



SOCIETY OF NEPALESE ANATOMISTS
सोसाईटी अफ नेपलीइज एनाटोमिष्ट



नेपाली सेना स्वास्थ्य विज्ञान संस्थान
NEPALESE ARMY INSTITUTE OF HEALTH SCIENCES



iSONACON 2026

2nd - International Conference
Society of Nepalese Anatomists

08TH-09TH MAY 2026 | NAIHS, KATHMANDU, NEPAL

“From Conception to Creation: The Anatomy of Human Emergence”

SOUVENIR

**Society of Nepalese Anatomists (SONA)
Nepalese Army Institute of Health Sciences (NAIHS)
University Grants Commission Nepal (UGC)**

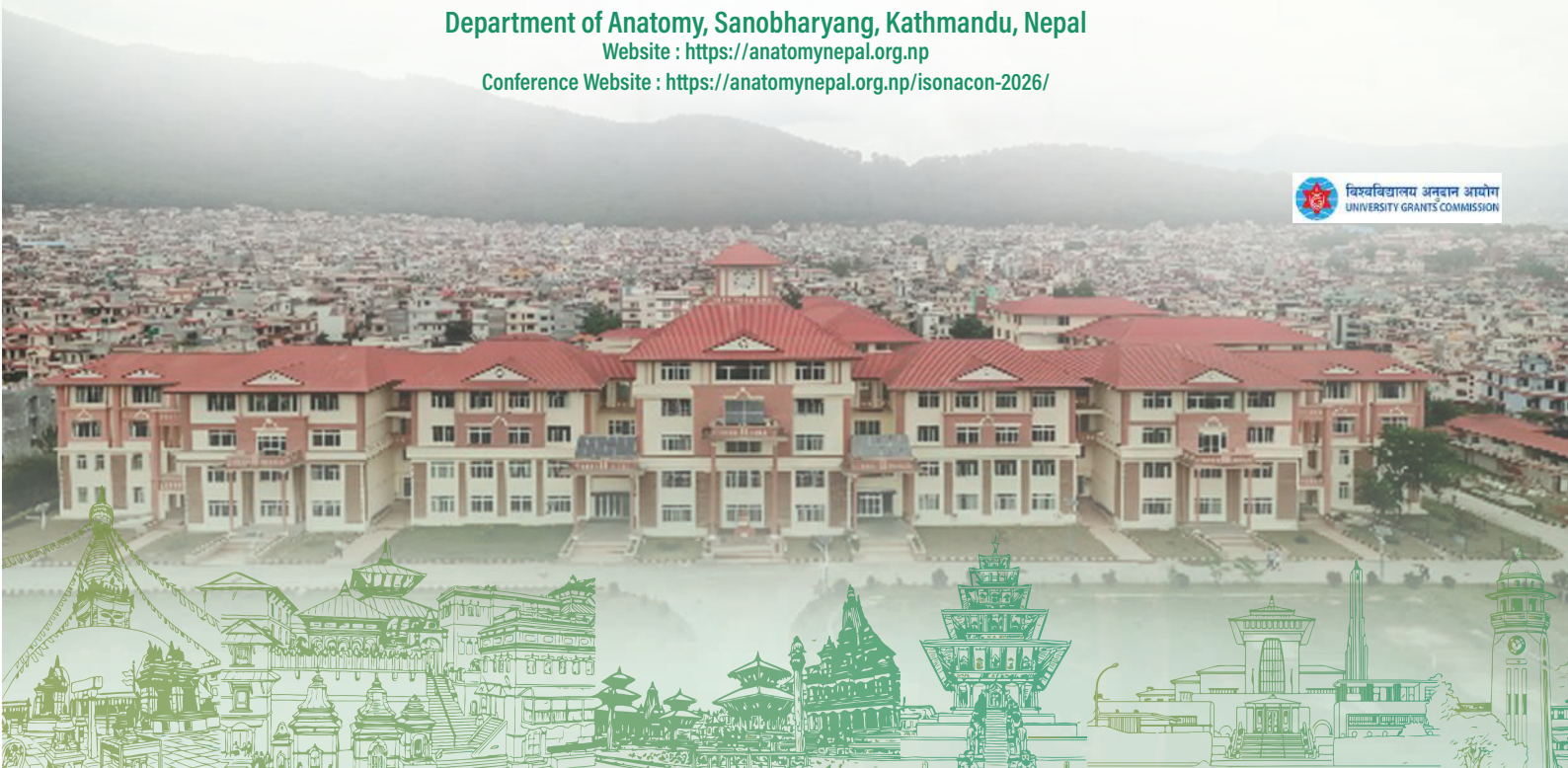
Department of Anatomy, Sanobharyang, Kathmandu, Nepal

Website : <https://anatomynepal.org.np>

Conference Website : <https://anatomynepal.org.np/isonacon-2026/>



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नेपाली सेना स्वास्थ्य विज्ञान संस्थान
NEPALESE ARMY INSTITUTE OF HEALTH SCIENCES

Nepalese Army Institute of Health Sciences (NAIHS) is a not-for-profit medical education endeavor of the Welfare Fund of the Nepali Army established with a vision of developing skilled and professional human resources in the field of medical education by providing an optimal educational environment and improve the quality of medical service of Nepali Army and nation as a whole. It is managed by the Directorate of Welfare Planning of Nepali Army. Its advisory committee comprises of all relevant directoriates of the Nepali Army under the leadership of the Chief of Army Staff (COAS).

To ensure simplified and easy access of army children in the field of medical education, General Chhatra Man Singh Gurung (Retd), by then COAS laid the foundation stone of NAIHS on 2067/08/02 B.S. but later inaugurated by then right Honorable President of Nepal, Dr. Ram Baran Yadav, on 10thJestha 2069 B.S. (23 May 2012 A.D.).

NAIHS operates under the affiliation of Tribhuvan University, Nepal's oldest and most prestigious university. This institution is recognized by Medical Education Commission, Nepal Medical Council, Nepal Nursing Council and Nepal Health Professional Council. These affiliations ensure that the programs offered are of high academic and professional standards.

NAIHS ensures medical education to the children of regular and retired army personnel, heroic death or death in line of duty and fully disabled army personnel as well as general public with the provision of fixed quotas. Under its two colleges (College of Medicine and College of Nursing) NAIHS currently caters 3 super specialization (DM/MCH), 23 Post Graduate (MD/MS/MN) courses & 5 Bachelor level programs (MBBS, B.Sc. Nursing, BNS, BPH and B.Sc. MLT). NAIHS aims to extend its Bachelor level programs like BDS, B. Pharm. BPT etc, Post Graduate programs and super specialization programs in the near future.

In these past glorious years of establishment, NAIHS has proven itself to be one of the premier institutes in the field of health professions' education and is amongst the top choice of medical students in Nepal. Overall, NAIHS strives to address the existing medical, paramedical and nursing health professional in Nepal by encompassing all health related fields.

Shree Birendra Hospital is the teaching hospital of NAIHS and is located in Chauni, Kathmandu. It is a tertiary level, modern, central and referral hospital of Nepali Army. The hospital currently has 635 beds and it provides almost all types of medical services to the serving army personnel and their dependents, retired army personnel and their dependents, civilian faculty members and staffs of NAIHS and their dependents.



SOCIETY OF NEPALESE ANATOMISTS

सोसाईटी अफ नेपालीइज एनाटोमिस्ट

The Society of Nepalese Anatomists (SONA) is a non-profit, philanthropic professional organization dedicated to the advancement of anatomical sciences and allied disciplines. Officially incorporated on 5th April 2022 under the provisions of the Companies Act, 2006 (as a Company Not Distributing Profit), SONA is also affiliated with the Social Welfare Council, Nepal, reflecting its commitment to ethical governance and national development.

SONA serves as a collaborative platform that brings together anatomists, medical educators, researchers, and clinicians from Nepal and across the globe. The society promotes academic excellence, innovation, and interdisciplinary cooperation, aiming to strengthen the role of anatomy in modern medical education, research, and clinical practice.

The organization actively conducts workshops, training programs, teaching initiatives, and national as well as international conferences to facilitate knowledge exchange and professional development. It also envisions a peer-reviewed scientific journal that will serve as a global platform for researchers, academicians, and practitioners to disseminate their work and contribute to advancements in anatomy and allied sciences.

By fostering collaboration and addressing professional challenges, SONA strives to support innovation in healthcare education and research, ultimately contributing to improved medical practice and academic standards worldwide.

Founder Members

The foundation of SONA is built upon the vision and dedication of its esteemed Founder Members, who established the society with a commitment to advancing anatomical sciences and creating a unified academic platform.

- Prof. Dr. Dil Islam Mansur – KU School of Medical Sciences
- Dr. Anusuya Shrestha – Maharajgunj Medical Campus (IOM, TUTH)
- Dr. Ramendra Kumar Raman – Kantipur Dental College
- Dr. Ranjan Prasad Devbhandari – Patan Academy of Health Sciences
- Mr. Ram Prasad Timsina – Kathmandu Medical College
- Dr. Sunima Maskey – KU School of Medical Sciences
- Dr. Nripendra Tiwari – Kathmandu Medical College
- Mrs. Rabita Kharbuja – Nepal Medical College
- Mr. Dilip Kumar Mehta – KU School of Medical Sciences

These founding members laid a strong academic and organizational foundation, guiding SONA toward national and international recognition.

Advisory Committee

The Advisory Committee of SONA comprises eminent academicians and senior anatomists who provide strategic direction and mentorship to the society. Their expertise ensures the maintenance of high academic standards and strengthens global collaborations.

- Prof. Dr. Trilok Pati Thapa – Nepalese Army Institute of Health Sciences
- Prof. Dr. Shaligram Dhungel – Nepal Medical College
- Dr. Banshi Krishna Malla – Kathmandu Medical College
- Prof. Dr. Ram Prasad Upreti – Maharajgunj Medical Campus (IOM, TUTH)

Their guidance continues to play a crucial role in shaping the academic, research, and professional initiatives of the society.

Join Us

The Society warmly invites academicians, researchers, and clinicians with an interest in anatomy to become a part of this growing professional network. Through shared knowledge and collaborative effort, SONA aims to advance anatomical sciences and contribute meaningfully to global health education.



