South Indian population

Materials & Methods: The present study is conducted in 100 adult dry femur bones in department of Anatomy, Bangalore Medical College & Research Institute, Bangalore. The femur bones were examined for length, number of nutrient foramina & position of nutrient foramina

Results: The study shows mean femoral length of south Indian population as 42.47 +/- 2.78 (n=100). Nutrient foramina in femur is absent in 3% subjects. 48% having single, 46% double, 2% triple, 1% quadruple nutrient foramen. The location of nutrient foramina is predominantly seen on midshaft anteromedial surface. The direction of all nutrient foramina is vertically downwards

Conclusion: The adequate knowledge on the number, position, direction of nutrient foramina in the diaphysis of femur is essential to prevent the complications related to the trauma on the nutrient vessels during surgical procedures. The findings in this study will be helpful for various femoral surgeries like fracture treatment, bone grafting, and other microvascular surgeries of femur.

Keywords: femur, nutrient foramina, blood supply of femur

A Morphometric study of nutrient foramen in dry adult human humerus bone

Robert Justin Raj

Department of Anatomy, Mysore Medical College & Research Institute, Mysore, Karnataka

Email: jus2in@gmail.com

Background: Humerus is the bone of the arm & the longest bone of the upper limb. The main source of nutrition to long bone during growth & ossification is nutrient artery which passes through the nutrient foramen. The anatomical knowledge of these foramina is useful in certain operative procedures to preserve the circulation.

Methodology: The study was conducted on 100 dry adult human Humerus of both sides of unknown sex, collected from department of Anatomy, Mysore medical college & research institute, Mysuru, Karnataka. Total humerus length along with the location, number, and direction of all the nutrient foramen present were recorded. The bones were photographed & data obtained was tabulated, results noted and the inference was drawn.

Result: The nutrient foramina were observed in all 100 Humerus, single nutrient foramen in 92 bones, double nutrient foramen in 08 bones. The most common location of nutrient foramen was present on anteromedial surface, near its middle.

Conclusion: The anatomical knowledge of nutrient foramen is important for orthopaedic surgeons during surgical procedures such as fracture repair, bone reduction, external & internal fixation device & bone grafting.

Key words: Humerus, Nutrient foramen, Nutrient artery, Foraminal Index, Bone graft.

Morphometry of Cranial Sutures and their Anthropometric Significance

S. Gayathri, Vasudha Kulkarni phase

Akash Institute of Medical Sciences and Research Centre, Bengaluru

Email: kaira04sandy@gmail.com

Background: Cranial sutures are fibrous joints providing. The sutures fuse with age, the rate of fusion being variable with age and patterns. The morphology and morphometry of cranial sutures is helpful in estimation of age, sex, race and stature of an individual thus adding to medicolegal significance.

Aim: The present study aims at estimation of length of sagittal, coronal, lambdoid and maxillary sutures by applying Ascadi-nemeskeri scale ectocranially.

Methods: This cross-sectional study was done on 80 human skulls available in the osteology collection of department of anatomy. The lengths of sagittal, coronal, lambdoid and maxillary sutures were measured using a twine thread and Vernier calipers. The sutures were evaluated from 0 to 4 as per the Ascadi-Nemeskeri scale.

Results: The mean and standard deviation were estimated for all the variables. The simple linear regression model was formulated to predict sex using sutural lengths with accuracy of 80%. The association between the sutural lengths of sagittal, coronal, lambdoid and maxillary sutures were analyzed using multiple linear regression analysis.

Conclusion: The lengths of the cranial sutures provide meaningful information for estimation of age, sex, race and stature of an individual. The study contributes to the baseline anthropometric data with archaeological and forensic anthropological relevance.

Key Words: Sagittal, coronal, lambdoid, maxillary, sutures

Study of Morphometric and Morphological Features of Lower End of Femur

Sahana, Hema N, Seema SR

Department of Anatomy, ESICMC and PGIMSR, Rajajinagar, Bengaluru-560010, Karnataka

Email: sahanakinnigoli@gmail.com

Background: Femur is the thigh bone measuring about 45 cms in length. It plays a very important role in the transmission of body weight. The distal end of femur is enlarged to form medial and lateral condyles which forms knee joint. The lower end of femur is unique in the fact that the primary Centre for ossification appears at the time of birth or just before birth. It is of great medicolegal importance. The adductor tubercle also presents various variations, which also act as landmark to determine knee joint line position.

Aim:

- To measure the bicondylar width and thickness
- To measure the intercondylar width and depth
- To study the variations of Adductor tubercle and medial supracondylar ridge
- To record if there is any morphometric differences between the two sides

Methods: 50 dried specimens of Femur bone were studied from the Department of Anatomy. Measurements of lower end of Femur was done using digital Vernier Caliper. The variations of Adductor tubercle were also noted.

Results: The adductor tubercle showed various variations. The results were subjected to statistical analysis. Details will be discussed during presentation.

Conclusion: The knowledge about the measurements and variations of the lower end of femur is important for designing prosthesis during arthroplastic Knee surgeries.

Key words: Knee joint, Surgeries, Intercondylar notch, Adductor tubercle, Prosthesis

Skulls A Study of Variations in the Superior Orbital Fissure in 50 Human

Shreeadityaa S

Kempegowda Institute of Medical Sciences

Email: aadi161624@gmail.com

Background: Superior orbital fissure (SOF) is a bony cleft situated between the greater and lesser wing of sphenoid lateral to the body of the sphenoid. It transmits few important cranial nerves (III, IV and VI) and vessels.

Aim: To determine variations in the shape and dimensions of the SOF. This study will help in enhancing the existing knowledge about the SOF.

Method: After obtaining ethical clearance from IEC-KIMS, the first step involved collecting 50 dried human skulls, which were then labelled. Next step included measuring the superomedial, superolateral edge dimensions and the distance between the edges of the SOF using a Weber's compass and recording them on paper and then taking photographs of all the skulls studied. The various shapes of the SOF were then recorded.

Results:

1) Mean value: SIDE

MEAN VALUE

RIGHT SIDE LEFT SIDE

SUPEROMEDIAL EDGE

HEIGHT

5.4 mm 5.1 mm

SUPEROLATERAL EDGE

HEIGHT

1.9 mm 1.9 mm

DISTANCE BETWEEN SUPEROMEDIAL

AND SUPEROLATERAL EDGE

17.3 mm 17.3 mm

2) Types of shapes :

TYPE OF SHAPE FREQUENCY OF OCCURENCE

TYPE I 19 (20.21%)

TYPE II 8 (8.5 %)

TYPE III 30 (31.9%)

TYPE IV 3 (3.1%)

TYPE V 5 (5.3%)

TYPE VI 7 (7.44%)

TYPE VII 7 (7.44%)

TYPE VIII 6 (6.38%)

TYPE IX 4 (4.25%)

TYPE X 4 (4.25%)

TYPE XI 1 (1.06%)

Conclusion: Based on the study performed, 11 different shapes of the SOF were found among the 50 skulls. The most common type of shape seen was TYPE III. The mean value of the dimensions were also calculated and the results are as seen before.

Keywords:

- 1) Superior orbital fissure
- 2) Sphenoid
- 3) Cranial nerves 3, 4, 6

Anatomical Relationship of Pterygospinous Bar and Foramen Ovale

Sinchana Varna; Vasudha Kulkarni

Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru

Email: sinchanabs03@gmail.com

Background: Pterygospinous Bar (Civinian Bar) is an incomplete or complete bar of ossified ligament extending between spine of sphenoid and posterior border of lateral pterygoid plate. Foramen Ovale is a transit zone for intra and extra cranial structures. The anatomical relationship between Pterygospinous Bar and Foramen Ovale is of great surgical importance during percutaneous trigeminal rhizotomy, biopsy of cavernous sinus tumor and in the event of mandibular nerve block.

Aim: The aim of the present study was to establish the association between the pterygospinous bar and foramen ovale. The study also involved assessing the laterality of the relationship between foramen ovale and the pterygospinous bar.

Methods: We examined one hundred and thirty skulls in the department of anatomy at AIMS & RC out of which one twenty-five skulls were eligible. The anatomical relationship between Foramen Ovale and Pterygospinous bar was examined from the inferior view of the skull. The relationship was classified into four major types. Type I: Lateral, Type II: Medial, Type III: Direct and Type IV: Detached

Results: Among the one hundred and twenty-five skulls, it was observed that Type III was most common (46.2%), followed by Type IV (19.6%) and Type I (19.2%). The Type II (14.6%) was the least common. Among the skulls examined only 34.8 percentage of the skulls showed bilaterality, whereas 65.2 percentage of the skulls showed unilaterality.

Conclusion: The pterygospinous bar when incomplete can entrap the neurovascular structures and obstruct the surgical approaches to base of skull. For instance, the percutaneous approach for treating trigeminal neuroglia could fail in patients showing Type IV relationship as the pterygospinous bar is disconnected from Foramen Ovale. Hence the anatomical knowledge of such osseous bars is essential for neurosurgeons, anaesthetists, radiologists and dentists for diagnostic evaluation and surgical approaches to base of skull.

Key Words: Foramen Ovale, Pterygoid Process, Skull, Pterygoid Bar.

Morphometric study of Pterygomaxillary fissure in dry skulls & its clinical importance**Sneha. J.M, Rashmi C, Goshi Vidya. C.S**

Department of Anatomy, JSS Medical College, Mysuru, Karnataka, India

Email: snehaswathi98@gmail.com

Background: Pterygomaxillary fissure is located in medial aspect of infratemporal fossa and it is formed by the divergence of maxilla from pterygoid process of sphenoid bone. It connects the infratemporal fossa with pterygopalatine fossa, and transmits terminal part of internal maxillary artery & posterior superior alveolar nerve.

Aim: To measure the pterygomaxillary fissure height, width and distance from articular tubercle, zygomatic temporal suture and zygomatic bone.

Methods: 40 Dry human skulls were studied from Department of Anatomy, JSS Medical College Mysuru. The height, width at upper end of pterygomaxillary fissure and distance between upper part of fissure to articular tubercle of zygomatic arch (AB), zygomatico temporal suture (AC) & body of zygoma (AD) was measured using Digital Vernier Caliper on right and left side of skulls on different gender.

Results: The average height of pterygomaxillary fissure was 22.68mm in male & 22.34mm in female, width was 7.33mm in male & 7.22mm in female, distance from articular tubercle (AB) was 33.37mm in male & 31.79mm in female, zygomatic temporal suture (AC) was 36.91mm in male & 34.89mm in female, zygomatic bone (AD) was 29.88mm in male & 28.44mm in female. There is no statistically significant difference between right and left sides of the skulls.

Conclusion: This study has tried to locate the position of pterygomaxillary fissure from the three anatomical landmarks due to the fact that narrow fissures smaller than 2mm could limit the insertion of neurostimulator implants in pterygopalatine fossa therefore careful approach should be made to female and younger patients during surgery.

Keywords: pterygomaxillary fissure, morphometry, dry skulls, maxillofacial surgery.

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 1

Anatomical Study of Genicular Branches of Popliteal Artery

Swapnali Shamkuwar Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Center, Devanahalli, Bangalore

Email: drswapnalis@gmail.com

Background: Vascular network of knee joint is extensive and formed by five major arteries such as superior medial and lateral, middle, inferior medial and lateral genicular artery. These arteries arise directly from popliteal artery at multiple levels of knee joint. Anatomy of genicular arteries is complex and has many variants. Detail knowledge of these arteries is essential for various procedures like total knee replacement, genicular vascular grafting surgeries, diagnostic angiograms and genicular artery embolization

Aim: The current study aims at to investigate the location of origin, branching pattern and diameter of genicular vessels as well as to document the variants of it.

Methods: A cross sectional study was conducted on 35 dissected cadaveric knees. The diameter of each artery was measured using calibrated caliper. The order of the genicular arteries leaving from popliteal artery was observed and different types of branching patterns were also noted.

Results: The measured data will undergo statistical analysis and their significance will be discussed during the presentation.

Conclusion: Understanding of variant anatomy of genicular vessels is crucial for radiologists, orthopaedic and vascular surgeons to plan the procedure as well as to minimize the catastrophic complications while performing several procedure in the posterior part of knee joint

Key Words: Genicular Artery, branching pattern, Knee Joint, Genicular Artery Embolization

Case Report - Variation in the branching pattern of coeliac artery

Vidya K S, Rohini K R, Ashok KR

BGS Global Institute of Medical Sciences, Kengeri, Bengaluru, Karnataka

Email: dr.ksvidya@gmail.com

Background: Coeliac trunk is a short wide vessel arising from the ventral aspect of abdominal aorta at the level of intervertebral disc between T12 and L1 vertebrae. It passes horizontally forwards and to the right and terminates into 3 branches- left gastric artery, common hepatic artery and splenic artery. Left gastric artery – smallest branch moves towards cardiac end of stomach and gives esophageal, gastric branches. Splenic artery –largest branch which takes tortuous course to left along the upper border of pancreas and gives of pancreatic, short gastric and left gastroepiploic branches.

Common hepatic artery-moves towards right along the upper border of pancreas and gives proper hepatic and gastroduodenal arteries. Anatomic variations and presence of accessory vessels have been reported.

Case report: During routine dissection for UG students' variations in the branching pattern of celiac artery was observed in male cadaver aged about 50 years. Coeliac trunk arose normally from abdominal aorta and terminated by giving left gastric artery and a common hepatosplenic trunk. An accessory hepatic artery originated from the left gastric artery which entered the left lobe of liver.

Conclusion: Knowledge of celiac artery variations becomes important in surgical resection, transplantation and interventional procedures.

Keywords: Left gastric artery, coeliac trunk, hepatosplenic trunk

A study of origin of coronary arteries in human cadaveric hearts of South Karnataka region**Shashidhar K, K V Venkateshu**

Department of Anatomy, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar

Email: shashidhark@sduaher.ac.in

Background: The coronary arteries take origin from the aortic sinuses. The aortic sinuses are located in the initial portion of the aortic root, which presents the leaflets of the aortic valve. The aortic sinuses reach beyond the upper border of the cusp. These sinuses are named according to their position as the anterior, left posterior, and right posterior aortic sinuses. The right coronary artery originates from the anterior coronary sinus and the left coronary artery originates from the left posterior aortic sinus. Recently, anomalous origin of coronary arteries as a cause of coronary heart disease is gaining significance. This presents with significant clinical features, including sudden death, especially in young athletes.

Aim: 1. To identify the location of left coronary artery ostia and measurement of diameter of it. 2. To identify the location of right coronary artery ostia and measurement of diameter of it

Methods: Cadaveric heart specimens were dissected. The ascending aorta was divided at the origin and the location of the coronary artery opening at anterior and posterior aortic sinuses were identified. The numbers of opening were noted. The diameter of the coronary artery openings was measured using digital vernier calipers.

Results: The right coronary artery opening was located at a distance of 11.5mm from the right anterior aortic sinus. The mean diameter of the right coronary artery opening was 3mm. The left coronary artery opening was located at a distance of 10.4mm from the left posterior aortic sinus. The mean diameter of the left coronary artery opening was 4mm. There were no accessory openings.

Conclusion: The right coronary artery opening was located at a greater distance from the corresponding right aortic sinus compared with that of the left coronary artery arising from left aortic sinus. The diameter of left coronary artery opening was greater than the right coronary artery opening. The location of the coronary artery opening is important for interventional cardiologists before performing procedures like coronary artery bypass grafting, coronary angiography, coronary angioplasty. The diameters of the coronary artery ostia are also necessary for the above procedures. This study will throw light on the dimensions of coronary artery ostia and will be helpful for cardiologists to select the required catheter to perform interventional procedures on heart.

Key words: Coronary artery, ostia, aortic sinus

Absence of Palmaris Longus – A Variation with Applied Anatomical Implication**Uma B Gopal**

SDM College of Ayurveda, Hassan

Email: drumabgopal@sdmcahassan.org

Abstract: Palmaris longus (PL) is one of the superficial muscle of flexor compartment of fore arm. The muscle originates from common origin point, from medial epicondyle of Humerus and passes down, having usually small muscular belly and long tendon, through which it is inserted to apex of palmar aponeurosis and distal half of flexor retinaculum. During routine dissection it was observed that unilaterally in left forearm of female cadaver aged about 70 years, it was absent. The muscle helps in flexion of wrist. PL is an important consideration when performing Palmaris longus graft surgeries. In addition; surgical procedures performed in this region require accurate knowledge of the mean distance between the inter styloid line and the crossing of the median nerve with the palmaris longus tendon. It is noted that PL tendon may play an important role in the pathophysiology of carpal tunnel syndrome and forms strong independent risk factor for it.

Key words: Palmaris longus, variation, absence, tendon grafting, median nerve

A case study on the morphological variations of the thyroid gland

Drishya Surendran, Sanjeev Kumar, Trinesh Gowda MS

Department of Anatomy, Mandya Institute of Medical Sciences, Mandya

Email: drdrishyasuren496@yahoo.com

Background: The thyroid gland is a highly vascular endocrine gland, placed anteriorly in the lower neck. It consists of right and left lobes connected by a narrow, median isthmus. Common thyroid gland morphological variations are presence of pyramidal lobe, levator glandulae thyroideae, Zuckerkandl tubercle, agenesis of any lobe or isthmus and accessory thyroid gland. Knowledge of the morphological variations of thyroid gland is essential for any surgical procedures and radiotherapy for disorders of the thyroid gland.

Aim: To describe the gross morphological features of the thyroid gland and their variations.

Materials and Methods: The present study was conducted in the Department of Anatomy, MIMS, Mandya on 40 thyroid glands collected from the autopsy cases of all ages of both sexes from the Mortuary of MIMS, Mandya. Fine dissection was done in the neck region of the autopsy cases to expose the thyroid gland. The morphological variations were observed and photographed. The weight of the thyroid gland was also measured using electronic singlepan weighing balance.

Results: Out of the 40 specimens studied, presence of pyramidal lobe was the most common anomaly observed, followed by presence of levator glandulae thyroideae, agenesis of isthmus, agenesis of lateral lobe and presence of Zuckerkandl tubercle. The average weight of thyroid gland was found to be 13g in males and 12g in females.

Conclusion: The knowledge of variations in the morphology of thyroid gland is important in avoiding the complications during surgical procedures involving the thyroid gland. Hence, such studies are of paramount importance for proper detection and documentation prior to any thyroid gland surgeries so that iatrogenic catastrophe can be avoided.

Keywords: Absent isthmus, levator glandulae thyroideae, pyramidal lobe, Zuckerkandl tubercle.

Caspase 3 and HSP90 Expression in Oligoasthenospermic patients after semen processing and Cryopreservation

Sivaraja Ganesan B^{1,2}, Sumathy G³

¹ CSI College of Dental Sciences and Research, Madurai, Tamil Nadu

² Bharath Institute of Higher Education and Research, Chennai, Tamil Nadu

³ Sree Balaji Dental College and Hospital, Chennai, Tamil Nadu

Email: ganesan.sivaraja8@gmail.com

Background and Introduction: One of the main causes of male infertility is oligoasthenospermia, which is characterized by low sperm count and decreased motility. The semen processing and cryopreservation processes used in assisted reproductive procedures might affect the quality of the sperm. Sperm function depends heavily on the chaperone protein HSP90 and the death marker caspase 3. Examining their cryopreservation and expression postprocessing might reveal new information on fertility preservation and potential treatments for oligoasthenospermic patients.

Objective: The objective here is to determine the Caspase 3 and HSP90 expression in oligoasthenospermic patients after semen processing and cryopreservation and explore the findings.

Method: Fifty semen samples were collected and processed using methods of swim-up, density gradient, and magnetic-activated cell sorting method. The sample was then cryopreserved for three months and then thawed. RNA isolation and cDNA synthesis RT-PCR was carried out. The agarose gel electrophoresis was used and the caspase 3 and HSP90 expression was found.

Result: In the Oligoasthenospermic sample, HSP-90 expression in the DGs group showed a significant elevation ($P < 0.001$) than SUs and MACSs groups. And in the MACSs sample, the HSP-90 level was downregulated compared to SUs and DGs groups. Caspase 3 expression showed a significant reduction ($P < 0.05$) in the DGs group compared with SUs and MACSs groups. But in the MACSs sample, Caspase 3 level was noticeably elevated than the SUs and DGs groups.

Anatomical variations in the labial branches of facial artery in face

Veeresh, Jyotsna, Mamatha Hosapatna

Department of Anatomy, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India 576104

Email: hanchinalveeresh000@gmail.com

Background and objective: The anatomical knowledge of facial artery and its labial branches are important in maxillofacial surgeons to plan for reconstruct facial injury which involves facial artery, aesthetic procedure in dermatology, embolization in facial tumor treatment, cosmetic procedure which involves neurotoxin or filler injection and knowledge of position of superior and inferior labial artery within upper and lower lip is helpful in application of volumizing materials. The knowledge of artery in this region will minimize the risk to patient.

Material and method: Study was conducted on 30 formalin fixed hemi faces of unknown sex adult cadavers and dissected. facial artery and its labial branches are topographically measured from cheilion, and gonion with Vernier caliper.

Result: The average distance between facial artery to gonion and facial artery to cheilion is 2.18 ± 0.36 cm and 1.4 ± 0.32 cm respectively. The average vertical and horizontal distance between superior labial artery and cheilion is 0.7 ± 0.40 cm and 0.92 ± 0.57 cm respectively. average vertical and horizontal distance between inferior labial artery and cheilion is 1.87 ± 0.45 cm and 1.81 ± 0.54 cm respectively. Superior labial artery presents three distribution patterns in this study: in 73% superior labial artery and alar branch arise directly from facial artery (type 1); in 6.6% arise directly from facial artery and gives an alar branch (type 2); in 20% considered as terminal branch (type 3).

Conclusion: Study shows variation in facial artery terminal branches as well as variation in labial artery origin. this data helps practitioner to prevent unnecessary damage during surgical procedure.

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 2

An anatomical study of para-nasal sinus ostia and its clinical relevance

Raghavendra A Y, Tejas Manjesh

S.S. Institute of Medical Sciences & Research Centre, Davangere

Email: raghav4n72@gmail.com

Introduction: Infection or blockage in sinus can block the nose producing infected mucosa down the back of the nose into the throat. Knowledge of normal Anatomy is mandatory for accurate diagnosis of Sino nasal pathology. The most frequent anatomical variants should be identified to decrease the risks of surgery. The endoscopic sinus surgeons must have a detailed knowledge of inconsistent location of maxillary sinus openings in any interventional maxillary sinus surgeries as it relates to the orbital floor, ethmoid infundibulum and the nasolacrimal duct. Functional endoscopic sinus surgery (FESS) is the most commonly used technique in present times. FESS requires precise knowledge of detailed anatomy, the operating surgeon's ability to interpret precisely the para nasal sinus location and experienced procedural surgical skills. This study is aimed at determining the average distance of para-nasal air sinus Ostia in the cadaveric specimens.

Methodology: Forty bisected halves of the formalin fixed adult human head and neck specimens were procured from the Department of Anatomy. The anterior part of the skull will be dissected in the midline and then entire nasal septum was removed taking care not to damage the ostiomeatal components, Middle concha was trimmed to view the relationship of structures within the middle meatus. The specimens were washed in normal saline. Coloured probes were used to identify and indicate the sinus ostia. The PNS Ostia were identified separately and distribution pattern was noted. Average distance of PNS Ostia from anterior nasal spine (ANS) was determined by using Jobson Horne probe. Data was assessed with SPSS software for final results.

Observation & Results: In the present study the mean distances of the ostia were noted from ANS. The mean distance of frontal, anterior, middle & posterior ethmoidal, maxillary and sphenoid sinus ostia were 3.9cm, 4.0cm, 4.3cm, 4.5cm, 5.1cm and 5.7cm respectively. Many variations were also found like enlarged bulla, accessory ostia.

Conclusion: The principal aim of this study was to locate the sinus opening from an accessible bony landmark. This has variety of applications ranging from diagnostic endoscopy to surgery. The results of the study showed minimal variation among both sexes and literatures.

Study of variations in the course of brachial artery: A cadaveric study

Raghavendra D R

Shridevi Institute of Medical Sciences and Research Hospital, Tumkur, Karnataka, India

Email: dr.raghavendra18@gmail.com

Background: Brachial artery begins as a continuation of axillary artery at the distal border of teres major, runs downward at first medial to the humerus and then inclines to lie in front of the bone until it appears in the cubital fossa, where it ends at the level of the neck of radius by dividing into radial and ulnar arteries.

Objectives: To know the variations in the course of brachial artery.

Methods: Dissection was done on 40 upper limbs from embalmed adult human cadavers in the Department of Anatomy, Kamineni Institute of Medical Sciences, Narketpally. Dissection of Brachial artery was carried out according to Cunningham's manual of practical anatomy.

Results: In all 40 specimens (100%), the brachial artery begins at the inferior border of the teres major muscle as the continuation of the axillary artery. In 37 specimens (92.5%), single brachial artery (BA) was present in the arm. It runs inferiorly on the medial side of the biceps brachii muscle to the cubital fossa. It divides into the radial artery (RA) and ulnar artery (UA) opposite the neck of radius at elbow. In 3 specimens (7.5%), doubling of the brachial artery in its course was observed. In these specimens, the brachial artery was divided into two divisions in the arm. Both divisions run inferiorly on the medial side of the biceps brachii muscle to the cubital fossa. In these two divisions, one lies superficial to the median nerve and was called the superficial brachial artery (SBA) and other division continues as the brachial artery proper (BAP). In all these 3 specimens (7.5%), the superficial brachial artery (SBA) continued as the radial artery (RA) and brachial artery proper (BAP) continued as the ulnar artery (UA) in the cubital fossa.

Interpretation and Conclusion: The present study is important for Surgeons, Orthopedicians, Vascular surgeons, Clinicians and Anatomists as it provides the knowledge of variations in the course of brachial artery in the arm and cubital fossa.

Key Words: Brachial artery, Superficial brachial artery, Cubital fossa. Radial artery

Dwarf Kidneys -A case report

Roshni Sadashiv, Vinay Kulkarni, Aamna Kausar, Parineetha SS, Veena Kulkarni

Shri Dharmasthala Manjunatheshwara College of Medical Sciences and Hospital, SDM University, Dharwad, Karnataka, India

Email: drroshnisadashiv@gmail.com

Background: Small-sized kidneys or dwarf kidneys are attributed for several reasons. It could be congenital such as renal hypoplasia or in adult life due to kidney disease. We were curious to know the cause of bilateral small kidneys observed in an elderly woman who donated her body to the Institutional Department of Anatomy.

Aim: We aimed to understand the morphology of the kidneys and review the literature on small-sized kidneys.

Methods: During the routine dissection course, small-sized kidneys were observed in a cadaver of a 75-year-old woman belonging to the North Karnataka belt of Indian origin. The kidneys were subjected to grossing and histopathological assessment.

Results: The kidneys weighed 46 grams each. The right kidney measured 5×3×1.4 cm. The left measured 5×3.7×1.5 cm. Cysts were observed. Microscopy revealed diffuse atrophy of the cortex with sclerosed glomeruli.

Conclusion: In the current case scenario, atherosclerotic changes were noticed in the aorta and vascular dilatations within the kidney. Histopathological Report indicated a case of Bilateral chronic pyelonephritis. The case report further discusses the causes of small-sized kidneys' altered morphology.

Keywords: Kidney, Hypoplasia, Atrophy, Bilateral

Morphological Variation of liver and its clinical importance

Sangeetha V

Department of Anatomy, Basaveshwara Medical College and Hospital, Chitradurga

Email: sangeethavelu097@gmail.com

Background: Liver is the largest abdominal viscera located in right hypochondrium, epigastrium and left hypochondrium in the abdomen proper. The present study helps radiologists in diagnosis and surgeons in preventing undue surgical complication. The cause for morphological variation of liver is embryological in origin.

Aim: To determine gross anatomical variations of liver and its clinical importance.

Materials and methods: A total of 30 formalin fixed cadaveric livers irrespective of the age, gender studied in the Department of Anatomy, Basaweshwar Medical College and Research Hospital, Chitradurga, Karnataka. Morphological variations were found in 22 livers. The preserved normal livers were studied under day light and photos were taken.

Results: In the present study, out of 30 liver specimens, variations were observed in 22 (73.3%) specimens. Accessory fissures were seen in 16 (53.3%) specimens, elongate left lobe in 2 (6.6%) specimens and lingular projection of left lobe in 2 (6.6%) specimens. Pons hepatis, which is a bridge of tissue connecting the quadrate lobe and the left lobe was observed in 1 (3.3%) specimen. Hypertrophied papillary process was present in 1 (3.3%) specimen.

Conclusion: The present study concludes the incidence of morphological variations of the liver is common. Hence such knowledge is essential for an anatomist to know about such variation which helps the radiologist in diagnosis, for surgeons and gastroenterologist to prevent undue complications while operating.

Key Words: Liver morphology, accessory fissures and lobes.

Anatomic Evaluation to Compare the Dye Spread with Ultrasound - Guided Pericapsular Nerve Group (PENG) Injection with or Without an Additional Suprainguinal Fascial Iliaca (SIFI) Injection in Soft Embalmed Cadavers

Sandeep Diwan, Shivaprakash S, Pushpalatha K, Manjunath H N

1) Department of Anaesthesiology, Sancheti Hospital, Pune

2) Department of Anatomy, JSS Medical College JSSAHER, Mysuru

Email: shivaprakash.sps@gmail.com

Background: Novel interfascial plane blocks like Pericapsular Nerve Group (PENG) and Suprainguinal Fascia Iliaca (SIFI) blocks are effective for management of hip fracture pain.

Aim: To compare the difference in the distribution of the dye injected and nerves stained by the addition of the SIFI block to the PENG block.

Methods: A total of 24 designated dye injections was performed in eight soft-embalmed cadavers. Under ultrasound guidance 20ml green ink injected bilaterally in PENG block and 30ml methylene blue dye was injected in SIFI block on the right side. The cadavers were dissected 24 hr later to assess the extent of dye spread.

Results: Extensive spread of dyes was seen on both side of iliocostalis muscle on the right side, but blue dye was not visible medial to psoas tendon. The subcostal and iliohypogastric nerves were stained green in the infra-inguinal region. On the left side (PENG alone), the anterior division of the Obturator nerve, Femoral nerve, Saphenous nerve (7/8) and iliohypogastric nerves (3/8) were stained in infra-inguinal region. In the supra-inguinal region, Femoral nerve (5/8), Accessory obturator nerve (3/8), Lateral Femoral cutaneous nerve (1/8) and nerve to rectus femoris (4/8) were stained. The main Obturator nerve trunk was spared with both injections while its anterior branch and accessory obturator nerve were stained with the PENG injection.

Conclusion: The study findings indicate that combined PENG + SIFI injections lead to an extensive craniocaudal and longitudinal spread along the iliocostalis muscle bilaterally. We perceive that the combination of these two injections will have a superior clinical outcome.

Keywords: PENG, SIFI, Ultrasound

Morphometry of Accessory head of Flexor pollicis longus – A Cadaveric study

Shwetha. K, Pushpalatha K

Department of Anatomy, JSS Medical College, Mysuru

Email: shwethajagannath85@gmail.com

Introduction: The flexor pollicis longus is one of the deep muscles of the flexors of the forearm. Sometimes an extra head arises from the coronoid process of the ulna which is known as the accessory head of flexor pollicis longus (AHFPL) also known as Gantzer's muscle. The present study was conducted to know its morphology and morphometry with its clinical importance.

Aim: 1. To estimate the occurrence of the muscle 2. To analyze the morphometry of the muscle

Method: The study was conducted on 50 upper limb specimens (25 right and 25 left) of either sex, fixed in 40% formalin collected from the Department of anatomy, JSS medical college, Mysore. The forearm was dissected, the deep group muscles were exposed and the flexor pollicis longus muscle was studied, any extra head if present its shape, origin, insertion, nerve, and blood supply was noted, then its muscular and tendinous length and breadth was measured using the digital Vernier Caliper.

Result: Among 50 specimens accessory head was present in 14 (28%) specimens. The most common origin was from the medial epicondyle, less common was from the coronoid process. All were inserted to the tendon of the flexor pollicis longus. All were innervated by the anterior interosseous nerve. The length was ranging from 8.2 cm to 15.1 cm. The thickness was ranging from 2.1 cm to 8.8 cm.

Conclusion: The accessory head of flexor pollicis longus is not a rare occurrence. The anatomical knowledge of this variation plays an important role in diagnosing and surgical intervention of nerve entrapment syndrome like anterior interosseous nerve syndrome.

Keywords: Accessory head, nerve entrapment, anterior interosseous nerve

A radiological and cadaveric study on the anatomy of the Sapheno-popliteal junction, its variations and implications

Sreya Bheemesh, Bala, Hema N, Seema SR

Department of Radiology and Anatomy, ESIC Medical College and PGIMSR, Rajajinagar, Bengaluru, Karnataka-560010

Email: bheemeshsreya@gmail.com

Background: The small saphenous vein (SSV) is a superficial vein in the lower limb which begins behind the lateral malleolus as a continuation of the lateral marginal foot vein. It ascends the posterior aspect of calf and frequently terminates at the popliteal vein in the popliteal fossa to form the "Sapheno-popliteal junction" (SPJ). The SSV sometimes also joins deep veins at a higher level through a cranial extension called Thigh Extension (TE) or joins Great Saphenous vein (GSV) via Giacomini vein. SSV passes between the heads of gastrocnemius and is present within a fascial compartment which gives it an "Egyptian eye" appearance in transverse ultrasonography. There have been attempts at classifying the different types of SPJs. Cavezzi classified SPJs into 3 categories. Duplex ultrasound investigation has become the reference standard in assessing the morphology and haemodynamics of the SSV and SPJ.

Aim: To study the morphology and types of Sapheno-popliteal junction, prevalence of each type and report any variations if present, in a group of patients with varicose veins.

Methodology: Ultrasonography method of examination and cadaveric study.

Results: The variations will be discussed in detail during the presentation.

Conclusion: More clarity on the prevalence of common types of SPJs will help doctors identify the vein anatomy quickly during routine examinations.

Key Words: Small Saphenous vein, popliteal vein, SPJ, Giacomini vein, thigh extension, saphenous compartment

A cadaveric study on tortuosity of the cervical segment of the internal carotid artery

Supraja Srivatsava, Jija Varghese, Gowri Mahasampath, Suganthy Rabi

Department of Anatomy, Department of Biostatistics, Christian Medical College, Vellore, India

Email: suprajamed@gmail.com

Background: The cervical segment of the internal carotid artery (c-ICA) is conventionally described to have a straight course from its origin to its entry at the carotid canal. Tortuosity of the c-ICA has garnered interest as the artery plays a crucial role in the anterior circulation of the brain.