NEPALESE ARMY INSTITUTE OF HEALTH SCIENCES

Bhandarkhal, Kathmandu
(Regulated by Army Welfare Fund)



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info@naihs.edu.np

Message

It gives me immense pleasure to extend my warm greetings to the faculty members and supporting staff of the Department of Anatomy for their commendable dedication and tireless efforts in organizing the 2nd International Conference of the Society of Nepalese Anatomists (iSONACON 2026). This prestigious international congregation, dedicated to the advancement of anatomical sciences, will be held on 8th–9th May 2026 at the Nepalese Army Institute of Health Sciences (NAIHS), Kathmandu, Nepal.

Anatomy remains the bedrock upon which the edifice of medical education is built. Its relevance extends far beyond foundational learning, forming the basis for clinical reasoning, surgical precision, and the safe practice of medicine. In the context of rapidly evolving medical sciences, it is imperative that we continually reaffirm and strengthen the central role of anatomy in both education and clinical application.

The publication of this souvenir stands as a meaningful academic endeavor, fostering intellectual exchange and documenting the scholarly contributions of experts from across the globe. It also serves as a reminder of our collective responsibility to innovate teaching methodologies, inspire young minds, and ensure that the essence of anatomical sciences remains deeply embedded in medical training.

At the undergraduate and internship levels, there is a pressing need to adopt dynamic and learner-centric approaches that enable students to appreciate the enduring significance of anatomy in all branches of modern medicine. Such efforts will undoubtedly contribute to the development of competent, confident, and ethically grounded healthcare professionals.

I extend my heartfelt greetings to all delegates, distinguished speakers, and participants of iSONACON 2026. I am confident that this conference will serve as a vibrant platform for knowledge exchange, professional collaboration, and academic excellence. I convey my best wishes for the resounding success of the conference.

Prof. Dr. Devendra Bahadur Khatri
Major General (Retd.)
Executive Director
Nepalese Army Institute of Health Sciences (NAIHS)
Kathmandu, Nepal

त्रिभुवन विश्वविद्यालय
चिकित्सा शास्त्र अध्ययन संस्थान
डीनको कार्यालय
महाराजगंज, पो.ब.नं.: १५२४
काठमाडौं, नेपाल ।
फोन नं.: ९७७-१-४४२९८७९



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Institute of Medicine
Office of the Dean
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Kathmandu, Nepal
Tel: +977-1-4421879, Fax: +977-1-4422307

May 3, 2024

Message

It is with great pleasure and pride that I convey my best wishes for the upcoming Second International Conference of the Society of Nepalese Anatomists (SONA), scheduled to take place on May 8–9 in Kathmandu. Clinical anatomy remains a cornerstone of undergraduate medical education, and the thoughtfully designed program reflects the breadth and relevance of topics to be addressed. Clinical anatomists play an essential role in nurturing competent, compassionate, and committed medical professionals who serve both within Nepal and beyond.

As medical education continues to advance, increasingly shaped by technological innovations and artificial intelligence, this souvenir stands as a reminder of our shared mission which is to expand the boundaries of knowledge in clinical anatomy. I hope this publication motivates our students and early-career professionals to uphold the highest standards of integrity, empathy, and lifelong learning. It is also my sincere hope that it inspires our graduates to embrace a “Nepal First” approach, contributing meaningfully to strengthening the nation’s health system at all levels.

I would like to extend my heartfelt appreciation to the Organizing Committee for their dedicated efforts in bringing this publication to fruition.

Let us continue to work collaboratively to advance medical education and research, ensuring that our community remains a beacon of excellence in shaping the future of healthcare.

With warm regards and best wishes for the success of this conference,

Prof. Dr. Mohan Sharma, MD
Dean, Institute of Medicine



नेपाली सेना स्वास्थ्य विज्ञान संस्थान
NEPALESE ARMY INSTITUTE OF HEALTH SCIENCES



Prof. Dr. Trilok Pati Thapa

Organizing Chair, iSONACON 2026
Vice Principal & Head, Department of Anatomy
Nepalese Army Institute of Health Sciences - College of Medicine (NAIHS-COM)

Message

Dear Esteemed Guests, Distinguished Delegates, and Participants,

It is a matter of great honor and a distinct privilege for Department of Anatomy, College of Medicine, Nepalese Army Institute of Health Sciences (NAIHS) to host the 2nd International Conference of the Society of Nepalese Anatomists (iSONACON 2026). This prestigious international gathering is envisioned as a platform for further understanding, of a complex subject, human anatomy, within the ever-evolving landscape of health professional education.

Our organizing committee has thoughtfully planned a comprehensive scientific program featuring a diverse array of sessions, including keynote addresses, panel discussions, and interactive presentations. These sessions include relevant research, innovative teaching methodologies, and clinically related anatomical insights. Our distinguished national and international participants bring with them immense expertise and experience, ensuring rich academic exchange and meaningful deliberations.

Kathmandu, with its serene environment and unique cultural heritage, provides an inspiring setting for this academic congregation. I hope that the harmonious blend of scholarly engagement and the tranquil ambiance of the valley will foster both intellectual growth and professional networking, making your experience truly enriching and memorable.

I wish to convey my sincere gratitude to the Secretariat of the Society of Nepalese Anatomists for entrusting us with the responsibility of hosting this prestigious international event. It is truly a proud and momentous occasion for our institution.

I also extend my sincere gratitude and appreciation to our sponsors, organizing committee members, volunteers, and the entire administrative team, whose unwavering dedication and tireless efforts have made this conference possible. Their commitment has been instrumental in shaping this event into a meaningful academic forum.

As we come together for iSONACON 2026, I look forward to healthy discussions, exchange of ideas, and the forging of lasting professional collaborations.

Once again, a warm welcome to you all and best wishes for a highly productive and enjoyable conference.


Prof. Dr. Trilok Pati Thapa



नेपाल चिकित्सक संघ

Nepal Medical Association

Founded: 20 Falgun 2007 (4th March 1951)

KTM, CDO Regd. No. 07/043/44

Member:
World Medical Association (WMA)
South Asia Medical Association (SAMA)
Confederation of Medical Association in Asia and Oceania (CMAAO)

CENTRAL OFFICE:
Siddhi Sadan, Post Box: 189
Exhibition Road, Kathmandu
Nepal (Asia)

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Dr. Ashis Shrestha

Message

It gives me immense pleasure to know that Society of Nepalese Anatomists is organizing its 2nd International Conference iSONACON on 8th-9th May 2026".



On behalf of Nepal Medical Association, I wish the program a grand success. I hope this conference will be helpful in sharing and enhancing knowledge between anatomists and other healthcare practitioners as well as promoting healthcare research and innovation for the benefit of Nepalese people and delivery of quality healthcare.

I hope this conference acts as a platform in bringing anatomists as well as other healthcare professionals, experts, and researchers from various sectors together to share experience and expertise. I believe the expertise and experience of the professionals will be transferred to the medical students participating in the program which will eventually help in strengthening quality healthcare delivery.

Nepal Medical Association would always like to enhance cooperation and collaboration with SONA for the improvement of healthcare system.

Once again I would like to extend by best wishes for the successful completion of the program. I would also like to express my best wishes for continuous growth of this organization in upcoming years.

Best Regards,

Dr. Anil Bikram Karki
President



KATHMANDU UNIVERSITY
SCHOOL OF MEDICAL SCIENCES



SOCIETY OF NEPALESE ANATOMISTS
सोसाईटी अफ नेपालीइज एनाटोमिष्ट



Prof. Dr. Dil Islam Mansur

Organizing Chairperson, iSONACON 2026
President, Society of Nepalese Anatomists
Professor and Head of Anatomy, KUSMS

Message

Dear Esteemed Guests and Participants,

It is my great pleasure and privilege to welcome you to the 2nd International Conference of the Society of Nepalese Anatomists (iSONACON 2026).

This conference brings together distinguished experts, academicians, and scholars in anatomy and allied health sciences to exchange knowledge, present research, and discuss clinically relevant advancements through a thoughtfully curated scientific program.

We are honored to host eminent national and international speakers whose valuable contributions will enrich academic dialogue and foster meaningful collaboration.

I extend my sincere gratitude to the Nepalese Army Institute of Health Sciences (NAIHS) for their generous support and for providing an excellent venue for this conference. I also thank our sponsors, volunteers, and organizing committee members for their unwavering dedication in making this event a success.

Once again, welcome to iSONACON 2026. I wish you a productive, engaging, and enriching experience.

Prof. Dr. Dil Islam Mansur



SOCIETY OF NEPALESE ANATOMISTS
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Dr. Ramendra Kumar Raman

Organizing Secretary, iSONACON 2026
Secretary cum CEO, Society of Nepalese Anatomists

Message

It is with profound honor, gratitude, and academic pride that I welcome all esteemed participants to the 2nd International Conference of the Society of Nepalese Anatomists (ISONACON 2026), being held on 8th–9th May 2026 at the Nepalese Army Institute of Health Sciences (NAIHS), Sanobharyang, Kathmandu, Nepal.

In the journey of medical science, anatomy remains the first language of understanding life itself—the silent foundation upon which every diagnosis is built, every surgery is guided, and every healing begins. It is this timeless discipline that brings us together once again, united by curiosity, knowledge, and the shared pursuit of excellence.

Following the resounding success of iSONACON 2024, we gather today with renewed energy and a deeper vision. As a biennial academic tradition, iSONACON continues to evolve—not merely as a conference, but as a growing intellectual movement dedicated to strengthening anatomical sciences as the enduring backbone of medical education, research, and clinical practice.

ISONACON 2026 stands as a global academic confluence, Organized by the Society of Nepalese Anatomists (SONA) with the invaluable support of the Nepalese Army Institute of Health Sciences (NAIHS) and the University Grants Commission of Nepal (UGC). Here, distinguished anatomists, educators, researchers, clinicians, and healthcare professionals from across Nepal and more than six countries come together—not only to share knowledge, but to shape the future of anatomical science.

The scientific program has been thoughtfully curated as a journey of discovery—featuring inspiring plenary sessions by eminent scholars, impactful scientific presentations, CME sessions, workshops, symposiums, and thought-provoking panel discussions addressing the evolving challenges in anatomy education and research.

The theme of iSONACON 2026 - **“From Conception to Creation: The Anatomy of Human Emergence”** beautifully reflects the essence of our gathering: the miracle of human development, the science of structure, and the art of understanding life in its most fundamental form.