Aim: To determine the incidence of c-ICA tortuosity and its types and correlate with gross parameters related to the c-ICA.

Methodology: The presence, type and grade of c-ICA tortuosity and the level of division of the common carotid artery (CCA) were studied in 40 cadaveric specimens. The diameters of the CCA at bifurcation and c-ICA at origin were measured and analyzed.

Results: Of the 40 specimens (23R, 17L), c-ICA tortuosity was present in 18 specimens (45%). Of these, 11 showed C & S-shaped tortuosity (61%), 5 showed kinking (28%) and 2 showed coiling (11%). The CCA divided at the level of the upper border of the lamina of thyroid cartilage in 8 (20%), below that in 1 (2.5%), between the thyroid cartilage and body of hyoid bone in 3 (7.5%), at the level of hyoid bone in 15 (37.5%) and above the hyoid bone in 13 (32.5%) specimens. The diameter (in mm) of the CCA and c-ICA were 33.28 (± 4.86) and 27.84 (± 5.17), and 25.42 (± 4.73) and 21.49 (± 4.79) in specimens with and without tortuosity respectively. The p-values for the difference between the corresponding values were 0.0015 for CCA and 0.01 for c-ICA.

Conclusion: c-ICA tortuosity was present in nearly half the samples studied, with C and S shaped being the most common type of tortuosity. c-ICA tortuosity was not related to laterality and level of division of CCA. The diameters of the CCA and c-ICA were significantly higher in specimens with tortuosity, indicative of vessel wall remodeling.

Key words: Internal carotid artery, cervical segment, tortuosity

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 4

Morphometric Analysis of Anterior Cruciate Ligament of Knee: A Cadaveric Study

Pranavi Poddar, Rohini Punja

Department of Anatomy, Kasturba Medical College, Manipal, Manipal, Manipal Academy of Higher Education

Email: pranavi.poddar@gmail.com

Background: The anterior cruciate ligament (ACL) tends to stabilize the knee in various ranges of extension and flexion. The precise anatomy of the anteromedial and posterolateral bundle is important for successful ACL reconstruction.

Aim: In the present study, we attempt to assess the length of anteromedial and posterolateral bundles of ACL and determine changes seen in the same during the flexion of the knee joint.

Method: 20 embalmed and formalin fixed knee joint specimens from the Department of Anatomy, Kasturba Medical College, Manipal, were used in this study. The length of both anteromedial and posterolateral bundles of ACL was studied. Thereafter the relative length of ACL bundles at 0°, 90°, and 140° angles of knee flexion was measured using a digital Vernier caliper.

Result: Mean and standard deviation values of AM bundle at full flexion, 90°, and full extension are 29.7mm ± 5.63, 25.1mm ± 4.27, 16.5mm ± 5.37, and of the PL bundle at full flexion, 90°, and extension are 17.2 mm ± 3.28, 14.15mm ± 3.08, 11.4mm ± 2.81.

Conclusion: Anteromedial and posterolateral bundles were found to be most relaxed at full extension and were most taut at maximum flexion of 140°. The anteromedial bundle underwent greater stretching and change of length in comparison to the posterolateral bundle, indicating that it is comparatively the more dominant bundle.

Keywords: arthroscopy, knee joint, cruciate ligament, ACL tear, sports injury

Palm Crease Analysis In individuals with Different Blood Groups

Prateek Manjunath, Thejashwari H G, Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: prateek.manish.07@gmail.com

Background: This study aims to investigate the relationship between palm creases and blood groups, exploring the possibility of utilizing palm crease analysis as a non-invasive method for personalized health assessment. Blood groups, categorized into A, B, AB, and O, have been linked to various physiological characteristics and susceptibility to certain diseases. However, limited research has explored the potential connection between blood groups and palm creases. This study seeks to fill this research gap by conducting a comprehensive analysis of palm creases in relation to blood group types.

Aim: To analyse the palm creases of individuals with different blood groups.

Materials and methods: The present study was approved by Institutional Ethical Committee. The study was presented on 72 1st year mbbs students of Siddaganga Medical College And Research Institute. The study was performed on both genders, who knew their blood group. The materials used for the study A4 size sheet, Black colour Stamp Pad (of a standard brand), magnifying lens, needle and high resolution photos of palm. Palms with deformities such as permanent scars, birth defects, burns, or disease were excluded. **Study Procedure:** The palm and the palmar surface of the finger were then fully dabbed with black standard ink. Then the ink was uniformly spread over the palm and fingers including the hollow of the palm. Then the uniformity of the ink was thoroughly examined, if certain areas were left out, ink was spread into that area using cotton balls. Firstly, the

right hand was pressed from proximal to distal side. Then, the hand was lifted from the paper from distal to proximal aspect. The same procedure was repeated on the left side. The sheets were immediately encoded with name, age, sex and groups. The prints were then subjected to detailed dermatoglyphic analysis. The analysis was then done with magnifying hand lens and the ridge counting was done with a sharp needle. Data will be analysed using IBM SPSS (version 16) for statistical analysis.

Results: Result will be discussed during presentation

Keywords: Palm creases, Blood group

Morphometric and morphological profiling of spleen variability

Rhea M, Hema N, Shivapriya, Seema SR

ESIC Medical College & Post Graduate Institute of Medical Science and Research, Rajajinagar, Bangalore

Email: rehanajinnah0712@gmail.com

Background: The spleen is a highly vascular wedge-shaped organ situated in the left hypochondrium of the abdomen. It is a part of the reticuloendothelial system and crucial for hematopoiesis in foetal life. Morphologically, it shows many variations in size, shape, impressions, and number of notches. These notches are due to the incomplete fusion of embryonic splenunculi. Understanding these variations is imperative in diagnosing and treating various disorders.

Aim: To morphometrically analyse the dimensional and anatomical variations in cadaveric spleens of the Southern Karnataka region.

Methodology: This study was conducted on 40 formalin-fixed human spleens of both sexes in the Department of Anatomy, ESIC Medical College and PGIMSR, Bengaluru. A vernier caliper was used to measure the spleens' dimensions. Specimens were weighed on an electronic weighing scale. Anatomical variations in the borders, poles, impressions and number of notches were meticulously noted. The data was tabulated in MS-Excel and analysed using SPSS software.

Results: In our study, the length, breadth, and thickness ranged from 7.43-12.057cm, 4.028-10.71cm and 2.601-8.014cm respectively. The average weight was 160.45gm. The spleens were classified as tetrahedral, oval, wedge-shaped, triangular, and irregularly shaped. The number of notches on the superior and inferior borders showed intriguing variations. The variations found and their clinical and embryological relevance will be discussed in depth in the presentation.

Conclusion: The study solidifies the fact that the spleen is variable in shape and size. Proper knowledge of these variations is pivotal to surgeons, radiologists and anatomists to distinguish morphological and morphometric variations from splenic damage for appropriate diagnosis, surgeries, and transplantation.

Keywords: Spleen, notches, morphometric, cadaveric, splenunculi.

A Cadaveric Study on Morphology of Fossa Ovalis

Saasha Sanjiv Desai, Agamdeep Singh Bedi, Dharmil, Chetan Shah, Shilpa M Bhimalli

Department of Anatomy, Kahr's J.N. Medical College, Belagavi

Email: saashadesai@gmail.com

Background: The heart is a hollow muscular organ in the middle mediastinum, enclosed within the pericardium. The human heart has four chambers: right and left atria and right and left ventricles. An interatrial septum lies between the two atria and an interventricular septum lies between the two ventricles. The interatrial septum, developmentally, is derived from septum primum and septum secundum. It presents the fossa ovalis, a shallow depression, representing the site of embryonic septum primum. The annulus ovalis is the margin of fossa ovalis and represents lower free edge of septum secundum.

Aim: Study of fossa ovalis over 60 human cadaveric hearts denoting parameters such as fusion with annulus, transverse and vertical diameters and presence of probe patency if any.

Methods: 60 formalin-fixed human cadaveric hearts of both sexes were collected from Dept. of Anatomy, KAHER's J.N. Medical College, Belagavi. Visceral pericardium and subepicardial fat were removed. Right atrium was dissected, and the vertical and transverse diameters were measured with a Vernier Calliper.

Results: On noting the measurements, the average transverse diameter was found to be 18.6 and the average vertical diameter was found to be 15.5. All the hearts were found with a fused septum. Superior notch found in 24 hearts (40%). Out of 60 specimens, probe patency was found in 4 hearts (6.6%).

Conclusion: The interatrial septum is of clinical significance for atrial septal defects like ostium primum defect, ostium secundum defect and patent foramen ovale. Thus, a study over the morphometrical characteristics of the fossa ovalis can help anatomists, clinicians and surgeons in further intervention regarding choice of treatment and surgical method.

Keywords: Interatrial septum, probe patency

Morphometry of Tibial Collateral Ligament and its Clinical Aspects

Sahiti Aggarwal, Chandni Gupta

Department of Anatomy, Kasturba Medical College, Manipal, 576104

Email: aggarwalsahiti@gmail.com

Background: The tibial collateral ligament is responsible for the stability of the knee joint. The ligament by virtue of its length and attachments is prone to damage. The tibial collateral ligament is a triangular band extending from the medial epicondyle of femur distal to adductor tubercle to the medial surface of the shaft of tibia.

Aim: The aim of the cadaveric study is to find the length, width at origin, insertion and at medial condyle of tibia, and its length from the medial condyle of tibia to its insertion at tibia.

Material And Method: The study is done on 25 cadaveric specimens, the length of the tibial collateral ligament is measured from origin to insertion, width of the tibial collateral ligament is measured at its origin, insertion and medial condyle of tibia, and distance from medial condyle of tibia to insertion. All measurements are done using vernier callipers.

Result: According to the study done on tibial collateral ligament, the average length of the ligament is 133.24 ± 5.57 , the width at origin is 14.6 ± 2.17 , the width at insertion is 12.92 ± 2.68 , the widest breadth at medial condyle of tibia is 33.72 ± 3.53 , and the distance from medial condyle of tibia to insertion is 76.52 ± 3.96 .

Conclusion: These results help determine the role of tibial collateral ligament in maintaining the stability of knee joint. This information will be helpful in knee joint surgeries related to the tibial collateral ligament and its reconstruction.

Key words: Tibial Collateral Ligament, Knee Joint, Anatomy

A Cross Sectional Study to Correlate Placental and Fetal Liver Morphometry in 2nd and 3rd Trimester Ultrasound Findings

Sapna.D, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru

Email: sapnadjatt@gmail.com

Background: The global prevalence of Low Birth Weight(LBW) is 14.6% accounting for 25 millionLBW infants born every year. More than 50% of LBW infants born in India are attributed to IntrauterineGrowth Retardation(IUGR). Liver is the severely affected organ in IUGR fetus. Evaluating placental dimensions and grading is of importance as it has an association with the growth of fetal liver. Limited consummate nomograms have been computed by making an inter-relational study between placental morphometry and fetal liver dimensions.

Aim: The purpose of the study was to identify whether association between placental morphometry and fetal liver dimensions be used as an application in evaluation of fetal growth in cases of intrauterine growth restriction.

Methods: A prospective observational study was done on 70 normal ultrasonographic findings at 2 nd and 3 rd trimester primigravida and multigravida pregnancies. Placental thickness, position of placenta, cord attachment, placental grading(cotyledons), fetal liver dimensions. The normal morphology and the variations observed were recorded.

Result: The mean values of variables with Standard deviation were computed for gestational age from 15 weeks-40 weeks. Multiple linear regression analysis was applied to establish relationship between gestational age, liver length and placental morphometry. Predictive values for 5 th ,50 th ,90 th percentile ranges of placental thickness, placental grading and fetal liver length were constructed. P values less than 0.05 was considered as statistically significant.

Conclusion: The placental thickness less than 25 mm in the third trimester indicated IUGR. Placental thickness greater than 45 mm was associated with maternal comorbidities like diabetes, hypertension or fetal anomalies such as hydrops fetalis. Anterior placenta was associated with a greater risk of pregnancy-induced hypertension, gestational diabetes mellitus and placental abruption, while posterior placenta had a significant association with preterm labour. Placentas that were less than 29 mm thick at 32 weeks and 31 mm thick at 36 weeks were related to higher morbidity.

Key Words: Fetal Liver length, Placental Thickness, Intrauterine Growth Retardation.

Morphometric Study on Lateral Sulcus (LS): A Cadaveric Study

Sarthak Pandey, Rohini Punja

UG Student, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Email: pandeysarthak70@gmail.com

Background: The LS, is also called as Sylvian fissure, is a prominent and deep fissure in the brain that separates the temporal lobe from the frontal and parietal lobes. It is one of the major landmarks on the lateral surface of the cerebral cortex. The LS plays a crucial role in demarcating the temporal lobe from the adjacent frontal and parietal lobes. The LS is of particular significance due to its association with the Broca's functional areas and structures within the brain.

Aim: The aim of this cadaveric study is to determine the morphometry and the relative distance of LS from different important landmarks of the brain like frontal pole, occipital pole, central sulcus on the medial surface, parieto-occipital sulcus, lunate sulcus.

Material And Method: The study was performed on 20 cadaveric brain [sagittal section] specimens. Some of the morphometry studied are distance of frontal and occipital pole to the point of intersection of central sulcus, length of anterior ascending, anterior horizontal, posterior ramus and stem, distance of lunate and parietooccipital sulcus to posterior ramus and angle of Broca's area.

Result: The mean length of anterior descending limb is 2.865 ± 0.424 cm, length of posterior ramus is 7.975 ± 0.141 cm. Other results have also been tabulated.

Conclusion: The importance of this study is to determine the morphometry and the relative distance of LS from different important landmarks of brain. Helpful during brain surgeries like treatment of certain neurological disorders, brain tumours, or epilepsy.

Keywords: Lateral Sulcus, frontal pole, morphometry, brain surgery.

Variations in carrying angle among male and female students studying at medical college

Satyam Vastrad, Shwetha B, Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: satyamvastrad@gmail.com

Background: The carrying angle is defined as the acute angle made by the median axis of the arm and that of the fully extended & supinated forearm & thus it measures the lateral obliquity of the forearm. The role of carrying angle in sex determination & its cause of formation is a long-debated issue in Anatomy & Anthropology. The axis of the elbow joint is set obliquely at nearly 84° of both the humerus & ulna. Obliquity of trochlea to the shaft of the humerus is the cause. The angle is formed as a result of trochlear groove being vertical anteriorly but on the posterior aspect it runs obliquely distally & laterally. This study will help us to find whether there is any significant difference in carrying angle in males and females.

Aim: 1. To measure the carrying angle in male and female students studying at Medical Colleges. 2. To study the variations in carrying angle between male and female students studying at Medical Colleges.

Materials and methods: The present study was approved by Institutional Ethical Committee. The study was conducted on 385 arms (2 of each student) of students studying in Siddaganga Medical College and Research Institute. The arm of the subject which had a fracture of the elbow or any deformities in the elbow joint was excluded. Carrying angle was measured by a manual goniometer with two drawing axes of the arm and forearm. Data was analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: carrying angle, arm axis, forearm axis

Study of Distinctive Vascular Supply of Head and Neck

Saurav Arora, Arathy, Hema N, Seema SR

Department of Anatomy, ESIC Medical College and PGIMS, Bengaluru

Email: arorasaurav89@gmail.com

Background: The subclavian artery is the principal artery of the upper limb. Arising posterior to the sternoclavicular joint, it originates from the brachiocephalic trunk on the right and the arch of aorta on the left. It terminates as the axillary artery once it reaches the lateral border of 1st Rib. Embryologically, it derives from the right 4th aortic arch, part of dorsal aorta below ductus caroticus along with 7th cervical intersegmental artery, whilst on the left side from the 7th cervical intersegmental artery only.

Aim: To study and assess the peculiar branching pattern of the blood vessels and to correlate with the development patterns and frequency of variation.

Methods: This study was conducted on 12 formalin fixed adult cadavers dissected bilaterally during gross anatomy teaching, gathering a specimen size of 24.

Results: In the present study, we were able to procure a striking variant along with additional alterations, with an ambiguous course of the subclavian artery and disparate origination of the vertebral artery.

Conclusion: These variations and investigations are of great utilization and to be kept in mind amidst vascular surgeries in the head, neck and thorax region.

Keywords: Subclavian artery, vertebral artery, costocervical trunk, variations, vascular surgeries.

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 5

The Impact of using 3D Printed Models in Learning Osteology among First-Year**Abhishek Agarwal, Anne D Souza, Vrinda Hari Ankolekar, Ashwija Shetty, Nandini Bhat**

Kasturba Medical College, Manipal, MAHE, Manipal, India

Email: abhishek.agarwal@learner.manipal.edu

Background: Anatomy Education has traditionally been imparted to students through cadaveric dissections supplemented by normal bones and 2D models like X rays Scans. With the development of 3D printing technology, various real-like models are also available to aid learning. Previous studies show an increase in scores and confidence of surgical residents taught using 3D printed models. This study evaluated the effect of teaching using 3D printed models of fractures on the scores and satisfaction of students in their first year pursuing MBBS.

Methods: First-year medical undergraduate students were chosen as the study group and divided into intervention and control groups. The Students of the control group were taught osteology using normal bones. However, the intervention group was taught using the 3D-printed models of fractured bones and normal bones. One session was planned per week, with two such sessions completed in two weeks. At the end of the second session, every student's understanding of upper limb osteology was evaluated using an MCQ- based test. Students in the intervention group were asked about their level of satisfaction using a Likert Scale questionnaire

Results: The scores achieved by the intervention group were significantly better than that of students in the control group. Most students either agreed or strongly agreed that the session improved their understanding and was a fun and exciting experience. The difference between the test times for both groups was not significant.

Conclusion: 3D printed models can have an impact on scores of students, and it also helps them better visualize and understand the fracture. Therefore, 3D printed models will be a valuable educational tool along with traditional teaching methods for anatomy education.

Keywords: 3D printed models, osteology, intervention, learning

Menstrual Cup Cognizance: Unveiling the Perceptions and Barriers among Medical Students**Harshitha MD, Archana BJ, Asha K R**

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: harshitha.swamy2004@gmail.com

Background: Stigma associated with menstruation is a global challenge for health care workers, owing to varied cultural practices, inaccessibility to menstrual health products (MHP) and poverty. The lack of adequate knowledge about the various MHP, influences the daily community life, education and livelihood of females. Poor menstrual hygiene is the major cause of reproductive infections in Indian women. Menstrual cups have gained popularity as an alternative MHP offering several advantages over traditional disposable options. The reasons for choosing menstrual cups were environmental sustainability, cost effectiveness, ease of use and convenience. This study aims to identify the differences in menstrual practices, perception regarding menstrual cups and challenges encountered in their usage among medical students.

Aim: To study the menstrual cup cognizance, perceptions about and challenges faced in relation to menstrual cup among medical students.

Materials and methods: The present study was approved by the Institutional Ethical Committee. The study was conducted on 225 female medical students of various medical colleges in Tumakuru by utilizing a Google form questionnaire exploring the demographic profile, current menstrual practices, perceptions and barriers of the participants regarding menstrual cup usage. The students who were not willing to participate in the study and < 18 years were excluded from the study. Data will be analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation .

Keywords: Menstrual hygiene products, Menstrual cup, Challenges of Menstrual cup

A Cross-Sectional Study to Correlate Cognitive Ability and Learning Styles using Wechsler Adult Intelligence Scale and Vark Questionnaire Tools

Krishna Sree Yalamanchili, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru-562110, Karnataka

Email: krish.sreey@gmail.com

Background: Cognitive ability of an individual includes vocabulary, comprehensive, arithmetic and reasoning skills. An Indian medical graduate's intellectual ability is considered as an essential element to be clinically competent. As medical students we have to constantly nurture our clinical reasoning skills. In addition, identifying our primary learning styles is imperative to cultivate active learning skills. Wechsler Adult Intelligence Scale is a validated questionnaire to quantify the cognitive ability of an individual. Similarly, the VARK (visual, auditory, reading and kinesthetic) questionnaire is a time tested tool to recognise one's learning style.

Aim: The present study aimed at identifying the cognitive ability and learning styles of medical students.

Methodology: 147 medical students of phase-1 MBBS at Akash Institute of Medical Sciences and Research Centre participated in this cross-sectional study. Wechsler Adult Intelligence Scale and VARK questionnaire were administered to the participants after obtaining the informed consent. The scores of both the questionnaires were tabulated in a google spreadsheet.

Results: The mean score of the medical students for Wechsler Adult Intelligence Scale was 74.7 (average) and 67.3% of the participants had kinesthetic type of learning style. The correlation between the scores of the two questionnaires were analyzed by applying linear regression analysis. p value < 0.05 was considered statistically significant.

Conclusion: We found that the average intelligence scores correlate with kinesthetic kind of learning style. This infers that there is a linear relationship between cognitive and psychomotor domain of learning for an individual. This study provided psychometric information and unimodal learning style of the medical students. This necessitates faculty to effectively deliver to the learning needs of medical students.

Keywords: Wechsler Adult Intelligence Scale, VARK questionnaire, cognitive ability, learning styles.

Perception and attitude towards body donation in general adult population: A cross-sectional study

Pratheeksha, Vidya H K, Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: pratheekshahrao@gmail.com

Background: For the purpose of medical education and research we need human cadavers, to dissect and study the human Anatomy. At present, the source of cadavers is often from unclaimed bodies and voluntary donors. But still there is a scarcity in the availability of cadavers for the sake of medical education. This study was conducted to evaluate the awareness regarding body donation in the general adult population, which helps in knowing the depth of knowledge and willingness about body donation among general population.

Aim: To know the perception of whole-body donation in the general adult population and to evaluate the awareness about body donation and willingness for body donation after death.

Material and methods: The present study was approved by institutional ethical committee. The present study was conducted on 94 participants who were willing to participate, by using a valid questionnaire based cross-sectional prospective study. One of the wards of Tumkur city was selected by a simple random method using lottery method. Study participants were selected randomly in the ward till the sample size is obtained. Questions in the questionnaire were mainly framed to find awareness regarding body donation, willingness of body donation, main myths and misconceptions about body donation. Every question has a yes or no option or it was multiple choice type and percentage of particular response were calculated in the percentage scale. Statistical analysis of responses for questionnaires was done using IBM SPSS (version 16).

Results and Conclusion: Shall be discussed during the presentation.

Key words: Cadaver, Body Donation, Awareness.

Team Assessment in Laboratory Setting (TAILS): A Novel Approach for Collaborative Learning in Dissection Hall

Saju Binu Cherian, Arcot Rekha, Deepa Gadwal

Department of Anatomy, Department of Surgery, Apollo Institute of Medical Sciences and Research, Hyderabad

Email: sajubinu@gmail.com

Background: In anatomy practical assessment, anatomical knowledge is tested using pins/tags on anatomical specimens, bones or radiographic images. Reports of inconsistency in marking or testing solely the knowledge are few drawbacks of spotter examination. tails was introduced to the first year medical graduates to bring about collaborative learning.

Aim: To address the format, to test skills and to receive a feedback about TAILS

Method: First year medical undergraduates(n=150) were divided into 15 groups of 10 students each. Team assessment was conducted in the dissection hall.

Result: Students received immediate feedback and realized the mistake immediately.

Conclusion: With appropriate planning, this type of assessment is highly feasible

Key words: Collaborative learning, Team based approach

Finding the key to your academic stress in 1st Professional Year**Laabhanya Mohpal, Aditya Sinha, Dr Chandni Gupta**

Department of Anatomy, Kasturba Medical College Manipal, 576104

Email: laabhanyamohpal@gmail.com

Background: Academic stress in the field of medicine is a significant issue that many medical students and professionals face due to the demanding nature of medical education and practice. High workload, competitive environment, pressure to perform are some of the factors that contribute to the same.

Aim: The aim of this study is to investigate, analyse, and gain a deeper understanding of various aspects related to academic stress among first year medical students. This question-based study is aimed at finding common ground in the major sources of academic stress experienced by medical students in their first year of study.

Material and method: A questionnaire based study using google forms was circulated among medical students. Their responses were recorded, analysed and summarised to conclude the various reasons for which they found the first year MBBS subjects difficult.

Result: According to the study conducted the percentage of students finding each subject difficult is: Physiology – 58.4%, Anatomy – 26.9%, Biochemistry – 14.7% Maximum students have problem with memorising and grasping the concept and presenting the answer in physiology. They find Anatomy quite extensive and cramming too much information is a major complaint in biochemistry.

Conclusion: Based on the result we were able to record what efforts both faculty and students can make to improve their learning and academic performance in first year.

Key words: academic stress, medical students

Psychology and Attitude regarding Voluntary Body Donation in registered body donors and non-body donors: A comparative study**Shambhavi Vivek Joshi, Elvin Joshua Pinto, Anne D Souza, Pratham Kogalur, Prasanna L C**

Department of Anatomy, Kasturba Medical College Manipal, 576104

Email: shambhavivjoshi@gmail.com

Introduction: Voluntary body donation is an extremely noble deed crucial for medical education and research, but it is still quite rare in India. By pinpointing the motivational factors behind body donation, steps can be taken to propagate positive aspects of body donation and address negative beliefs identified in this research.

Aim: To understand and compare the factors behind motivation of registered body donors and unwillingness of non-body donors regarding voluntary body donation by assessing their psychology and attitude.

Methodology: A quantitative- qualitative analysis model was utilized, involving a questionnaire and in-depth interviews with 15 body donors and 15 non-donors. The data was analyzed based on demographics, psychology (life satisfaction), and attitudes towards body donation. Psychology and attitude was assessed by a 5 point likert scale.

Result: Donors reported high levels of gratitude, altruism, happiness and low levels of death anxiety. Non-donors reported slightly lesser life satisfaction levels and held neutral or negative views on voluntary body donation. Donors were motivated by a desire to contribute to medical education, leave a lasting legacy and thereby attain "Nirvana". Non-donors displayed hesitance due to limited awareness and societal stigma surrounding body donation

Conclusion: Although both groups sought meaning in their lives, donors viewed body donation as a positive way to contribute to society. Non-donors, however, lacked awareness and held negative perceptions. In conclusion, addressing the lack of complete awareness and reducing societal stigma are crucial in promoting voluntary body donation and increasing the number of donors.

Key Words: Voluntary Body donation, Cadaver, Medical education, Psychology, Attitude

Concept of Clinical Cadaver: Learner' satisfaction in practising procedural skills for medical undergraduates

Elvin Joshua Pinto, Shambhavi Vivek Joshi, Anne D Souza, Prasanna L C, Joseph Abraham

Department of Anatomy, Kasturba Medical College Manipal, 576104

Email: 28elvin@gmail.com

Introduction: Acquiring procedural skills is a pivotal aspect of medical education, necessitating innovative approaches to optimize learning experiences. This study investigates the learner's satisfaction with using a soft-embalmed cadaver that was embalmed using a modified salt saturation solution to learn procedural skills and aims to assess its effectiveness in enhancing the acquisition of these skills.

Methodology: Ten undergraduate medical students from first to third professional years volunteered to participate in this study, having only previously practised the procedures on a mannequin. They received training on IM injections and simple interrupted sutures and then performed the procedures on the cadaver. The supervisor graded their technique, and participants provided feedback about their experience working on a cadaver through a questionnaire.

Results: Participants aged 18-21 years found the cadaver to offer a more realistic learning experience. They appreciated the resistance provided by the muscle during injections and the skin while suturing. Additionally, the cadaver improved their understanding of anatomical landmarks and emphasized the importance of proper technique. Participants expressed motivation to continue practising these procedures in the future.

Conclusion: The findings suggest that the clinical cadaver serves as a more accurate representation of a patient compared to a mannequin, making it a valuable tool for learning procedural skills. Future research can expand the sample size and include a comparison group to compare the experiences of performing the same medical procedure on a mannequin and cadaver.

Key Words: Clinical cadaver, procedural skills, Intramuscular injection, simple interrupted, sutures, mannequin

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 6

Histological Analysis of Human Cervical Transformation Zone using IKOSA AI Tool

Akshaya S, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru

Email: akshayasomashekar8@gmail.com

Background: Cervical intraepithelial neoplasia is the second most common cancer in women with WHO estimation of 3,11,000 deaths in 2018. Early stage diagnosis helps in preventing and good prognosis of cervical cancer. The cervical transformation zone is a dynamic area which develops during puberty. Histologically it is the zone where the glandular epithelium is replaced by squamous epithelium. This zone is routinely examined by expert pathologists visually for diagnosing the metaplasia and classifying the grades of cervical intraepithelial neoplasia. Often, the examination of biopsies of cervix under microscope poses intra and inter observer variability in outcome.

Aim: We aim at quantifying the transitional zone of cervix through image analysis AI tool. The epithelium detection networks of the study would aid in classifying cervical intraepithelial cancer as time and cost effective tool.

Methods: Fifty serial sections of cervix were stained with haematoxylin and eosin stain. 1250 optical fields of the transformation zone were photographed under 40X (high power microscope). The images were converted to tiff format. The region of interest (transformation zone) was extracted. The binary classifier categorized the input image into epithelium or non epithelium. The orientation of the epithelium were determined and the number of nuclei in the transformation zone were quantified.

Results: 1250 labelled images were digitally evaluated for specificity, sensitivity, harmonic mean (Hmean), F1 score, accuracy and area under the ROC curve.

Conclusion: Digital image analysis methods have proven to significantly improve the diagnostic efficiency, analysis, grading and staging of cervical cancer, skin cancer, breast cancer, cirrhosis of liver and prostate cancer. The advent of advance image processing techniques such as IKOSA AI, aperi image scope are useful to increase the accuracy of histopathological diagnosis and to minimize the intra and inter observer variability

Key words: Cervical intraepithelial neoplasia, transformation zone, digital image analysis IKOSA AI.

A Cross Sectional Study of Cord Index and Morphological Variations of Placenta and Umbilical Cord

Aman Jain, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru – 562110, Karnataka

Email: theajain@icloud.com

Background: Every year 30 million infants suffer from Intrauterine Growth Retardation (IUGR). The mean IUGR rate in India is 54%. The prevalence of low birth weight in India is 26%. Placenta is the vital foeto-maternal unit responsible for the maintenance of pregnancy, foetal growth and development. Furthermore, the umbilical cord serves a paramount role in foetal intrauterine persistence. Assessment of umbilical cord and placental dimensions thus determine the foetal outcome. In addition, the umbilical coiling index has an impact on perinatal outcomes.

Aim: The present study aimed at estimating the morphological variations of postnatal specimens of placenta and umbilical cords at our tertiary care centre.

Methods: A cross sectional study was conducted on 80 specimens of postnatal placentae and umbilical cords for 2 months. The umbilical cord length, diameter of vessels, umbilical coiling index (UCI) were estimated. Placental diameter, placental cotyledons, foeto-placental weight ratio, vascular pattern, placental coefficient and mode of attachment of umbilical cord were recorded.

Results: Mean diameter of placenta, average number of placental cotyledons, mean length of umbilical cord were analysed using SPSS 20. UCI of <10 th centile was classified as hypo coiled and UCI of >90 th centile as hyper coiled. The association between cord diameter and placental diameter was analysed by linear regression analysis. p value of <0.05 was considered as statistically significant.

Conclusion: Placental and umbilical cord morphometry gives us reflection of the antenatal events. Hypocoiled cords were associated with foetal distress and low birth weight whereas hyper coiled cords were associated with thrombosis of chorionic vessels and intrauterine growth retardation. The present study contributes to the platter of baseline data of placenta and umbilical cord morphometry to anatomists, sonologists, pathologists and gynaecologists.

Key words: Umbilical cord, placenta, coiling index

Holoprosencephaly

Bhargavaram, Nishaa P, Padmalatha K

Department of Radiology, Department of Anatomy, ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: Ebhargavbhat002@gmail.com

Background: Holoprosencephaly is the most common type of forebrain deformation. Its prevalence is 1 in 275 fetuses and 1 in 16000 births. Its severity forms range from- alobar, semilobar to lobar, based on separation of the forebrain hemisphere. Alobar refers to complete non separation of the forebrain with complete absence of olfactory bulbs- serious facial malformations are associated with this condition. Semilobar forms have their frontoparietal lobes failing to separate with the presence of hypoplastic olfactory bulbs. Alobar forms are characterized with an inter hemispherical fissure but continuity is still seen with cingulate gyrus. Etiologies of this malformation range between environmental causes, drug induced and genetic conditions.

Aim: To Understand the clinical characteristics of Holoprosencephaly and to trace the genetic cause for the incidence of this condition. Also to analyze embryological and environmental data, if any.

Method: The diagnosis of aforementioned cases were mainly Ultrasonography, with further analysis made using genetic data.

Result: 23 week fetus with characteristic presence of proboscis and echogenic kidney. Genetic variation of trisomy 21 seen. 18 week fetus with cleft palate along with radial ray. Genetic variation of 7q deletion seen. 20 week fetus with the anomaly scan revealing occipital encephalocele, echogenic kidney and polydactyly- all consistent with Meckel Grubersyndrome. 11 year old with congenital hemiparesis presenting with cerebral palsy and visual disturbance.

Conclusion: The present knowledge of the gene mutations that result in HPE, accounts for only 28% of cases. Hence a deeper knowledge on the embryological, environmental and genetic causes lead to better understanding and prevention of such diseases.

Keywords: Holoprosencephaly, lobar, semilobar, alobar, Ultrasonography, Meckel Gruber Syndrome, cerebral palsy.

Exploring the Pathological Implications of Tuberous Sclerosis on Anatomy: A Case Study

Deepali Malik, Padmalatha K, Nishaa P

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: deepaliimalik05@gmail.com

Background: Tuberous sclerosis (TS) is a rare genetic disorder characterized by mutation in the TSC1 or TSC2 genes which provide instructions for making the proteins hamartin and tuberlin, respectively. These genes are involved in regulating cell growth, and the mutations lead to uncontrolled growth and formation of non-cancerous tumours in multiple organs, primarily the brain, heart, kidneys, and skin.

Aim: This case study aimed to investigate the anatomical significance of tuberous sclerosis in a patient, highlighting the distribution and impact of tumours in different organs.

Methods: A comprehensive examination of a patient diagnosed with tuberous sclerosis was conducted. Clinical evaluations, imaging studies (MRI, CT scans and Ultrasonography) and electroencephalogram were performed to assess the distribution (involvement of heart, brain, lungs, kidney, skin, etc.), characteristics (like multiple cortical tubers in the brain, cardiac rhabdomyomas, retinal hamartoma, ash leaf macules, etc.), and potential complications associated with TS.