Beyond lectures and presentations, this conference is a celebration of ideas. It is a space where minds meet, disciplines converge, and collaborations are born—planting seeds that will grow into the future of medical education and healthcare innovation.

I extend my deepest gratitude to all invited speakers, delegates, sponsors, and organizing committee members whose unwavering dedication has transformed this vision into reality. Your commitment is the invisible architecture of this academic endeavor.

To all participants, I warmly welcome you to Kathmandu—a city of heritage, serenity, and learning. May your time here be intellectually enriching, professionally rewarding, and personally memorable.

Let iSONACON 2026 be more than a conference. Let it be a moment of reflection, a spark of innovation, and a bridge toward a brighter future in anatomical sciences.

Dr. Ramendra Kumar Raman



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NEPALESE ARMY INSTITUTE OF HEALTH SCIENCES



Prof. Dr. Muna Kadel

Co-Organizing Secretary, iSONACON 2026
Professor of Anatomy, Nepalese Army Institute of Health Sciences,
Kathmandu, Nepal

Message

It gives me immense pleasure to extend a warm and heartfelt welcome to all distinguished guests, respected faculty members, and dear participants to the Conference of Anatomy – iSONACON 2026, being held on the 8th and 9th of May 2026 at the Nepalese Army Institute of Health Sciences, Kathmandu.

This conference serves as a significant platform for anatomists, researchers, clinicians, and students to come together, exchange ideas, and explore recent advances in the field of anatomy. It is an honor for us to host this prestigious academic event at our institution, and we are committed to making your experience both intellectually enriching and professionally rewarding.

Our organizing team has worked with dedication to develop a comprehensive scientific program that encourages learning, collaboration, and innovation. We believe that the deliberations and interactions during this conference will contribute meaningfully to the advancement of anatomical sciences.

I warmly welcome you all to Kathmandu and wish you a successful, engaging, and memorable iSONACON 2026.

Prof. Dr. Muna Kadel

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SOCIETY OF NEPALESE ANATOMISTS (SONA) MEMBERSHIP

The membership subscriptions are for Life and Regular members only. The membership fee will be as decided by General Body of SONA from time to time.

Life Member including Enrollment Fee NRs. 11500 (For Nepalese Citizen), USD 100 (SAARC countries citizen) and Other Nationality USD 200.

Regular (Annual) Member including Enrollment Fee NRs. 2000 (For Nepalese Citizen), USD 20 (SAARC countries citizen) and Other Nationality USD 30.

All membership fee shall be non-refundable and non-transferable.

How To Pay

Online Bank Transfer/ Bank Draft / Multicity Cheque / NEFT Bank Transfer

Bank Details for Membership Payment - NEPAL

Swift Code: HIMANPKA

Account No.: 21010872250013

Account Name: SOCIETY OF NEPALESE ANATOMISTS

Bank: HIMALAYAN BANK LIMITED

Branch: NEW ROAD BRANCH



Fonepay QR

Bank Details for Membership Payment - INDIA

Swift Code: NSBINPKA

Account No.: 20425240200420

Account Name: SOCIETY OF NEPALESE ANATOMISTS

Bank: NEPAL SBI BANK LTD.

Branch: MAHARAJGUNJ BRANCH



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Process

Applicant should have the following documents ready before proceeding to apply:

- SONA membership form filled online by following link: <https://anatomynepal.org.np/membership/registration/>
- Copies of MD/MSc Certificate in Clinical Anatomy and Copy of Citizenship/Passport.
- Copy of passport size photograph in colour.
- Copy of Bank Deposit Slip or screenshot of Online payment.

Fully completed registration will be processed within 2-3 working days. Membership fees should have been received before the application is forwarded to the committee for approval as per the categories of membership.

SECRETARIAT

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President

Professor and Head

Department of Anatomy

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Dhulikhel, Kavre, Nepal

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Email : dilislam@kusms.edu.np

Dr. Sunima Maskey

Accounting, Coordination of Office Operations, Membership

Tel: +977 9849288322 (WhatsApp/Viber)

Dr. Ramendra Kumar Raman

General Secretary cum CEO

Tel: +977 9851174303 (WhatsApp/Viber)

Email: secretary@anatomynepal.org.np

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ISONACON 2026

2nd - International Conference: Society of Nepalese Anatomists

Venue: Nepalese Army Institute of Health Sciences

"FROM CONCEPTION TO CREATION: THE ANATOMY OF HUMAN EMERGENCE"

PROGRAMME SCHEDULE

08th May 2026, Friday

08:00am - 09:00am	REGISTRATION & BREAKFAST	
09:00am - 10:00am	INAUGURATION CEREMONY National Anthem Welcome Speech by President of SONA Lighting of the Lamp by Chief Guest along with the Distinguished Guests Opening Remark from Chair- Organizing Committee Speech By Patron of Organizing Committee Remarks By the Chief Guest Closing Remark and Vote of thanks	Auditorium Hall
10:30am - 01:00pm	Plenary Guest Speaker Session I (CME) "From Conception to Creation: The Anatomy of Human Emergence" Chairperson: Prof. Dr. Rajan Bhatnagar, Prof. Dr. Surajit Ghatak, Dr. Anusuya Shrestha, Dr. Sanzida Khatun The Blueprint of Life: Tracing the Genetic Journey from Conception to Creation Dr. Shiva Shankaran Chettiar, <i>Director, Genexplore Diagnostics and Research Centre, India</i> Artificial Intelligence in Human Emergence - From Conception to Creation Dr. Reeha Mahajan, <i>Associate Professor, Anatomy, All India Institute of Medical Sciences, Jammu, India</i> The Journey of Embryology: From Aristotle's Observational Philosophy to the Precise Engineering of Genes Dr. Mushfika Rahman, <i>Professor and Head of Anatomy, Dr. Sirajul Islam Medical College, Dhaka, Bangladesh</i> Gonadal Development and Effect of Teratogens Prof. Dr. Biswabina Ray, <i>Dean (Academic), Professor & Head, Anatomy, All India Institute of Medical Sciences, Kalyani, India</i> Applied Reproductive Anatomy: Morphological Determinants of Oocyte and Embryo Quality Dr. Sarabpreet Singh, <i>Director, The Fertilis Academy and Head, Clinical Embryology & Andrology, Artemis Health Institute, Gurgaon, India</i> Male infertility and Sperm genetics Dr. Laxmi Bhattarai, <i>Assistant Professor Anatomy, Devdaha Medical College, Nepal</i> Endometriosis and Infertility Dr. Bishnu Gautam, <i>MD Gynecology & Obstetrics, MPH, Fellowship in Reproductive Medicine, Bipasana Fertility (IVF) Center, Tilottama, Nepal</i> Precision Reproductive Medicine: Clinical Applications of PGS, PGD and Non-Invasive Preimplantation Genetic Testing Dr. Swasti Sharma, <i>Hope Fertility Center and Diagnostic, Kathmandu, Nepal</i> Experience of Academic Fetal Autopsies in Tertiary Care Institute Dr. Pooja Bhadoria, <i>Associate Professor, Department of Anatomy, AIIMS, Rishikesh, India</i> From Conception to Creation: Neural Tube Defects - Disruptions in the Anatomy of Human Emergence Dr. Shubhangi Yadav, <i>Associate professor, Department of Anatomy, AIIMS, Raebareli, India</i> Anatomists as Medical Geneticists: Converting Foundational Strength into Clinical Impact Dr. Dnyandeo Chopade, <i>Director- Genetic Health & Research Center, Nashik, India</i> GENERATIVE GENOMICS: A Quest to Reconcile Generative and Evolutionary Origins Dr. Jae Kyu Lee, <i>PhD, President of the Generative Genomics Council, Professor Emeritus, Korea Advanced Institute of Science and Technology (KAIST), Seoul, Korea</i>	Auditorium Hall
01:00pm - 02:00pm	LUNCH	
02:00pm - 03:30pm	WORKSHOP : Chairperson: Dr. Sudikshya KC, Dr. Usha Chalise, Dr. Umeshwar Prasad Thakur Building Safer Healthcare Teams: The Role of Emotional Intelligence and Reflection Dr. Puja Dulloo, <i>Professor & Head, Physiology & DHPE, PIMSR, Parul University, India</i> Dr. Neeraj VEDI, <i>Associate Professor, Anatomy & Member DHPE, PIMSR, Parul University, India</i>	Swayambhu Hall