Results: The patient presented with characteristic features of tuberous sclerosis, including multiple cortical tubers in the brain seen on MRI, cardiac rhabdomyomas on ultrasonography, ash leaf spots, confetti marks, facial angiofibromas, seizures. Thus, it is confirmed to be a case of Tuberous Sclerosis.

Conclusion: This case study highlights the importance of understanding the anatomical manifestations of tuberous sclerosis. The distribution of tumours in various organs can significantly impact the clinical presentation and management strategies for individuals with TS. Accurate identification of these anatomical abnormalities through clinical evaluations and imaging studies is essential for timely diagnosis and appropriate treatment of TS.

Foetal Cardiac Anatomical Evaluation as a Biomarker for Chromosomal Anomalies: A Case Series

Eshaan U Jalihal, Padmalatha K, Nishaa P

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: eshaanjalihal@gmail.com

Background: Foetal cardiac anatomical evaluation is performed to assess the structure and function of the developing heart. It is an important component of prenatal screening for chromosomal anomalies. Chromosomal anomalies are genetic abnormalities caused by alterations in the number or structure of chromosomes. Early detection of chromosomal anomalies is crucial for appropriate prenatal management and counselling.

Objective: This case series aims to investigate the potential of foetal cardiac anatomical evaluation as a biomarker for detecting chromosomal anomalies during prenatal screening.

Methods: A retrospective analysis was conducted on a series of prenatal cases referred to the radiology department of ESIC Modern hospital, Rajajinagar. Foetal echocardiography examinations were performed on the enrolled cases to evaluate the cardiac anatomy. The cardiac anomalies identified during the examinations were correlated with the chromosomal aberrations detected through karyotyping and microarray.

Results: The study shows certain congenital cardiac anomalies are associated with chromosomal anomalies, such as Atrioventricular Septal Defects seen in trisomy 21, Aortic stenosis in 5p deletions, Coarctation of Aorta in mono X chromosome children, Double Outlet Right Ventricle (DORV) in Trisomy 18, Tetralogy of Fallot (TOF) in 22q deletions, Transposition of Great Arteries in trisomy 13, etc.

Conclusion: Foetal cardiac anatomical evaluation shows promise as a non-invasive biomarker for identifying chromosomal anomalies. The presence of specific cardiac abnormalities detected through foetal echocardiography can raise suspicion for chromosomal aberrations, prompting further diagnostic testing. Further prospective studies are warranted to validate these findings and establish guidelines for the implementation of foetal cardiac evaluation as a biomarker in prenatal care.

A cross-sectional study to correlate Nuclear Fixative properties of Formal Saline and Clarke's Fluid for histomorphological evaluation of Human tissues

Lakshya V, Vasudha Kulkarni

Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru

Email: lakshya.v21@gmail.com

Background: The "formalin dogma", infers that formalin is the best and cheapest fixative. However, the International Agency for Research on Cancer (IARC) designated formalin as a human carcinogen that causes nasopharyngeal cancer, leukaemia and several other conditions. Clarke's fluid is one of the non formalin nuclear fixative which has greater potential for morphological and cytological preservation. It is also known that Clarke's fluid quickly penetrates, provides strong nuclear fixation, and effectively preserves cytoplasmic components.

Aim: This study was taken up to compare formal saline with Clarke's fluid, a potential alternative, in terms nuclear fixative properties for histomorphological evaluation.

Methods: After obtaining ethical clearance, tissues of skin, artery, lymph node, spleen and small intestine were collected during autopsy. The fresh tissues were sliced into 1 × 1 cm for optimal fixation and were immersed in sufficient amount of 10% formal saline and Clarke's fluid respectively. After adequate fixation, these tissues were subjected to routine histological processing and 10 serial cross-sections of each tissue were prepared. The fixed tissues were then analyzed and compared on gross morphology and histopathological characteristics and were graded based on various sectioning criteria, staining criteria and microscopic details.

Results: The data about the quality of fixation of the tissues were summarized by using percentages. Comparison of sectioning criteria were carried out by using Fisher's exact test with p-value < 0.05 as significant. Comparison of staining criteria and microscopic details were carried out using Mann-Whitney U test with p-value < 0.05 as significant.

Conclusion: The potential carcinogenic and toxic effects of formalin encouraged us to reevaluate the formalin dogma and examine the substitute fixatives, which could provide superior results and higher worker protection. Clarke's fluid is a splendid alternative, particularly as a nuclear fixative.

Key Words: Formal Saline, Clarke's Fluid, Nuclear Fixative

Histological assessment of Pacinian Corpuscles in Human Pancreas: A cross-sectional study

Sai Adithi Amarnath, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru-562110, Karnataka

Email: saiadithiamarnath@gmail.com

Background: Pacinian corpuscles are pressure receptors distributed in dermis of hand. Structurally, each corpuscle comprises capsule, outer and inner core zone and the central terminal zone. The capsule consists of type-II collagen fibres and concentrically arranged lamellae of flat cells. There are reports of sporadic presence in sheath of tendon, deep fascia, eardrum, middle ear cavity, peritoneum, fibrous capsule of knee joint, fingertips, subcutaneous tissue of phalanges, olfactory bulb, ureter, urinary bladder, thymus, urethra, prostate gland, genital organs, mesenteric vessels, pancreas & peripheral nerve. Presence of Pacinian corpuscles in pancreas have been attributed to regulation of blood flow and perception of abdominal pain.

Aim: The aim of the present study is to quantify the pancreatic pacinian corpuscles using IKOSA AI tool

Methodology: A cross sectional study was done on thirty hematoxylin and eosin stained serial sections of head, body and tail of human pancreas. The length and diameter of Pacinian Corpuscles was measured on IKOSA AI tool. The distance between the Pacinian corpuscles and the main pancreatic duct was documented.

Results: The mean length of Pacinian corpuscle was 1-2mm and diameter was 0.1 to 0.7mm. Immunohistochemical methods demonstrated synaptophysin positive nerve fibre in the centre of the inner core, neural cell adhesion molecule (CD56)-positive Schwann like cells attached directly to the nerve fibre, and multilayered S100 antigen positive Schwann cells forming the inner core. Oneway ANOVA was applied after normalising the data from slides of Pancreas.

Conclusion: The presence of Pacinian corpuscles in normal human pancreas is mysterious as limited research data is available. There is a need for establishing physiological role of Pacinian corpuscles in human pancreas. We have attempted to collect the morphometric data of Pacinian corpuscles which shall provide evidence to the role of Pacinian corpuscles in the release of pancreatic secretions from the pancreatic duct.

Keywords: Pacinian corpuscle, IKOSA AI, pancreas.

Study of Epidermal and Dermal Changes in Papulosquamous Disorders using Dermoscope

Sumukha Chetan C, Ragnatha Shivanna, Padmalatha K

Department of Dermatology, Venerology and Leprosy, Department of Anatomy, ESIC Medical College and Post Graduate Institute of Medical Science and Research, Bangalore

Email: sumukhachetan903691@gmail.com

Background: Papulosquamous diseases are a heterogeneous group of disorders whose etiology primarily is unknown. The nosology of these disorders is based on a descriptive morphology of clinical lesions characterized by scaly papules and plaques. The major entities in this group include psoriasis, parapsoriasis, lichen planus, lichen nitidus, lichen striatus, pityriasis rosea, pityriasis rubra pilaris, seborrheic dermatitis, and the Gianotti-Crosti syndrome.

Aim: Study of vascular and avascular changes of epidermis and dermis in papulosquamous disorders using dermoscopy.

Methods: A cross sectional study is being conducted on patients with papulosquamous disorders. Patients of any age and sex, irrespective of duration of the disease are included in the study. The single most recently developed lesion of each patient is evaluated with a hand held dermoscope.

Results and conclusions will be updated in detail at the time of presentation.

Key Words: Papulosquamous disorders, Epidermis and Dermal changes, Dermoscopy. Dermoscopy is a noninvasive diagnostic tool to visualize clinical patterns of various pigmented skin lesions. Although histopathology remains the undisputed gold standard diagnostic test for papulosquamous disorders, it is an invasive procedure. Dermoscopy improves the accuracy of the clinical diagnosis of papulosquamous disorders as an additional measure. This in turn avoids the need for invasive diagnostic techniques like skin biopsy.

Histological Study of Oesophagus and its Developmental Aspects

Syed Zohair Husain Rizvi, Chandni Gupta

Department of Anatomy, Kasturba Medical College Manipal, 576104

Email: syed.rizvi@learner.manipal.edu

Background: The research will be a major contribution to the existing literature pertaining to the development of oesophagus, its histogenesis and morphometrical study. It will prove to be helpful to understand the developmental intricacies of oesophagus especially when previous studies were based on animal models. Oesophageal anomalies can be identified and prevented to great extent.

Aim: To study the histological development of oesophagus.

Objectives: a. To appreciate histological development of all the 3 layers of oesophagus and their morphometry. To study the appearance of oesophageal glands. Appearance of oesophageal glands, their thickness and time of their appearance during the developmental phenomenon will be appreciated better using human foetuses. Yet again, it will fill the lacunae in the study parameters which have been based on animals and birds

Methods: Inclusion criteria – foetuses without external anomaly; Exclusion criteria – foetuses with anomaly will not be included in the study.

Biological materials required: The foetal oesophagus shall be extracted out (10 from each trimester -1st, 2nd, and 3rd) carefully with proper dissection tools; cut into small pieces, 0.5 to 1.0 cm thick.

Statistical methods: Mean and SD will be calculated using SPSS statistical software. Independent t test for male and female.

Tools used: Microscope is used for measuring 3 layers of esophagus. Once properly stained with Haematoxylin & Eosin, all 3 layers (mucosa, submucosa, muscularis externa) will be measured using Image Analyser Software Image Pro Premiere 9.1 and we will look for appearance of oesophageal glands.

Results: The measures of lengths of mucosa, submucosa, and muscularis propria were calculated for oesophagus samples and mean of these values was calculated. Mucosa, Submucosa, and Muscularis propria of 1st trimester foetal oesophagus are 118.883, 143.905, 157.631 microns respectively. Similarly, mean values of mucosa, submucosa, and muscularis propria of 2nd trimester oesophagus are 219.564, 285.584, 267.896 microns. Mean values of mucosa, submucosa, and muscularis propria for 3rd trimester oesophagus are 133.228, 456.544, 314.234 microns. The appearance of oesophageal glands in 2nd trimester oesophagus was appreciated under microscope.

Conclusion: Development of oesophagus is better understood by being able to appreciate appearance of oesophageal glands. This observational study has covered the gaps in the studies so far and touched upon detailed histogenesis of oesophagus and appearance of oesophageal glands, their measurement and morphometry.

Key-words: Foetal oesophagus, Development, oesophageal glands, morphometry, Histogenesis.

Morphometric Analysis of Placentas among Deliveries in Tertiary Care Centre: A Cross Sectional Study

Tanisha N, Archana B J, Asha K R, Hema K R

Department of Anatomy, Department of Obstetrics & Gynecology, Siddaganga Medical College & Research Institute, Tumakuru
Email: tanishasj2004@gmail.com

Background: Human placenta is disc shaped haemochorial villous structure involved in maternal to fetal transfer of oxygen and nutrients. Complications during pregnancy like anemia, hypertension etc. is reflected in the morphometry of placenta. Thus placental examination is vital in effective immediate and delayed management of newborn and mother. Umbilical cord is an important connection between fetus and placenta which is commonly eccentric or central in position. Various other sites of attachment of umbilical cord to placenta are velamentous (membranous), marginal (battledore) etc. which carry the risk of complications like hemorrhage and reduced fetal development. Knowledge of morphometry of placenta with respect to its shape, diameter, weight, number of maternal and fetal cotyledons and attachment of umbilical cord are beneficial in managing many fetal and maternal complications that may arise during pregnancy and delivery. This study intends to provide normal data regarding placental morphology in a tertiary care hospital.

Aim: To study Morphometry of placenta
Materials and methods: The present study was approved by Institutional Ethical Committee. A total of 47 freshly delivered placental specimens with umbilical cord were collected from Department of OBG of Siddaganga Medical College & Research Institute. The specimens were collected soon after expulsion from normal and caesarean section. Incomplete and damaged placenta, placenta of multiple pregnancy and diseased placenta were excluded in the study. The placentas were washed, dissected, observed and analyzed for shape, diameter using digital Vernier Calipers, placental weight using calibrated weighing machine, number of maternal and fetal cotyledons and site of umbilical cord attachment to placenta were observed. Descriptive and statistical tests significance was used to analyze the data utilizing IBM SPSS (version 16) software.

Results and Conclusions: Shall be discussed during the presentation.

Key words: Placental morphology, umbilical cord, velamentous placenta, battledore placenta.

Collagen and Elastic Fiber Frequency in Tortuous Arteries by Microscopy

Thanush P, Ashwini C Appaji

MS Ramaiah Medical College

Email: reddythanushp@gmail.com

Background: The arteries carry oxygenated blood from the heart towards the peripheral tissues. In order to facilitate this the arteries have a thick tunica media with smooth muscles. This maintains blood pressure and allows pulsatile blood flow to the peripheral tissues. Some of the arteries are tortuous for eg splenic, facial, coronary arteries. The purpose of the tortuosity is extra length within a small distance, which allows stretch of artery in movements of joints close by. The factors that continue to maintain the tortuosity could be in the increase of collagen and elastic fibers in the tunica media. There could also be variations in the collagen and elastic fiber content of the connective tissue around the blood vessel which helps in stretch and recoil.

Aim: To study the collagen and elastic fiber frequency in tortuous arteries by microscopy

Methods: 1-2 cms of facial artery, splenic artery, coronary artery, radial and ulnar artery (5 samples each) was harvested with whole lumen intact from formalin fixed human cadavers. The tissue was cut appropriately and paraffin blocks were made for each specimen. From each of the blocks, slides were prepared. Radial and ulnar arteries served as control. Skin tissue served as control for Van Gieson - Verhoeff stain. Each of the sections were stained by VVG special stain and examined for collagen and elastic fiber frequency under the microscopy.

Results: The elastic fiber frequency was more in the tunica media of tortuous than control arteries. However the amount of elastic fiber in surrounding connective tissue was significantly more in tortuous arteries than the control arteries.

Conclusion: The factor responsible for maintaining tortuosity, could be the amount of elastin in tunica media as well as in the surrounding connective tissue which helps in stretch and recoil of arteries.

Keywords: microscopy, tortuous arteries, elastic fibers.

Morphometric Study of Fossa Ovalis with Embryological and Clinical Significance

Saanya Chhabra, Chandni Gupta,

Department of Anatomy, Kasturba Medical College, Manipal, 576104

Email: chhabrasaanya@gmail.com

Background: The fossa ovalis is a depressed structure, of varying shapes, located in the inferior aspect of the right interatrial septum. A remnant of an interatrial opening, the foramen ovale, which has a significant role in fetal circulation, the fossa ovalis forms by the fusion of the septum primum and septum secundum. This article will describe the structure, function, embryology, vascular supply, physiologic variants, surgical considerations, and clinical significance of the fossa ovalis.

Aim: The aim of the cadaveric study is to get the Morphometric and Morphological data forembryological and clinical significance.

Material And Method: The study is done on 50 cadaveric heart specimens, all measurements are done using vernier callipers and parameters that are checked are diameter, patency, position in Atria, depth, nature of floor, presence of septal pouch, shape and presence of fibrous strands.

Result: According to the study of 50 specimens, Mean diameter: 16.62, 4% is patent, 94% inferior aspect of the right atrium, Limbus Fossa Ovalis: 32% prominent all around the fossa ovalis nature of floor : bulge towards Left Atrium-34%, fibrous strands, present: 26%, absent: 74%, septal pouches:, absent- 56%

Conclusion: The findings of the present study provide pertinent information on the morphology of Fossa Ovalis, which may be useful for device selection in treating Atrial Septal Defect and Pertinent Foramen Ovale patients.

Histological study on the therapeutic effect of cynodon.dactylon in letrozole induced pcos rats

Anandaramajayan Nallathambi

Associate Professor, Department of Anatomy, Arunai Medical College and Hospital, Tiruvannamalai

Email: anandaraman2006@gmail.com

Abstract: Polycystic ovarian syndrome is a female reproductive defect with a prevalence rate of 2.2% to 26% in world and in Indian adolescent at a rate of 9.13%. Polycystic ovarian syndrome is a heterogeneous endocrine syndrome related to increase in secretion of hyperandrogenemia with increasing risk of hyperinsulinism, type 2 diabetes mellitus, Hirsutism, dyslipidemia, cardiovascular diseases and finally leading to endometrial tumor. The endocrine hormones are regulated by various factors like environment, photoperiod, ambient temperature, relative humidity availability of food etc. Cynodon dactylon or Bermuda grass is seen all over the world. C. dactylon is a stoloniferous, hardy perennial grass, very much variable with long rapid growing, rooting at nodes, forming a dense tuft on the top of the soil. Materials and method: C. dactylon plant was collected and 100gm of plant powder was mixed with 1,000ml of distilled water and heated till boiling temperature. The mixture was filtered and lyophilized. All the animals were induced for PCOS by giving Letrozole with oral feeding needle for 21 days and the vaginal smear was examined to confirm PCOS. From 22-42 days, the animals were treated with the drug and Metformin. The animals were divided with four groups as Control, Induced group, treatment

group with 500 mg/kg (Cynodon dactylon), and Referral group 100mg/kg (Metformin). After 24hr of last dose the animals was sacrificed dissected, all the GIT and reproductive organs were collect and preserved in 10% formaldehyde. next day tissue processing was done, stained with H & D staining and Photographs was taken and observed.

Result and discussion: The result and discussion will be discussed at the time of presentation

Key words: PCOS, Cynodon dactylon, letrozole

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 7

Morphometric Study on Corpus Callosum: A Cadaveric Study

Devishi Choudhary, Mamatha Hospatana

Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Email: devishi5279@gmail.com

Background: Corpus callosum (cc) is the largest commissural fibre, present in the placental mammals, connecting two cerebral hemispheres. Its main function is to enable communication between 2 hemispheres, for transfer of information. It presents the following parts Rostrum, Genu, Body, Splenium.

Aim: The aim of this cadaveric study is to determine the morphometry and the relative distance of CC from different important landmarks of the brain like frontal pole, occipital pole, central sulcus, overshoot of cingulate sulcus, parieto-occipital sulcus.

Material And Method: The study was performed on 30 cadaveric brain [sagittal section] specimens. Some of the morphometry studied are distance of genu and splenium from frontal and occipital pole, the angle between genu-frontal pole and splenium-occipital pole, relative thickness of cc, distance of genu and splenium from central sulcus. All measurements were made using vernier calliper.

Result: The mean distance from frontal pole to genu was calculated to be $2.805 \text{ cm} \pm 0.320$. The mean distance from occipital pole to splenium was calculated to be $5.30 \text{ cm} \pm 0.57$. The mean distance from central sulcus to callosal sulcus calculated to be $3.69 \text{ cm} \pm 0.60$. The mean distance of genu from central sulcus was calculated to be $8.66 \text{ cm} \pm 0.52$. Mean angle was calculated to be 120.9 ± 10.08 . Rest of the results were tabulated.

Conclusion: The importance of this study is to determine the morphometry and the relative distance of CC from different important landmarks of brain. Helpful during brain surgeries like corpus callosotomy which is performed to prevent spread of epileptic seizures. Corpus callosotomy results in a disorder called Split brain syndrome.

Keywords: Corpus callosum, central sulcus, frontal pole, callosotomy, morphometry.

Morphometry of Internal Capsule : A Cadaveric Study

Dhriti Goyal, Rohini Punja

Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India - 576104

Email: goyaldhriti04@gmail.com

Background: Internal capsule (IC) is a two way tract for transmission of information to and from cerebral cortex. IC is type of projection fibres situated in inferomedial part of each cerebral hemisphere of brain. It is a subcortical structure and has 5 parts – anterior limb (AL), genu, posterior limb (PL), retrolentiform and sublenticular.

Aim: Aim of the study is to know average size of IC and its distance from neighbouring structures like insula, anterior tubercle of thalamus, septum pellucidum.

Materials And Methods: The study is done on 30 brain specimens taken from the department of anatomy, Kasturba Medical College, Manipal. The length of AL, genu and PL are measured using landmarks like caudate nucleus and thalamus. The width of each is measured at the midpoint. The angle is measured between the outer borders of AL and PL. All the measurements are taken using vernier caliper.

Result: Mean length of right and left AL are $1.62 \pm 0.27 \text{ cm}$ and $1.57 \pm 0.35 \text{ cm}$ respectively. Mean length of right and left PL are $2.79 \pm 0.28 \text{ cm}$ and $2.60 \pm 0.36 \text{ cm}$ respectively. Other results are tabulated.

Conclusion: IC is one of the most important projection fibres in brain. Any injury to the IC can lead to injury of pyramidal, extrapyramidal and ascending tracts, leading to disorders like hemiparesis or hemiplegia. Knowing the average size, shape and location of IC is essential to prevent injuries during any brain surgery.

Keywords: Anterior limb, posterior limb, genu, stroke, thalamus, insula.

Transverse Process of Atlas as a Surgical Landmark for Various Head and Neck Surgeries – A CT Assisted Study

Madhu P Raj, Jyothi K C, Shailaja Shetty, Ashok Kumar

M S Ramaiah Medical College

Email: madhusudanraj7@gmail.com

Introduction: Head and neck is a complex area with vital structures compactly arranged. Hence it is essential to define important structures with respect to a common externally palpable landmark, such as the transverse process of C1 which will direct the surgeon towards appropriate structures. Transverse process of Atlas can be palpated midway between mastoid process and the gonion and hence serves as an important surgical landmark [1] for certain head and neck surgeries.

Materials and methods: In this retrospective study (sample size > 34), we included normal CT scans of cervical vertebra. After we estimated the distances of vertebral artery (3rd part), occipital artery, ICA, IJV and styloid process bilaterally. Quantitative variables such as age, distance of structures from C1 transverse process are expressed in terms of mean & Standard deviation. Gender was expressed as frequency and percentages. Differences in the mean values were tested for statistical significance by Student-t test.

Results: Among the 50 subjects (20 (40%) males and 30 (60%) females), the mean distance of ICA was 22.69 mm (SD=3.47), IJV was at 9.06 mm (SD=2.65) and the minimum distance directly anterior to the transverse process was 1.49 mm (SD=0.23), occipital artery was at 12.46 mm (SD= 6.90) posteriorly, vertebral artery on an average 25.34 mm (SD= 7.29) and the styloid process posterosuperiorly at a mean distance of 17.18 mm (SD = 3.16). The differences in the distances of the structures on the left and right side were compared. There was statistical significance in the distances of internal jugular vein, styloid process and the vertebral artery on the left and right sides. In terms of correlation, there was a strong correlation however between the structures bilaterally.

Conclusion: From this study we concluded that with appropriate topographical knowledge of structures in relation to a common important landmark, on one side serves as an easier method of surface marking and on the other hand may alleviate the risks as well as intraoperative and postoperative complications.

Key words: transverse process, atlas, surgical landmark

Agenesis of Corpus Callosum: Does Loss of Connection Between Hemispheres Matter?

Manjunath C U, Nishaa P, Padmalatha K

Department of Radiology, Department of Anatomy, ESIC Medical College & PGIMS, Rajajinagar, Bangalore

Email: themanjunathumesh@gmail.com

Background: The corpus callosum is a vital structure in the brain that facilitates communication and coordination between the two cerebral hemispheres. Its anatomical and physiological features allow for the integration of sensory, motor, and cognitive processes, contributing to the overall functioning of the brain. ACC involves partial or complete absence of the main commissural pathway that connects the two cerebral hemispheres, and can be isolated (with no other abnormalities) or complex (coexisting with other abnormalities). Studies of human embryology indicate that callosal connections begin more centrally in the hippocampal primordium and the subsequent growth progresses bidirectionally. People who have a disorder of the corpus callosum typically have delays in attaining developmental milestones and poor motor coordination. Children with the most severe brain malformations may have intellectual impairment, seizures, hydrocephalus and spasticity.

Aim: In this Review, we aim to provide up-to-date and evidence based answers regarding the diagnosis and prognosis of Agenesis of Corpus Callosum (ACC) detected in ANC and Pediatrics department. We have 5 cases: 2 Antenatal and 3 Child. A female in ANC, G3P1A1 with 29 weeks of pregnancy and another female, G2P1 with 26 weeks of pregnancy. A pediatric patient with complete corpus callosal agenesis, another patient with syndromic agenesis and a pediatric patient with partial agenesis of corpus callosum presented with seizures and developmental delay.

Results & Conclusion: Corpus callosal agenesis is a complex neurological condition with diverse etiological factors and clinical manifestations. Radiological imaging, particularly MRI, plays a crucial role in diagnosis and evaluation. It may be suspected at the time of the routine anomaly scan or diagnosed on direct visualization.

Key Words: Corpus Callosum, Agenesis, Connection between hemispheres.

A Morphological Study of Interthalamic Adhesions in Northern Karnataka Brains: A Cadaveric Study

Navya Sharma, Suma Dnyanesh, Anushka Dunganwal, Shilpa MBhimalli

Department of Anatomy, KAHER's Jawaharlal Nehru Medical College, Belagavi, Karnataka

Email: navya.sharma0302@gmail.com

Introduction: Interthalamic adhesion (ITA) or massa intermedia is a neuroanatomical structure that acts as a bridge of tissue joining the medial surfaces of the two thalami. In humans, the ITA is variable; it is noteworthy since it has been linked to dopaminergic modulation of the limbic system in the Substantia Nigra and Caudate nucleus.

Aim: To determine the prevalence, location, and dimensions of adhesions (ITAs) in brains of Northern Karnataka region.

Materials and Methods: Fifty midsagittal sections of adult cadaveric brains were examined for the presence, absence or duplication of ITAs, their location on the lateral wall of the third ventricle.

Result: ITA was found in 37 sections (74%). In 13 cases, ITA was absent (26%). In 6 cases, it was double (12%). It was most commonly located in the anterosuperior quadrant. The mean horizontal diameter and range was more than mean vertical diameter and range in all the brains. Its average area (12.53 mm²) showed tremendous variation (ranges between 5.1 mm² to 70.5 mm²).

Conclusion: Absence and duplication of ITA are fairly common in Northern Karnataka brains. No correlation was found between the surface area of the ITA and the length of the third ventricle.

Keywords: Massa intermedia, cadaver, interthalamic adhesions, commissures, third ventricle.

Evaluation of Circle of Willis variant in patient going for Angiography and its association with CVA in Tertiary Hospital

P N Gajan¹, Nishaa P², Padmalatha K³

Department of Radiology, Department of Anatomy, ESIC Medical College & PGIMS, Rajajinagar, Bangalore

Email: pngajan12@gmail.com

Background: The circle of Willis is an important anastomotic arterial polygon at the base of the brain that connects the carotid and vertebrobasilar systems. COW Variants include fenestration, duplication, hypoplasia, or agenesis. Correlation between variants of the cerebral arterial circle and cerebrovascular diseases is a proven fact. The circle is the main route for collateral supply in case of internal carotid system occlusion. Those patients with variants of the circle with efficient collateral circulation have a lower risk of stroke than that of patients without such collaterals. The incidence of ischemic stroke varies among different populations hence this study

focuses on Indian population. Four criteria are classically used to define 'normal' anatomy of the CoW: (1) all segments (ACoMA, A1s, PComAs and P1s) are present. All segments arise from their natural origins, no accessory arteries are present, all segments have an external diameter of >1 mm.

Aim: The main objective of the study is to evaluate and describe the prevalence of COW variants, provide a standard of reference for future research on COW with 3d MRA and to finally correlate the variants with occurrence of CVA.

Method: This is a descriptive cross sectional study. The patients were evaluated using MR angiography. The data of patients has been calculated over a period of 1 year and the results have been tabulated the clinico-radiological profile.

Result & Conclusion: will be discussed in detail during presentation

Key Words: Brain Mra, Circle Of Willis's Variation, Cerebrovascular Accidents

Anatomical variations in Coronary Arteries and Veins in patients undergoing CT angiography in a Tertiary Hospital in Bangalore

Paridhi M C, Nishaa.P, Padmalatha K

Department of Radio Diagnosis and Anatomy, ESIC Medical College, PGIMS, Rajajinagar, Bengaluru

Email: paridhiminnu@gmail.com

Background: Coronary arteries are the blood vessels supplying the musculature of the heart. Coronary artery anomalies are uncommon with prevalence of 1% discovered incidentally during coronary angiography. Not only do variations in coronary anatomy have known association with structural forms of congenital heart, but anomalous coronary artery with an oblique origin or intramural course, or positioning between the great vessels puts coronary arteries at risk of compression and may significantly limit the reservoir capacity of epicardial coronary system. Myocardial ischaemia is thus the commonest manifestation of these anomalies. This also the second most cause of sudden cardiac deaths in young athletes

Aim: The objective of the study is to describe various coronary artery variants and anomalies discovered in an Indian subset with symptoms suggestive of CAD. The aim of this study is to increase awareness about the various coronary artery variants and anomalies in a symptomatic Indian population.

Methods: This is a descriptive cross-sectional study about variations in coronary anatomy using CT angiography. We have collected the data of patients undergoing CT coronary angiography during a tenure of 1 year.

Results and Conclusion will be discussed in detail during the presentation.

Key words: Coronary arteries, Variants, CT angiography

A cross-sectional study of Sulcogyral morphometry of language zone of human brain

Prapoorna.R, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru

Email: prapoornar1605@gmail.com

Background: The perisylvian region of the left-cerebral hemisphere forms the language and speech zone of human brain. The Broca's motor speech area, Wernicke's sensory speech area, Visual speech area of angular gyrus, Tactile speech area of supramarginal gyrus and Exner's writing area of medial frontal gyrus are represented in the form of frontal, parietal and temporal opercula of the Sylvian fissure. The speech areas show varied sulcogyral patterns and present accessory sulci. The comprehensive insight of the sulcogyral patterns of the speech area is beneficial for neurosurgeons in intraoperative mapping, deciding on the extent of resection, and to reduce postoperative deficits.

Aim: The present study aims at estimating the morphometry and sulcogyral patterns of all the speech areas of human brain.

Methods: 35 cadaveric human cerebral hemispheres were observed for this cross sectional study in the department of anatomy. Fronto-occipital length, Sylvian fissure length, distance from anterior Sylvian point to inferior Rolandic point, dimensions of supramarginal gyrus, angular gyrus, and medial frontal gyrus were recorded using the thread and vernier calipers on the cerebral hemispheres.

Results: Mean and standard deviations were for all the variables. The variables of right and left cerebral hemispheres were compared by student 't' test. The patterns of anterior ascending ramus and anterior horizontal ramus were categorised as U, V and Y types. Results with p values of less than 0.05 were considered statistically significant.

Conclusion: The knowledge of morphometry and sulcogyral patterns of the primary speech areas and their extended areas is helpful to facilitate the functional localization and the surgical approach to deeper structures surrounding these areas such as ventricles and subcortical lesions. The study adds to the existing data of brain atlases and can be used for automatic parcellation.

Key Words: Broca's area, Wernicke's area, Exner's writing area, Sulcogyral patterns

Imaging Spectrum in Vascular Malformations

Rishab Raghavendra, Nishaa P, Padmalatha K

Department of Radiology & Anatomy, ESIC Medical College & PGIMS, Rajajinagar, Bangalore

Email: rishkoke@gmail.com

Background: Vascular malformations (VM) are vascular spaces lined by flat epithelium with an estimated prevalence of 4.5% in the population. It is usually present at birth, progressing with age. VM can be classified by the type of vessel component (capillary, venous, lymphatic, arterial and hybrid subtype) and according to blood flow dynamics (high and low flow lesions). Low-flow vascular malformations include primarily venous, lymphatic, and mixed malformations. Venous malformations are dysplasias of small and large venous channels associated with a variable amount of hamartomatous stroma. The venous channels connect with adjacent veins. Lymphatic malformations (LM) consist of chyle-filled cysts lined with endothelium. The most common locations for LM include the neck & axilla also seen in mediastinum, retroperitoneum, pelvis & groin. When LM occurs in the neck and axilla, they are often called cystic hygromas. Any lesion that has arterial components is considered a high-flow malformation. These include arteriovenous malformations (AVM) and AV fistulas, MRI features can provide further characterization of sonographic findings and help determine the appropriate management of VM & allows to define extent & anatomic relationship to adjacent structures.

Aim: to study the imaging spectrum in vascular malformation.

Methods: Imaging spectrum in i) Spinal AV fistula, ii) Spinal AVM, iii) Hemangioma spectrum, iv) Kasabach Merritt syndrome, v) Klippel-Trenaunay-Weber Syndrome, vi) Wyburn Mason syndrome, vii) Struge Weber Syndrome & viii) Blue Rubber Bleb Nevus Syndrome

Results: It shall be presented in detail during presentation

Conclusion: It shall be presented in detail during presentation

Role of Biparietal Diameter and Abdomen Circumference on Fetal Growth: A Retrospective Observational Study

Sanjana P, Asha K R, Prasad T N

Department of Radiology, Siddaganga Medical College Research Institute, Tumakuru

Email: sanjanaprakash2804@gmail.com

Background: One of the most important goals of prenatal care is to assess fetal growth. Correct assessment of fetal growth is essential for optimal obstetric management. The accurate estimation of intrapartum fetal weight is very important as it is very closely linked with the survival and well-being of a fetus. Among the available intrapartum fetal weight estimation methods, ultrasound-based estimation is the most readily available and widely practiced technique. Also, birth weight is an important factor in delivery management. The present study is conducted to estimate fetal weight using biparietal diameter (BPD) and abdomen circumference (AC) using ultrasonography.

Aim: To determine fetal growth based on BPD and AC and correlate the data obtained with the fetal weight.

Materials and methods: The present study was approved by Institutional Ethical Committee. An observational study of BPD and AC of 35 pregnant women was conducted on the available sonograms from the Radiology Department of Siddaganga Medical College and Research Institute. Sonograms of pregnant women with respect to their gestational age and only singleton pregnancies were considered. Sonograms of women carrying twins and fetal anomalies were excluded. The trimester wise scan reports were collected and sorted. A sequential comparison was done and recorded to estimate the fetal weight. Data will be analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: Biparietal diameter, Abdomen circumference, Ultrasonography, Fetal weight

Spectrum of Morphometric Analysis of Paranasal Sinuses: Anatomical Variations and Clinical Implications

Shanmish Bannur, Nishaa P, Hema N

Radiology and Anatomy, ESIC MC PGIMSR Rajajinagar, Bangalore

Email: bannursc@gmail.com

Background: Paranasal sinuses are paired symmetrical air-filled cavities situated around nasal cavity. Variations of these sinuses can hinder operative safety during FESS which is to be performed to drain these sinuses following sinusitis. This surgery is most commonly used to drain maxillary sinus as this sinus has difficulty in natural draining of sinus. Paranasal sinus infection can spread locally and cause complications, most commonly it can affect orbit and periorbital regions. It can lead to complications like brain abscess, meningitis, subdural empyema, cavernous sinus thrombosis and epidural abscess. The maxillary sinus is the most commonly infected air sinus and has the most disadvantageous position for natural drainage as it is covered in base by lateral wall of nose. **Aim:** This study is to document the morphometry and anatomical variations of paranasal sinuses in the patients presenting to Radiology OPD of ESICMC & PGIMSR Rajajinagar, Bangalore.