02:00pm - 04:00pm	Plenary Guest Speaker Session-II Chairperson: Dr. Swapna Parate, Dr. Ranjan Prasad Devbhandari, Dr. Muna Kadel, Dr. Ganpat Choudhary Novel facial muscular and fascial anatomy-based precision aesthetic strategies for the clinical excellence Prof. Dr. Hee-Jin KIM, <i>Anatomy & Developmental Biology, Department of Oral Biology, Yonsei University College of Dentistry, Seoul, Korea</i> Endoscopic Anatomy of Ear Dr. Anupama Mahajan, <i>Director Principal cum Professor Anatomy, Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, India</i> Mental Health Status of First-Year MBBS Students in Bangladesh: A Study on Stress, Anxiety, and Depression Dr. Md. Nahidur Rahman, <i>Sir Salimullah Medical College, Dhaka, Bangladesh</i> Surface Anatomy- Learning approach and Relevance in Clinical Practice Prof. Dr. Prerna Gupta, <i>Professor and Head, Department of Anatomy, T. S. Mishra University, Lucknow, India</i> Endoscopic Anatomy of Inguinal Region in the context of Lap Hernia Surgery Dr. Ranjit Guha, <i>Principal and Professor of Anatomy, IGIMS, Patna, India</i> Advancing Anatomy with Interactive and Immersive Technologies Dr. Yogesh Sontakke, <i>Additional Professor of Anatomy, JIPMER, Pondicherry, India</i> Clinical anatomy Insights Through Radiology: A Future Research Perspective Dr. Srinivasa Rao Sirasanagandla, <i>Department of Human & Clinical Anatomy, College of Medicine & Health Sciences, Sultan Qaboos University, Muscat, Oman</i>	Auditorium Hall
03:00pm - 04:30pm	Scientific Session- I Poster Chairperson: Dr. Prachi Bhagat, Dr. Laxman Khanal Supratrochlear foramen of Humerus and its clinical implications Dr. Deepesh Dhungel, <i>Maharajgunj Medical Campus, Nepal</i> A South Indian Cadaveric Study on The Variations in The Gluteal Region Ms. Sonal Nayak, <i>Research Associate (Lecturer), Division of Anatomy, Department of Basic Medical Sciences, Manipal Academy of Higher Education, Madhav Nagar, Manipal, India</i> Qualitative Assessment of Neural Cell Structure in Prefrontal Cortex and Hippocampal CA1 and CA3 Regions in Diabetes Induced Male Wistar Rats Ms. Sharanya Rao, <i>Research Associate (Lecturer), Division of Anatomy, Department of Basic Medical Sciences, Manipal Academy of Higher Education, Madhav Nagar, Manipal, India.</i> Assessment of emergence patterns of the mental nerve through the mental foramen in orthopantomograms Dr. Ruku Pandit, <i>Patan Academy of Health Sciences, Nepal</i> Epimuscular Myofascial Force Transmission of Bilateral Gluteus Maximus muscles to Latissimus Dorsi and Lower Trapezius in chronic low back pain patients Dr. Sapna, <i>Division of Anatomy, Department of Basic Medical Sciences, Manipal Academy of Higher Education, Madhav Nagar, Manipal, India</i> Anatomical variation in the origin of the lateral circumflex femoral artery and its surgical implications – A South Indian cadaveric study Dr. Surekha Devadasa Shetty, <i>Division of Anatomy, Department of Basic Medical Sciences, Manipal Academy of Higher Education, Madhav Nagar, Manipal, India</i> Unlocking the Mandibular Gateway: A Morphometric Insight into the anatomy of the mandibular foramen Dr. Ashwini Aithal P, <i>Division of Anatomy, Department of Basic Medical Sciences, Manipal Academy of Higher Education, Madhav Nagar, Manipal, India</i> Lateral Cord of Brachial Plexus, Median and Radial Nerves Innervating the Musculocutaneous Nerve Territory in its Absence Prof. Dr. Mohandas Rao KG, <i>Division of Anatomy, Department of Basic Medical Sciences, Manipal Academy of Higher Education, Madhav Nagar, Manipal, India</i> Status of Cadaver for Anatomy Education in Medical Schools of Nepal Jyoti Mishal, <i>Madan Bhandari Academy of Health Sciences, Hetauda, Bagmati Province, Nepal</i> Fusion of the musculocutaneous nerve with the median nerve and their continuation as a common neural trunk: A case report Dr. Navindra Phuyal, <i>Rapti Academy of Health Sciences, Nepal</i> Morphological study of the foramen transversarium of the typical cervical vertebrae with clinical correlation. Dr. Bharat Ramrao Sontakke, <i>All India Institute of Medical Sciences (AIIMS), Nagpur, India</i> An intermediate filament and its role in neuronal population in human fetal dorsal root ganglia Dr. Vishwajit Deshmukh, <i>All India Institute of Medical Sciences (AIIMS), Nagpur, India</i> Anatomy Education in the Digital Age: Exploring EdTech Platforms and Innovations Dr. Pinki Rai, <i>Government medical College and Hospital, Chandigarh, India</i> Motivations for body donation among Nepali donors: a cross - sectional qualitative study Dr. Anusuya Shrestha, <i>HOD, Department of Anatomy, Maharajgunj Medical Campus, Maharajgunj, Kathmandu, Nepal</i>	Ganesh Hall

03:00pm - 04:30pm	Scientific Session- II Oral Chairperson: Dr. Anand Kumar Singh, Prof. Dr. Muktyaz Hussein, Dr Iju Shrestha	Saraswoti Hall
	Emotional Intelligence in Anatomy Faculty Predicts Enhanced Learning Outcomes and Reduced Emotional Distress Among First-Year Medical Students: A Cross-Sectional Study Dr. Sonam Singh, <i>Dr Ram Manohar Lohia Institute of Medical Sciences Lucknow Uttar Pradesh India</i> Goniometric Comparison of Active Range of Motion (ROM) of Abduction and Adduction of Hip Joint Between Adult Female Bharatanatyam Dancers and Sedentary Women, Bangladesh Dr. Mumtahena Afroz Nisha, <i>Dhaka National Medical College</i> Understanding Learner Engagement with Virtual Dissection Table: Student Insights into Learning with CADAVID Dr. Sayantan Das, <i>Department of Anatomy, MGM Medical College, Kishanganj, Bihar, India.</i> The Ontogenetic Transformation Of The Atlanto-Axial Joint: Clinical Implications Of An Atlanto-Atlantal Articulation Dr. Anita Rani Singh, <i>King Georges Medical University UP Lucknow</i> Anatomical Insights into the Lateral Crescent Septum of the Sphenoid Sinus for Endoscopic Skull Base Procedures. Dr Sumit Patil, <i>AIIMS Bhopal India</i> Anatomical Variations of the Coracoid Process of the Scapula: An Osteological Study with Surgical Correlation Dr. Swapna Parate, <i>SMBT IMS RC, Nashik , Maharashtra, India</i> Predictive Mapping of the Sensory Posterior Interosseous Nerve Using Surface Landmarks: A Cadaveric Study Dr. Vandana Tiwari, <i>AIIMS BATHINDA, India</i>	
06:00 PM onwards	GALA DINNER (Aarambha Banquet & Events, Thapathali, Kathmandu)	

09th May 2026, Saturday

8:00am - 9:00am	BREAKFAST	
9:00am - 12:00pm	Plenary Guest Speaker Session-III Chairperson: Prof. Dr. Yogesh Sontakke, Prof. Dr. Shamsheer Shrestha, Prof. Dr. Ajaya Jang Kunwar	Auditorium Hall
	The Approach to Successful Anatomy Performance at International Intercollegiate MRCS examination Prof. Dr. Srijit Das, <i>Department of Human & Clinical Anatomy, College of Medicine & Health Sciences, Muscat, Oman</i> Living Lessons from The Silent Teachers Prof. Dr. Rakhi Milind More, <i>Anatomy, D Y Patil School of Medicine, Navi Mumbai, India</i> From Dissection to Data: Integrating principles and practices Evidence based Anatomy in Anatomical Research Prof. Dr. Adil Asghar, <i>AIIMS Patna, India</i> Translational Anatomy of the Cochlea through Temporal Bone Dissection: Our Experience Dr. Anjali Singal, <i>Associate Professor, Department of Anatomy, AIIMS, Bathinda, India</i> AI in Teaching-Learning & Evaluation: Paradigm Shift in Health Professions Education Prof. Dr. Sandip Shah, <i>Department of Anatomy, BPKIHS, Dharan, Nepal</i> ADSCs from visceral fat showed better corneal epithelial differentiation than those from subcutaneous fat when co-cultured with hTCEpi Dr. Taty Anna Kamarudin, <i>Department of Anatomy, Universiti Kebangsaan, Malaysia.</i> Kelulut honey as a functional natural product in supporting bone health and osteoporosis prevention Dr. Elvy Suhana Mohd Ramli, <i>Department of Anatomy, Universiti Kebangsaan, Malaysia.</i> Authentic Anatomy Assessment: OSPE as A Tool for Competency Assurance in Practicum Among Medical Undergraduates Prof. Dr. Sarun Koirala, <i>Department of Anatomy, BPKIHS, Dharan, Nepal</i> Teaching Anatomy the Gen Z Way Dr. Ramasamy Chitra, <i>Professor & Head, Anatomy, Siddhartha Medical College, India</i>	

11:00am - 01:00pm	Scientific Session- III Oral Chairperson: Dr. Kanhaiya Jee, Dr. Sarbada Makaju, Dr. Sanjib Kumar Sah Exploring Early Clinical Exposure: Students perspective on its strengths Dr. Suniti Pandey, <i>GSVM Medical College, Kanpur, India</i> An Evaluation of Psychological Responses, Physical Symptoms, and Demeanor Toward Cadaveric Dissection Among First-Year Medical Students Prof Dr. Manisha R Gaikwad, <i>All India Institute of Medical Sciences, Bhubaneswar ODISHA, India</i> Dissecting The Anatomy of a Great Doctor Dr. Shahzad Younas, <i>Department of Surgery, College of Medicine & Health Sciences, Sultan Qaboos University, Muscat, Oman</i> Revisiting the Ligamentum Mucosum: A Cadaveric Study Based on the Gonera et al. Classification Dr. Surajit Ghatak, <i>All India Institute of Medical Sciences, Jodhpur, India</i> Teratogenic Effects After Exposure To Turner (Insecticide) On The Development Of Chick Embryos Dr. Muktyaz Hussein, <i>Government Medical College Budaun UP, pin 243601, India</i> Three-Dimensional Computerized Tomographic Evaluation Of Morphometry Of Styloid Process And Frequency of Elongated Styloid Process In Respective To Age and Gender. Dr. Sharmisthas Sagar, <i>National Institute of Medical Sciences (NIMS) Jaipur, India</i> Morphometric measurements of knee joints using magnetic resonance imaging (MRI) scan Dr. Tripti Shakya, <i>Patan Academy of Health Sciences, Nepal</i> Teaching and Learning Anatomy in Nepal: Past, Present and Future Dr. Nripendra Tiwari, <i>Kathmandu Medical College, Nepal</i> CT-Based Analysis of Frontal Recess Cells and Their Association with Frontal Sinusitis in Omani Subjects Dr. Srinivasa Rao Sirasanagandla, <i>Department of Human & Clinical Anatomy, College of Medicine & Health Sciences, Sultan Qaboos University, Muscat, Oman</i> Multi-Modal Embryo Selection in IVF: Integrating PGT, Artificial Intelligence, and Non-Invasive Multi-Omics for Improved Implantation Outcomes. Dr. Ajaya Jang Kunwar, <i>Department of Anatomy, Janaki Medical College, Janakpur, Nepal</i>	Swayambhu Hall
11:00am - 01:00pm	Scientific Session- IV Oral Chairperson: Dr. Pragya Shrestha, Dr. Umesh Choudhary, Dr. Subodh Yadav Variations of renal artery in cadavers Dr. Chhiring Palmu Lama, <i>Nepal Medical College, Nepal</i> Anatomical Variations of The Biceps Brachii Muscle in The Nepalese Population: A Cadaveric Study Dr. Anuja Jha, <i>Nepal Medical College, Nepal</i> Preferred Modalities For Learning Gross Anatomy Practical Classes: Perception of MBBS Students Rabita Kharbuja, <i>Nepal Medical College, Nepal</i> The Branching Patterns, Variations and Terminations of the Facial Artery- A Cadaveric Anatomical Study Dr. Usha Chalise, <i>Nepal Medical College, Nepal</i> Sexual dimorphism in permanent mandibular canine Dr. Mangesh Bajracharya, <i>Nepal Manipal College of Medical Sciences, Nepal</i> Overcoming Barriers to Dentin Repair: The Roles of Prickle2 and MG132 Bandana Rana, <i>Kyungpook National University, Republic of Korea</i> O-GlcNAcylation as a pivotal mechanism in oral tissue development and regeneration Elina Pokharel, <i>Kyungpook National University, Republic of Korea</i> Evaluating the quality and duration needed to clean various bone types using hydrogen peroxide, both with and without the removal of soft tissue Dr. Prabesh Pandey, <i>Patan Academy of Health Sciences, Nepal</i> Anatomical Variations in the Origin and Branching Pattern of the Posterior Segmental Artery of the Human Kidney: A Cadaveric Study V Vinila, <i>Konaseema Institute Of Medical Sciences, Amalapuram</i> A Comparative Ultrasonographic Evaluation of Maternal Pelvic Morphometry and Fetal Cranial Biometric Parameters in Relation to Maternal Age Husnuma, <i>Integral University, Lucknow, UP, India</i>	Saraswoti Hall

12:00pm - 01:00pm	SYMPOSIUM: Visualizing the Fourth Meningeal Layer: Seeing is Believing Chairperson: Prof. Dr. Tanuj Kanchan, Dr. Jyoti Chopra, Dr. Brijesh Kumar, Dr. Hare Krishna Introduction to the Concept of Clara Mater Dr. Ashutosh Kumar, <i>AIIMS Patna, India</i> Immunohistochemical Evidence Supporting the Clara Mater Dr. Chiman Kumari, <i>PGIMER Chandigarh, India</i> Gross Dissection Evidence of the Clara Mater Dr. Ravi Kant Narayan, <i>AIIMS Bhubaneswar, India</i> Routine & Special Staining Evidence with Ultrastructural Visualisation Dr. Rajesh Kumar, <i>AIIMS Patna, India</i>	Auditorium Hall
01:00pm - 02:00pm	LUNCH	
02:00pm - 03:30pm	PANEL DISCUSSION: Challenges in Modern Anatomy Education: Curriculum, Technology, and Research Perspectives (Focus: MBBS Curriculum & Teaching Patterns in South Asia) Moderator : Prof. Dr. Shaligram Dhungel, <i>Nepal Medical College, Kathmandu, Nepal</i> Chairpersons : Prof. Dr. Anupama Mahajan, <i>Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, India</i> Prof. Dr. Anita Rani, <i>King George's Medical University, Lucknow, India</i> Dr. Ramendra Kumar Raman, <i>Society of Nepalese Anatomists (SONA), Nepal</i> Panelists (Faculty) : Prof. Dr. Krishnamurthy Jwala Venkata, <i>College of Medical Sciences, Bharatpur, Nepal</i> Prof. Dr. Dil Islam Mansur, <i>KUSMS, Dhulikhel, Nepal</i> Prof. Dr. Rajat Subhra Das, <i>AIIMS, Raebareli, Uttar Pradesh, India</i> Prof. Dr. Prerna Gupta, <i>T. S. Mishra University, Lucknow, India</i> Prof. Dr. A. H. M. Mostafa Kamal, <i>Dhaka Medical College, Dhaka, Bangladesh</i> Prof. Dr. Rakhi Milind More, <i>D Y Patil School of Medicine, Navi Mumbai, India</i> Prof. Dr. Suniti Pandey, <i>GSVM Medical College, Kanpur, India</i> Prof. Dr. Manisha Sandeep Nakhate, <i>MGM Medical College, Panvel, India</i>	Auditorium Hall
03:30pm - 05:00pm	Awards and Valedictory Session	



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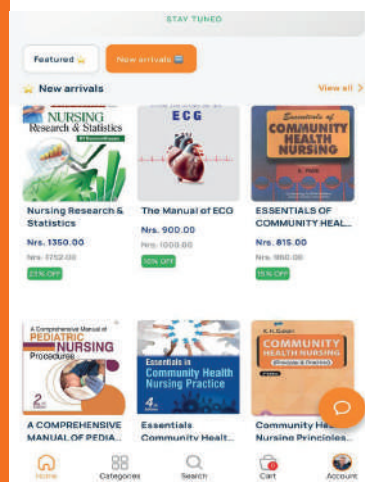
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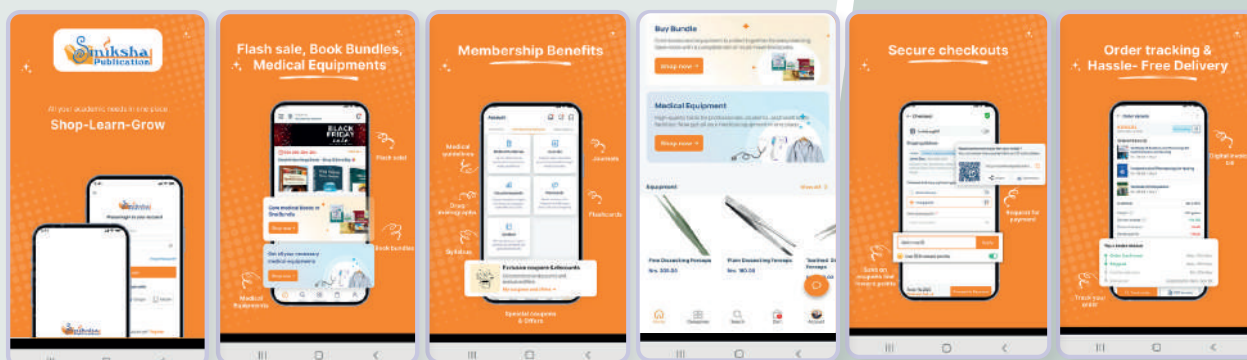
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PANEL DISCUSSION

Challenges in Modern Anatomy Education: Curriculum, Technology, and Research Perspectives (Focus: MBBS Curriculum & Teaching Patterns in South Asia)

Overview

An engaging and insightful panel discussion bringing together leading anatomists and medical educators from across South Asia. This session will explore the evolving landscape of anatomy education in the context of competency-based curricula, technological advancements, and research integration.

With rapid changes in medical education, anatomy teaching faces both opportunities and challenges. The discussion will focus on curriculum reforms, innovative teaching methodologies, assessment strategies, and the balance between traditional cadaveric dissection and modern digital tools.

Guided by frameworks such as the Nepal Medical Council, the session will also address standardization, faculty development, and future-ready approaches to enhance learning outcomes.

Key Highlights

- ▶ Competency-Based Medical Education (CBME)
- ▶ Integrated Basic Medical Sciences (IBMS)
- ▶ Clinical Correlation in Anatomy
- ▶ Cadaveric Dissection vs Digital Tools
- ▶ Innovative Teaching & Assessment Methods
- ▶ Technology in Medical Education (AI, VR, Simulation)
- ▶ Research & Academic Collaboration
- ▶ Future Directions in Anatomy Education

Who Should Attend?

- ▶ Curriculum Reforms & CBME Implementation
- ▶ Integrated Teaching Models (IBMS)
- ▶ Clinical Anatomy & Applied Learning
- ▶ Traditional vs Digital Learning Approaches
- ▶ Competency-Based Assessment Strategies
- ▶ Technology-Enhanced Learning
- ▶ Research & Publications
- ▶ Faculty Development & Standardization

Moderator



Dr. SHALIGRAM DHUNGEL

Professor and Head of Anatomy
Nepal Medical College, Kathmandu, Nepal

Chairpersons



Dr. ANUPAMA MAHAJAN

Director Principal & Professor of Anatomy
Sri Guru Ram Das Institute of Medical
Sciences & Research, Amritsar, India



Dr. RAMENDRA KUMAR RAMAN

General Secretary
Society of Nepalese Anatomists (SONA)



Dr. ANITA RANI

Professor, Department of Anatomy
King George's Medical University, Lucknow, India

Panelists (Faculty)



Prof. Dr. KRISHNAMURTHY JWALA VENKATA

Professor & Head, Department of Anatomy
College of Medical Sciences, Bharatpur, Nepal



Prof. Dr. DIL ISLAM MANSUR

Professor & Head, Department of Anatomy
KUSMS, Dhulikhel, Nepal



Prof. Dr. RAJAT SUBHRA DAS

Professor & Head, Department of Anatomy
AIIMS, Raebareilly, Uttar Pradesh, India



Prof. Dr. PRERNA GUPTA

Professor & Head, Department of Anatomy
T. S. Mishra University, Lucknow, India



Prof. Dr. A.H.M. MOSTAFA KAMAL

Head of the Department of Anatomy
Dhaka Medical College, Dhaka, Bangladesh



Prof. Dr. RAKHI MILIND MORE

Professor of Anatomy
DY Patil School of Medicine, Navi Mumbai, India



Prof. Dr. SUNITI PANDEY

Professor & Head, Department of Anatomy
GSVM Medical College, Kanpur, India



Prof. Dr. MANISHA S. NAKHATE

Professor & Head, Department of Anatomy
MGM Medical College, Panvel, India

WORKSHOP

Building Safer Healthcare Teams : The Role of Emotional Intelligence and Reflection

In today's dynamic healthcare environment, patient safety relies heavily on the ability of healthcare teams to work collaboratively and effectively. Emotional Intelligence (EI) and reflective practices are critical tools that empower healthcare professionals to navigate interpersonal relationships, enhance communication, and foster a culture of safety and mutual trust. This workshop will equip participants with the knowledge and skills to apply EI and reflection in interprofessional settings, strengthening team cohesion and improving patient outcomes.

Participants will delve into the fundamental concepts of EI and reflection and their significance in enhancing team dynamics and patient outcomes. Through engaging discussions and activities, attendees will recognize how EI contributes to improved interpersonal relationships, effective communication, and conflict resolution within healthcare teams.

The workshop incorporates real-life case studies and scenarios to illustrate how integrating EI and reflective practices can mitigate risks and enhance patient safety.

By the end of the session, participants will be equipped with practical strategies to cultivate a culture of safety, collaboration, and continuous improvement within healthcare teams. This workshop is ideal for healthcare professionals committed to advancing their leadership skills and promoting patient safety through emotional intelligence and reflection.