Methods: This study will be carried out in ESIC MC and PGIMSR model hospital Rajajinagar, Bangalore under department of Radiology and Anatomy where the anatomical variations of Paranasal sinuses will be documented and described with the help of computed tomography scans of Paranasal Sinuses.

Significance: This study will provide a map so as to help the surgeons while performing FESS so as to drain sinuses and it can also be helpful to detect an alternative route to explore uncinate process, bullae and infundibulum of ethmoidal air sinus.

Result and conclusion: The anatomical variation so found and documented have clinical implications on FESS surgery and will be described during presentation.

Anatomical and Radiological Exploration of Sella Turcica – It's Surgical Implications

V Kurian Varughese, Nishaa P, Padmalatha K, Chitra N, .Shyamala B Y, Seema S R

Department Anatomy, ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: kurianvarughese@gmail.com

Introduction: The Sella turcica is an important saddle shaped structure that houses the pituitary gland and located in the middle cranial fossa. One of the widely used landmarks in the skull, used for cephalometric tracing is the sella point which is located in the center of sella turcica, which is placed in the middle of the pituitary gland at the base of the skull. Accordingly, the five morphological variations are oblique anterior wall, sella turcica bridging, the double contour of the floor, irregularity (notching) in the Posterior part of the dorsum sella and pyramid shape of dorsal sellae. An understanding of the sphenoid sinus, anatomic features and variations, and precise orientation of the sella turcica and surrounding vital structures are critical before and during surgery

Objectives of the study: To study the morphology and morphometry of sella turcica, Age and gender- related variations in Sella turcica, Relationship of Sella with Internal carotid artery in the cavernous sinus.

Methodology: Fifty dry adult skulls of unknown sex and age, Fifteen Cadaveric pituitary fossa specimens collected from the Department of Anatomy will be examined. The values will be measured using calipers. 100 CT scans will be collected from Department of Radiology and analyzed. Morphometric analysis was done using the following parameters -Length of sella turcica, Sellar width, Sellar height along anterior aspect, Sellar height along posterior aspect, Sellar height average, Cross sectional area- value in millimeter², Sellar depth, Anteroposterior diameter

Results. Of the 88 lateral CT scans collected, 30 were of females and 59 of males. The sellar height of females were 5.498 ± 1.222 , sellar width of females 7.716 ± 1.368 . the sellar height of males were 5.308 ± 1.309 and sellar width was 7.857 ± 1.352 . Further results will be discussed during presentation

Conclusion: the exact dimensions of sella turcica are an important consideration in the diagnosis, and treatment of diseases of pituitary gland and brain. The morphology of sella turcica is different from person to person. There were no significant differences in size of sella turcica between genders of the studied subjects.

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 8

Morphometric correlation of Atlas and Axis articular surfaces for Atlantoaxial stability

Sampurna Saha, Chandni Gupta

Department of Anatomy, KMC Manipal

Email: sampurnasaha2018@gmail.com

Background: The Atlantoaxial joint is an important synovial joint that provides support, flexibility to the craniovertebral axis. Instability of Atlantoaxial joint occurs due to trauma, degenerative and inflammatory and congenital diseases. Morphometric measurements of Atlas and Axis play an important for spinal surgery to prevent neurovascular injury. This cross-sectional study will help in understanding the importance of dimensions of articular facets of Atlas and Axis vertebrae.

Aim: To understand the stability of Atlantoaxial joint by morphometric analysis of Atlas and Axis articular parameters.

Method: 69 intact dry specimens each of Atlas and Axis vertebrae of adults were studied. Various measurements were taken on Atlas and Axis with the help of Vernier calliper. Mean, Standard deviation, Pearson correlation coefficient and p-value were calculated based on the data collected.

Result: The mean anteroposterior diameter of Inferior articular facet of Atlas was 17.5 and 17.4mm on right and left side. The mean transverse diameter of Inferior articular facet of Atlas was 14.5 and 14.2mm on right and left side. The mean height and width of dens facet was 9.98mm and 9.46mm. The mean anteroposterior diameter of Superior articular facet of Axis was 17 and 17.3mm on right and left side. The mean transverse diameter of Superior articular facet of Axis was 15.1 and 15.3mm on right and left side. The height and the maximum transverse diameter of dens was 16.2mm and 9.33mm.

Conclusion: The results of this study will be helpful for better surgical intervention to prevent neurovascular injury and surrounding tissue injury during instrumentation and implant placement.

Keywords: Atlas, axis, articular facet, atlantoaxial stability, morphometry

A study on symmetry of important paired foramina in human skulls

Aditya Krishna Murthy

Kempegowda Institute of Medical Sciences (KIMS), Banashankari 2nd Stage, Bangalore

Email: adityamurthy2211@gmail.com

Background: The cranial fossa of human skull presents numerous paired foramina. This study focuses on the bilateral symmetry of 5 paired foramina-Optic canal, Foramen rotundum, Foramen ovale, Internal acoustic meatus and Jugular foramen. Variations in bilateral symmetry in these foramina may be anatomical, physiological or pathological. This can bring about differences in the orientation of the structures passing through them.

Aim: To evaluate the presence of bilateral symmetry of the following foramina-

1. Ovale
2. Optic canal
3. Jugular foramen
4. Rotundum
5. Internal auditory meatus

Methodology: Following clearance from KIMS-IEC, the study was conducted in the anatomy department at KIMS. Thirty human undamaged skulls without calvaria of presumed south Indian origin were procured and numbered. Each of the paired foramina were measured along two dimensions using a caliper and the values were recorded. For foramen rotundum, the diameter was recorded whenever circular and along two dimensions when not circular. Variations in any of the chosen foramen were documented. Photographs of the skulls were taken. The data collected was analyzed to find out which of the paired foramen were more likely to be symmetrical.

Results: Foramen Total pairs Exactly symmetric. Not symmetric with a difference in dimension by just 1mm
Percentage of exactly symmetric pairs Ovale 29 11 5 37.9%, Rotundum 29 25 4 86.2% Jugular 30 5 1 16.6%, for a men Internal auditory meatus 30 21 7 70%, Optic Canal 26 18 4 69.2%

Conclusion: Foramen rotundum shows most consistency in symmetry (86.2%), while jugular foramen shows maximum variations in shape, size and is least likely to be bilaterally symmetric (16.6%).

The order of bilateral symmetry of foramina is as follows-

1. Rotundum-86.2%
2. Internal auditory meatus-70%
3. Optic canal- 69.2%
4. Ovale-37.9%
5. Jugular foramen-16.6%

This data is of value to radiologists, surgeons, forensic specialists, anthropologists and anatomists.

Key Words: Symmetry, Optic Canal, Foramen Rotundum, Paired foramen

Morphometric study of human mandible

Akshitha M Shetty, Vidya H K, Asha K.R

Department of Anatomy, Siddaganga Medical College and Research Institute, Tumakuru

Email: akshithamshetty7@gmail.com

Background: In medicolegal cases, identification of human based on skeletal remains is a challenge, identification of sex will reduce half of the job. As a component of skull, mandible may be considered as second important source of sex confirmation. Sexual dimorphism in the mandible, may be due to the relative difference in the development of musculoskeletal system, especially the muscles of mastication attached to the mandible. Now a days, due to increased incidents of violence, a greater number of unidentified and mutilated bodies are being referred to the forensic experts. Hence the present study may be useful in providing anthropologic parameters of mandible bone as criteria for sex determination.

Aim: To study the morphometry of Human Mandible. To study the parameters of the mandibles which are indicators of sex determination.

Materials and Method: The present study was approved by Institutional Ethical Committee. The study was conducted on 106 dry human mandibles of unknown age & gender, collected from the 1 year medical students of Siddaganga Medical College and Research Institute. Mandibles in good condition were only included, mandible which are broken and with any pathological features were excluded. Gender of the Mandible was determined based on gonial eversion, chin square and rough or smooth appearance in lateral aspect of angle of mandible.

The parameters such as, angle of the mandible measured with the help of a protractor. Diagonal length on the body of mandible, Horizontal length, minimum ramous breadth was measured with the help of a digital vernier callipers.

Results and Conclusion: Shall be discussed during the presentation.

Keywords: Mandible, Gonial eversion, angle of mandible,

Study on incidence of Wormian Bones and their relation to cranial sutures of the human skull**Ananya Jhamb, Ananya Phatak, Rachana Kulkarni, Chetan Biradi 4 Shilpa Bhimalli**

Department of Anatomy, Jawaharlal Nehru Medical College, Belagavi

Email: jhamb.ananya713@gmail.com

Background: Sutural/Wormian bones are large, irregular bony islands found along cranial sutures that develop from several ossification centres. The Wormian bones are most frequently seen along the lambdoid suture, between the parietal and occipital bones. These are present in both healthy persons and in individuals with a variety of illnesses, including rickets, osteogenesis imperfecta, therefore prior understanding of them is crucial.

Aim: To learn more about the presence of Wormian bones in adult human skulls considering the following parameters: overall incidence, incidence along particular sutures, morphometry.

Methods: The study was performed on 71 dry adult human skulls in North Karnataka, and the observations were made using measuring tape, tools and probes. The skulls for the study were collected from MBBS undergraduate students and the Anatomy Department of J.N. Medical College.

Results: Out of the 71 skulls studied, overall incidence of Wormian bones was 70.42% with maximum present along the lambdoid suture (62.6%) followed by coronal suture (7.13%), parietotemporal suture (5.69%), sagittal suture (1.62%); the least being along the temporal suture (0.8%). Incidence of Wormian bones at the pterion was 8.94%.

Conclusion: The location of Wormian bones will aid surgeons and radiologists in differentiating between skull fractures and Wormian bones and get a better understanding of several genetic and CNS disorders. This will also add to the pre-existing knowledge of neurosurgeons and provide an updated guide.

Key Words: Wormian bones, morphometry, pterion, osteology

Morphometric study of the Atlas Vertebrae**Anushree M, Thejashwari H K, Asha K R**

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: shreanu426@gmail.com

Background: Atlas vertebra is the first of the seven cervical vertebrae. It is the only vertebra which has no vertebral body. It has many unique features and is located at a critical point close to the vital centers of the Medulla oblongata, which can get compressed by dislocation of atlanto-occipital joint. Therefore, study of anatomy of Atlas vertebra is crucially important in any kind of surgery in the cranio-vertebral region.

Aim: To study the morphometry of the Atlas vertebrae.

Materials and methods: The present study was approved by Institutional Ethical Committee. The present study was conducted on 54 Atlas bones of undetermined gender collected from the 1 year medical students of Siddaganga Medical College and Research Institute. Broken bones and bones with pathological features were excluded from the study. The various parameters such as (i) distance between the tips of transverse process of Atlas, (ii) distance between the most lateral margins of two foramina transversaria, (iii) distance between the medial margins of two foramina transversaria, (iv) maximum anteroposterior diameter of vertebral foramen and (v) anteroposterior and transverse diameter of the superior articular facet were studied using vernier caliper. Data will be analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: Atlas, Vertebrae, Foramen transversarium

Morphometric analysis of Foramen Magnum: An anatomic study using Artificial Intelligence**Bharath R, Asha K R**

Department of Anatomy, Siddaganga Medical College and Research Institute, Tumakuru

Email: drbharath2004@gmail.com

Background: The foramen magnum is a critical anatomical structure located at the base of the skull that serves as the gateway for the passage of numerous vital structures like spinal cord, vertebral arteries, meninges, some important ligaments. Any lesion or trauma to these structures may lead to severe complications and its very tedious task for the medical community. This study is aimed to conduct a morphometric analysis by taking photographs of the foramen magnum subjected to AI model to provide comprehensive data on its dimensions, shape and variations. The data obtained from this study may serve as a reference for neurosurgeons, radiologists and anatomists, assisting in diagnostic assessments, surgical planning and forensic investigations involving the foramen magnum.

Aim: To study the anatomical variations associated with Foramen Magnum.

Materials and Methods: The present study was approved Institutional Ethical Committee. A total of 148 dry skull specimens will be utilized for this anatomic study. The dimensions of the foramen magnum will be measured, for that we will present a deep learning model to calculate distances between two points, which leads to metric measurements. The image of the sample will be taken and enhanced by image processing and grayscale filter will be applied to it to get a better analysis. The dark area of the cavity present at the foramen magnum will be measured. To perform morphometric analysis of the foramen magnum using machine learning, the following steps are involved: Data Collection, Data Processing, Feature selection/ extraction, Model selection, Model training, Model evaluation, Model optimization, Testing and Interpretation.

Results and conclusion: Shall be discussed during the presentation.

Keywords: Foramen Magnum, Image Processing, Machine Learning, Artificial Intelligence.

Morphometric analysis of the pterion on adult dry human skulls**Chandan S Prabhu, Archana B J, Asha KR**

Department of Anatomy, Siddaganga Medical College and Research Institute, Tumakuru

Email: chandansprabhucsp777@gmail.com

Background: Pterion is the weakest part of skull, made of sutural anastomosis of 4 bones. It gains clinical importance due to its close relation to middle meningeal artery, injury to which often leads to extra dural hemorrhage. The thorough understanding of morphometry of pterion will help neurosurgeons in planning effective surgical approaches in transcranial surgeries of pituitary tumors, extra-dural haematoma evacuation etc. The study of morphometry of pterion aids as a tool for forensic anthropologists in identification of age and gender of individuals from skeletal remains. This study aims to provide normal data on the morphometry of pterion with respect to its type and distance from important surgical landmarks.

Aim: To study the morphometry of pterion

Materials and methods: The present study was approved by Institutional Ethical Committee. The present study was conducted on 95 adult dry human skulls of undetermined age and gender collected from the year medical students of Siddaganga Medical College and Research Institute. Skulls in which the morphology of pterion had been disturbed due to cutting of calvaria were excluded from the study. The formation of the pterion was observed. Distance between the pterion and anatomical landmarks like mid-point of the superior edge of the zygomatic arch, anterior and posterior edge of the frontozygomatic suture, the tip of the mastoid process, anterosuperior edge of supraorbital spine and asterion was measured using calibrated Digital Caliper

in millimetres. The skulls were numbered and photographed. Data was analyzed using IBM SPSS (version 16) for statistical analysis.

Results and Conclusion: Shall be discussed during the presentation.

Key words: Pterion, middle meningeal artery, frontozygomatic suture, extradural haematoma

A Study on morphology of Suprascapular notch and its clinical significance

Dhanvin B M, Shwetha B, Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: dhanvinbm22@gmail.com

Background: Suprascapular notch is present medial to coracoid process on the superior border of scapula. Superior transverse scapular ligament changes this notch into foramen, and suprascapular nerve passes within this foramen. Many variations occur in the shape and formation of suprascapular notch owing to the ossification of the superior transverse scapular ligament. Anatomical knowledge of suprascapular notch is very essential in diagnosis, and management of entrapment neuropathy and surgical interventions around the shoulder joint.

Aim: The aim of the study is to measure the vertical and transverse diameter of the notch and study the shape and classify the suprascapular notch.

Materials and methods: The study will be conducted after obtaining institutional ethical committee clearance. The shapes of suprascapular notch will be analysed and classified based on Rengachary classification. and the vertical and horizontal diameter will be measured using Vernier callipers. The parameters measured will be:

1. Superior transverse diameter : the maximum distance between superior corners of the notch.
 2. Middle transverse diameter : the maximum horizontal distance between the margins of the notch.
 3. Maximum depth: the maximum vertical distance between the deepest point of the notch to imaginary plane between the superior corners of the notch
- The study will require 91 dry human scapulae. Data will be entered in MS-Excel and analysed using IBM SPSS Version 16. Descriptive statistics like mean and standard deviation will be calculated.

Results and Conclusion: Shall be discussed on the day of Presentation.

Keywords: Suprascapular notch, transverse scapular ligament, suprascapular nerve, scapula, suprascapular foramen.

Morphology of suprimeatal triangle and its clinical relevance

Eesha Kharade, Sneha Upadhyay, Khushi Sharma, Vrinda Hari Ankolekar

Email: eeshavilas14@gmail.com

Background: The suprimeatal triangle is located between the posterior wall of external acoustic meatus and posterior root of the zygomatic process, in the temporal bone. It is also called as Macewen's triangle. The suprimeatal triangle is used for approaching the tympanic cavity and it is an important landmark for otologic surgeons during mastoidectomy.

Aim: To observe the morphometry of suprimeatal triangle and to review the literature on anatomical and clinical aspects of suprimeatal triangle.

Method: The study was carried out in the Department of Anatomy, Kasturba Medical College Manipal, on 65 human adult skulls. Five landmarks were taken on the left and right sides of the skulls and the imaginary lines were constructed and measured by Vernier caliper between the landmarks.

Results: From the above conducted study, the mastoid length was 23.48 ± 2.55 mm, the distance between anterior tubercle and tip of mastoid process was 35.69 ± 3.55 mm, the distance between posterior tubercle and tip of mastoid process was 27.69 ± 3.60 mm, the width of the acoustic meatus was 5.55 ± 1.51 mm, the length of acoustic meatus was 4.77 ± 1.49 mm, superior border of suprameatal triangle was 12.57 ± 2.73 mm, antero-inferior border of suprameatal triangle was 9.09 ± 1.81 mm, posterior border of suprameatal triangle was 11.22 ± 2.59 mm, distance between Henle's spine and midpoint of triangle was 16.76 ± 1.97 mm, distance between porion and midpoint of triangle was 7.72 ± 1.99 mm, area of triangle was 49.40 ± 2.73 sq.mm.

Conclusion: Knowing the morphometry of this area, before the surgical procedure, will be a guide for surgeons in preventing possible operative and postoperative complications.

Keywords: Henle's spine, Suprameatal triangle, Mastoidectomy, suprameatal spine

Morphometry of distal fragments of Humerus: A tool for reconstruction of Humeral length

Yasaswini Udayagiri, Asha K R

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: yashuneet2020@gmail.com

Background: The establishment of the identity of a deceased person also assumes great medico-legal importance. To establish a person's identity, stature is one of the criteria. To know the stature of an individual, the length of long bones is needed. The Humerus is one of the long bones in the human body. It has a shaft, proximal end, and distal end. Humerus is selected in the present study because it is one of the long bones which helps in assessing the height of the individual. Distal humeral fractures in adults are challenging injuries. They often require surgical intervention in form of internal fixation or total elbow arthroplasty. Careful preoperative evaluation including type of fracture, affected distal humeral segments, quality of bone, pre-existing conditions and functional demand help surgeons in deciding optimal treatment.

Aim: To determine the length of distal segments of the humerus. To reconstruct the total length of the humerus using Standard Regression formula.

Materials and methods: The present study was approved by Institutional Ethical Committee. A total of adult dry humeri of unknown age and sex were taken. Damaged or deformed bones were excluded. Each bone was divided into segments by taking following predetermined points on it.

- a) Maximum length of humerus (MLH).
- b) Distance between proximal and distal point of olecranon fossa (H1).
- c) Distance between distal point of olecranon fossa and distal point of trochlea (H2).
- d) Distance between proximal point of olecranon fossa and distal point of trochlea (H3).

The above parameters were measured using vernier caliper. The data will be analyzed using SPSS software.

Descriptive statistics like Mean, Standard Deviation will be computed. Data will be analysed statistically using Regression Analysis.

Results and conclusion: Shall be discussed during the presentation.

Key words: Humerus, Distal fragments.

Study of morphometric and morphological features of dry mandible**Suhas B R, Hema N, Seema SR**

Department of Anatomy, ESIC Medical College and PGIMSR, Rajajinagar, Bangalore - 560010

Email: suhasbr2216@gmail.com

Background: The mandible is the largest bone of the human skull which forms the lower jaw and temporomandibular joint. Mandible consists of body and ramus. The internal surface of the ramus presents mandibular foramen and lingula. Inferior alveolar nerve passes through the mandibular foramen and gives off mental nerve that emerge from the mental foramen. In the case of traumas, fractures of Mandible are relatively common. Mandible is the second bone to ossify from Meckel's cartilage. Mandible has a significant role in identification of the gender

Aim: 1. To measure the Breadth and Height of the ramus of the mandible.

2. To evaluate the site of mandibular foramen by measuring its distance from various landmarks on the ramus of mandible

3. To study the variations of lingula and coronoid process of the mandible

4. To measure the angle of the mandible using goniometer and to correlate present findings with the previous research works.

Methods: 30 Dry mandibles were obtained from Department of Anatomy and measurements were taken using digital Vernier caliper. Angle of the mandible was measured using Goniometer. Measurements were taken on both halves of the mandible. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software

Results: Different measurements were observed between both halves of same mandible. Various shapes of lingula were observed the details of which will be discussed during the presentation

Conclusion: The knowledge of these Anatomical measurements and variations plays a significant role during facial surgeries in the region of mandible.

Keywords: Mandibular foramen, Lingula, mental foramen, surgeries.

DAY 1 15th September 2023 (Friday)

ORAL 2

3.30-5.00 pm

Scientific Session 9

Clinical scenario of non-fusion of Amnion & Chorion

Shubha Nivargi

Sapthagiri Institute of Medical Sciences and Research Center

Email: drshubhanivargi@gmail.com

Background: The separation of the chorion and amnion before 14 weeks of gestation is physiologically normal which usually fuse between 14-16 weeks. Then non fusion of these membranes after 16 weeks can indicate fetal anomalies or pregnancy with complications.

Case Description: A case of non fusion of chorion and amnion was observed during routine obstetric ultrasound examination at 36 weeks of pregnancy in a 22 years old woman who visited the antenatal clinic, in the department of OBG. Colour Doppler study for various fetal parameters was done to assess the fetal growth.

Observations: General physical examination of the pregnant woman was done. Age of the patient and the gestational age were noted. Fetal head circumference, Fetal abdominal circumference, Fetal biparietal diameter and amniotic fluid index were observed using ultrasonography. Colour Doppler study for various fetal parameters was done to assess the fetal growth.

Results: Non fusion of amnion and chorion was observed on USG. Amniotic fluid index was seen to be increased with grade II placenta with posterior fundal position.

Conclusion: Non fusion of chorion & amnion may be associated with premature delivery with preterm labour, aneuploidy like trisomies or any other fetal anomalies. Hence such cases if diagnosed early should be followed up carefully to avoid any untoward consequences in pregnancy.

Aortic Knuckle and its contribution to left cardiac outline: A radiographic study

Sunil O, Balachandra N

Department of Anatomy, Dr. B.R. Ambedkar Medical College

Email: sunilobulesh013@gmail.com

Background: The chest radiograph is an important method of chest imaging, providing an easily accessible, cheap, and effective diagnostic tool. Aortic knuckle is an important finding in chest radiograph. Aortic knuckle enlargement suggests underlying cardiovascular comorbidity including hypertension.

Aims and objectives: To analyze the contribution of aortic knuckle to left cardiac outline in a general population of various age groups.

Materials and methods: Postero-anterior (PA) chest radiographs of 648 individuals between the ages of 18 to 75 years were evaluated. Curved length of aortic knuckle (AKC) and total length of left cardiac outline (LCOT) were studied and contribution of aortic knuckle to left cardiac outline in a general population of various age groups. Statistical analysis was carried out with the help of IBM-SPSS (IBM Corporation) and Microsoft Excel.

Results and Conclusion: Curved length of aortic knuckle (AKC) and total length of left cardiac outline (LCOT) were analyzed to compare normal population with those with cardiovascular co-morbidity. The contribution of aortic knuckle to left cardiac outline showed a gradual increase in the contribution ranging from 17.8% in age group 17-25 years and 23.4% in age group 61-75 years. Further the contribution was 18.4% in normal population and 25.5% in co-morbid patients. Thus, simple measurement of aortic knob in PA chest x-ray may help in predicting cardiovascular disorder.

Keywords: aortic knuckle, comorbid, hypertension

Changes in the seahorse of brain due to chronic stress - A critical review

Supriya 1, Suresh N.M ²

Department of Anatomy, Sri Chamundeshwari Medical College Hospital & Research Institute, Channapatna- 562160, Karnataka

Email: priyapadmashali.13@gmail.com

Introduction: 75% of general population experience atleast some stress once in every two weeks. Studies have shown that the chronic stress is a risk factor for many of psychological disorders including the cardiac, gastrointestinal disorders and obesity. Many of behavioral studies on humans and animals have shown that hippocampus is most commonly involved at variable levels under the influence of uncontrollable stress. This review provides a brief information on how the chronic stress influences the structural and functional damage on hippocampus.

Objective: The review focuses on the changes occurring in the hippocampus post exposure to chronic stress.

Methods/ Study description: The review of majority of study articles have shown that the stress elevates the Cortisol and alters the hippocampal volume which eventually impairs many of the memory tasks which are dependent on hippocampus.

Results: Chronic Stress clearly exacerbates the cognition pathway by inducing widespread alterations to brain functioning, ranging from large scale network activity and reorganization to altered expression and function of synaptic proteins, including A β protein and Tau-p Protein leading to deleterious effects on Hippocampus in many neurodegenerative diseases like Alzheimer's disease.

Conclusion: Chronic stress acts as a putative link between neuropsychiatric and neurodegenerative disease. Hence good and healthy lifestyle changes should be endorsed to reduce stress as a precautionary measure in humans

Key words: Chronic stress, Hippocampus, Cortisol effects, Neurodegenerative disorders, Sea horse of brain.

Effect of metformin on behavioral changes and inflammatory markers in bacterial lipopolysaccharide induced neuroinflammatory model of Albino Wistar rats

Vandana Blossom, Sheethal Ullal, Rajalaxmi Rai, Nayantara AK, Aradhana Marathe

Department of Anatomy, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

Department of Pharmacology, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

Department of Physiology, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

Department of Biochemistry, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

Email: Vandana.blossom@manipal.edu

Background: The triggering mechanisms involved in disease onset, development of neuro-inflammation are poorly understood. Previous research has reported some neuroprotective properties of metformin which help in modulating the process of neuroinflammation, rest of which have still to be explored.

Aim: To find out the efficacy of Metformin on behavioral changes and inflammatory markers Albino Wistar rat model of lipopolysaccharide (LPS) induced neuroinflammation

Methods: Group 1A received weekly PBS (Phosphate buffer) every day for 8 weeks, Group 2A received LPS for 8 weeks once a week, similarly, Group 3A, 4A, and 5A received metformin of different dose orally for 8 weeks every day along with LPS once a week for 8 weeks. Group 1B will receive normal saline intraperitoneally once daily for 3 weeks (week 13-15). Group 2B will receive LPS intraperitoneally once weekly for 12 weeks followed by normal saline intraperitoneally once daily for 3 weeks (week 13-15). Group 3B, 4B and 5B will receive metformin in the dose orally for 3 weeks (weeks 13-15) after LPS administration weekly once for 8 weeks. After the experimentation,

Behavioral changes were noted, and brain tissues were visualized for neuronal analysis, biochemical analysis for inflammatory markers was done.

Results: Step-through latency significantly improved ($p < 0.05$) with treatment of metformin compared with inflammatory group (2A, 2B). Steady decline ($p < 0.05$) in number of neurons in frontal cortex, dentate gyrus, different regions of hippocampus was observed, in the LPS group (2A,B) compared with different dose of metformin treated group ($p < 0.05$). There is noticeable change in inflammatory markers in the metformin group ($p < 0.05$).

Conclusion: Its observed metformin being commonly used anti-diabetic drug also has certain beneficial effects on brain with long-term use. The pathophysiological processes associated with inflammatory processes targeting brain tissues in neuroinflammatory model were evaluated.

key words: 3-5Lipopolysaccharides, Metformin, Neuroinflammation

Morphometric evaluation, variations and sexual dimorphism of Frontal Air Sinuses by Computed Tomography.

Vidya H K, Asha K R, Archana B J, Prasad T N

Department of Anatomy, Siddaganga Medical College & Research Institute, Tumakuru

Email: vidyassmc@gmail.com

Background: Frontal air sinuses are a pair of air-filled spaces in the frontal bone of skull, its anatomy, varies from person to person. Significant differences in structure between the two sides may also exist in the same person, therefore a detailed anatomical knowledge of the frontal sinuses is very much essential while performing procedures such as functional endoscopic sinus surgery & when other ways of identification have failed, and only skull remains have been recovered, the frontal sinus can be used for identification.

Aim: To measure the volume and other diameters of the frontal air sinuses. To study the relationship between diameters, volume of the frontal air sinuses with respect to age and sex.

Materials and methods: The present study was approved by Institutional Ethical Committee. Data were collected from CT of patients who reported to the department of Radiology and Imaging, SMCRI, Tumakuru for head & neck CT examination between 1st January 2023 to 30th June 2023. Patients with documented sinus pathology or lack of pneumatization were excluded from the study. The CT images were viewed on the computer monitor, anterior-posterior, horizontal and vertical diameters of the frontal sinuses in both right and left side measurements were taken with in-built linear calipers in collaboration with the radiologist. The data obtained were documented in customized MS Excel 2010 sheet/tables. Statistical analysis was done using IBM SPSS (version 16).

Results and Conclusion: Shall be discussed during the presentation.

Key words: Frontal air sinus, Computerized tomography, sexual dimorphism.

Identifying Grey Areas of Brain Fungal Pathogenesis Using 3-D Cerebral Organoids

Aswathi Ramesh, Peralam Yegneswaran Prakash, Kavitha Saravu, Kavitha S Shettigar, Dinesh Upadhya

Centre for Molecular Neurosciences, Kasturba Medical College, Manipal Academy of Higher Education, Manipal Department of Microbiology, Kasturba Medical College, Manipal Academy of Higher Education, Manipal, Department of Infectious Disease, Kasturba Medical College, Manipal Academy of Higher Education, Manipal. Department of Medical Laboratory Technology, Manipal College of Health Professions, Manipal Academy of Higher Education, Manipal
Email: aswathi.ramesh2@learner.manipal.edu

Background: Cryptococcal meningoencephalitis is a fatal brain infection caused by an opportunistic fungal pathogen *Cryptococcus neoformans*. The polysaccharide capsule is a key virulent factor of the fungus and a major component of the capsule Glucuronoxylomannan (GXM) is copiously released into the CSF and brain parenchyma during brain infection and contributes to fungal pathogenesis. Despite this knowledge, the interaction of GXM on brain cells and its pathogenesis is poorly understood.

Aim: To understand the cellular targets of GXM using human cerebral organoids.

Methods: Cerebral organoids were generated using standard protocol up to 30 and 60 days. These cerebral organoids were divided into control and treatment groups with 6 organoids per group (n=3 independent experiments). In the treatment group, organoids were incubated with 50µg/mL GXM at 37°C with 5% CO₂ for 48 hours. Following treatment, organoids were cryofixed, sectioned using a cryostat, and multiple single and dual immunostaining procedures were performed to understand the effect of GXM on cellular proliferation and survival as well as to identify the cellular targets of GXM.

Results: Cell proliferation assay showed that GXM didn't alter the proliferation of neural stem cells. TUNEL assay to study the cell apoptosis proved that GXM treatment moderately increased cell death in the cerebral organoids. Dual Immunostaining with anti-GXM and anti-Ki67 antibodies demonstrated that GXM is not co-localizing with proliferating cells. GXM is found accumulated surrounding the β III tubulin-positive neurons. GXM didn't co-localize with the GFAP-positive astroglial cells.

Conclusion: We understood that GXM has a preference towards neurons and is not targeting proliferating cells and astroglial cells in cerebral organoids.

Key words: Cerebral organoids, Cryptococcal meningoencephalitis, Glucuronoxylomannan.

Lipid composition of developing central nervous system

Sumukha Hegde, Divya Chandran, Dinesh Upadhya

Centre for Molecular Neurosciences, Kasturba Medical College, Manipal Academy of Higher Education, Manipal 576104, Karnataka, India
Email: Sumukha.hegde7@gmail.com

Background: Human brain is the most composite structure of all living organisms. The principle structural unit of the brain is a lipid which constitutes 50–60% of its dry weight. However current literature shows that the role of lipids in neurodevelopmental stages has been poorly understood.

Objectives: To evaluate cellular lipid composition in different stages of neurodevelopment.

Methodology: In this study, we used directed differentiation of induced pluripotent stem cells (iPSC) into neuronal lineage which mimics the human neuronal developmental pattern was used to understand the different neurodevelopmental stages. The lipidomic profile of induced pluripotent and neural stem cells cultured on a laminin-coated basement membrane matrix was studied by comprehensive mass spectrometry-based untargeted lipidomics. Further studies are done to uncover the influence of external supplements during the

early stages of neurodevelopment. Also, studies are underway to identify lipid composition in human neurons. All the cell types were confirmed by western blot and immunostaining with cell-specific markers.

Results: Our results show that the lipid species present in iPSC majorly constitute Monoradylglycerolipids (MG), Diradylglycerolipids (DG), Triradylglycerolipids (TG), Glycerophosphocholines (PC), Glycerophosphoglycerols (PG), Glycerophosphoserines (PS), Glycerophosphoethanolamines (PE), Glycerophosphoinositols (PI), and Cholesterol ester, whereas during development when these cells are patterned to neural lineage the lipid species MG, DG, PC, and PE were significantly altered, which clearly reflects on the critical role of the niche that guides in the development. Similarly, DG and PE are considerably changed in neural stem cells when external supplements are present.

Conclusion: Our approach successfully identified the changing lipidomics pattern from the initial pluripotent stages to neural stem cell stages. Further studies are underway to identify lipid composition in human neurons.

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 1**Aberrant head of triceps and biceps brachii muscle with vascular variation: A case report.**

Aamna Kausar, Roshni Sadashiv, Sharanya Rao, Sonal Nayak, Veena V. Kulkarni

Department of Anatomy, SDM College of Medical Sciences and Hospital, Dharwad

Email: aamnakausar5@gmail.com

Background: The triceps brachii and biceps brachii muscles of the arm, by their names correspond to the number of heads they possess. Triceps brachii, a muscle of posterior compartment has 3 heads namely- long, lateral and medial heads while biceps brachii, a muscle of anterior compartment has 2 heads namely- long and short heads. Aberrant heads and their relation to the neighbouring structures must be notified to create a safe exposure of the intended area by the clinicians during any surgical procedure.