Specific learning objectives:

By the end of the session, participants will be able to:

- Explain the concepts of Emotional Intelligence (EI) and reflection in the context of healthcare team dynamics and patient safety.
- Recognize the role of EI in enhancing interpersonal relationships, communication, and conflict resolution within healthcare teams.
- Identify reflective practices that improve individual and team performance in interprofessional care.
- Analyze real-life scenarios and case studies to understand how EI and reflection can mitigate risks and enhance patient safety.
- Apply reflective techniques to assess their role as a team member in fostering safer healthcare environments.

Who should attend:

Faculty members, curriculum planners, and health professional educators involved in undergraduate and postgraduate medical/health professions education.

Facilitators



Dr. PUJA DULLOO

Professor & Head, Physiology & DHPE, PIMSR,
Parul University, India



Dr. NEERAJ VEDI

Associate Professor, Anatomy & Member DHPE, PIMSR,
Parul University, India

SYMPOSIUM

“Visualizing the Fourth Meningeal Layer: Seeing is Believing”

The team of anatomists and neuroscientists has been working extensively on establishing gross, microscopic, immunohistochemical, and ultrastructural evidence of a previously unrecognised anatomical layer, which we have termed the Intermediate Leptomeningeal Layer, or Clara Mater. The existence of this fourth meningeal layer represents a paradigm-shifting anatomical insight. This topic warrants wider academic discussion among renowned anatomists and neuroscientists, and your conference provides the perfect platform to initiate such discourse at an international level. The symposium will consist of structured presentations by the following experts:

Introduction to the Concept of Clara Mater

Dr. Ashutosh Kumar, AIIMS Patna, India

Immunohistochemical Evidence Supporting the Clara Mater

Dr. Chiman Kumari, PGIMER Chandigarh, India

Gross Dissection Evidence of the Clara Mater

Dr. Ravi Kant Narayan, AIIMS Bhubaneswar, India

Routine & Special Staining Evidence with Ultrastructural Visualisation

Dr. Rajesh Kumar, AIIMS Patna, India

Who should attend: Faculty members, curriculum planners, and health professional educators involved in undergraduate and postgraduate medical/health professions education.

Amar Lal and Asara Devi Chaudhary **Lifetime Achievement Award in Anatomy**

Formerly known as the “Special Contribution and Lifetime Achievement Award in Anatomy”, this prestigious honor has been renamed as the **“Amar Lal and Asara Devi Chaudhary Lifetime Achievement Award in Anatomy”** in accordance with the Memorandum of Understanding (MoU) between the Society of Nepalese Anatomists (SONA) and Dr. Ganpat Choudhary.

The Organizing Committee of iSONACON 2026 is honored to announce this distinguished award, which recognizes an eminent Nepalese anatomist for exceptional and lifelong contributions to the advancement of anatomical sciences in Nepal. The award celebrates excellence in teaching, mentorship, research, and academic leadership. It acknowledges individuals who have significantly strengthened anatomical education and research through curriculum development, innovative pedagogical practices, scholarly contributions, institutional leadership, and capacity building.

This award has been instituted by Assistant Professor Ganpat Choudhary, the first graduate in Anatomy from BPKIHS, Nepal, in loving memory of his late parents, Mr. Amarlal Chaudhary and Mrs. Asara Devi Chaudhary.

This honor is conferred upon individuals whose sustained contributions, professional integrity, and dedication have created a lasting impact on medical education and continue to inspire future generations of anatomists in Nepal.

Eligibility Criteria

- Must be a Nepalese anatomist with a distinguished academic and professional career.
- Should have a minimum of 20–25 years of contribution in the field of anatomy (teaching, research, and/or academic service).
- Demonstrated excellence in teaching, mentoring, and curriculum development.
- Proven record of research contributions, including publications, projects, or academic innovations.
- Evidence of leadership roles in academic institutions, professional organizations, or institutional governance.
- Contributions toward capacity building, ethical research practices, and advancement of anatomical sciences in Nepal.
- The award may be conferred posthumously, if deemed appropriate.

Nomination Process

Nominations may be submitted by:

- Heads of Departments/Institutions
- Senior faculty members/peers
- Self-nominations are not permitted.
- Each nomination must include:
 - Detailed curriculum vitae (CV) of the nominee
 - Statement of contribution (500–800 words) highlighting lifetime achievements
- At least two letters of recommendation from eminent academicians
- Supporting documents (publications, awards, evidence of contributions, etc.)
- Nominations must be submitted at least one month prior to the conference via email to: secretary@anatomynepal.org.np



Selection Guidelines

- A Selection Committee appointed by the Organizing Committee/SONA will review all nominations.
- The selection will be based on:
 - Lifetime achievements and overall impact in anatomical sciences
 - Contribution to education, research, and academic leadership
 - Innovation and capacity-building efforts
 - National and/or international recognition
 - Professional integrity and ethical standards
- The decision of the Selection Committee shall be final and binding.

The award will be presented during the iSONACON Conference Ceremony.

Dr. B. K. Malla Gold Medal Award

(For Academic Excellence in Postgraduate Anatomy)

The Society of Nepalese Anatomists (SONA) invites nominations for the prestigious Dr. B. K. Malla Gold Medal Award, established to recognize outstanding academic excellence in postgraduate anatomy. This award honors the most meritorious postgraduate student who has demonstrated exceptional scholastic performance, consistency, and dedication in the field of anatomical education and research.

Candidates must:

- Have completed MD/MS/MSc Clinical Anatomy or equivalent from a recognized academic institution (from 2024 onwards) with outstanding academic performance
- Only one candidate per institution per academic year is allowed

Required Documents

- Cover Letter / Statement of Merit (Maximum 200 words)
- Completed Nomination Form (duly filled and signed)
- Official Academic Transcripts (issued by the university/institution)
- Summary of Research Work / Publications (if applicable)
- Recommendation Letter from Head of Department (Anatomy)

Submission Details

- Last Date: Before month of April (Every Year)
- Submission Mode: Email
- Email Address: secretary@anatomynepal.org.np
- Contact Person: Dr. Anusuya Shrestha, Vice President, SONA

Important Notes

- Incomplete or late nominations will not be considered
- SONA reserves the right to withhold the award if no suitable candidate is found
- Any form of misrepresentation will lead to disqualification

We encourage all eligible candidates to nominate deserving candidates and be part of recognizing excellence in anatomical education.

Prof. Dr. Krishnamurthy Jwala Venkata Scientific Awards

The Prof. Dr. Krishnamurthy Jwala Venkata Scientific Awards are among the most distinguished recognitions presented by the Society of Nepalese Anatomists (SONA) during iSONACON 2026 – the 2nd International Conference of the Society of Nepalese Anatomists. These awards are instituted to honor excellence in scientific research and presentation within the field of anatomical sciences. Presented in two categories—Best Oral Presentation and Best Poster Presentation—the awards recognize participants who demonstrate outstanding originality, scientific rigor, clarity of communication, and meaningful contributions to the advancement of anatomical knowledge. Named in honor of Prof. Dr. Krishnamurthy Jwala Venkata, a respected figure in anatomical education and research, these awards reflect a strong commitment to academic excellence and innovation.

Award Categories: The awards will be conferred under the following categories:

- Best Oral Presentation Award
- Best Poster Presentation Award

Eligibility Criteria

- The participant must be a registered delegate of the conference and a valid Ordinary/Life Member of SONA.
- The abstract must be officially accepted by the Scientific Committee.
- The presenting author must be the first author or designated presenter.
- Each participant may present only one paper/poster per category.
- The work must be original and unpublished (not previously awarded at other conferences).
- The study must comply with ethical standards, including approval from an Institutional Ethics Committee (where applicable).
- No age restriction applies.
- The author must submit a declaration to the General Secretary of SONA certifying that the work has not been presented at any other conference.
- The declaration, along with the title of the presentation, must be submitted to the General Secretary of SONA, with a copy to the Organizing Secretary, before the abstract submission deadline.
- Research conducted as part of a thesis (submitted, ongoing, or intended) or work carried out in a recognized national or international institution/laboratory will also be considered.

A. Oral Presentation

- The research should be complete or have substantial results.
- The presenter must adhere to the allotted time and presentation format.
- Submission must comply with conference guidelines for oral presentations.

B. Poster Presentation

- The poster must be prepared according to the prescribed format and dimensions.
- The presenter must be available during the designated poster evaluation session.
- E-poster/digital formats, if applicable, must follow submission specifications.

Submission Requirements

- Structured abstract (Background, Methods, Results, Conclusion) & Declaration of originality and authorship.
- Ethical clearance certificate, where applicable.
- Disclosure of funding sources and conflicts of interest.

Awards & Recognition

- Each category will have one winner (with a runner-up, if applicable).
- Awardees will receive Certificate of Excellence & Memento/Award Plaque
- Awards will be presented during the Valedictory Ceremony of the conference.

General Rules

- Participants must strictly adhere to conference and scientific guidelines.
- Any disputes will be resolved by the Scientific Committee, whose decision shall be final.
- The Organizing Committee reserves the right to modify the criteria or guidelines, if necessary.
- Send Email Address: secretary@anatomynepal.org.np

A Journey through the "Evolution of Anatomy"



Dr. Banshi Krishna Malla

The First Anatomist of Nepal was HoD Department of Anatomy, Kathmandu Medical College, Duwakot, and Bhaktapur

Introduction:

The study about the human body is one of the oldest pursuits and a fascinating evolution in human history. The word "Anatomy" derived from the Greek terms *ana*, meaning "up," and *tome*, meaning "a cutting," reflecting the historical reliance on dissection to uncover the mysteries hidden beneath the skin. The journey started from the ancient foundation of the cave walls paintings, served as the world's first Anatomical Atlases. They prove that the "cutting up" (*tome*) of anatomy began not with a scalpel, but with the keen eye of the "hunter's perspective" of cave art to a more formal, academic approach to the body.

The early study of anatomy was speculative as a religious or cultural taboo afterlife like, mummification and animal sacrifices. The evolution of anatomy has moved from the ancient myths to various era or stages of the developments and finally to the genomic and digital anatomy. This journey reflects not only the increasing scientific curiosity but also the significant evolutionary process over centuries by highlighting on the works of esteemed anatomists to achieve the present status of "Anatomy". The main goal remains the same: to understand the miracle of human life.