Aim: To identify the morphological aberrant heads of triceps and biceps brachii muscle accompanied by vascular variations, in order to aid clinical procedures.

Methods: During routine dissection class, variations were observed in 74 years aged female cadaver fixed in 10% formalin. The anterior and posterior compartment of both arms were dissected to clearly expose the muscles and neurovascular structures in relation to the concerned muscle. Predominantly, the muscle variance became apparent and the findings were recorded and photographed subsequently.

Results: Triceps brachii muscle (Left arm) showed a small additional-fourth head arising aberrantly as a delicate tendon from the posterior aspect of humerus shaft at the level slightly below its surgical neck. Its insertion into the medial head of triceps brachii crossed superficial to neurovascular structures in the radial groove. The biceps brachii muscle (Right arm) possessed an additional-third muscular head originating from humerus shaft and adjoining brachialis fascia, posteromedial to the distal part of principal belly. Its insertion to the principal belly tendon turned slightly tendinous. Accompanying, vascular branching pattern variation was noticed in the second and third part of axillary artery.

Conclusion: The prior knowledge of aforesaid variation is necessary considering preoperative diagnosis and avoiding iatrogenic injuries during procedures like shoulder arthroscopy/ replacement surgeries, biceps tenodesis, tenotomy etc.

Key words: Triceps brachii, biceps brachii, aberrant heads, surgery.

Anthropometric Study of Human Ear Auricle in North Indian Population

Singh Amoldeep, Mahajan Anupama, Chaudhary Rajeev

Department of Anatomy, Indira Gandhi Medical College, Shimla

Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar

Email: dr.amoldeep@gmail.com

Introduction: The ear auricle has similar diversity as of the fingerprints but the research work on the ear auricle is very rare as compared to research on fingerprints. Ear auricle can serve as a better identification feature as it exhibits less changes with the advancement of age and is less likely to get injured or manipulated.

Objective: The present study is performed to estimate the anthropological measurements of ear auricle in north Indian population

Materials and methods: The different parameters of ear auricle were measured in 480 participants of North Indian origin with their age ranging from 21-60 years. An informed consent was duly signed by all the participants of the study. The parameters recorded are ear length, ear width, ear length up to inter tragus notch, lobule length, lobule width, tragus length and tragus width.

Results: The ear auricle length and width, ear auricle length up-to inter-tragic notch, tragus length and width and auricle height above tragus are greater in males as compared to females whereas the lobule length and width and ear length below tragus are greater in females as compared to males.

Conclusion: The morphometric knowledge of ear auricle may be helpful for the plastic surgeons for cosmetic or reconstructive surgeries related to ear auricle. It is valuable in forensics to find out the identity of unknown person and can also be used as the biometric tool for identification.

Formation of Median nerve from single root – A Case Report

Brijesh Kumar

Department of Anatomy, AIIMS Bhopal

Email: brijesh.anatomy@aiimsbhopal.edu.in

Background: Innervation of upper limb is derived from brachial plexus. It consists of roots, trunks, divisions, cords and branches. Anterior primary rami of C5, C6, C7, C8 and T1 spinal nerve constitute the roots of brachial plexus. Upper trunk is formed roots C5 and C6, middle trunk is formed by C7 root and the lower trunk is formed by C8 and T1 roots. Each trunk divides into ventral and dorsal divisions. Ventral divisions of upper and middle trunk form lateral cord (C5, C6, C7), whereas ventral division of lower trunk form medial cord (C8 and T1). Usually, the median nerve (C5-T1) is formed by the union of medial and lateral roots. The medial root comes from the medial cord (C8, T1) and lateral root comes from the lateral cord (C5, C6, C7).

Aim: To report a rare variant of median nerve formation

Method: Routine cadaveric dissection of upper limb for medical undergraduate students.

Result: The median nerve was formed from lateral cord without contribution of medial cord. The lateral cord was formed by ventral divisions of upper and middle trunks. Therefore, the root values of this median nerve was C5, C6, and C7. On right side, no variation was observed.

Conclusion: Knowledge of these variations is important to anaesthesiologists, radiologists, and surgeons for diagnosis and while performing surgery and regional anaesthetic block procedures. Discussion will be presented during the poster presentation.

Key words: Median nerve, brachial plexus, roots of brachial plexus

Arteria Lusoria - A rare anatomical variant - case report

Hemalatha Bangera, Varsha Shenoy, Somesh S

Department of Anatomy, Father Muller Medical College, Kankanady, Mangalore

Email: bangerakmc@gmail.com

Arteria lusoria is the infrequent inborn anomaly of the aortic arch seen in 0.25% to 2.5% cases. Right subclavian artery taking origin as a separate branch from left end of the aortic arch (also called as an aberrant right subclavian artery syndrome), crossing to the right side passing behind the oesophagus, may compress it resulting in dysphagia (condition called as dysphagia lusoria). It is associated with non-recurrent right inferior laryngeal nerve, which may be injured during neck surgeries. Arteria Lusoria was seen in adult male cadaver associated with non-recurrent laryngeal nerve, erosion of vertebral bodies along the course of artery and thoracic duct deviation towards was observed. Presence of Arteria Lusoria together with the right non-recurrent inferior laryngeal nerve is especially clinically important during thyroid surgery, the right laryngeal nerve cannot be found at the lower pole of the thyroid, and it may be injured by the surgeon if it is not identified in the aberrant area or found lateral to the thyroid.

Keywords: Aberrant right subclavian artery, Non-recurrent laryngeal nerve, arteria lusoria

A study on morphometric analysis of mitral valve in embalmed human hearts: An insight into its clinical implications

Pallavi

Department of Anatomy, Father Muller Medical college, Mangalore

Email: pallavi84ravi@gmail.com

Background: Congenital or acquired valvular heart diseases are not uncommon and mitral valve is most commonly affected. Valve repair or replacement surgeries are commonly done to restore its function using biological tissues or any synthetic prostheses. Considering the complexity of mitral valve complex, detailed knowledge of the dimensions of its components is important to assess the valve pathology and to design an appropriate prosthesis.

Aim: To study the morphometry of mitral valve by measuring various parameters of valve leaflets and annulus.

Methods: This study was conducted using 50 formalin fixed human hearts in the department of Anatomy, Father Muller Medical College, Mangalore. The left atrium and left ventricle were opened by lateral incision and mitral valve leaflets were exposed. Parameters like, annular circumference (C), length and height of anterior and posterior leaflets of mitral valve were measured. Annular diameter was also measured. Descriptive statistical analysis was done using these parameters.

Results: In the present study, the mean annular circumference of mitral valve was measured to be 10.29 ± 1.28 cm. Average Length and height of anterior leaflets were 4.51 ± 0.68 cm and 2.03 ± 0.32 cm respectively. Average Length and height of posterior leaflets were 5.46 ± 0.91 cm and 1.16 ± 0.29 cm respectively. The mean Annular diameter was calculated as 3.27 ± 0.41 cm.

Conclusion: Surgical interventions on the mitral valve complex demands an accurate knowledge of its normal anatomy and its dimensions. The present study provides a database of valvular morphometry in comparison with many published data of different geographical and racial origin. This will help manufacturers to develop synthetic prostheses and also cardiac surgeons to undertake valve reconstructive surgeries successfully.

Key words: Mitral valve, morphometry, valve replacement, valve prosthesis

Duplication of Inferior Vena Cava - A Case Report

Pratik Khona, Pramod Rangasubhe, Pavan Havaladar, P S Bhusaraddi

Department of Anatomy, Gadag Institute of Medical Sciences, Gadag, Karnataka

Email: drpratikkhona@gmail.com

Background: Developmental anomalies of Inferior vena cava (IVC) are infrequent. The Most common anomaly of IVC is double IVC. Double IVC are usually asymptomatic and are discovered mainly during intra operative procedures or incidentally during diagnostic imaging.

Case Description: During routine UG cadaveric dissection of the abdominal cavity at GIMS, Gadag, in a female cadaver aged 85 years duplication of the IVC was observed. At the level of renal arteries, around upper part of second lumbar vertebra, the right and left vena cava drained into a short common trunk of the IVC and it entered the groove behind the Liver. The further course was normal. We also observed that the left renal vein opened into the left vena cava while the right renal vein opened into the right vena cava and then both joined to form the common venous trunk.

Conclusion: IVC can be involved by a number of developmental anomalies due to its complex embryogenesis. This report shows a double IVC variant in which, during embryological development, the supracardinal veins failed to fuse, forming a duplication of the infrarenal IVC. Both the Infrarenal IVCs formed a common trunk at the level of renal arteries. The left Gonadal vein drained into left renal and inturn both drained into left vena

ceva and right gonadal vein drained into right renal vein and both inturn drained into right vena ceva. Though asymptomatic, if such anomalies are present they may have severe consequences, including vascular damage during surgical maneuvers in the retroperitoneal region, which is crucial for the patient's safety.

Key words: Inferior Vena Ceva, Embryology, Anamolies

Morphological study of the popliteus muscle in formalin embalmed adult cadavers

Rajanigandha Vadgaonkar, P. Gopal Govind Kalluraya, Vandana Blossom, B.V. Murlimanju

Department of Anatomy, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal

Email: rajani.vadgaonkar@manipal.edu

Background: The morphology of popliteus muscle and its tendon are subjected to their variability in the origin, mode of insertion, innervation patterns and its dimensions.

Aim: The objectives are to measure the length, thickness and width of the popliteus at various locations.

Methods: This descriptive cross sectional institutional based study will include 50 formalin embalmed adult lower limb specimens. The length of the popliteus along the upper and lower borders, width of the muscle at midpoint, musculotendinous junction and insertion, thickness of the muscle at its midpoint, length, width at its origin and thickness of the tendon of popliteus, length of nerve to popliteus, distance of point of origin of nerve to popliteus from the intercondylar line and nerve to the muscle will be studied. Measurements will be performed by using the digital Vernier caliper.

Results: The detailed morphometric data of this study will be presented at the conference.

Conclusion: It is believed that the morphometric data of the present study will be enlightening to the orthopaedic surgeons particularly in the field of arthroscopic and plastic surgery.

Key words: arthroscopic surgery; popliteus; plastic surgery.

The nerve supply to Extensor Carpi Radialis Brevis in 30 cadaveric upper limbs

Roshni Bajpe

KIMS; RC, Bangalore

Email: Radhakiran30@gmail.com

Introduction: Extensor Carpi Radialis Brevis (ECRB) arises from common extensor origin, lateral epicondyle & radial collateral ligament, inserted into the dorsal aspect of the 3rd metacarpal mainly, with a slip to the adjacent 2nd metacarpal.

Nerve supply: Deep branch of radial nerve before it supplies the Supinator. Some workers found the nerve supply to the muscle as Superficial branch of radial nerve. ECRB may be used in free muscle transfer surgeries or may be injured in trauma to lateral epicondyle, a study to ascertain nerve supply would add to the existing knowledge which would be beneficial to surgeons operating in the area. ECRB is implicated in lateral epicondylitis. The study was done to assess nerve supply to ECRB.

Materials and method: On obtaining ethical clearance, study was embarked upon. 30 upper limbs irrespective of sex used were procured from cadavers used for dissection by MBBS students from Anatomy Department KIMS Bangalore. By routine dissection method, radial nerve was isolated in cubital fossa, its division into superficial and deep branches was noted. The ECRB was separated from overlying extensor carpi radialis longus muscle and nerve supply was assessed.

Nerve supply: Whether it was derived from radial nerve, its superficial or deep branch of radial nerve was noted, limbs were numbered & photographed.

Results: 24-The innervation was from deep branch of radial nerve (80%),

1-Nerve was from radial nerve before it divided into superficial and deep branches(3%)

2-From superficial branch(6.6 %),

3-From angle between superficial and deep branches of radial nerve(10 %)

Conclusion: Variations in nerve supply of ECRB have clinical significance in free muscle transfer, trauma, inflammation

Key words: extensor carpi radialis brevis(ecrb), radial Nerve, superficial branch of radial nerve, deep branch of radial Nerve, radial collateral ligament.

Caval variants - Imaging spectrum in Superior and Inferior Venacava

Shyamala B Y, Nishaa.P , Padmalatha.K

ESIC Medical College & PGIMSR Rajajinagar, Bangalore

Email: drbyshyamala@gmail.com

Background: Development of IVC (Inferior Vena Cava) is a complex sequential process occurring during the 4th to 8th week of gestation. It involves development, regression, anastomosis and replacement of three pairs of venous channels - the posterior cardinal vein, the subcardinal vein, and the supracardinal vein. The aberrant development of these venous systems, for unknown reasons, causes anomalies of the vena caval system. Development of SVC (Superior Vena Cava) is characterized by formation of anastomosis between right and left side, so that blood from left side can be shunted to right. Many studies have found the variation in the IVC, some are incidental whereas some presented with pulmonary emboli, pain, and venous thrombosis. Knowledge of its variations are important to prevent catastrophic bleeding during surgery.

Aim: To summarize imaging findings of some frequent and infrequent superior and inferior vena cava anomalies found in three cases.

Methodology: The Computerized Tomography findings showing variations in caval system noted during routine radiographic procedures in three cases were considered and discussed

Results: Imaging spectrum showed the presence of double IVC, persistent left IVC instead of right and IVC continues into azygos vein. The details and its embryological and clinical significance will be discussed during presentation.

Conclusion: It is extremely important for surgeons to be aware of the variations of the IVC in order to avoid fatal consequences

Key words: Double inferior vena cava, Azygos continuation, Left inferior vena cava, Caval variations.

A morphological variation of Umbilical Fissure in a cadaver- A case report

Sudha.M, Ashalatha PR, Rafeeq.P

Department of Anatomy, Malabar Medical College Hospital & Research Centre-Kozhikkod

Email: sudhaanilmcem@gmail.com

Background: Umbilical fissure (Fissure for Ligamentum Teres) is a long narrow groove in the visceral surface of the liver for ligamentum teres hepatis. Morphological variations of umbilical fissure is a concern for Radiologists and Surgeons for diagnosis and surgical management of hepatobiliary disorders.

Materials and Methods: We report here a case of Pons hepatis, bridging of left lobe of liver and quadrate lobe seen in an adult male cadaver during routine dissection at Department of Anatomy, Malabar Medical College Hospital and Research Centre, Kozhikode. Umbilical Fissure is incompletely converted into a tunnel by the overlying bridge of liver parenchyma measuring 13 mm vertically.

Discussion: Incidence of Pons hepatis is about 3.45% globally. With increasing dependence on laparoscopic procedures, precise knowledge of external variations of the liver is essential for better surgical, interventional and radiological outcomes.

Conclusion: knowledge of pons hepatis bears clinical significance as it can be misinterpreted for liver tumors and hinder the operative procedures on the liver.

Keywords: Pons hepatis, Ligamentum teres tunnel, Variants of Umbilical fissure, fissure, ligamentum, teres, falciform.

Hypoplasia of 4th part of Vertebral Artery Distal to Origin of Posterior Inferior Cerebellar Artery

Sumit Patil

All India Institute of Medical Sciences, Bhopal MP

Email: dr.sumitpatil1122@gmail.com

Background: The clinical significance of the anatomical and morphological variations of the vertebral artery extends beyond the performance of interventional or surgical procedures. These variations also play a crucial role in ensuring circulation to the hindbrain. The fourth segment of the artery spans from the posterior atlantooccipital membrane to penetrate the foramen magnum, reaching the posterior cranial fossa. It then ascends medially towards the medulla oblongata before ultimately reaching the lower border of the pons. The convergence of both vertebral arteries forms the basilar artery, which resides in the basilar sulcus of the ventral part of the pons.

Aim: To report the variant hypoplasia of intracranial part of vertebral artery.

Materials and methods: During routine dissection after removal of total 10 brains along with brainstem, the vertebro-basilar blood vessels were observed for variant patterns.

Case Report: We found two cases where the intracranial part of vertebral artery, distal to origin of posterior inferior cerebellar artery was hypoplastic. In both the cases the hypoplasia was seen in right vertebral artery. In one case, the proximal normal segment had thickened whitish wall, suspecting atherosclerosis of artery. So the section was taken for histo-pathology, to confirm it. After examination of the histo-pathology slide, it revealed atherosclerosis.

Conclusions: The vertebral artery typically develops from the longitudinal anastomoses that connect the seven cervical intersegmental arteries. While most of the intersegmental arteries regress early on, the seventh intersegmental artery persists and transforms into the subclavian artery, which includes the point of origin for the vertebral artery. The most distal part of vertebral artery may have a different segment of origin leading to hypoplasia. Further due to hemodynamic stress on proximal part may be the reason for atherosclerosis.

Keywords: Vertebral artery, hypoplasia, hemodynamic stress

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 2**Absent mirror-image of azygos venous system: A case report with embryological correlation**

Anita.L, Lydia Shobha Andrade

Department of Anatomy, KMC, Manipal

Email: anitalazer11@gmail.com

Introduction: The Azygos venous system comprises of azygos vein, hemiazygos vein and accessory hemiazygos vein. It drains blood from the thoracic wall and abdomen wall. The hemiazygos vein is considered to be a mirror-image of the lower half of azygos vein and is formed by the union of the left ascending lumbar vein and left subcostal vein. The azygos-hemiazygos system is subject to a wide range of variations in its pathway. A few cases have reported that, hemiazygos and accessory hemiazygos veins may drain into the azygos vein through a common trunk. The posterior wall thorax undergoes several surgical interventions.

Case report: The present case highlights the absence of hemiazygos and accessory hemiazygos veins. Anatomical variation in the azygos venous system was observed in an approximately 50-year-old female south Indian cadaver. The fifth to twelfth posterior intercostal veins on the left side crossed the vertebrae and drained directly into the azygos vein. The left ninth and tenth posterior veins formed a single trunk and drained into the azygos vein. No significant variation was observed on the right side.

Conclusion: The knowledge of such variations is necessary, especially for the cardiothoracic surgeons, to avoid haemorrhage while performing surgeries.

Unilateral high division of Sciatic Nerve – A case report

Dinesh R, Rajapur Parashruarm

Department of Anatomy, MMC & RI, Mysore

Email: dineshrvr46@gmail.com

Background: The sciatic nerve is the thickest nerve in the body & is ~ 2 cm wide at its origin. It leaves the pelvis via the greater sciatic foramen below piriformis and descends between the greater trochanter and ischial tuberosity, along the back of the thigh, dividing into the tibial and common peroneal nerves at a varying level proximal to the knee. The point of division of the sciatic nerve into its tibial and common peroneal components is very variable. The common site is at the junction of the middle and lower thirds of the thigh, near the apex of the popliteal fossa, but the division may occur at any level above this point and, rarely, may occur below it.

Methodology: During the routine dissection of Gluteal region of a 65 year old male cadaver, at Department of Anatomy, Mysore Medical College and Research Institute, Mysore, we encountered an unilateral high division of the sciatic nerve in the left gluteal region, in which, the common peroneal nerve is piercing the Piriformis muscle, whereas the tibial nerve emerges below the piriformis muscle. Thus indicating a high division of the nerve in the gluteal region.

Results: An unilateral high division of the sciatic nerve in the left gluteal region.

Conclusion: The topographical knowledge of the common variations of the point of division of sciatic nerve is essential for orthopedic and general surgeons to avoid iatrogenic injury to this nerve during surgeries and also for anesthetists to prevent the failure of nerve blocks, especially during popliteal nerve blocks.

Key words: Sciatic Nerve, Piriformis Muscle, Tibial Nerve, Common Peroneal Nerve, Nerve blocks.

Anatomical variation in origin of Medial and Lateral circumflex femoral artery found in cadaver - A case Report

Gundigi Varshitha, Najma Mobin, Vidya C.S

Department of Anatomy, JSS Medical College, Mysuru, Karnataka, India

Email: gvarsha87907@gmail.com

Background: The Profunda femoris artery is one of the largest branches of femoral artery. It is the major blood vessel to the thigh. The course and ramification of the lower limb vessels have received much attention by the radiologists during interventional procedures like arteriography, ultrasonography, and Doppler imaging techniques. Hence, accurate knowledge about the profunda femoris artery and circumflex arteries is highly recommended.

Aim: To identify variation in the origin and branches of profunda femoris artery during the cadaveric dissection.

Method: During the routine dissection with MBBS batch (2022-2023) students in the Department of the Anatomy at JSS Medical College, we observed a rare variation in the arterial supply of the lower limb of a male cadaver.

Observation: The variation was found in 55-years-old male cadaver which showed the anatomical origin of the medial and lateral circumflex femoral arteries. They both were arising from the common femoral trunk instead of the deep circumflex femoral artery. This variation was found to be in 15% of people. The profunda femoris artery is usually posterolateral in position, but here it was medial in position. This is a rare case found only in 3.31% of the population.

Conclusion: It is an important to note such a rare variation in order to classify the branching patterns of profunda femoris artery in future. A complete understanding of the anatomy of profunda femoris artery and its variations is necessary to avoid complications during arterial replacements and surgical implications.

Keywords: Medial circumflex femoral artery, Lateral circumflex femoral artery, common femoral artery, Profunda femoris artery.

Unilateral absence of median cubital vein in a 70-year-old male cadaver: A case report

Harshitha. B.M, Nagabhushan H.M, Poonam. D. N, Vidya. C.S

Department of Anatomy, JSS Medical College, Mysuru, Karnataka, India

Email: harshithagowda2501@gmail.com

Background: The superficial veins in the cubital fossa are likely to have various patterns. The median cubital vein connects the basilic vein with the cephalic vein in the cubital fossa. The superficial veins of the cubital region are utilized for clinical procedures like phlebotomy, insertion of intravenous cannulas, arteriovenous fistulas for hemodialysis, cardiac catheterization. In addition, they have close relationship with the cutaneous nerves which is prone to vary and vague.

Aim: To study the pattern of median cubital vein in relation to cephalic and basilic vein in the cubital fossa

Methods: The flexor compartment of forearm along with the cubital fossa was dissected according to the volume- 1: upper and lower limbs, Cunningham's manual of practical anatomy, by G.J.Romanes.

Observation: During routine dissection of a male cadaver aged about 70 years, Department of Anatomy, JSS Medical College, the variation we found in the right cubital region of the cadaver showed there was an absence of median cubital vein. Therefore, the cephalic vein drained into basilic vein in the cubital fossa. The median ante-brachial vein terminated into cephalic vein.

Conclusion: It is important to study about the anatomical variation in patterns of the superficial veins of cubital fossa to avoid any professional errors like complications during procedures like phlebotomy, intra venous cannula insertion, and to prevent the accidental nerve injury that may occur leading to paresthesia and pain.

Keywords: Phlebotomy, Median cubital vein patterns, Venipuncture, Paresthesia.

A rare case report of tubular stomach in a 80 year old female cadaver**Monalisa Mandal, Uma Shivanal, Vidya. C.S**

Department of Anatomy, JSS Medical College, Mysuru, Karnataka, India

Email: mandalmonalisa10@gmail.com

Background: The stomach is a site for various pathological conditions like congestive hypertrophic pyloric stenosis, peptic ulcer, gastroesophageal reflux disease (GERD), and carcinoma of the stomach. Surgical manipulation of the stomach is done by a bariatric surgeon for the treatment of obesity. Comprehensive knowledge of variations of stomach helps clinicians to identify the developmental defects while diagnosing diseases and further helps in preoperative planning and preventing inadvertent damage during surgeries.

Aim: The present study was undertaken to assess the anatomical variation of stomach along with the histological alterations.

Methods: During routine dissection for MBBS students in Department of Anatomy, JSS Medical college, we found an unusual tubular stomach in an 80-year-old Indian woman. The stomach was dissected, cutting through the esophagus superiorly and pyloric duodenal junction inferiorly and was taken out of the abdominal cavity. The stomach was cut along the greater curvature for interior examination.

Observation: The cadaveric stomach was tubular in shape with a smaller number of rugae. Length of stomach was 28 cm long, and width was 8.5 cm along fundus, pyloric end 3.5 cm, cardiac end 3.5 cm and tissue was taken for histopathological examination (H& E stain) and will be discussed in the presentation.

Conclusion: The different shape of the stomach is strongly associated with the organogenesis. Numerous acquired variations of stomach are clinically important like in vagotomy and esophagectomy. The stomach in discussion is tubular in shape with 3.5 cm in width along the cardiac, body and pyloric region.

Keywords: Gastric variation, Tubular stomach, Vagotomy

Trifurcation of left coronary artery with absent left circumflex artery and superdominant right coronary artery in the heart.**Nikilesh S, Ambiga R, Stephen PC, Verma S, Suma HY**

Department of Anatomy, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry

Email: nikisankar28@gmail.com

Background: The absence of left circumflex artery (LCX) is usually a benign, asymptomatic condition and sometimes patients can present with angina like symptoms. Absent LCX in a patient may present like coronary artery syndrome. The prevalence of absent LCX has been reported as 0.003-0.067%.

Case report: During routine dissection for the undergraduate students in an isolated heart specimen of a 65-year-old male cadaver, the coronary arteries were observed for variations. The left coronary artery originated from left aortic sinus and its length was 2.20 cm. It trifurcated into left anterior descending (LAD), left marginal and left diagonal branches. The LCX was absent. The total length of LAD was 11.5cm. The right coronary artery (RCA) originated from right aortic sinus. Its right marginal branch was absent. The RCA continued beyond the crux after giving the posterior interventricular artery and became superdominant as it supplied branches to the left ventricle. Its total length was 12.5cm.

Conclusion: This variant anatomy adds to the existing literature on variations in coronary artery anatomy. These variations may be useful to the cardiothoracic surgeons while performing cardiac interventional surgeries including coronary artery bypass graft procedure. Radiologists need to be aware of such variations while performing coronary angiography.

Keywords: Human heart, Coronary artery, Left circumflex artery, Right coronary artery

Embryological basis of polydactyly in 56 year old male patient: Case report**Sarayu M, Vidya C S, Prerana Das**

Department of Anatomy, JSS Medical College, Mysuru, Karnataka, India

Email: sarayum39@gmail.com

Background: Polydactyly is the more common congenital hand deformity. The limb buds are the precursor structures of the limbs. Their formation begins in the 4th week, with the activation of mesenchymal cells in the somatic layer of lateral plate mesoderm. Polydactyly is the congenital deformities which is seen in 1000 births.

Aim: To observe and study the various type of polydactyly in relation to the preaxial polydactyly and postaxial polydactyly with other classification.

Methods: Patient visited the General Medicine Department, JSS Medical College and Hospital with history of fever and found the extra finger on both hands and collected the report.

Observation: Here we report a male patient aged 56 years who with h/o fever for routine treatment to medicine OPD, here we observed 6 fingers on both hands attached to thumb with no independent movement at interphalangeal joint with no other gross congenital anomaly. No other family history with similar anomaly.

Conclusion: Postaxial polydactyly is most common than the preaxial polydactyly. So, thumb polydactyly is a interphalangeal synostosis and is classified by the Wassel type for the thumb duplication.

Key words: Thumb Duplication, Pre-axial Polydactyly, Interphalangeal synostosis.

An Unusual Branch of Axillary Artery Communicating with Radial Artery: A Case Report**Sonal Nayak, Roshni Sadashiv, Aamna Kausar, Sharanya Rao, Veena Kulkarni**

Department of Anatomy, SDM College of Medical Sciences and Hospital, Dharwad

Email: sonalnayak2017@gmail.com

Background: Developmentally, Axillary artery formed from the proximal part of axial artery has three parts divided by the pectoralis minor muscle. Knowledge of normal branching pattern and the variational branching pattern of the axillary artery is of absolute importance for the radiologists and vascular surgeons.

Aim: To identify the variation in the branching pattern of axillary artery.

Methods: During the routine dissection of Axillary region for the medical undergraduate students, axillary artery and its branches were cleared and identified. Second and third part of the right sided artery showed variation in its branching pattern. Observed variations were photographed and their relation with neighbouring structures were noted.

Results: An unusual branch from the second part of the axillary artery communicating with the radial artery in the cubital fossa was noted. Thoracoacromial artery, lateral thoracic artery and an alar thoracic artery were identified as its branches in the proximal part. Also the subscapular artery, branch from third part of axillary artery divided into posterior circumflex humeral artery, circumflex scapular artery and continued as thoracodorsal artery.

Conclusion: Knowledge of variations in the branching pattern of the axillary artery holds importance for the radiologists and vascular surgeons in the diagnostic procedures. Its contribution is noteworthy in bypass surgery between axillary artery and subclavian artery in case of occlusion of the subclavian artery.

Key-words: Axillary artery, variation, branching pattern, unusual branch.

Variations in the size of the right kidney and branching pattern of right and left renal artery and its hilar structures with its clinical correlations - A case report**Febina FK, R. Huban Thomas**

Department of Anatomy, Kasturba Medical College, Manipal Academy of Higher Education, Manipal, India

Email: febina.kmcmpl2022@learner.manipal.edu

Abstract: Kidneys are the excretory organs located on the posterior abdominal wall. The normal dimension of the kidneys would be 12 × 6 × 3 cm and the blood supply are derived from renal artery and the renal vein. During routine dissection we observed a reduced size in the right kidney and multiple variation in the blood supply of right and left kidney of an adult male cadaver. The dimension of the left kidney is 12 × 5.5 × 3 cm whereas the right kidney is 6 × 3 × 1.5 cm. Right renal artery arising from the abdominal aorta passes in front of the renal vein and before reaching the hilum it gives multiple branches that enters the kidney above and below the emergence of the renal vein. Thus, the entire medial border of the right kidney is occupied by the renal vessels. The left renal artery arises from the left side of the abdominal aorta lies behind the renal vein, divides into multiple branches which runs in front and behind the beginning of the renal vein near the hilum, and enters the hilum at its lower end near the lower pole. Clinical significance of variations in the kidney and its blood supply especially renal arteries entering the medial border near its lower pole may obstruct the ureter and cause hydronephrosis. This case report brings awareness to clinicians as the branching pattern of the renal arteries in the hilar region and the variation in the size of the right kidney is reported.

Keywords: variations, size of kidney, renal artery, branching pattern

Variant origin of Ulnar Artery from the Brachial Artery in the arm and its Superficial Course – A Case report**Dr Arya K, Dr Akhilandeswari B, Dr Priya Ranganath**

Post Graduate, Professor, Professor & Head of the Department, Department of Anatomy, Bangalore Medical College & Research Institute

Email: aryak1992@gmail.com

Background: A variant origin and superficial course of ulnar artery is a rare anatomical observation, which arises in the axilla/ arm, runs a superficial course in the forearm, enters the hand and participates in the formation of superficial palmar arch. Such alterations require adequate exploration, as the artery is of utmost importance for the Orthopaedicians, Hand and Plastic Surgeons in planning and in conducting surgeries of the upper limb.

Aim: Aim of this study is to have a thorough understanding of the high origin and superficial course of ulnar artery and its clinical implications.

Methods: Routine cadaveric dissection of the upper limb was done on a male body, using instructions from Cunningham's Practical manual, in the department of Anatomy, BMCRI. On the right side, variations in the origin, course and branching pattern of ulnar artery was noted. The findings were recorded and tabulated.

Results: An anomalous origin of ulnar artery from the upper 1/3 rd of the brachial artery (16cms from the neck of radius) was observed on the right side. The artery traversed a superficial course, passed superficial to the bicipital aponeurosis and flexor tendons and finally entered the palm to take part in the superficial palmar arch after providing a deep branch for the deep palmar arch. It was also noted that the, ulnar arterial size was half, of that of the radial and that brachial artery at the neck of radius divided into radial and common interosseous arteries.

Conclusion: Superficial position of the ulnar artery makes it more vulnerable to trauma and other hemorrhages. In this case, the artery was superficial to the bicipital aponeurosis and in a clinical setting such a variant could easily be mistaken for a vein. Such misinterpretation could lead to intra-arterial injection and difficulty in angiographic procedures. It also has a higher risk of getting damaged during forearm surgeries. The knowledge of such variations is imperative not only for surgeons, but also for other medical and nursing staff as intravenous cannulations are commonly performed by them.

Key words: Superficial ulnar artery, variation, brachial artery

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 3**Arteriovenous fistula between the Inferior Mesenteric artery and vein**

Agamdeep Singh Bedi, Sheetal V. Pattanshetti, Shilpa M. Bhimalli

Department of Anatomy, KAHER's J.N. Medical College, Belagavi

Email: agamdeepsbedi@gmail.com

Background: Inferior mesenteric artery is a ventral branch of abdominal aorta. It arises from the front of the abdominal aorta behind the third part of the duodenum, at the level of third lumbar vertebra. Inferior mesenteric vein begins as the superior rectal vein from the upper part of the internal rectal venous plexus. The superior rectal vein crosses the left common iliac vessels medial to the left ureter and continues upwards as the inferior mesenteric vein. It opens into the splenic vein. An arteriovenous fistula was found between the inferior mesenteric artery and vein.

Aim: To report the variation of arteriovenous shunt found during routine cadaveric dissection of abdomen.

Case Report: Upon routine cadaveric dissection of abdomen of a mid-aged male cadaver at KAHER's J.N. Medical College, Belagavi, an arteriovenous fistula was observed between the inferior mesenteric artery and the inferior mesenteric vein. An Arteriovenous fistula is a direct communication between an artery and vein without interposition of capillary bed.

Result: Inferior mesenteric artery which is a ventral branch of abdominal aorta and Inferior mesenteric vein were connected to each other by an arteriovenous fistula which may have lead to mixing of blood.

Conclusion: Arteriovenous fistula in the abdomen are either congenital, due to the failure of regression of undifferentiated embryonic vessels or due to some accidental trauma. Splanchnic Arteriovenous fistulas and Arteriovenous malformations can be a cause of unexpected portal hypertension and high-output cardiac failure.

Keywords: Arteriovenous fistula, inferior mesenteric artery, inferior mesenteric vein, cadaver.

Volvulus of the Meckels Diverticulum: Untying of the mystery knot!

Arpita Navarasu, Nishaa P, Padmalatha K

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: arpitanavarasu@gmail.com

Meckel's Diverticulum is an intestinal congenital anomaly affecting approximately 2% of the population. It arises from a failure of the vitelline duct to obliterate during embryonic development. Also known as the omphalomesenteric duct, it is a temporary structure that connects the midgut to the yolk sac during early fetal development and regresses during the fifth week of gestation. When a remnant persists, it forms the Meckel's Diverticulum in the antimesenteric border of the ileum proximal to the ileocecal valve. It can present with a variety of clinical symptoms and complications, making its diagnosis challenging. Different imaging modalities are used to diagnose the condition, with technetium-99m pertechnetate scintigraphy being the gold standard. Treatment options depend on the clinical presentation, with surgical intervention being the mainstay for symptomatic cases and complications. Various complications associated with Meckel's include, gastrointestinal bleeding, intestinal obstruction, Diverticulitis, intussusception, perforation and umbilical abnormalities causing fistulas and leaking of intestinal contents.

Aim: This is a case of an 18 year old male, admitted in our hospital for right lower quadrant pain, X ray and CT were done which showed dilated bowel loops. Particulars of the same will be discussed in the presentation.

Conclusion and Results: A detailed discussion on the topic of Meckel's Diverticulum with its embryological aspects, clinical presentation, the risk factors, further complications, and the complications that might arise from surgical treatment (provided surgical intervention is required) will be reviewed in the presentation.

Xanthomatosis of Tendoachilles - A Case Report

Brunda D Reddy, Vasudha Kulkarni, Vikas Reddy

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bangalore

Email: brundadevaraj2528@gmail.com

Introduction: Xanthomas are defined as pseudotumours of the connective tissue, and consists of histiocytes with lipid droplets and collagen fibres. These lesions manifest themselves as lobular masses with a well encapsulated and yellowish masses. Xanthomas are associated with disorders of lipid metabolism. Achilles tendon xanthomas are usually accompanied by an increase in tendon size, caused not only by the intra tendinous lipids but also by inflammation and oedema of the area. This may interfere with the tendons function and may cause achillodynia. They develop secondary to familial hypercholesterolemia and cerebrotendinous xanthoma. Cerebro tendinous xanthoma occurs secondary to 27 hydroxylase gene resulting in accumulation of cholesterol and cholestanol in tissues.

Case Report: A female patient aged 35 years presented to the orthopaedics outpatient department of Akash Institute Of Medical Sciences and Research Centre with history of pain in both the heels since one month duration. On examination swelling was noted in both of the Achilles tendon. plain radiograph of the ankle region showed soft tissues shadow posterior to the achilles tendon without involvement of calcaneum. Ultrasonography of the swelling showed bilateral homogenous hypoechoic lesion inside the tendon achilles. Clinical features were consistent with that of cerebrotendinous xanthomatosis.

Conclusion: Xanthomas are often associated with familial hypercholesterolemia. They are usually diagnosed by plain X-ray, ultrasonography, CT scan or MRI. The differential diagnosis include tendonitis, bursitis, nodules from rheumatic arthritis, or gout tophi. Management of xanthomas can be done with lipid lowering agents and total excision of the lesion with flexor hallucis tendon graft.

Key words: Xanthomas, Tendoachilles, Hypercholesterolemia

A case report of subdiaphragmatic right kidney as a positional variant of cephalad renal ectopia

Chandana A Reddy, Suganitha Balasundaram, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bangalore

Email: chandana.anandareddy@gmail.com

Introduction: Renal ectopia refers to the abnormal position of kidney outside the renal fossa. It may be in sacral region due to absence of ascent, lumbar region due to incomplete ascent, in subdiaphragmatic position due to a little high ascent, or in thoracic region due to very high ascent. Renal ectopia occurs 1–5 times per 1,000 population, and the majority of instances are asymptomatic. High renal ectopia is a rare disease that only affects one in every 22 ectopic kidney occurrences.

Case Report: During the routine cadaveric dissection of a 50 year old male, we observed an uncommon case of high ascent of the right kidney, upto the bare area of liver. The right kidney was normal in its size and shape, and received an arterial branch from the abdominal aorta, 3mm below the origin of the left renal artery, but the position of the right renal artery was found to be oblique. Interestingly, the right renal vein drained into the hepatic portion of the Inferior Vena Cava (IVC).

Conclusion: The most common type of renal ectopia is the kidneys lying in the sacral or lumbar region. The subdiaphragmatic position of the right kidney is extremely rare, and may be associated with congenital abnormalities such as vesicoureteral reflux or hydronephrosis. Knowledge about the variations in the positions

of the kidneys is very important as ectopic kidneys may have reduced renal function and are often prone to urolithiasis, infection or malignancies. Cephalad ectopic kidney may be a challenge for surgical and interventional procedures.

Key Words: Cephalad renal ectopia, subdiaphragmatic kidney, high ascent of kidney.

Hypoplasia of quadrate lobe of liver: A case report

Harini Shree Subburaj, Suganitha Balasundaram, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bangalore

Email: harini1.1shree@gmail.com

Background: Morphological and structural abnormalities of the liver can be classified as agenesis, aplasia, or hypoplasia. Hypoplasia of the quadrate lobe is one such rare abnormality which is detected as an incidence finding revealed by ultrasound, computer tomography or magnetic resonance imaging, or as an autopsy finding. Surgical understanding of the abnormalities of the lobes of the liver and the position of the gallbladder are necessary for interpretation of intraoperative surgical findings and planning of postoperative therapy.

Case report: The hypoplasia of the quadrate lobe of the liver was observed in a formalin fixed male cadaver of about 60 years of age. Additionally, it was observed that there was a high ascent of gallbladder within its fossa.

Conclusion: Volume reduction or absence of the right lobe of the liver is often associated with anomalous gallbladder positioning, with or without hypertrophy of other liver segments. The entire quadrate lobe is a separate anatomical segment because of separate branches and ductuli of portal vein, hepatic artery, and bile duct. Knowledge of the abnormalities of the lobes of the liver is very essential for clinicians, surgeons, and anatomists for performing surgical procedures like hepatectomy, cholecystectomy and liver transplantation. Such abnormalities may cause confusions in radiological and surgical diagnosis, and fatal errors during surgical operations.

Keywords: Agenesis of quadrate lobe, hypoplasia, high ascent of gallbladder

A Case Report on Tricipital Tendon of Biceps Brachii Muscle

Harsh Raj, Suganitha Balasundaram, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bangalore

Email: hraj22403@gmail.com

Introduction: Biceps brachii muscle frequently exhibits variant morphology in terms of origin, insertion, and mode of innervation. Nevertheless, the three-headed biceps brachii is described to be the interesting variation. Supernumerary or additional heads of Biceps brachii accounts from one head up to seven heads. The presence of additional heads of biceps brachii vary depending on race, sex and laterality. The right upper limb is the most common location for an additional head of the Biceps Brachii.

Case report: During routine dissection of upper limb of a 52-year-old male cadaver AIMS & RC, Bangalore the third head of the Biceps Brachii was found in the right upper limb. It originated from medial surface of the shaft of humerus along with insertion of coracobrachialis. The third head was situated between the attachment points of the Coracobrachialis and the Brachialis muscles. The attachment and path of the long and short heads of Biceps Brachii were normal bilaterally. Then all three heads of biceps were fused at the cubital fossa to get inserted in to the radial tuberosity. All 3 heads of Biceps are supplied by Musculocutaneous nerve separately. The Median nerve and Brachial artery are related medial to third head of Biceps muscle.

Conclusion: Understanding the presence of these additional heads and the associated variations are crucial as they can lead to clinical symptoms by compressing nearby neurovascular structures. Additionally, this knowledge plays a vital role in accurately identifying these variations during medical imaging and preventing unintentional

injuries during surgical procedures. The comprehension of these extra heads is also significant in managing muscle injuries and tendon reconstruction surgeries. Furthermore, it can impact the movement of the joints that the muscle acts upon.

Key words: tricipital Biceps Brachii , Supernumerary , Additional head [1] MBBS Phase 1 student

Bilateral accessory bellies of the Anterior Belly of the Digastric Muscle: Anatomical variations and clinical implications

Harshavardhan Sai Sadineni, Sushma Prabhath, Nandini P Bhat

Department of Anatomy, Kasturba Medical College, Manipal

Email: hsadineni1110@gmail.com

Introduction: The digastric muscle, a suprahyoid neck muscle consisting of the anterior and posterior bellies, joined by an intermediate tendon, plays a crucial role in various functions such as mastication, swallowing, and speech. This case presentation focuses on two unique cases demonstrating the presence of additional muscle structures in the digastric fossa, originating from different sites and exhibiting distinct characteristics.

Case Description: Case 1 involves a 56-year-old male cadaver, where accessory bellies on both sides originate from the medial side of the anterior bellies in the digastric fossa. Case 2 features a 45-year-old male cadaver with accessory bellies originating from the lateral side of the anterior bellies in the digastric fossa. In both cases, the muscle fibers of the accessory bellies were directed downwards, backward, and laterally; however, the insertion points differed, with the first case inserting into the lateral part of the hyoid bone and the other into the intermediate tendon. Notably, the thickness of the accessory bellies equals that of the anterior bellies of the digastric, and they exhibit bilateral symmetry in size, shape, origin, insertion, and nerve supply.

Discussion: These cases provide significant insights into the anatomical variations associated with the anterior belly of the digastric muscle. The presence of bilateral accessory bellies originating from different sites highlights the complexity and diversity of muscular structures in the digastric fossa.

Conclusion: Identifying bilateral accessory bellies of the anterior belly of the digastric muscle emphasizes the importance of considering anatomical variations in clinical and surgical settings. Understanding the presence and characteristics of such accessory structures can aid in accurate diagnosis, prevent potential misinterpretations during imaging studies, and guide surgical interventions in the head and neck region.

Keywords: anatomical variation, accessory bellies, anterior belly of the digastric muscle, digastric fossa, innervation.

Case of Variation in Origin of Left Gastric Artery

Jasneet Kaur Narang, Shambhavi Vivek Joshi

Kasturba Medical College, Manipal

Email: jasneetnarang19@gmail.com

Introduction: The left gastric artery arises from the celiac trunk (ventral branch of abdominal aorta) and runs along the superior portion of lesser curvature of stomach before anastomosing with right gastric artery. It also gives oesophageal branches that supply lower oesophagus and ascend through the oesophageal hiatus to anastomose with oesophageal branches of thoracic part of aorta. CASE

Report: During routine dissection for educational purposes, we found rare variations in origin and branching pattern of left gastric artery in a middle aged male cadaver. It was found that the left gastric artery arose from the anterior wall of abdominal aorta rather than the usual anatomical pattern that is from celiac trunk. Other variations were observed that the anomalously originating left gastric artery gives hepatic branches which supply liver. These hepatic branches (from left gastric artery) also branched to supply oesophagus as the pass

through the aortic opening of diaphragm . It was also noted that the celiac artery and superior mesenteric artery shared a common trunk arising ventrally from abdominal aorta.

Discussion: The variations observed in our case are rare and highly significant as celiac trunk and its branches solely provide blood supply to upper abdomen . Pre-operative knowledge of such variations is crucial for clinicians to accomplish successful surgeries , diagnostic and therapeutic vascular intervention procedures and liver transplantation.

Keywords: Left gastric artery, celiac trunk

Normal growth of various Aortic Segments and Pulmonary Trunk in Human Foetuses: An anatomical study

Juvena Jebeleen Tony Dsouza; Purnima Adhikari; Arvind Kumar Pandey

Department of Anatomy, KMC Manipal

Email: juvenadsouza6122000@gmail.com

Background: This is a morphometrical study performed on fetal cadavers for the measurement of the great vessels of the heart. With the recent advancement in ultrasound and other diagnostic methods, early pre-natal diagnosis of congenital heart diseases helps in timely intervention to increase the quality of life of the fetus and to reduce the mortality rate.

Aims: To obtain the normal range of data regarding the length and diameter of pulmonary trunk and various aortic segments. To find out the morphometry of length and diameter of pulmonary trunk and various aortic segments' variation with gestational age.

Materials and Methods: The number of fetal cadavers used was 8, without any visible malformations – 4 from the second trimester and 4 from the third trimester. The cadavers were dissected and the morphometric parameters like length and diameter of the ascending aorta, arch of aorta, descending aorta, and the pulmonary trunk, were measured using the ImageJ software.

Results: The parameters measured were calculated, and the mean was taken out which is summed up as below:
Third trimester: The mean length of Ascending Aorta (AA) is 1.3 cms, Aortic Arch (AAr) is 1.5 cms, Descending Aorta (DA) is 2.7 cms, and Pulmonary Trunk (PT) is 1.43 cms. The mean diameter of AA is 0.5 cms, AAr is 0.38 cms, DA is 0.48 cms, and PT is 0.75 cms. Second trimester: The mean length of AA is 0.48 cms, AAr is 0.53 cms, DA is 1.55 cms, and PT is 0.78 cms. The mean diameter of AA is 0.23 cms, AAr is 0.13 cms, DA is 0.35 cms, and PT is 0.8 cms.

Conclusion: This study may be helpful to understand the normal growth pattern of great vessels of the heart with respect to length and diameter. This morphometric data may help the clinicians in identifying and managing any cardiac malformations related to the great vessels.

Keywords: Ascending aorta, descending aorta, aortic arch, pulmonary trunk, great vessels of heart.

Bilateral presence of an Unidentified Muscle in the Anterior Compartment of the lower limb: A case report**Khushi Shah, Krish Bhambhani, Sheetal Pattanshetti, Shilpa M Bhimali**

Department of Anatomy, Jawaharlal Nehru Medical College, Belagavi, Karnataka

Email: khushishah004@gmail.com

Introduction: The Extensor Hallucis Brevis, one of the four muscles in the anterior compartment of the leg. Originates from the calcaneus, the EHB shares its origin with the Extensor Digitorum Brevis; it inserts on the proximal phalanx of the hallux.

Aim: To identify the found variation of the EHB by deducing its attachments and possible function.

Materials and method: Careful dissection was carried out to find out that the unidentified muscle took origin inferior to the origin of EHL. Muscle variation of both the legs possessed three distinct bellies, the variation on the left gave two tendons while the right leg possessed only one tendon. EHB and the unidentified muscle were measured by vernier caliper with the accuracy of 0.1 mm whereas the length of tendons were measured by thread and scale method.

Result: Length at origin of the both the unidentified muscles: Right = 45.5 mm and left = 48.5 mm Length of the tendon from the muscle belly till its insertion at the base of the first proximal phalanx Right = 105.6 mm and Left = 109.3 mm Length of the tendon of the EHB from origin to its insertion on the tendon of unidentified muscle Right = 34.6 mm and Left = 28.3mm

Conclusion: Based on hours of research this muscle variation seems to be unique based on its origins and insertions and seems to be an extensor hallucis brevis accessorius muscle.

Keywords: Extensor Hallucis Longus (EHL), Morphological Variations, Extensor Hallucis Brevis (EHB), Hallux, Unidentified Muscle.

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 4**Anencephaly****Kimaya Kamat, Geethanjali BS, KS Rashmi, Martin A Lucas**

Chandramma Dayananda Institute of Medical Science and Research (CDSIMER)

Email: kimaya.kamat714@gmail.com

Introduction: Anencephaly is a serious developmental defect of the CNS in which the brain or cranial vault are grossly malformed. It is a part of the neural tube defect spectrum, as a result of failure of its closure during the 3rd-4th week of development.

Materials and method size: A female aged 23 years with a gestational age of 14 weeks and 2 days presented to the department of OBG at CDSIMER on 16/01/2023 with complaints of per vaginal bleeding, abdominal pain and amenorrhea for the past 3½ months, And 2 year history of hypothyroidism. Reason of admission was G2A1 foetal expulsion.

Obstetric and menstrual history: A1:2½ months (D&E performed) G2:Present pregnancy LMP:25/09/2022
Results and findings: Per abdominal examination-uterus 14-16 weeks P/V-cervix closed and unaffected USG performed on 9/1/23- SLIUF (13+3 weeks) Acrania / excencephaly- expulsion of male baby, death Weight of 40 gms

Discussion: variable presentation-meroanencephaly, holoanencephaly, craniorachischisis. incidence of anencephaly in India is 2.1/1000 births and since most of these pregnancies result in still birth the prevalence if seen result in death within 2-3 hours after birth. Cause is multifactorial and could be genetic or environmental

Conclusion: Anencephaly can be identified at 12 to 13 weeks of gestation by transvaginal USG and nuchal translucency. This becomes necessary for early termination of an otherwise fatal continuation of pregnancy for the mother.

Keywords: Acrania, excencephaly, meroanencephaly, holoanencephaly, craniorachischisis

Bilateral presence of an accessory tendon of the Flexor Hallucis Longus and the Accessory Flexor Digitorum Longus: A Case Report**Krish Bhambhani, Khushi Shah, Sheetal V. Pattanshetti, Shilpa M. Bhimalli**

Department of Anatomy, KAHER's J. N. Medical College, Belagavi, Karnataka

Email: krish6904@gmail.com

Background: The Flexor Hallucis longus(FHL) and Flexor Digitorum Longus(FDL) are the two of the four deep muscles of the posterior compartment of the leg. The Abductor Hallucis(AH), one of the superficial intrinsic muscles or a muscle of the first layer of the dorsum of the foot, is in close relations with the tendons of these muscles.

Aim: To report and study about an additional muscle belly and an accessory tendon in the posterior compartment of the lower limb found during routine dissection of lower limb.

Materials and Methods: A careful dissection was carried out to find the origin, insertion and the measurements of the accessory muscle belly and tendon. Accessory Flexor Digitorum Longus(AFDL) was measured with a vernier caliper with an accuracy of 0.1mm and the accessory tendon of the FHL was measured by markings on threads against a cm ruler.

Result: The Accessory muscle belly originates inferior to the FHL and inserts on the tendon of the FDL along with the fibers of the AH. The origin of the accessory tendon of the FHL is in the same plane, medially to the insertion of the AFDL.

Conclusion: The said variation of the AFDL is said to be 6% in the world population, however the accessory the tendon of FHL is not well documented.

Keywords: Flexor Hallucis Longus(FHL), Accessory Flexor Digitorum Longus(AFDL), Accessory Tendon, Abductor Hallucis(AH).

Variations in the great vessels with modified bovine aortic arch – A case report

Lokesh Katiwal, Shivapriya, Shyamala B Y, Hema N, Seema S R

ESIC Medical College PGIMSR, Rajajinagar, Bengaluru

Email: lokesh.katiwal03@gmail.com

Background: Typical branching pattern of the aortic arch consists of the brachiocephalic trunk (BCT), the left common carotid artery (LCCA) and the left subclavian artery (LSA). Bovine arch presents with BCT and LCCA arising as a common trunk. Bovine arch (BA) pattern is associated with left hemispheric laterality of cardioembolic stroke. BA prevalence have ranged from 1% to 27.4%. Variant patterns have been associated with a broad spectrum of pathologies. Arch of Aorta develops from left 4th Aortic arch, left limb of aortic sac and left dorsal aorta.

Aim: To report the variant of BA and variations in other vessels in the cadaver with its clinical and embryological significance

Methods: Study was done on a male cadaver used for teaching medical students in the Department of Anatomy. Careful dissection was done following the steps of Cunningham's manual. Variations seen in the branching pattern of Aorta, coronary and carotid arteries were noted and documented.

Results: Many variations in great vessels were noted. They are BA was arising just behind the manubrium, presence of double posterior interventricular arteries, Tortuosity noted in common carotid arteries of both sides. Hemiazygos vein crossed the vertebral column anterior to the aorta and ended in azygos vein.

Conclusion: The meticulous knowledge of potential aortic arch variants is of utmost importance to radiologists, interventional cardiologists, vascular and thoracic surgeons.

Keywords: Brachiocephalic trunk, Bovine arch, great vessels, variations, Coronary artery

Importance of the mystery muscle rectus sternalis – A comprehensive anatomical review and the incidence of a new variant.

M Mohit, Shivapriya N R, Hema N, Seema S R

Department of Anatomy, ESIC Medical College and PGIMSR, Rajajinagar, Bengaluru, Karnataka

Email: mohit.10gowda@gmail.com

Background: The rectus sternalis muscle is a rare anatomical structure that lies superficial to the anterior thoracic wall. The worldwide prevalence of sternalis muscle was observed to be 6%. It may be misdiagnosed as a wide range of benign and malignant anterior chest wall lesions and tumours on CT, and MRI.

Aim: To identify the importance of the mystery muscle rectus sternalis.

Methodology: This study was carried out in Department of Anatomy, ESIC Medical College and PGIMSR, Rajajinagar, Bengaluru, Karnataka from January 2023 to May 2023. During routine dissection of a female formalin-fixed cadaver, variation in the pectoral region was observed.

Results: Three slips of Rectus sternalis muscle was noticed on Right side. One of the slip took origin from Sternocleidomastoid and inserted to 5th rib. The anatomical and embryological significance of Rectus Sternalis muscle will be discussed in detail during the presentation. The study included 22 specimens, out of which only one variation was found and documented which amounts to 4.54% incidence in our study.

Conclusion: The knowledge and awareness of this aberrant muscle is crucial for diverse medical professionals such as anatomist during dissection, surgeon during mastectomy and alternations in the ECG, plastic surgeons for reconstruction of flaps and radiologists to prevent this diagnosis of breast tumour in mammograms.

Key Words: Flap reconstruction, Mammogram, Triceps sternalis, Thoracic wall.

Bilateral accessory renal artery: A case report

Maanas Varun Mahesh, Balachandra N, Sunil O

Department of Anatomy, Dr. B.R. Ambedkar Medical College

Email: maanasmaresh1@gmail.com

Background: Accessory renal arteries (ARAs) are embryonic remnants found in >1/3 rd of patients and occur bilaterally in 10% of the population. Renal arterial variations are extensive and are found because of its complex embryological development. In 1552, Eustachius was the first to write about multiple renal arteries. Variation in renal arterial system has significant clinical implications in endoscopic surgery, renal angiography and renal vascular interventions such as renal transplantation.

Aim and objectives: To study the vascularity of both kidneys in the present case and its embryological and clinical significance.

Materials and methods: In the routine cadaveric dissection of a female cadaver in the department of Anatomy, Dr. B.R.Ambedkar Medical College incidentally showed accessory renal arteries on both the sides. Accessory renal artery length and the level of origin was measured and compared. The hilum of both the kidneys were cleared of perinephric fat and branching pattern of both renal arteries were studied.

Results: Renal arterial system showed considerable variations bilaterally, the right kidney was found to have two renal arteries, one entering the hilum measuring 8.9 cm and the other entering the lower pole, measuring 8.2 cm. The left kidney was found to have three renal arteries, two entering the hilum measuring 7.2 cm and 7.4 cm and a third one entering the upper pole, measuring 6.9 cm. The renal arterial system on both sides arises at the L2 and L3 level.

Conclusion: Knowledge of the variations in renal vessels is essential for exploring renal trauma, vascular reconstruction procedures, repair of abdominal aortic aneurysms etc.

Keywords: Aneurysms, Cadaver, Eustachius

Thyroglossal Duct Cyst: A Case Presentation

Maanasi Srinivas, Geethanjali BS, Niveditha, Martin Lucas

Chandramma Dayananda Institute of Medical Science and Research (CDSIMER)

Email: maanasisrinivas07@gmail.com

Introduction: Thyroglossal Duct Cysts(TGDC) are small soft lumps present on the anterior surface of the neck. They are the embryological remnant of the Thyroglossal duct, occurring when the thyroid gland fails to descend downwards into the neck region. These cysts can affect both children and adults, but is more prevalent in children. It is mostly benign, but can turn malignant as seen in 1% of the cases.

Materials and methodologies: A 43 year old male was presented in the ENT OPD of CDSIMER with complaints of a painless mass on the anterior neck. The chief complaint was the presence of the abnormal mass. General Physical Examinations and Investigations of the thyroid gland were performed.

Results: Upon examination, it was found that the mass was displaced when the patient was asked to swallow. CT scans showed no metastasis of the cells, hence malignancy was ruled out. Thyroid function tests were reported as normal. The diagnosis of TGDC was made.

Discussion: In this paper, I, an MBBS Student have attempted to explain the embryology of the TGDC. Along with this, I have also tried to understand the course of treatment chosen for this particular case, the recovery of the patient. Furthermore, I have tried to distinguish TGDC from other conditions that can be confused with.

Conclusion: The diagnosis of the TGDC is very crucial as if left undiagnosed or untreated, it can lead to conditions like dysphagia or dyspnea. Medical imaging, along with biochemical investigations play a major role.

Key words: Thyroglossal Duct Cyst, Sistrunk Procedure, Congenital ano

Anatomically variant origin of anterior belly of Digastric, with its embryological and clinical significance

Manoj, Shivapriya, Shyamala, Seema

ESIC Medical College and PGIMSR, Rajajinagar, Bengaluru

Email: manojhsreddy999@gmail.com

Background: Digastric muscle consists of two bellies, anterior and posterior. Anterior belly arises from digastric fossa of mandible then run downward and laterally to meet the posterior belly which arises from notch on the mastoid process, near the hyoid bone. Both the bellies are joined at an intermediate tendon. The anterior belly of digastric lies superficial to the mylohyoid muscle. Anterior belly arises from first branchial arch so supplied by mandibular nerve. It's a part of suprahyoid muscle which assist in depression of mandible and elevation of hyoid bone and Larynx. Variation in anterior belly is most common amongst the submental region variations.

Aim: To report and document the variations in anterior belly of digastric muscle and its clinical significance

Methods: During routine dissection, a variation of the Digastric muscle on Left side was found in a female cadaver

Results: There were three anterior bellies of Digastric muscle. The two bellies arose from digastric fossa lying next to each other. Another small thin belly arose from mylohyoid raphe. All the three bellies converge towards the hyoid bone. There was no variation of the posterior belly and the right digastric muscle.

Conclusion: Knowledge of this variant will help to avoid confusion with pathological conditions of the submental region. It is relevant both for the interpretation of radiological images and during surgical procedures such as dissection of the anterior belly of the digastric for a malignant disease and graft positioning.

Key words: Digastric muscle, cadaveric study, anterior belly, variation

Anatomical Variation in the Formation of Median Nerve and its Communication with the Musculocutaneous Nerve in the Axilla: A Case Report

Nikhil S, Vanitha Naik, Rashmi Bhat, Gajan and Pujari

Department of Anatomy, Srinivas Institute of Medical Sciences and Research Centre Mukka, Mangalore

Email: snikhil1404@gmail.com

Background: Median nerve arises from the fusion of the medial root (C5, C6) and lateral root (C8, T1) of medial and lateral cords of the brachial plexus. Knowledge about the formation, course, and distribution and its relationship with the vascular structures in the axilla are very important during surgeries. Variations of the median nerve are documented very well in the literature. The most common ones are early division or late division of the nerve roots, abnormal course, and branches.

Case Presentation: In the present case report, we found a unique case of the median nerve with an anomalous course with the axillary artery in the right arm of a male cadaver during routine dissection where the median nerve had three roots. Out of these two roots were coming from the lateral cord and crossed the third part of the axillary from the lateral to the medial side to join the medial root. Later the median nerve descended on the

medial side of the artery for a short course and communicated with the musculocutaneous nerve slightly in front of the brachial artery. The branches and course of the musculocutaneous nerve were normal.

Conclusion: The anomalies may be due to developmental differences that occurred during communications between the mesenchyme and invading axons of spinal nerves into the developing limb bud and guided by the expression of chemo-attractants and chemo-repellants at the site of fusion of brachial plexus. The present report will be helpful for clinicians in the diagnosis of upper limb palsies and neurological disorders and surgeons to prevent iatrogenic injuries.

Keywords: Axillary artery, Axilla, Median nerve, Musculocutaneous nerve

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 5**Anatomical Variation in branching pattern of Subclavian artery – A Cadaveric Study****P. Manu Pradhaan, Vasudha T K**

Department of Anatomy, Subbaiah Institute of Medical Science and Research Center, Shivamogga, Karnataka, India

Email: manupradhaan16@gmail.com

Background: The subclavian artery which has a typical branching pattern giving 5 branches namely, the vertebral artery, internal thoracic artery, thyro-cervical trunk, costo-cervical trunk and the dorsal scapular artery. This is the normal anatomy of the subclavian artery, but sometimes there may be a variation in the branching pattern present this is known as an aberrant subclavian artery

Aim: To study the variation in branching of subclavian artery and note its clinical importance

Methods: Dissected embalmed cadaver during routine dissection by following Cunningham's Manual

Results: In the subclavian artery it was noted that there was a bilateral absence of costocervical trunk and that the branches were directly arising from the 1st part of the artery. It was also noted that on the left subclavian artery the internal thoracic artery was originating from the thyrocervical trunk.

Conclusion: Variations of the branches should be known by surgeons for surgical procedures and for diagnostic procedures such as anigograms to prevent serious complications

Keywords: Abberant subclavian artery, Branches, Costocervical trunk, internal thoracic artery

Horseshoe kidney: A Fusion Anomaly**Pranav Reddy L, Dr Geethanjali B S, Dr Chandana Udayakumar, Dr Martin Lucas A**

Dr Chandramma Dayanad Sagar Institute of Medical Education and Research

Email: pranavreddynani2004@gmail.com

Introduction: The normal adult kidney develops from the ureteric bud and metanephros. Horse shoe kidney is the most common renal fusion anomaly. In almost 90% of the cases fusion occurs at the lower of kidneys at the midline. In case of horse shoe kidney the isthmus of the two renal masses may be positioned at the midline or laterally. There are high risks of developing vesicourethral reflux, ureteropelvic junction and increased incidence of malignancies.

Materials and methods: We describe the case of a 43 yr old male who was presented to the department of general medicine Dr Chandramma Dayanad Sagar hospital with the chief complaints of abdominal pain, chills, fever. The patient was investigated with abdomen CT scan.

Results: General examination and systemic examination gave normal results, but tenderness was felt upon palpating the abdomen. Abdomen CT reveals that the inferior poles of the kidney are fused in the midline at L3 vertebral level, Malrotated left kidney with mild perinephric fat stranding. The left ureter wall is thickened. Right kidney appears normal.

Discussion: The development of kidney is a very complex process, it involves the development from ureteric bud and the metanephros. Horseshoe kidney is one of the commonly seen renal fusion anomalies where in ideally the lower poles are fused in most of the cases. Horseshoe kidney affects about 1 in 500 people. It affects more men than women. Around 7 in 10 people with renal fusion have symptoms of kidney problems. The chromosomal causes of horseshoe kidney are down syndrome and turners syndrome. The non chromosomal causes are fanconi anaemia, and alcohol consumption in pregnancy. The associated complications of horse shoe kidney include pelviureteric junction obstruction, and vesicourethral reflux.

Conclusion: Horse shoe kidney is the most common renal fusion abnormality. In this case the patient was diagnosed with horse shoe kidney and hydroureteronephrosis due to the persecution of pelviureteric junction calculi causing the dialation of renal pelvis.

Keywords: Horseshoe kidney, Abdomen CT, metanephros, Hydroureteronephrosis.

Role of Fetoplacental ratio and placental parameters towards maternal and fetal outcome

Rishab IR

Dr. Chandramma Dayananda Institute of Medical Science & Research, Bengaluru

Email: rishabindupur@gmail.com

Purpose of study: The fetal outcome is adversely influenced by pathological changes in the placenta because it is a mirror that reflects the intrauterine status of the foetus. Placental abnormalities are considered a leading cause of maternal and prenatal mortality. Fetoplacental ratio and other placental parameters do have an impact on maternal and fetal outcome including maternal and fetal morbidity.

Aim and Objectives: To evaluate the role of Fetoplacental ratio and placental parameters (placenta weight, volume & ratio with birth weight) among diabetic pregnant women.

Materials & Methods: This is an analytical cross sectional study conducted among 60 pregnant women attending to CDSIMER hospital. All information on maternal characteristics gestational age at delivery (in weeks), parity, mode of delivery, presence or absence of maternal medical diseases was obtained. Placental parameters were assessed by using beam weighing scale. The placental-birth weight ratio (PBWR) was calculated as ratio of placental weight to neonatal weight multiplied by 100.6. Data was analysed using one-way analysis of variance (ANOVA). A probability of 0.05 was set for statistical significance.

Results: The final results and the inference along with the study conclusion will be presented during conference presentation.

Key Words: fetoplacenta ratio, placenta parameters, Birth weight, Diabetes

Anomalous Termination of the Short Saphenous Vein Distal to the Popliteal Region: A Case Report

Samit Sen, Lavanya C, Aruni C S

Department of Anatomy, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India

Email: samitsen1254@gmail.com

Background: Variations in the origin, course, and termination of the superficial veins of the lower limb are commonly observed.

Aim: Here we report a unique variant of the short saphenous vein concerning its termination. The anomaly was identified in the right leg of a female cadaver during routine cadaveric dissection for undergraduate medical students.

Results: The vein originated and coursed normally in the distal half of the leg. It then terminated in the long saphenous vein, just distal to the knee joint, instead of terminating in the popliteal vein, in the popliteal fossa. The variation was found to be unilateral.

Conclusion: The anatomy of the short saphenous vein is important in the surgical management of varicose veins and in arterial grafting for coronary artery bypass grafts. This case might interest phlebotomists, general surgeons, vascular surgeons, and cardiothoracic surgeons.

Keywords: Short saphenous vein, long saphenous vein, variation, varicose veins.

Morphologic and Morphometric Analysis of the Sphenoid Air Sinus using Computed Tomography

Shreya Reddy Pulli, Anne D Souza, Sushma Prabhath, Rajagopal K V

Department of Radiodiagnosis, Kasturba Medical College Manipal

Email: shreyapulli@gmail.com

Background: The sphenoid sinus, located within the sphenoid bone shows marked variability in size, dimensions, pneumatization, and septation among individuals, as well as variability in its anatomic relation to neighbouring neural and vascular structures.

Aim: To study the morphological features and conduct a morphometric analysis of the sphenoid sinus using computed tomography imaging.

Method: A cross-sectional study was conducted using CT scan images (coronal and sagittal sections) of 25 healthy individuals (21 men and 3 women) aged between 18 to 60 years. Morphological characteristics of the sphenoid sinus evaluated include the type of pneumatization (pre-cellar, cellar, post-cellar), presence of septum, and symmetry of the sinus. The vertical length, anteroposterior diameter, and transverse diameter of the right and left sphenoid sinuses were measured separately using CT images. The parameters were analysed by calculating the average and standard deviation of the set of data, as well as a comparison of the right and left corresponding parameters using paired sample t-test.

Results: The pre-cellar, cellar, and post-cellar variants of pneumatization of the sphenoid sinus comprised 4.35%, 43.48%, and 53.17% respectively, with all sinuses showing septation and right-left asymmetry. The averages of right-side sinus measurements of vertical length, anteroposterior diameter, and transverse diameter are 2.09±0.38cm, 2.51±0.54cm, and 1.82±0.52cm respectively. The averages of left-side sinus measurements of vertical length, anteroposterior diameter, and transverse diameter are 1.95±0.38cm, 2.56±0.74cm, and 1.54±0.41cm respectively. There was found to be a significant difference between averages of the transverse diameter of the corresponding right and left sides ($p = 0.045$, $p = 0.05$).

Conclusion: The ambiguous variability in size and type of sphenoid sinus necessitates a detailed CT scan examination prior to any clinical interventions relating to the same.