Discussion:

- ▶ Ancient Foundations (3000 BCE – 200 CE):
 - The Ancient Egyptians are world-renowned for their complex understanding of the internal organs of human body like heart, brain, liver by ritual practice of mummification of bodies for the afterlife, viewed through a religious lens.
 - Ancient Greece: Eminent figures like Hippocrates and Aristotle gave the birth of anatomy as a science based on dissection of animals and initiated the conception of 'Comparative Anatomy'. Herophilus (335–280 BCE) was one of the first to perform systematic human dissections, established the school of Anatomy and thus known as the "Father of Anatomy"
 - Claudius Galen (129–216 CE): A Roman physician and anatomist, became the unchallenged authority as "Dictator of Anatomy." on the descriptions, based primarily on the dissection of animals like African monkeys apes and pigs), leading to several long-standing errors about human biology. Since human dissection banned in Rome, Galen's Theory dominated for over a millennium (1500 yrs.) and regarded 'Anatomy as the foundation of medical knowledge'.
- ▶ The middle Ages & Islamic Golden Age (500 – 1400 CE)
 - During this era, progress in the study of Anatomy slowed significantly due to the religious prohibitions on dissection of human body. However, Anatomy taught primarily through reading Galen's texts...
- ▶ The Renaissance Revolution (1400–1700 CE):

The Age of Scientific Revolution" and Rebirth of Anatomy driven by Art and Science

 - By the beginning of 15th century, cadaveric dissection became a regular event for teaching and learning anatomy in French universities.
 - Leonardo da Vinci (c. 1500s): The artist and polymath performed numerous human dissections and produced highly accurate and detailed anatomical drawings, combining art and science
 - Andreas Vesalius (1514–1564): He performed his many dissections, corrected Galen's errors and established human dissection as the 'Gold Standard of Medical Education'. He published *De Humani Corporis Fabrica*, meticulously illustrated treatise in 1543 and established Anatomy as an empirical science thus known him as "Father of Modern Anatomy".
- ▶ The Physiological Revolution (17th – 18th Century)
 - William Harvey (1578–1657): He solved the mystery of the heart, proving that blood circulates in a closed loop pumped by the heart and proved the heart acted as a pump and blood circulated through a closed system.
 - The Microscope: The invention and improvement of the microscope by Antoni van Leeuwenhoek opened up the microscopic realm of tissues and cells. Researchers like Marcello Malpighi discovered capillaries, bridging the gap between arteries and veins. This began the study of 'Microscopic Anatomy' opened up the microscopic realm of tissues and cells (Histology and Cytology).

► The 19th Century: Formalization and Ethics

- As medicine became more professional, the demand for cadavers skyrocketed, leading to the dark era of "body snatching" in the United Kingdom (UK). This eventually forced legal reforms, such as the 'Anatomy Act of 1832' in the UK, which provided a legal framework for obtaining unclaimed bodies from the hospitals, firm houses for medical research.
- Many eminent scholars who developed the various tenants of today's anatomical knowledge should be remembered for the challenges they faced during the course of their research works: Antonio Scarpa (Scarpa's fascia), Camillo Golgi (Golgi apparatus), Alfonso Giacomo Gaspare Corti (organ of Corti), Filippo Pacini (Pacinian corpuscles), Johann Friedrich Meckel (Meckel's diverticulum), Leopold Auerbach Auerbach's plexus), Georg Meissner (Meissner's plexus), Ludwig Edinger (Edinger's tract), Anders Retzius (Cave of Retzius/ Retzius' space), Alfred Wilhelm Volkmann (Volkmann's canals), Franciscus Sylvius (Sylvian fissure and aqueduct), François Magendie (foramen of Magendie), Pierre Paul Broca (Broca's area), Thomas Willis (circle of Willis), Alexander Monro (foramen of Monro) and Sir Charles Bell (Bell's palsy),
- Gray's Anatomy: Henry Gray and Henry Vandyke Carter published the First iconic most notable medical book with a detailed illustrations standardized text book of Anatomy "Gray's Anatomy: Descriptive and Surgical" for generations of medical students as "Bible of Anatomy" at the age of 31 years in 1858.

► The 20th Century: Seeing Through the Skin:

The greatest leap in the 1900s was the ability to study anatomy in living person without a scalpel.

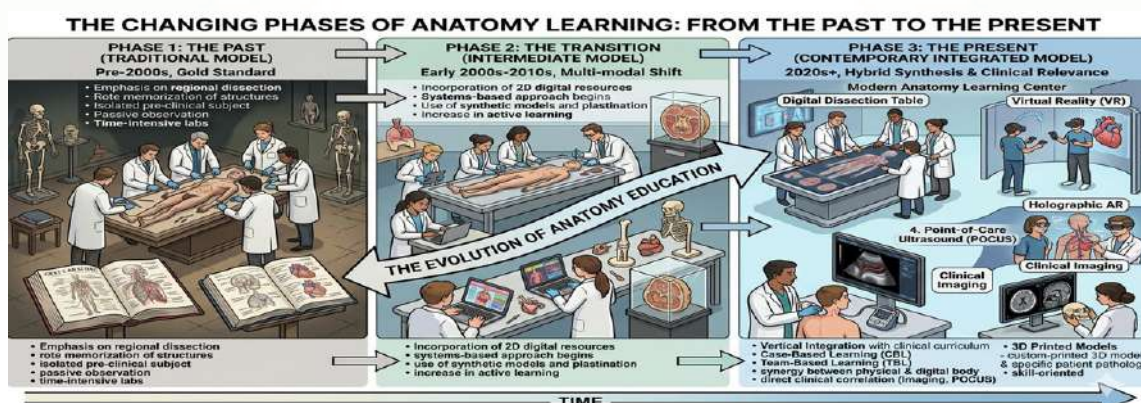
- Imaging Technology: The discovery of X-rays, followed by the development of CT scans and MRI, allowed to view the living anatomy in real-time.
- Preservation Techniques like Plastination developed by Gunther von Hagens, allowed for the permanent preservation of real human specimens, making anatomical education more accessible and durable.

► The Modern Era: The 21st-Century: Digital and Virtual Anatomy

- The Visible Human Project: Entire cadavers have been frozen and sliced into thousands of digital cross-sections, creating a complete, high-resolution digital map of the human form.
- Today, teaching and learning of Anatomy in medical institutes have undergone a significant evolution. The study of anatomy has moved beyond the physical specimen into the realm of data like Computers who can turn 2D scans into 3D models and "dissect" virtually.
- Digital Dissection Tables: Platforms like Anatomage provide life-sized, touch-screen cadavers that allow for "undo" buttons and traditional dissection and the ability to view real-world structures of human body at the swipe of a finger.
- Molecular and Evolutionary Anatomy: The development of the electron microscope and X-ray diffraction enabled the study of subcellular and molecular structures, giving rise to fields like 'Molecular Anatomy'.

Conclusion:

The study of anatomy has moved beyond the cadaveric dissection from scalpels to silicon, but it has remained as the Gold Standard Model for tactile learning of Anatomy. While the cadaver remains the "first patient," students will be learning through the lens of modern diagnostics modalities as "Clinicalization" of Anatomy". The use of Point-of-Care Ultrasound (POCUS) allows students to visualize the internal structures like a beating Heart or a contracting Bicep.



"Science belongs to no country, because knowledge is the patrimony of Humanity, The torch which enlightens the world"

(Pasteur)

Future Career Pathways for Anatomy Faculty in Nepal: Beyond Traditional Teaching Roles



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Introduction:

Anatomical sciences in Nepal remain rooted in a traditional pedagogical model centered on lectures and cadaveric dissection. This model has produced generations of competent clinicians; however, it has also confined anatomy faculty to a limited academic identity. With the expansion of private medical colleges, evolving regulatory oversight by the Medical Education Commission, and the growing influence of digital health technologies, expectations from basic science educators are changing.

The central tension lies between preservation and progression. While dissection remains pedagogically valuable, it no longer suffices as the sole domain of anatomical expertise. Globally, anatomy has expanded into molecular biology, imaging sciences, computational modeling, and simulation-based education. In Nepal, this transition is nascent and uneven. Without deliberate reform, anatomy risks marginalization within integrated curricula and competency-based frameworks.

Emerging and Diverse Roles for Anatomists

This article argues for a broader professional identity for anatomy faculty—one that integrates clinical relevance, technological fluency, and educational leadership.

1. The Digital Frontier: Anatomy Beyond the Dissection Hall

Digital technologies have redefined how anatomical knowledge is created, visualized, and disseminated. Opportunities now exist for anatomy faculty to contribute to:

- Medical Illustration and 3D Modeling

High-quality anatomical illustrations and 3D models remain scarce in Nepal, particularly those reflecting local population variations. Faculty trained in anatomy possess the domain expertise required to guide accurate visual representation. Collaboration with software developers and designers in Kathmandu's growing tech ecosystem can enable the development of:

- Interactive anatomical atlases tailored to Nepali curricula
- Surgical simulation models based on regional anatomical variations
- Patient education tools in local languages

- Virtual and Augmented Reality (VR/AR)

Immersive technologies are increasingly used in medical training worldwide. Nepali anatomy faculty can lead content validation and contextual adaptation for VR/AR platforms. Rather than importing foreign modules, there is a clear opportunity to produce localized, cost-effective solutions aligned with national educational standards.

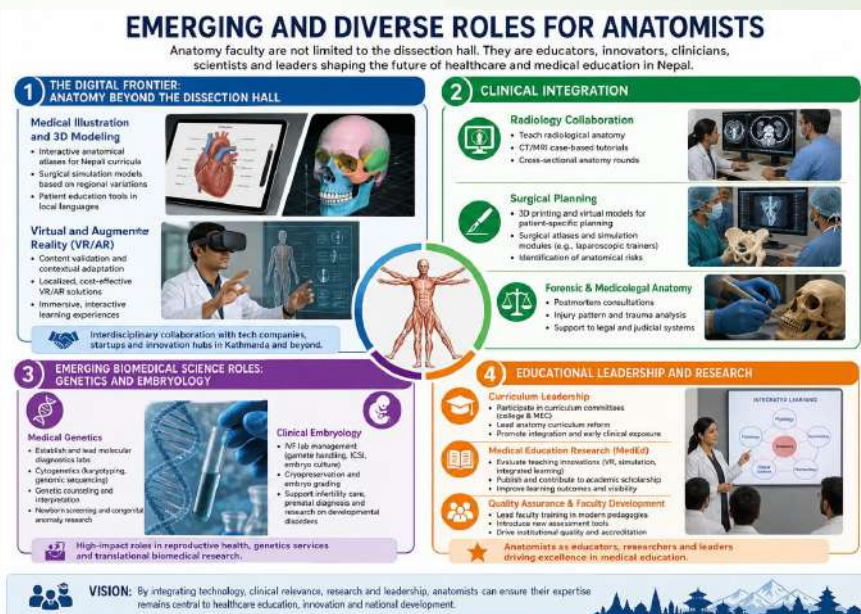
Such initiatives demand interdisciplinary partnerships between medical colleges and the technology sector, including startups and innovation hubs emerging across urban centers. Anatomy faculty can serve as the bridge between biomedical accuracy and technological execution.