Keywords: CT scan, sphenoid sinus, morphometry, morphology

Anatomical variation in branching pattern of axillary artery: A case report

Shreyas Pai M, Rashmi Bhat, Lalu Krishna KN

Department of Anatomy, Srinivas Institute of Medical Sciences and Research Centre, Mukka, Mangalore

Email: shreyaspaim@gmail.com

Introduction: Axillary artery is the principal artery of the axilla, a direct continuation of subclavian artery. The key muscle, pectoralis minor divides it into first, second and third part. Branches such as superior thoracic, thoracoacromial, lateral thoracic, subscapular, anterior and posterior circumflex humeral arteries arise from these three parts respectively. The origin and branching pattern of this artery is diverse and is of great clinical significance, as it supplies axilla and the scapular region. Major surgeries such as fracture neck of humerus, shoulder joint reconstruction, axillary lymphadenectomy etc. requires a vast knowledge of this artery in detail. Hence any variations in its course and branches must be considered of utmost importance.

Case report: In this study of axillary artery, the superior thoracic artery arose from the first part. The second part gave rise to thoracoacromial artery and the lateral thoracic artery was absent. No branches were found arising from its third part. A large branch was arising from the second part, dividing it into lateral thoracic and then continued as subscapular artery and its further branches. Origin of the posterior circumflex humeral artery was noticed as a branch of subscapular artery instead of the third part of axillary artery.

Discussion: These variations are due to defects in embryonic development of the vascular plexus of the upper limb. Shilpi et al (2016) have also reported similar variations and our findings are in line with Aastha et al (2015). On-table decisions are important for surgeons to choose suitable vessels for reconstructive surgeries. Knowledge of both normal anatomy and variations of the vascular system are essential to ensure better postoperative outcomes. Through this study an attempt has been made to report a case which contributes to the same.

Imperforate Hymen

Tanya Vijay Jadhav, Geethanjali B S, Ritimukta Panda, Martin Lucas, Nagendra Prasad

Dr. Chandramma Dayananda Institute of Medical Science and Research (CDSIMER)

Email: tanyajadhav.vijay@gmail.com

Introduction: Imperforate hymen is a rare congenital anomaly of the female genital tract, wherein the hymen completely obstructs the vaginal opening. The approximate incidence is 1 in 10 million. The condition occurs when the hymen does not rupture during neonatal development. It is diagnosed in adolescent girls presenting with primary amenorrhea, cyclic abdominal pain and urinary retention.

Materials and method size: A 12 year old girl visited the obstetrics and gynecology department at Dr. Chandramma Dayananda Sagar Institute of Medical Education and Research on 20/7/23 with c/o abdominal pain and inability to pass urine since 12 hours. She had not yet attained menarche. Per abdominal and per vaginal examination was done along with ultrasound.

Results: Patient presented with abdominal pain and urinary retention. Secondary sexual characters were developed. On physical examination of the abdomen, suprapubic distension of the bladder was palpable. Vaginal examination revealed bluish and bulged hymen. Ultrasound imaging visualized a well defined echogenic collection within the cervix and vagina. Diagnosed to have primary amenorrhea with imperforate hymen. Under ultrasound, appearance of hematocolpos and hematometra. Treatment is by surgical cruciate incision-hymenectomy. Foley's catheterization done to drain urine. Postoperative period was uneventful.

Discussion: Hymen is a thin membrane surrounding the vaginal opening. In the embryonic stage, the hymen is perforated to make a connection between vestibule and the vaginal canal. Failure in this process results in imperforate hymen. Common symptoms include amenorrhea, abdominal pain, urinary retention. Imperforate hymen usually occurs as sporadic case and sometimes due to family inheritance. Though it is commonly diagnosed in adolescence, it can be diagnosed in neonates too. In few cases along with the given complaints back pain, dysuria and constipation was also noted. Other conditions such as vaginal septum and vaginal agenesis are commonly misdiagnosed as imperforate hymen.

Conclusion: It is important to consider imperforate hymen in adolescent girls with cyclic pelvic pain and primary amenorrhea. Examination of external genitalia of neonates at the time of delivery can help diagnosing the condition early and prevent further complications like vaginal infections, subfertility, and endometriosis.

Keywords: Imperforate hymen, abdominal pain, primary amenorrhea, bluish bulged hymen, hematocolpos

A Bifid attachment of Latissimus Dorsi to Humerus Enclosing Neuro-vascular Structures:**A Case Report**

Yaajnavalkya Hebbar K, Rashmi Bhat, Lalu Krishna KN

Department of Anatomy, Srinivas Institute of Medical Sciences and Research Centre, Mukka, Mangalore

Email: lens.yaaj76@gmail.com

Introduction: Latissimus Dorsi is a large, broad muscle of the back partially covered by trapezius muscle. It takes its origin from the spinous process of T7-T12 vertebrae, from the thoracolumbar fascia and from the outer lip of iliac crest and inserts into the floor of the bicipital groove of the humerus bone. This muscle is of great importance due to its action to adduct, medially rotate and extend the arm at the glenohumeral joint. It is important to know about the variations in this muscle as it has vast attachments to upper limb, thorax and lower limb. Also its relation with neurovascular structures in the arm can enlighten the knowledge in surgical procedures.

Case report: During the regular dissection schedule of arm and axillary region a variation in the insertion of latissimus dorsi muscle was found. An extra slip of muscle arising from the anterior part of the latissimus dorsi, ran laterally covering the brachial artery and neural structures of arm. Later it was found inserting as an expanded aponeurosis over the lateral aspect of the humerus, merging with the tendinous part of the deltoid muscle.

Discussion: It is reported that pedicle transplant, rotator cuff repair, reconstruction of breast, face, scalp and cranium defect are various surgical approaches where Latissimus dorsi is used. Often an extra slip of the same is misinterpreted as an enlarged lymph node during axillary and mamillary gland surgeries. In many occasions extra slip of latissimus dorsi are useful as grafts. Presence of such slips are reported earlier by R Baidya et al (2017). Similar occurrence are mentioned by C R Bhatt et al (2013). These studies are in line with the present study.

A variation in the branches of arch of aorta - A case report

Manas Maddheshiya, Mamatha Hosapatna

Department of Anatomy, Kasturba Medical College, Manipal

Email: manasinfo101@gmail.com

Background: During routine anatomical study we came across a 60-year-old cadaver showing a variation, where it was observed that besides the normal branches of arch of aorta that is 1) Brachiocephalic trunk, 2) Left common carotid, 3) Left subclavian artery, an additional arterial branch was arising.

Results: The additional branch which was arising from arch of aorta was later identified as left vertebral artery, it shows variation from its typical site of origin which is left subclavian artery. On further inspection it was noticed that on the right side of the cadaver the vertebral artery was showing typical site of origin that is from the right subclavian artery.

Conclusion: The Arch of aorta is a very important blood vessel and any variation in this artery has tremendous clinical significance, especially from the surgical standpoint. Anatomical variants can cause difficulty during catheterization while performing endovascular interventions and various other heart related procedures.

Key words: Arch of aorta, left subclavian artery, catheterization, left ventricle.

Morphology and morphometry of human external ear – A comparative study**Shwetha (MSc 1st year), Dr. Chandni Gupta (Additional Professor)**

Department of Anatomy, Kasturba Medical College, Manipal Academy of Higher Education, Manipal, India

Email: shwetha.kmcmpl2022@learner.manipal.edu

Introduction: The external ear is the visible part of hearing apparatus. It is the most important structure, which defines the face. It is unique in terms of shape, size and dimensions. So it plays an important role in forensic anthropology.

Aim: To study the morphology and morphometry of external ear in human.

Objectives: To compare the morphology and morphometry of external ear in males and females and also the individuals with right and left ears.

Materials and methods: This study was carried out on 20 males and 20 females of age between 18-25 years old. Subjects with congenital ear anomalies are excluded from the study. Digital vernier caliper and goniometer was used for morphometric measurements.

Result and conclusion: The shape of the ear was found to be oval in most of the subjects. All the values are greater in males than in females. An observation was made that on the right side, females have higher LH than males. Rest all measurements were greater in right side than in left side.

Keywords: Morphology, morphometry, digital vernier caliper, anthropometry, goniometer

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 6**Heart Connections - Endocardial Cushion Defects**

Akshatha Jois Y A, Nishaa P, Hema N

ESIC MC & PGIMSR, Rajajinagar Bengaluru – 10, Karnataka

Email: akshathajoisya@gmail.com

Background: Endocardial cushion defects can present as atrioventricular septal defect (AVSD) describes series of congenital cardiac malformations. Incidence of 4–5.3 per 10,000 live births has been reported. In the horse shoe shaped cardiogenic region of the embryonic disk forms the heart tube at 3rd week of gestation. The primitive atria and the ventricles are split by the circular AV canal that eventually becomes transverse. The canal divides due to dorsal and ventral endocardial cushions as a result of subendocardial mesenchymal cell proliferation. These cushions fuse to form the septum intermedium. A paucity in these endocardial cushions results in defects leading to intercommunication of all four heart chambers. Clinical presentation of AVSD varies depending on the severity of the defect. Major associations have been found between AVSD and genes regulating embryonic cell cilia. Chromosome 21 harbours important regulators for cilia, and trisomy 21 (Down syndrome) can de-regulate them. Thus, AVSD is most commonly due to underlying Down syndrome.

Aim: Case report of AVSD with its embryological significance.

Methods: Foetal Echocardiography was obtained from radiology department of ESIC MC & PGIMSR Rajajinagar Bengaluru & studied.

Result: Two cases of endocardial cushion defects were identified.

1. Balanced type AVSD in a gravida 3 para 1 with the Trisomy 21 case
2. Unbalanced AVSD in a gravida 2 at 24 weeks

Conclusion: AVSD being a rare phenomenon. Its embryology is of clinical importance for treatment.

Keywords: AVSD, Congenital, Septum intermedium, Common Chamber, Down syndrome,

A histological examination of Levator Glandulae Thyroidae - Case Report

Alex Bhanu, Prakash B.S.,

Department of Anatomy, HIMS Hassan

Email: lxbhanu@gmail.com

Background: The levator glandulae thyroidae (LGT) is usually described as a unilateral muscle originating on either the hyoid bone or thyroid cartilage, and inserted on the pyramidal lobe, isthmus or lateral lobe of the thyroid gland. The occurrence of LGT is 15% and pyramidal lobe is 26.7% according to Begum et al (2004). The pyramidal lobe is usually associated with a fibrous band or LGT. Aim: The aim of this case report is to document the course and innervation of LGT and pyramidal lobe and to perform a histological examination of LGT.

Materials and methods: The muscle is exposed during routine dissection classes for 1st MBBS students in department of anatomy, HIMS Hassan. The neck is dissected as per the instructions in Cunningham's Manual of Practical Anatomy (15th edition). After the muscle is exposed, the specimen is embedded in paraffin wax, 3 horizontal sections are made proximal, middle and distal to its attachment in the gland. The sections are mounted onto the glass slides and dehydrated. Sections are stained with Hematoxylin and Eosin (H&E). Results: Results will be discussed during the presentation.

Conclusion: We investigated a specimen of LGT derived from a cadaver during routine dissection and performed a histological examination.

Keywords: Levator Glandulae Thyroidae, Pyramidal lobe, Thyroid gland.

Cyclopia, a variant of holoprosencephaly: A case report**Amogha G Shetty, Balachandra N, Sunil O**

Department of Anatomy, Dr. B.R.Ambedkar Medical College

Email: amoghasgshetty@gmail.com

Background: Cyclopia is a rare variant of holoprosencephaly, alobar holoprosencephaly. Cyclopia typically presents with median single or a partly divided eye in a single orbit, absent nose, and a proboscis above the eye. Cyclopia occurs 1 in every 100,000 live births. The etiology of this rare syndrome, which is incompatible with life, is not known and sporadic. It results from incomplete cleavage of prosencephalon into right and left hemispheres occurring between the 18th and 28th day of gestation.

Case presentation: Anomalous foetus (18 weeks of gestation), a case of spontaneous was referred by the obstetrician for further examination to our department of Anatomy, Dr. B.R.Ambedkar medical college, Bengaluru. The foetus was received from the couple (28 year old primi-gravida and 33 year old spouse). There was no history of maternal illness. Antenatal scan done at 18 weeks of gestation, detected alobar holoprosencephaly and there was no history of intake of any medications including iron and folic acid supplements. Expelled foetus showed median probosis above single median eye, absent nasal apertures and bilateral upper limb preaxial polydactyly.

Results: Facial dysplastic features & prenatal ultrasound detection of fused thalami with single monoventricle confirmed the diagnosis of alobar holoprosencephaly. Medical termination of pregnancy was done on indication of alobar holoprosencephaly at 18 weeks of gestation, as the condition is incompatible with life.

Conclusion: Cyclopia has a poor prognosis. Early transvaginal sonography can diagnose 6-10 weeks of gestation. An early diagnosis allows an easier pregnancy termination. In each of the cases genetic counselling has to be given and carrier genetic testing has to be done to prevent further such pregnancy wastage.

Keywords: Cyclopia, Holoprosencephaly, polydactyl, probosis, sonography

Understanding the role of Senataxin in sporadic and familial Amyotrophic Lateral Sclerosis**Somasish Ghosh Dastidar^{1,2*}, Craig Bennett^{2,5*}, Ranita Ghosh Dastidar¹, Shrilaxmi MS¹, Sindhu Sree B¹, Brian Freibaum⁴, Bryce Sopher³, Matthew Mitchel², Sarah Jordan², Angela Chang², Amita Risbud², Don Cleveland², Paul Taylor⁴, Albert La Spada^{2,5}.**

* Equal Contribution.

1 Center for Molecular Neurosciences, Manipal Academy of Higher Education, Manipal;

2 University of California San Diego, La Jolla CA; 3 University of Washington, Seattle WA; 4 St. Jude Children's Research Hospital; 5 University of California, Irvine.

Email: sindhuri2345@gmail.com

Background: Amyotrophic Lateral Sclerosis (ALS) represents a neurodegenerative condition marked by the gradual deterioration of both upper and lower motor neurons located within the brain and spinal cord. ALS has two distinct forms: familial ALS (fALS) (10%) and sporadic ALS (sALS) (90%). Well-known ALS-associated genes like C9orf72, SOD1, and FUS have exhibited evidence of protein aggregation within both the brain and the spinal cord. ALS4 arises exclusively due to specific dominantly inherited point mutations in the SETX gene an RNA-binding protein, which helps in resolving R-loops or DNA/RNA hybrids that can develop between template DNA and newly forming RNA strands. Senataxin, alongside TDP-43 and FUS, is the most significant disease-associated variant and variations in senataxin were identified in patients who also exhibited positive results for TDP-43 and C9orf72 mutations. There is not enough evidence to show the relation between Senataxin and C9orf72 in ALS.

Aim: To identify if SETX plays a role as a contributor to C9orf72-ALS disease occurrence.

Methods: To characterize motor neuron dysfunction and neurotoxicity we used SETX L389S+/- mice as a in vivo model. We used HEK293T cell lines and two mouse PCN models from wild-type and transgenic mice as in vitro models. We used cell fractionation studies to understand the subcellular localization of senataxin. We used knock-down, CO-IP to understand if senataxin is an interactor of C9orf72 DPRs.

Results: We identified genetic modifiers for ALS4 which included senataxin. Reduced expression of SETX induces cell death in PCN. Toxicity induced by various C9orf72 models is exacerbated by reduced expression of SETX. Senataxin localizes to the nucleolus and displays a preferential RNA-mediated interactions with C9orf72 poly-GR.

Conclusion: Senataxin acts as both a genetic modifier and an interactor of C9orf72 DPRs causing ALS4.

Key Words: Amyotrophic Lateral Sclerosis, Senataxin, neurodegeneration.

Transposition of Great Arteries

Bilva Teja, Padmalatha, Nishaa

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: bilvateja4@gmail.com

Transposition of great arteries is a congenital heart defect in which the great vessels, aorta and pulmonary artery switch places, characterised by atrioventricular concordance and ventriculoatrial discordance. The incidence rate is estimated as 1 in 3500-5000 live births i.e 3% of all the congenital heart diseases. TGA is of two types, complete/uncorrected/d-TGA and congenitally corrected TGA. The severity depends on the degree of mixing of blood between the two circulations. Some of the conditions which allow intermixing of blood are patent ductus arteriosus, atrial or ventricular septal defect which is congenitally present in 1/3 rd of the cases of TGA where cyanosis may go undetected and may proceed to congestive cardiac failure. Prenatal diagnosis is possible by foetal echocardiography. In our hospital we encountered two cases; one is G 3 A 1 22 weeks of gestation with congenitally corrected TGA and the other is G 2 P 1 with complete TGA. The exact etiology though unknown is presumed multifactorial. Mutation in growth differentiation factor-1 gene, and the gene encoding cryptic protein accounting for minority of TGA cases. There are two theories: one suggests that aortopulmonary septum fails to spiral at the level of infundibulum thus causing linear development of the septum and TGA and the other theory suggests that TGA is caused by abnormal resorption or underdevelopment of the subpulmonary conus, with persistence of subaortic sinus. Management is by providing prostaglandin E1 and other surgical interventions like balloon atrial septostomy and arterial switch procedure. With the advancement in surgical techniques, survival rate is 90% at 15 years of age. The particulars of the same will be mentioned in detail during the presentation.

Keywords: TGA, cyanosis, congenital heart defect, arterial switch procedure.

The effect of single dose cyclophosphamide on development of testis in rat**Biswabina Ray, Kalyani, Chhandamayee Mohanty**

Department of Anatomy, AIIMS Kalyani

Email: biswabina.ray@gmail.com

Key words: Cyclophosphamide, Primordial germ cell, Testis, Development, Gonad Gonadal development is a complex process and any interference by a teratogen may affect it. The study was conceived to understand if cyclophosphamide (CP), an antimetabolic agent and a known teratogen, some of the breakdown products of which (e.g. acrolein) are found in the environment as pollutant, interferes with the gonadal development. An indication on the detrimental effect of environmental pollution on gonadal development may be assessed. Opting Rat as an animal model, CP in the doses of 2, 5, 10 or 20 mg/kg body weight was administered intraperitoneally on days 10, 11, 12, 13 or 14 of gestation. Photomicrographs of Hematoxylin & eosin (H& E) stained slides of transverse sections of testes collected on day 20 of gestation. In control, each seminiferous tubule is encircled by a well-formed basement membrane. Sertoli cells and germ cells at different stages of development and proliferation were seen. Photomicrograph of treated specimen shows residual mesenchymal tissue devoid of seminiferous tubules. In addition, total disintegration (absence) of basement membrane from around the seminiferous tubules. Its cellular components are relatively clustered together showing overcrowding, shrinking in size and taking a deep staining indicating initiation of degenerative process. The contents of the tubules have detached from the basement membrane and have displaced to the central part of the tubules. The basement membranes of the tubules were placed away from the cellular contents with fluid accumulation in between. Mesenchymal tissue interposed in the zone between the basement membranes are seen. CP interfered with migration of PGCs and Antimetabolic effect of CP on the PGCs, specially after their arrival at the gonadal ridge, and also on intrinsic cells of gonadal ridge led to failure of seminiferous tubule organization. In the event of non-availability of PGCs there is lack of two way interaction between PGCs and stromal cells. CP intoxication of cellular ingredients further added to this malfunction leading to degenerative processes in the gonads.

Absent Pulmonary Valve Syndrome**Dhanush M, Padmalatha K, Nishaa P**

ESIC Medical College & PGIMS, Rajajinagar, Bangalore

Email: dhanush.muniraju5@gmail.com

APVS is a rare congenital heart defect characterized by absence or Underdevelopment of Pulmonary valve, along with abnormal enlargement of Pulmonary artery. APVS is of 2 types Fallot type (along with VSD) and Non Fallot type (with intact Ventricular Septum). There is incidence 3-6% in case of TOF & 0.2-0.4%. of live Born infant with Congenital heart disease. Three cases were reported in our hospital at 21 weeks, 22 weeks, & 24 weeks of gestation, It was detected based on dilatation of Pulmonary artery, absent pulmonary valve, aliasing at pulmonary artery. This condition typically results in significant respiratory and cardiovascular complications due to unrestricted backflow of blood from main pulmonary artery into right ventricle. APVS is often diagnosed prenatally, frequently associated with other cardiac anomalies Such as VSD, overriding aorta, Right ventricular outflow tract obstruction. The exact cause of APVS remains unknown although genetic factors and environmental influences are believed to play a role. Diagnostic evaluation includes foetal echocardiography. Management of APVS depends on the severity of the condition and associated abnormalities. In severe cases, surgical intervention is typically required to repair the cardiac defects and alleviate the pulmonary artery enlargement. Early diagnosis and appropriate management are essential for improving outcomes and minimizing Complications associated with this condition. The particulars of the same will be mentioned in detail during the presentation.

Keywords: Absent pulmonary valve syndrome, Ventricular septal defect, Main pulmonary artery, Tetralogy of Fallot.

Congenital Lung Anomalies Spectrum

Durga Prasada S, Dr. Nishaa P, Dr. Padmalatha K

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: dps1104d11@gmail.com

Congenital lung anomalies are a group of birth defects that affect the lungs and it ranges from mild to life-threatening. A case series of patients presented to our college consisting of 3 infant cases and 1 child. The poster presentation aims for the clinical features, diagnostic challenges and management approaches. Congenital lobar emphysema is characterized by localized hyperinflation of one/more lobes of the lung, resulting in respiratory distress. Lung Congenital High Airway Obstruction Syndrome is characterized by echogenic lung tissue, mesocardia on prenatal ultrasound, associated with pulmonary hypoplasia and other anomalies. Congenital Diaphragmatic Hernia is a defect in the diaphragm allowing abdominal contents to herniate into the thoracic cavity, leading to respiratory compromise. Hybrid lesions refer to complex lung anomalies consisting of sequestration and other lung anomalies, presenting diagnostic and management complexities. The signs and symptoms can vary depending on the specific anomaly which include respiratory distress, cyanosis, difficulty breathing, retractions, wheezing, cough, failure to thrive. Etiology of congenital lung anomalies is multifactorial, involving genetic, environmental, and developmental factors. Early recognition and accurate diagnosis are important for appropriate management. Embryological stages of pulmonary involvement are Embryonic, Pseudo-glandular, Canalicular, Saccular & Alveolar stages and pathology associated with it are Agenesis/Aplasia, Bronchiectasis, Pulmonary hypoplasia, Congenital Pulmonary Airway Malformations & Broncho Pulmonary Sequestration respectively. Severe cases require surgical interventions like lobectomy/diaphragmatic repair. Long-term outcomes and complications differ across these anomalies. Detailed discussion on the congenital lung anomalies spectrum will be presented, emphasizing the importance of early diagnosis and treatment.

Situs inversus totalis: A rare congenital abnormality

Kaushik Rajesh Joshi, Geethanjali B S, Chandana Udayakumar, Martin Lucas

Chandramma Dayanand Sagar Institute of Medical Education and Research

Email: joshikaushik1234@gmail.com

Introduction: Situs inversus totalis is a rare congenital abnormality with the abdominal and thoracic organs present as the mirror images of their anatomical positions. Frequency of situs inversus totalis is 1:10000, and is more frequent in males.

Methods and materials: We describe the case of a 69Y old male who was presented to the department of general medicine Dr. Chandramma dayanad sagar hospital with chief complaints of abdominal pain, inability to micturate, and fever. The diagnosis made was staghorn calculus, bilateral pyelonephritis, diabetes mellitus, sepsis and acute kidney injury.

Results: Upon performing a plain and contrast enhanced spiral CT scan of abdomen and thorax, his liver, and gall bladder were noted in the left hypochondrium, and his spleen was noted in the right hypochondrium. Two small cortical cysts were noted in left kidney along with a large staghorn calculus on the right kidney. Bilateral DJ stent was seen in-situ.

Discussion: Situs Inversus Totalis: A Clinical Review is a reference article where the incidence of SIT is mentioned to be 1:10,000. Six risk factors for SIT were identified: family history of heart defects, family history of noncardiac anomalies, maternal diabetes, antitussive use, paternal smoking, and low socioeconomic status. Sidedness is established at the time of primitive streak formation (gastrulation). Other terminologies used are situs solitus for normal anatomy, situs inversus for complete reversal, and situs ambiguous for any other abnormality of LR development. In contrast to it, my discussion includes dextrocardia, and other complications shown by the patient, and their embryological significance.

Conclusion: The diagnosis of situs inversus is especially important in emergency scenarios. These patients require more flexibility and creativity from the surgical team. Medical imaging plays a crucial role in these cases to properly plan possible surgical treatment.

Key words: Situs inversus totalis, dextrocardia, staghorn calculus, cortical cysts.

A Case Report on Situs Inversus Totalis

Manya Dhari, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bangalore, Karnataka

Email: manyadhari3@gmail.com

Introduction: Situs Inversus is a congenital abnormality characterized by the reversal or transposition of organs within the thoracic and abdominal cavities from their typical position. When Situs Inversus is accompanied by dextrocardia, it is referred to as Situs Inversus Totalis. The prevalence of situs inversus in live births is estimated to be 1:10,000, with a male-to-female ratio of 3:2.

Case Report: A 27-year-old male patient was admitted to the General Medicine Department of Akash Hospital with history of fever, cough, and breathlessness for 4 days. Incidentally, his chest radiograph revealed dextrocardia and electrocardiograph showed reversal of all the leads. Ultrasonography of abdomen and pelvis showed the transposition of liver and gall bladder in the left hypochondriac region. Spleen was enlarged and noted in right hypochondriac region. Coils of small intestine were in the midline and caecum and appendix were seen in right iliac fossa. The patient was diagnosed as a case of Situs Inversus Totalis.

Conclusion: Situs Inversus Totalis is usually an asymptomatic condition. All the reverse organs themselves function normally; their irregular positioning makes the diagnosis difficult. In cases where symptoms manifest, patients may present with primary ciliary dyskinesia or Kartagener's syndrome as potential underlying conditions. The differential diagnosis encompasses appendicitis, asplenia/polysplenia, congenital coronary anomalies, sinusitis, and ventricular septal defects as plausible aetiologies to consider. Surgeons and radiologists should possess knowledge and awareness of this anomaly during the preoperative and surgical context to ensure appropriate management and decision-making. The embryological basis and genetic considerations of this rare case shall be discussed during the scientific presentation.

Key Words: Situs Inversus Totalis, Dextrocardia, Kartagener's Syndrome

The Procedure of Nephron Number Counting Using Image Analysis Method

Megha Nagaraj Nayak, Ravindra Prabhu A, Vinod Chandrakanth Nayak, Sushma Prabhath, Deepak Nayak M

Pathology Department, Forensic Medicine Department, Anatomy Department, KMC, MAHE, Manipal

Email: megha.nayak@manipal.edu

Background: The nephron numbers may give an important clue connected to CKD. Since the existing standard dissector/fractionator method is proven as a gold standard method for nephron counting, this method has a few drawbacks; it is time-consuming and tedious. So, there is a need to develop a simpler method for nephron counting.

Aim: To standardize the procedure of nephron number counting by using the image analysis method.

Methods: The sample collection process was initiated after obtaining IEC approval and

CTRI registration. Four autopsy kidney samples were collected from the forensic lab, and tissue preparation and H&E staining were done in the pathology lab. Each slide carried two identical tissues of approximately 1 to 1.5-inch size. Both tissues were used for the nephron counting. The nephron numbers were counted using the image analysis method at the Centre for molecular neurosciences lab, KMC, Manipal, using Olympus Microscope (Model BX53F2) and CellSens standard software. The slide was viewed under the microscope at a 4X magnification. The nephrons (glomeruli) were identified. The mechanical stage of the microscope was moved from left to right and upwards to downwards using the stage control knob. Images were captured by using CellSens software and stored. The nephrons were identified manually in these images and marked and numbered using the CellSens software. The nephron numbers in each image were counted. The total number of nephrons present in all the images was added, and this was the number of nephrons present in the particular stained tissue used for the nephron counting.

Results: 545 Nephrons in the sampled tissue.

Conclusion: This is the initial step towards standardising the procedure of the novel nephron counting method.

Keywords: Nephron, Kidney, Microscope, Image analysis, glomeruli

Evaluation of the Fetal Abdominal Cysts and its Embryological Significance

Neeraj Kashyap H J, Nishaa P, Hema N

ESICMC and PGIMSR, Rajajinagar, Bengaluru

Email: njkashyap7@gmail.com

Background: Foetal abdominal cysts are defined as abnormal fluid-filled bubble-like mass which can occur due to pathology arising from any abdominal organs. The spectrum includes choledochal, hepatic, gonadal, splenic, pancreatic, mesenteric, renal cysts and intestinal duplication cysts. More accurate diagnosis can be relied upon anatomic relationships and surrounding parenchyma. They are most frequently detected in 2nd or 3rd trimester. The folding of the embryo leads to incorporation of a portion of the endoderm derived from gastrulation into the embryo, to form the primitive gut. Urogenital system develops from intermediate mesoderm along the posterior wall of the abdominal cavity.

Aim: To assess the anatomical origins of the abdominal cysts and its prognosis and associations with other anomalies if any.

Methods: Prenatal USG (Ultrasonographic) studies were carried out from October 2021- June 2023 in the department of Radiology. Abdominal cystic masses in particular were recorded during this period. The site, size, shape, thickness of the cystic wall, anatomical origin and follow up were assessed and results were recorded.

Results: Total 6 cases were analysed with respect to organ of origin, site, number, contents and size. Double bubble sign was evident in duodenal atresia. Cysts of endometrium, kidney, gall bladder was identified in different antenatal USGs. An interesting case of duplicated gall bladder was appreciated. OEIS was seen in 18 weeks of pregnancy.

Conclusion: Foetal abdominal masses are commonly detected in routine antenatal ultrasonography. Hence awareness regarding the site, associations and prognosis are needed to plan the delivery and management.

Keywords: Foetal Abdominal Cysts, Prenatal Diagnosis, USG, OEIS

Anatomical Study on Great Vessels Connections – PDA**Poorna Kruthik M, Hema N, Shivapriya, Pushpalatha**

ESIC MC and PGIMSR, Rajajinagr, Bengaluru-560010

Email: drpkstrange1@gmail.com

Background: The connection between pulmonary trunk & aorta in fetal circulation has a significant role as it provides pathway for blood to bypass the non functional lungs since oxygenation primarily occurs through the placenta. This connection closes soon after the birth. However, there are reports mentioning this connection to be patent after birth known as Patent ductus arteriosus (PDA). It is a common diagnosis among extremely premature infants, especially in those with lung disease with an incidence of 1 in 2000.

Aim: To report and document the cases of Patent ductus arteriosus (PDA) with its embryological significance.

Methods: Cadaveric dissection of adult heart reveals a case of PDA which was confirmed by passing a probe through the duct. Echocardiograph studies revealed 3 cases

Results: 4 cases of PDA were identified.

- 1) Communication between the left pulmonary artery to the arch of aorta was seen in the dissected adult heart.
- 2) A 7-month-old female baby showed 3.5mm diameter of PDA on 2-D Echo.
- 3) Colour flow doppler of 6-month-old female baby showed PDA of 5mm diameter.
- 4) 2D Echo of 8-month-old female baby showed 3mm diameter of PDA was identified.

Conclusion: The anatomical knowledge of the structure and its closure is important for diagnosing and managing such abnormalities which eventually benefits the health and well-being of individuals

Keywords: PDA, Closure, Great Vessels, Echocardiograph, Aorta, Pulmonary trunk

Juvenile Granulosa Cell Tumor (JGCT)**Shreyas V, Padmalatha K, Asma Samreen**

ESIC Medical College & PGIMSR

Email: shreyasv2003@gmail.com

Granulosa cell tumors (GCT) are uncommon neoplasms arising from the ovary, representing about 2-5% of ovarian cancers. They belong to the subtype of sex-cord stromal tumors, and arise from the granulosa cells of the ovarian follicle. These are low grade indolent malignant tumors with 20-30% chance of recurrence after 5-20years of diagnosis. GCT are classified into two subtypes, juvenile and adult, as they have a bimodal age distribution. Hence, it can present both in adults and pre-pubertal females, but the peak age is usually about 50-55 years. These tumors usually present with symptoms of mass per- abdomen and endocrine manifestations like hyperestrogenism, which present as precocious pseudopuberty, hyperandrogenism and menstrual irregularities. Our hospital encountered two cases, one each of an adult type and other of the juvenile type in a pre-pubertal female, whose case is the point of discussion during the presentation. The molecular pathogenesis of JGCT is poorly understood, but there have been implications of mutations in the GNAS gene, and in-frame duplications within the oncogene AKT1 in about 60% of the JGCTs studied. Adult GCTs on the other hand, have a well established molecular basis: mutation in the FOXL2 gene. The primary management involves complete surgical resection of the tumor along with hormone modulator therapy and chemotherapy, which typically includes a combination of bleomycin, etoposide, cisplatin, etoposide/cisplatin, and paclitaxel and carboplatin. Prognosis depends on the stage of tumor, but is generally very favourable. At stage 1, the five-year survival rate is about 94%. If extra-ovarian spread has occurred, the survival rate reduces to 60%. The particulars of the same will be mentioned in detail during the presentation.

Keywords: JGCT, hyperestrogenism, AKT1

Thyroglossal Cyst with Papillary Carcinoma of Thyroid**Veerendra Kumar M Magi, Padmalatha K, Srinivas Murthy, Nishaa P**

ESIC Medical College & PGIMSR, Rajajinagar, Bangalore

Email: vkmmagi0313@gmail.com

Background: A thyroglossal duct cyst's an embryologic remnant that forms due to the failure of closure of the thyroglossal duct extending from the foramen cecum which is at the junction of anterior 2/3 rd and posterior 1/3rd of the tongue to the thyroid's location in the neck which starts at 3 rd week as a median outgrowth, passing anterior and in close relation to the developing hyoid bone reaching the final position i.e., the inferior pre-tracheal neck by 7 th week. The thyroglossal duct usually involutes by 10 th week. If any portion of the duct persists, secretion from the epithelial lining results in inflammation and thyroglossal duct cyst formation. They can form anywhere along the thyroid's route of migration from the tongue base to the inferior neck. They often present as midline neck cysts closely associated with the hyoid bone. Complications include,

- 1) Infected thyroglossal duct cyst in untreated cases.
- 2) Thyroglossal fistula due to unexpected rupture.
- 3) Less than 1% of thyroglossal duct cysts develop into a carcinoma. Papillary carcinoma is the most common malignancy found (92.1%) followed by squamous cell carcinoma (4.3%). Thyroglossal duct cyst carcinoma typically presents with an asymptomatic midline neck mass.

Case Description:

- A 42 year old female who is a homemaker, presented with complaints of swelling in front of the neck since 2 years. On inspection an ovoid swelling was seen 2cm below thyroid prominence and 2 cm above the suprasternal notch which moves on deglutition. Investigations included TFT, USG which suggested diffuse thyroid disease, MDCT neck which suggested complex thyroglossal cyst, FNAC suggested of Thyroglossal cyst. Treatment included surgical excision by Sistrunk procedure and the sample was sent for HPE which suggested papillary carcinoma of thyroid arising from thyroglossal duct.
- Further details will be presented during the poster presentation.

Result: N/A**Conclusion:** N/A

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 7**The study of morphometric and morphological features of Coracoid Process in Scapula**

Aishwarya, Shivapriya, Hema N, Seema SR

Department of Anatomy ESIC Medical College and PGIMSR, Rajajinagar, Bangalore

Email: aishwaryalakaraddi@gmail.com

Background: The coracoid process is a small hook-like structure on the lateral edge and the superior anterior portion of the scapulae. In monotremes the coracoid is a separate bone, hence known as atavistic epiphysis. Surgeons often refer to lighthouse of shoulder which serves as landmark to avoid neurovascular damage. Major neurovascular structures like brachial plexuses and axillary vessels are related to coracoid process. The muscles attached to coracoid process are Pectoralis minor, Coracobrachialis and short head of Biceps Brachii. Coracoclavicular, Coracohumeral and Coracoacromial ligaments gain attachment to it.

Aim: To estimate the prevalence of the anatomical variations and measurements of the Coracoid process of scapula and their clinical implications, which would be helpful in management of various disease like rotator cuff injuries

Methods: 50 dried scapulae were obtained from Department of Anatomy and studied for morphological and morphometric variations using Digital Vernier caliper.

Result: Different shape and sizes were identified based on 5 types of classification. Any differences between the two sides were also noted. Details about these will be discussed during presentation.

Conclusion: The knowledge of Anatomical variations and measurements is helpful for diagnosis and management of disorders around the shoulder joint.

Key words: scapula also called Shoulder blade, acromion, spine of scapula

A study of morphometric and morphological variations of Lister's tubercle

Ameen Hussain, Shivapriya, Seema

ESIC MC & PGIMSR Rajajinagar, Bengaluru

Email: hussainameen1672004@gmail.com

Background: Lister's tubercle is found on the dorsal distal radius. Lister's tubercle is used as a standard anatomical landmark in hand surgery and arthroscopy procedures. It functions as a pulley for the extensor pollicis longus (EPL) tendon before the tendon pivots and turns obliquely to insert onto the distal phalanx of the thumb. Lister's tubercle which serves as a key to identifying both dorsal wrist ganglia & junction of scapholunate joint & dorsal scapholunate inter-osseous ligament.

Aim: To evaluate and propose a classification for anatomical variation of Lister's tubercle.

Methods: The study will be carried out in 50 dried human bones obtained from the department of anatomy, ESIC Rajajinagar, Bengaluru. The measurements of both left and right Lister's tubercle of radius bone will be measured using a sliding vernier calliper. The data will be analyzed statistically. All the observations will be presented in graphs and images.

Result: The morphological classification and its sub-types will be noted and a detailed morphometric valuation with statistics will be discussed during presentation.

Conclusion: The anatomical localization and morphometric data of Lister's Tubercle will be useful in various surgical procedures like screw fixation in volar plating and micro nail techniques.

Key words: Lister's tubercle, Extensor pollicis longus tendon, Scapholunate joint.

Comparison of anthropometric craniofacial measurements in young adults sleeping in different positions

Anjali Sethi

Kasturba Medical College, Manipal

Email: anjali.sethi2424@gmail.com

Background: When people sleep for a long time in either right or left lateral position the tissues are subjected to compression, shear and stress forces which can induce changes in craniofacial measurements. This study was done to compare the effect of supine and lateral position on anthropometric craniofacial measurements like facial length, facial width, facial index, cranial length, cranial width, cranial index and total head height. This will help to identify facial asymmetry developed due to sleeping in lateral position and help minimize facial distortion. The ideal sleeping position can also be identified to improve the facial aesthetics.

Aim: Comparison of craniofacial morphometry in young adults affected due to their sleeping position.

Objectives: 1) Comparison of craniofacial morphometric parameters in right or left lateral position with the supine position 2) Comparison of male craniofacial morphometric parameters in right or left lateral position with the supine position 3) Comparison of female craniofacial morphometric parameters in right or left lateral position with the supine position.

Method: Craniofacial measurements and information about sleeping position of 200 individuals aged 16-25 years were taken and analysed.. Vernier calliper was used to measure facial length, facial width, cranial length, cranial width and total head height of these individuals.

Results: A statistically insignificant difference was observed in the craniofacial measurements of individuals sleeping in supine and lateral position. However significant differences were observed among the same gender population sleeping in different positions.

Conclusion: Sleeping in supine or lateral position doesn't affect an individuals facial morphometry such that one position could be preferred over other to minimize facial distortion.

Key words: supine, lateral, craniofacial, morphometry

A study of Hypoglossal canal variations in 50 skulls

Jia Golecha

Kempegowda Institute of Medical Sciences, Bengaluru

Email: jiagolecha2003@gmail.com

Background: The hypoglossal canal is a small foramen in the occipital bone. There are two hypoglossal canals in the anterolateral margins of the foramen magnum, deep to the occipital condyles. It transmits the hypoglossal nerve and meningeal branch of ascending pharyngeal artery. The canal may be partly or wholly divided by spicule of bone.

Aim: To assess bilateral presence of hypoglossal canal, duplication of hypoglossal canal on left and right sides, presence of bony partition whether a spicule or septum.

Methods: After obtaining ethical clearance from IEC, KIMS, the study of hypoglossal canal variations was conducted. The first step involved collecting the 50 skulls, the skulls were obtained from the department of anatomy, KIMS, Forensic department, KIMS and from the students of I MBBS and labelling the skulls. The next step included to assess the occurrence of hypoglossal canal, whether it is present bilaterally or unilaterally and presence of double hypoglossal canal. Only intact skulls were used, presumably of South Indian origin.

It was an observational study.

Results: Out of 50 skulls studied, double hypoglossal canal was seen in 15 skulls [5 bilaterally present, 5 unilaterally present on the left side and 5 unilaterally present on the right side] Thus, the occurrence of this cranial variant was 30%. Out of these, it was bilaterally present only in 10% cases. However unilaterally it was present in 20% cases.

Conclusion: The occurrence of double hypoglossal canal has been studied in 50 human skulls. It is present in 30% of the skulls.

Key words: Hypoglossal canal, spicule, hypoglossal nerve and meningeal branch of ascending pharyngeal artery.

Elongated styloid process - A case study

Nidhi.S, Divia Paul A, Jazeela B F

Department of Anatomy, Yenepoya Medical College, Mangalore

Department of Anatomy, Father Muller Medical College, Mangalore

Email: nidhis2777@gmail.com

Background: Eagle's syndrome is caused by an elongated or misshapen styloid process and calcification of the stylohyoid ligament. It is characterised by pain in the throat, difficulty in swallowing, otalgia, foreign body sensation, headache, pain in the neck during rotation of the head, pain during tongue extension and facial pain. The styloid process is a part of temporal bone about 2.5cms long, extends downwards and forwards. Normal length is about 20-30mm. It is normally distributed in the population and can be divided into short <20mm in length and styloid process is denoted as elongated styloid process >30mm in length.

Aim: A study on elongated styloid process and its clinical implications.

Methods: The study has been conducted in dry skulls at the Department of Anatomy, Yenepoya medical college. All skulls were regular in shape without deformities. It was observed in some skulls that, styloid process was elongated, bilaterally and in some skulls unilaterally. These skulls were studied for any other variations. The length of the styloid process was measured and noted. Photographs of the elongated styloid process was taken.

Results: Among the 30 skulls, Styloid process was elongated unilaterally in 4 skulls and bilaterally in 3 skulls. Unilateral enlargement measurements – 7.1cm, 4.5cm, 4.2cm, 4.4cm respectively. Bilateral enlargement measurements on right side 6.7cm, 4.6 cm, 5.4cm respectively and left side 6.5cm, 4.8cm and 5cms respectively.

Conclusion: Undiagnosed and persistent pain in the neck, face and ear could be due to elongated styloid process or Eagle's syndrome. The diagnosis of Eagle's syndrome (ES) can be made by palpating the calcified styloid process in the tonsillar fossa. Imaging techniques like computed tomographic imaging confirms the diagnosis. This knowledge might be helpful for the physicians and surgeons for the diagnosis of persistent intermittent pain in the face and neck regions.

Key words: Eagle's syndrome, elongated styloid process, styloid process.

The study of morphology and morphometric parameters of Greater Sciatic Notch in dry hip bones

Olivia Mary John, Hema N, Shivapriya, Seema R

Department of Anatomy, ESICMC and PGIMSR, Rajajinagar, Bengaluru, Karnataka

Email: oliviajohn64372@gmail.com

Background: The greater sciatic notch is a large indentation on the posterior aspect of the hip bone, specifically on the ilium. It is an important anatomical landmark as it can exhibit sexual dimorphism. Therefore, the dimensions such as width and depth of the greater sciatic notch can be used to assess the gender of the hip bone. The notch is converted into greater sciatic foramen by sacrospinous ligament and sacrotuberous ligament. The foramen serves as a passage for several important structures such as sciatic nerve, internal pudendal nerve and artery, superior and inferior gluteal nerves, piriformis muscle etc.

Aim: To measure the width, breadth and angle of the Greater Sciatic Notch. To determine the ratio of width and depth. To compare the parameters of both sides

Methods: 50 dried specimens of pelvic bones were studied from the Department of Anatomy. The width, breadth and angle of the greater sciatic notch were measured and all the data entered in a Microsoft Excel sheet and were analysed by SPSS software.

Results: The width and depth of the greater sciatic notch showed various variations morphometrically. The two sides of the pelvic bones also showed variations in different parameters. Details of these would be discussed in the presentation.

Conclusion: Greater Sciatic notch shows sexual dimorphism and can therefore be used for gender determination. Knowledge of the anatomy of the shape and size of the notch and its variations is crucial for surgeons doing pelvic region operations.

Keywords: Greater Sciatic notch, angle of Sciatic notch, Sciatic nerve, Sexual Dimorphism, Sacrotuberous ligament

Incidence of the Infraorbital Sulcus in 50 Human Skulls

Preethi Praveen

Kempegowda Institute of Medical Sciences, Bengaluru

Email: preethip1909@gmail.com

Background: The groove in the lateral wall of the orbit begins either at the lateral end of the superior orbital fissure or the foramen meningo-orbitale and ends at the posterior end of the inferior orbital fissure, having crossed the greater wing of the sphenoid. The groove was first discovered by Low in 1946 in a single skull. The groove probably lodges an anastomosis between the middle meningeal and infraorbital blood vessels. The presence of the groove & contents is of significance to surgeons, ophthalmologists, and oncosurgeons.

Aim: The incidence of the infraorbital sulcus and its upper and lower extent will be observed and documented on the right and left sides of 50 skulls. After recording this data will be compared to previous studies to show the frequency of incidence of the groove.

Methods: After obtaining ethical clearance from IEC KIMS, this study was conducted. The first step involved procuring 50 skulls, presumably of South Indian origin, and labeling them for easy identification. Only adult, normal skulls were studied without taking sexes into consideration. The incidence was studied and noted in 50 skulls.

Results: Examination of the orbit of 50 skulls showed that the groove was present in the lateral wall in 21 cases. In 3 cases, it was present unilaterally on the right side. In 13 cases, it was present unilaterally on the left side. In 6 cases, it was present bilaterally. A total of 100 orbits were observed and the groove was present in 27 cases (27%).

Conclusion: In 100 orbits the incidence of the infraorbital sulcus was 42 percent.

Key words: Infraorbital sulcus, Orbit, Anastomosis

Concurrent appearance of rare sacral hiatus with sacrococcygeal synostosis A case report**Sharanya Rao, Roshni Sadashiv, Risha, Veena Kulkarni**

Department of Anatomy, Radiology, SDM College of Medical Sciences and Hospital

Email: sharanyarao2502@gmail.com

Background: Dorsal aspect of sacrum in the caudal region presents arched sacral hiatus formed due to failure of fusion of 5th sacral lamina. Symphysis joint is present between the sacrum and coccyx body. An intercornual ligament was found between cornuaes of Sacrum & coccyx. The Sacral hiatus and sacrococcygeal cornuae are the important landmark for caudal epidural anaesthesia but the morphological variations may hinder their location.

Aim: To study a rare sacral hiatus associated with synostosis of sacrococcygeal region.

Methods: While segregating the dry human bones in the osteology lab of department, we spotted a variant shape of sacral hiatus along with fusion of sacrum & coccyx. We have calculated the depth and other dimensions pertaining to bony projection of sacral hiatus and fused sacrococcygeal cornuae using a vernier caliper.

Result: This study reported "M" shaped sacral hiatus. The length of sacral hiatus from base to apex of sacrum was 1.7cm. Additionally synostosis of apex of sacrum with base of coccyx in conjunction with synostosis of sacrococcygeal cornuae was observed. The intercornual sacral canal transverse and vertical diameters were 0.5cm and 0.8cm respectively. Other measurements pertaining to bony projection & synostosis of cornuae was measured and reported.

Conclusion: The knowledge of the possible extra bony projection of sacral hiatus with its measured dimensions and the cornual synostosis could be beneficial for surgeons, radiologists & orthopedicians when considering caudal epidural anaesthesia. Aforementioned variations of sacrococcygeal parts may pose a probable cause of coccydynia or it may also lead to extended labour and perineal tear.

Keywords: Sacral hiatus, coccyx, synostosis

Morphology and morphometric analysis of glenoid cavity: Its implications on shoulder arthroplasty**Shaun Shajan, Pallavi**

Department of Anatomy, Father Muller Medical college, Mangalore

Email: shaunshajan09@gmail.com

Background: Glenoid cavity is the most important component of shoulder joint complex. Considering the variations in its shape and size, detailed knowledge of its morphology is essential for surgical and biomechanical interventions on shoulder joint. Dimensions of the glenoid cavity plays an important role in total shoulder arthroplasty for designing and selecting the appropriate prosthesis.

Aim: To determine the glenoid cavity index (GCI) using various dimensions of glenoid cavity and to note different shapes of glenoid cavity in adult dry human scapulae.

Methods: The study was conducted on 70 dry adult human scapulae which included 33 right and 37 left scapulae. Morphometric parameters like, supero-inferior diameter (SI), maximum antero-posterior diameter (AP-1) and antero-posterior diameter of upper half of the glenoid cavity (AP-2) were measured. Glenoid cavity index was calculated. Various shapes of the glenoid cavity were observed and tabulated.

Results: The mean length of the glenoid cavity (SI) was observed to be 3.49±0.28cm. The mean antero-posterior glenoid diameters (AP1 and AP2) were 2.3±0.23cm and 1.65±0.21cm respectively. The mean GCI was found to be 67.97±4.44. The GCI of the right scapulae was slightly greater than that of left. Shapes of the glenoid cavity were observed to be pear, oval or inverted comma shape in 32, 30 and 8 scapulae respectively.

Conclusion: Morphometric analysis of glenoid cavity dimensions and the knowledge about the range of variations in its shape are important for the proper utility of a prosthesis in shoulder arthroplasty. Our study provides a baseline data which will help the orthopedic surgeon to choose appropriate prosthesis and effectively restore the shoulder function.

Key words: Glenoid cavity, Morphometry, Glenoid cavity index, Shoulder arthroplasty

Morphology of supra-meatal region and the surgical implications of its morphometric analysis

Shreedee Padaru, Pallavi

Department of Anatomy, Father Muller Medical College, Mangalore

Email: shreedee.p04@gmail.com

Background: Suprameatal triangle is the area of choice to approach tympanic cavity for many surgical interventions following mastoiditis or otitis media. The suprameatal approach (SMA) is a recent and popular alternative in cochlear implantation when conventional surgical approaches are difficult to be performed. Morphometry and depth of the triangle including the suprameatal spine morphology plays an important role for surgical approaches in this region.

Aim: To study the morphology of suprameatal region with respect to the suprameal spine and depth of suprameatal depression and to estimate the dimensions of suprameatal triangle.

Methods: Present study was conducted on 70 dry adult human skull bones of unknown sex and age, that was available in the department of Anatomy. Superior border (ST1), antero-inferior border (ST2) and posterior border (ST3) of the suprameatal triangle were measured on both sides and suprameatal triangle area (STA) was calculated. Shape of the suprameatal spine and depth of the suprameatal triangle were noted.

Results: Length of the boundaries of suprameatal triangle were measured and the calculated mean STA was $1.17 \pm 0.29 \text{ cm}^2$ and $1.10 \pm 0.27 \text{ cm}^2$ on right and left sides respectively. Henle's spine was crest shaped in majority of skulls on both side. The suprameatal depression was deep in 50% of the skulls studied.

Conclusion: Suprameatal approach has been widely used by Otologists for various surgical interventions. Thus the present study provides a morphometric data of suprameatal region and it also provides an insight into the prevalence of types of Henle's spine. This may help the surgeons to prevent possible intraoperative or postoperative complications.

Key words: Suprameatal triangle, Henle's spine, mastoidectomy, cochlear implantation

Morphometric Analysis of Orbital Dimensions, Fissures and Foramina of South Indian Skulls

Vasudev murthy. K & Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Center, Bengaluru

Email: vasudev murthy.k026@gmail.com

Background: Orbital foramina are categorized as primary and secondary foramina. The Primary foramina include superior orbital fissure, inferior orbital fissure and optic canal. The Secondary foramina include Orbito-meningeal foramen, metopic canal and Warwick's foramen, Orbital dimension play predominant role in the evaluation of craniofacial complex. The Importance of detailed study of morphometric variation of superior and inferior orbital fissure is Of paramount importance for surgeons who approach this area to avoid injury of neurovascular Bundles.

Aim: The present study aims at estimating the morphometry of primary and secondary Foramina of orbit.

Methods: A cross sectional study was conducted on 84 orbits of human adult skulls in the Department of Anatomy. The dimensions of superior and inferior orbital fissures, the orbital Height and orbital width were recorded using Vernier caliper and needle divider to the nearest Millimeter. The presence of metopic canal and Warwick's foramen were documented.

Results: Mean orbital height of right orbit was 31.84 ± 3.44 mm and left orbit was 31.96 ± 3.68 mm. Mean orbital breadth of right orbit was 39.6 ± 1.88 mm and left orbit was 39.92 ± 2.68 mm. The Mean length of superior orbital fissure of right orbit was 1.38 ± 0.22 cm and Left orbital fissure was 1.4 ± 0.22 cm, the mean breadth of left orbit was 0.826 cm and right orbit Was 0.902 cm. The Mean length of inferior orbital fissure of right orbit was 3.68 ± 3.64 cm and left Orbit was 3.66 ± 3.14 cm, the mean breadth of right orbit was 5.08 mm and of left orbit was 5.12 mm. The incidence of metopic canal was documented in 13% of human skulls.

Conclusion: The knowledge of orbital dimensions is helpful for surgical approach during Plastic surgery, maxillofacial and neurosurgeries and in design of eye protective equipments. The Baseline data is beneficial for Forensic and Anthropological investigations of unknown Individuals for determining gender and age.

Keyword: Orbito-Meningeal Foramen, Metopic Canal, Warwick's Foramen, Superior Orbital Fissure, Inferior Orbital Fissure

DAY 2 16th September 2023 (Saturday) POSTER 11.00 am-12.00 pm Scientific Session 8**Radio-anatomical approach to fundamentals of peritoneal spaces using Multidetector Computed Tomography.****Anika Tiku, Santosh Rai**

Department of Radio-diagnosis, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Mangalore, Karnataka

Email: anikatiku@gmail.com

Background: The peritoneum is a large serosal membrane enveloping the abdomen and pelvic organs. This complex relationship forms many named abdominopelvic spaces, which are frequently involved in infectious, inflammatory, neoplastic and traumatic pathologies. Computed tomography is being increasingly used to determine anatomy of peritoneal and retroperitoneal spaces. It is important to understand the peritoneal spaces and the ligaments and mesenteries that form their boundaries in order to localize disease to a particular peritoneal space and formulate a differential diagnosis on the basis of that location.

Aim: To provide adequate knowledge of anatomy of peritoneal spaces to localize and describe the extent of diseases. This can further help in percutaneous drainage and other radiological procedures.

Methods: Contrast enhanced CT scan of the abdomen and pelvis was performed with sagittal, coronal and axial images was performed on a 60 year old male patient who was a known case of chronic liver disease. The CT images showed gross ascites and could better delineate the anatomy of the peritoneal spaces, ligaments and mesenteries that form their boundaries.

Results: A variety of diseases and pathological conditions can be evaluated and understood using Multidetector CT studies with reformatted images to fully delineate peritoneal anatomy and extent of disease.

Conclusion: The knowledge of peritoneal spaces, ligaments and mesenteries is essential in determining the causes and extent of disease for further management. This profound knowledge can also be imperative when predicting metastatic spread of abdominopelvic malignancy.

Key words: Peritoneum, CT, abdomen, cross-sectional anatomy, peritoneal cavity

Sellar and Suprasellar Pituitary Macroadenoma in 32 Years aged Woman- A Case Report**Jacqueline Kim J, Vidya C.S**

JSS Medical College, Mysuru, Karnataka, India

Email: jacquelinekim137@gmail.com

Background: Pituitary adenomas are the most common disease affecting the pituitary gland. These benign tumors most commonly affect people at the age of 30–40 years. Pituitary adenomas with diameter < 10 mm and ≥10mm were defined as microadenomas and macroadenomas, pituitary adenomas respectively. Of these 30% are prolactinomas, 20% are nonfunctioning 15% secrete growth hormone and 10% secrete adrenocorticotrophic hormone.

Aim: To highlight about asymptomatic pituitary macroadenomas in diagnosis and treatment of non-functional adenoma and functional adenomas like prolactinoma, acromegaly, and Cushing disease.

Method: Patient attended ophthalmology department OPD, JSS hospital for Visual acuity testing with symptoms of frontal and occipital headache. Results of hormonal assay and MRI scan were collected from the department of biochemistry and radiology. This study presents a case report of a 32 years old female patient who is asymptomatic, no galactorrhea, and regular menses. On hormonal assay prolactin level was 2.5ng/ml. The study demonstrates an asymptomatic sellar and suprasellar pituitary macroadenoma.

Observation: On observation patient is asymptomatic and hormones within normal limits. MRI imaging of paranasal sinus reveals heterogeneously enhancing lesion in sellar on left side with suprasellar extension, erosion in left side of clivus and encasement of cavernous segment of left ICA. Th lesion measures about 1.5APx 1.6MLx 1.5SI cm.

Conclusion: Asymptomatic pituitary macroadenomas do not require any treatment hence concluded to manage conservatively in view of surgical complications and advised regular follow up every 6 months.

Key words: pituitary gland, macroadenoma, asymptomatic, prolactin

Congenital Absence of Left common iliac vein and its embryological significance

Khushi, Satish Prasad, Dr Hema N, Seema SR

Department of Radiology and Anatomy, ESIC Medical College and PGIMSR, Rajajinagar, Bengaluru, Karnataka

Email: khushikhandelwal2503@gmail.com

Background: The union of internal and external iliac veins forms common iliac vein. Right and left common iliac vein join to form the inferior vena cava. The external iliac vein acts as the junction between the deep venous system of the leg and the common iliac vein. Anatomical Variations of iliac vein is reported to range from 20% to 27%. Anomalies of the iliofemoral venous system are rare The iliac veins are formed from regression of the distal portion of the posterior cardinal veins after 8 weeks of life.

Aim: To report and document an interesting case of Venous anomaly and to emphasise its clinical and embryological importance

Methodology: Colour Doppler ultrasound and Contrast-enhanced Computed tomography of lower limb and abdomen was the method of examination

Results: A 25 year old male reported with pain in lower limb diagnosed for varicosities on further examination detected with absence of Left common iliac vein and external iliac vein. Colour Doppler ultrasound revealed a dilated, arch-shaped vein over suprapubic region. Contrast-enhanced computed tomography angiogram showed the absence of the left common iliac vein and external iliac vein aberrant venous structure, originating from the left common femoral vein and draining to the right common femoral vein. The anatomical and embryological significance of venous anomaly will be discussed in detail during the presentation. .

Conclusion: A detailed knowledge of Anatomical variations becomes important for managing a surgical case effectively

Keywords: Common iliac vein, anatomical variations, posterior cardinal veins, CT

Assessment and Analysis of Human Laterality for Manipulation and communication gestures using Renne's Laterality Questionnaire.

Leya H M, Vasudha Kulkarni

Department of Anatomy, Akash Institute of Medical Sciences and Research Centre, Bengaluru

Email: leyahm686@gmail.com

Background: Brain lateralisation has been subject of substantial research for many years. Most vertebrates exhibit lateral biases in their behaviour. Toads, chicken, and fish tend to react faster to predators approaching from the left. On the contrary most animals have right-sided biases while handling objects. In humans, right-handers are far more common than left-handers. The laterality has significant implications for communication and is often linked to certain regions of the brain that may be influenced by handedness. There is a need for understanding the relationship between language, gesture and handedness to understand the evolutionary trend of lateralisation of human brain.

Aim: The present study aims at estimating the prevalence of laterality in communication and non-communication activities of human brain.

Methods: The cross-sectional was done on 375 participants aged 16 – 61 years. Renne's Laterality Questionnaire, was administered to all participants with their informed consent through Google forms, to collect data on laterality preferences in various types of gestures involving hands, face and ears. The questionnaire included 60 items related to both communication and non-communication functions, divided into 9 different categories. The direction and strength of laterality were assessed by Laterality Index, and laterality bias was analysed at the population level. The participants were classified as strong left- lateralised, mixed left- lateralised, ambidextrous, mixed right-lateralised and strong right-lateralised based on Laterality index scores.

Results: The highest percentage for both communication and non-communication were in mixed right-lateralised participants (61.86%) followed by strong right-lateralised participants (27.20%). 7.73% of them were ambidextrous and 2.93% were mixed left-lateralised. Out of the total population, only 1 participant (0.26%) was strongly left-lateralised.

Conclusion: Our findings revealed that the most common laterality is mixed right handedness followed by strong right handedness. This enhances our understanding that human laterality is influenced by behavioural characteristics, interactional context and socio-demographic characteristics.

Key words: Laterality Index, Rennes Questionnaire, Handedness, Gestural communication.

Study of Cardiac Situs Anomalies and its Embryological and Clinical Implications-Case Series

Medha Kakde, Nishaa P, Hema N, Seema SR

ESIC Medical College and PGIMSR, Rajajinagar, Bangalore - 560010

Email: medhakakde24@gmail.com

Background: Heterotaxy syndrome or Situs Ambiguous is the disturbance in the usual left-right distribution of the thoracic and abdominal organs. It occurs from an early embryological developmental disturbance which most cases being sporadic. It is classified under the group of cardiosplenic syndromes. These anomalies have been estimated to be around 1 in 8,000-24,000 live births. Anatomical positioning of organs in human body can be classified into 3 types:- Situs Ambiguous, Situs Solitus, Situs Inversus. Dextrocardia occurs if the heart tube bends to the left instead of right during embryological development. Persistence of fetal splenic lobules (spleniculi) leads to polysplenia.

Aim: Imaging spectrum in situs abnormalities and its embryological significance.

Methods: This spectrum includes 3 patients who underwent CT scans of abdomen from the Department of Radiology in 2022-2023

Results: 24 year old female, with Dextrocardia associated with Kartagener Syndrome was documented. Another case of 32 year old female, with Polysplenic condition will be discussed. One more 3 year old female child, with Asplenia condition was identified on CT scan. Further details will be discussed during the presentation.

Conclusion: Heterotaxy syndrome is associated with complex cardiovascular malformations. Recent advances in medical management, improves chance of survival of these patients. This disorder remains one of the greatest challenges for cardiologists and surgeons.

Keywords: Heterotaxy, Situs Ambiguous, cardiosplenic syndromes, Polysplenic, Asplenia, Dextrocardia, Kartagener Syndrome.

Dual Dilemma: An Unusual Pediatric Case of Cryptorchidism with Testicular Torsion**Rhea.M, Satih Prasad, Hema N, Seema SR**

Department of Anatomy, ESIC MC and PGIMSR, Rajajinagar, Bengaluru, Karnataka

Email: rehanajinnah0712@gmail.com

Background: Cryptorchidism arises due to the failure of one or both the testes to descend into the scrotum. It is a common congenital anomaly in 3% of full-term and 30% of preterm male infants. Testicular torsion is the rotation of the testis along its axis and can occur in both descended and undescended testes. It leads to compromised blood supply and testicular damage. The simultaneous occurrence of cryptorchidism and testicular torsion is a rare phenomenon that requires immediate diagnosis and intervention.

Case Presentation: This is the case of a 6-year-old male who presented with acute abdominal pain to the OPD. Physical examination revealed tenderness in the left inguinal region and an empty left scrotal sac with free fluid. Ultrasonography was used to ascertain cryptorchidism and detect testicular torsion.

Conclusion: Timely recognition and management of this condition is important to prevent long-term complications, such as testicular loss and infertility. Increased awareness among clinicians and the utilization of imaging modalities, such as ultrasonography, is vital in facilitating accurate diagnosis and appropriate management in similar cases.

Keywords: Male infants, Cryptorchidism, Torsion, Ultrasonography, Scrotum

Morphometric analysis of floor of fourth ventricle in cadaveric brain specimens**Sristi Chakraborty, Arvind Kumar Pandey**

Kasturba Medical College Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India

Email: sristichkrbrt@gmail.com

Background: Although, safe entry zones in the region of the fourth ventricle can be easily determined with the usage of radiology nowadays, it is difficult to draw a gross conclusion, since the demarcating zones differ precisely on an individual basis, intra-operatively. e.

Aim of the study: The purpose of this study was to find constant anatomical landmarks and distances within the rhomboid fossa region which would help a neurosurgeon to determine safe approach zones through the 4th ventricle floor to brainstem lesions.

Materials & Methods: A study of 8 parameters on 24 brainstem specimens of patients of unknown sex who had died of non-brain disease was performed to determine the degree of individual morphological and morphometric variability of the floor of 4th ventricle. Several anatomical landmarks like median sulcus, sulcus limitans, obex, vestibular area and the rhomboid fossa itself was clearly demarcated in the examined specimens. This study was conducted using instruments like scale, measuring tape and pins and through visual observations.

Results: Gross anatomical features like median sulcus, and sulcus limitans were clearly identified in all the specimens. The facial colliculus was not prominent in about 54% specimens, striae medullaris was in good condition in 33% of the specimens and showed high degree of variation with thickness and orientation. Hypoglossal triangle was prominent in 50% of the specimens whereas vagal triangle was not clearly identifiable in 90% of the specimens.

Conclusion: This study aids in identifying the various landmarks in the floor of 4th ventricle and the functional areas associated with it, to facilitate neurosurgery operations of brainstem structures.

Key words: ventricles, brain, neuroanatomy, neurosurgery, morphometry

Cross sectional study on normal parameters of cruciate ligaments of adult knee joints using MRI scan.

Varsha Shenoy, Ram Shenoy

Department of Anatomy, Father Muller Medical College, Mangalore

Dept of Radiodiagnosis, Father Muller Medical College, Mangalore

Email: varsha.shenoy@hotmail.com

Background: Anterior and posterior cruciate ligaments (ACL & PCL), intra-articular ligaments of knee joint give antero-posterior stability to joint. Rotational injuries to knee joint in sports like soccer, tennis can lead to tear of these ligaments especially ACL. For the successful reconstruction of these ligaments, normal morphometric data of these ligaments of the population is very much essential. Hence it was decided to study these values using MRI of adult knee joints.

Aim: The objectives of the study are: Using normal MRI scans of adult knee joint to measure:

- a) The length and thickness of anterior and posterior cruciate ligaments of knee joint.
- b) The ACL-Tibial angle
- c) Blumensaat - ACL angle
- d) PCL angle

Methods: After institutional ethical clearance, fifty MRI of Adult Knee joints with intact ACL and PCL available in the Department of Radiodiagnosis, FMMC, Mangalore were studied. Mean and standard deviation was calculated for all the parameters. Paired and unpaired "t" tests were used to compare the difference in males and females as well as to compare the right-side data with that on the left side.

Results: The study analysed 50 (21 right side & 29 left side) MRI scans of knee joint and the results were: The mean ACL length on right side was 35.3 ± 4.04 mm and on the left side it was 34.8 ± 3.5 mm. The mean of Coronal ACL-tibial angle was found to be $99.56^\circ \pm 7.4^\circ$. The Blumensaat-ACL angle was ranging from 1.4° - 15.1° with a mean value of $5.92 \pm 3.1^\circ$. PCL angle mean value was $116.4 \pm 10.4^\circ$.

Conclusion: Cruciate ligament repair is one the most common procedure in modern era. The results of the study will be a useful information to the surgeons.

Key words: anterior cruciate ligament, posterior cruciate ligament, knee joint, sports injury.

Virgin coconut oil- A review of its extraction, properties and health benefits

Mangala M. Pai, Y Lakshmisha Rao, Murli Manju BV, Latha V Prabhu, Rajanigandha Vadgaonkar

Department of Anatomy, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India

Email: mangala.pai@manipal.edu

Virgin coconut oil (VCO) is processed, edible oil extracted from the mature coconuts. The traditional methods of extraction of VCO are hot and cold extraction processes. VCO is a colourless water insoluble liquid. It will attain solid state at the temperature of 25° C and its smoking point is 232° C. Unrefined or bleached oil will have a typical coconut smell. Majorly the nutritional components of VCO are contributed by Lauric acid. VCO has shown its anticancer and antimicrobial, analgesic, anti-bacterial and anti-viral properties and anti-inflammatory properties and has gained the attention in medical field. Most evidently VCO has shown antioxidant property. This is due to its phenolic compounds and medium chain fatty acids. Stress and depressions are the two major causes for most of the psychological disorders. The anti-oxidants are one of the beneficial compounds to prevent and treat the oxidative stress induced neurological disorders. Since VCO has shown its potential antioxidant property it can be used in treating and preventing the disorders caused by oxidative stress. Dietary supplementation of VCO is easy and economic as well as safer in the day today life in all the age groups. Hence exploration of antioxidant property as well as other beneficial effects of VCO in various health conditions is valuable.



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Department of Anatomy Kasturba Medical College Manipal

Manipal Academy of Higher Education
Manipal - 576104, Karnataka, India