2. Clinical Integration

Anatomy is indispensable to clinical specialties. Faculty can integrate more closely with patient care through radiology, surgical planning, and forensic practice. In radiology, anatomists should collaborate with imaging departments to teach radiological anatomy: co-develop case-based tutorials, facilitate CT/MRI image sessions, and run imaging anatomy workshops. Such integration helps students translate gross anatomy into diagnostic contexts. For example, by adding cross-sectional anatomy rounds, anatomists make anatomy immediately relevant to physicians.

In surgery and procedural specialties, anatomists can take on roles in preoperative planning. They can use 3D-printing or virtual models to map patient-specific anatomy for complex surgeries (orthopedics, neurosurgery, obstetrics, etc.). Working with surgeons, anatomists can create accessible surgical atlases and even participate in developing Nepal-centric simulation modules (e.g. laparoscopic trainers). Their deep knowledge of normal and variant anatomy is valuable for identifying surgical risks.

Forensic and medicolegal anatomy is another growth area. All Nepali medical graduates learn forensic medicine, but forensic services suffer from a shortage of trained specialists. Anatomy faculty can add forensic expertise by offering postmortem consultations and injury analysis services.



3. Emerging Biomedical Science Roles: Genetics and Embryology

Beyond anatomical teaching, anatomists can become advanced biomedical scientists. In medical genetics, anatomists' training in developmental biology and histology is directly relevant. Nepal's genetic services are severely underdeveloped: surveys show "Nepal is home to very few genetics specialists, virtually all trained in other countries," and most genetic tests are sent abroad. Yet many Nepalese physicians care for patients with suspected genetic disorders and crave more resources. Anatomy faculty can acquire genetics expertise (through fellowships or collaborations) and join or establish molecular diagnostics labs. Anatomists can drive similar initiatives: leading cytogenetics labs (karyotyping, genomic sequencing) and providing genetic counseling. They can also engage in national newborn screening and congenital anomaly research, partnering with pediatrics and obstetrics departments.

Clinical embryology and reproductive biology are another promising path. Nepal's fertility clinics (IVF centers) are expanding, but trained embryologists are scarce. Anatomy faculty with additional training can become clinical embryologists. This involves managing IVF lab procedures (gamete handling, ICSI, embryo culture, cryopreservation) and advising on developmental biology aspects of fertility treatment. Similar dual-trained professionals can lead IVF and reproductive health programs. With comprehensive embryology training (often available through short courses or fellowships in Asia), anatomists can contribute to infertility care, prenatal diagnosis, and research into developmental disorders. As reproductive technology grows, the clinical embryologist role offers both scientific impact and career stability.

4. Educational Leadership and Research

Anatomy faculty should also claim leadership in medical education itself. The Nepal Medical Council and MEC now expect teachers to be educational researchers and designers, not just lecturers. Faculty can participate in curriculum committees at their colleges and at MEC. They can lead the anatomy curriculum reform to ensure integration with clinical subjects and incorporation of new pedagogies. For example, MEC standards demand organ-system integration and early clinical exposure; anatomists can contribute by mapping anatomy content into integrated modules and case-based learning sessions. There is a growing emphasis on medical education research (MedEd). Anatomy educators can study and publish on teaching innovations in Nepal – for instance, evaluating VR-enhanced anatomy labs, comparing integrated vs. traditional methods, or assessing the impact of simulation training. Such scholarship not only improves teaching but also raises the profile of anatomy departments. Importantly, the Nepal Medical Council now requires a Department of Medical Education in every college and mandates faculty training in modern pedagogies. Anatomists can become experts in educational methodology: leading faculty development workshops, introducing new assessment tools, and driving quality assurance. Indeed, MEC accreditation guidelines highlight interactive and student-centered learning (simulation, small groups, e-learning); anatomists versed in these strategies become indispensable to their institutions. By engaging in accreditation and peer review, anatomy faculty can ensure their contributions count toward institutional advancement.

Barriers to Transition

Several entrenched barriers impede these new roles. First, regulatory and institutional inertia: Faculty positions and promotions in Nepal's colleges are typically tied to traditional teaching and basic research metrics. Job descriptions often limit anatomists to departmental duties. Changing these roles requires administrative foresight that is currently lacking. For example, a recent analysis noted wide variation in basic science curricula across Nepal and questioned how much control MEC or NMC should exert, reflecting unclear policy direction.

Second, resource constraints: Advanced labs (VR facilities, molecular labs, IVF suites) demand funding that is scarce. A scoping review of Nepal's research funding found that "almost all studies identified lack of funding as a deterrent to research". Without grants or institutional support, many anatomists cannot easily purchase 3D printers, software, or lab equipment. Donor agencies and the University Grant Commission exist, but competition is stiff and many projects go unfunded.

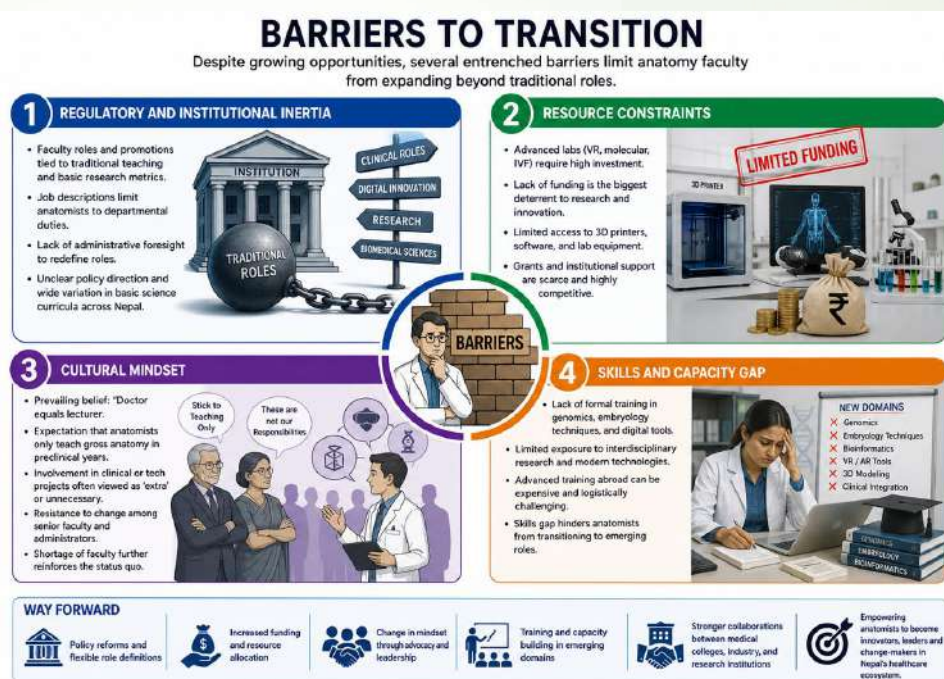
Third, cultural mindset: The prevailing view remains "doctor equals lecturer." Many senior faculty and administrators expect anatomy professors only to teach gross anatomy in the preclinical years. Efforts to involve anatomists in clinical rounds or tech projects are often dismissed as extra. The 2017 anatomy review warned of "lack of anatomy teaching faculties" in Nepal, which partly reflects a shortage of even the traditional cadre. Those faculty who are present often resist change. Changing attitudes will require champions, but until now few have pushed the envelope.

Finally, faculty may lack the skills for new domains. Anatomy teachers are rarely trained in genomics, embryology techniques, or digital tools. For many, advanced training abroad or interdisciplinary projects are logistically difficult. This skills gap is a real hurdle to transitioning careers.

Recommendations

To "future-proof" their careers, young anatomists should take proactive steps:

- 1. Acquire new competencies:** Learn digital tools (3D modeling software, VR/AR platforms) and bioinformatics fundamentals. Pursue courses or certifications in medical illustration, health informatics, or simulation technology. For example, anatomy faculty could collaborate on the Telemedicine Society's digital health initiatives. Similarly, short-term training in clinical embryology (e.g. a fellowship or hands-on program) or medical genetics (e.g. a diploma in genomic counseling) will open clinical roles. Even basic skills like statistical analysis and research methodology can empower publishable studies.
- 2. Pursue interdisciplinary collaborations:** Form partnerships with Kathmandu tech companies, engineering departments, or international universities. For instance, work with Health Informatics at Kathmandu University on curriculum development and VR labs. Team up with radiology and surgery departments for case conferences. Join forensic teams in the health or police systems. Such collaborations build reputation and lead to co-authored grants.
- 3. Engage in curriculum and policy work:** Volunteer for MEC or institutional committees. Propose integrated anatomy modules linking to clinical cases. Offer to design or review assessments (OSCEs, practical tests) that reflect clinical anatomy. Even if not mandatory, serving on curriculum boards (at TU, KU, or MEC) ensures anatomy's voice is heard.
- 4. Develop local teaching resources:** Instead of importing costly foreign content, create Nepali-specific materials: an atlas of local anatomical variants, Nepali-language video lectures, or a 3D virtual cadaver app. Share these at conferences like SONACON or through SONA (Society of Nepalese Anatomists) to gain recognition. These efforts align with MEC's calls for localized content and can attract institutional support.



5. **Champion research and innovation:** Start small research projects that address national needs (e.g., anatomical variations in the Nepali population, digital tool effectiveness, and community health anatomy issues). Publish in local journals (J Nepal Med Coll, JPAHS) or international venues. Apply for university seed grants or collaborate with the newly formed Nepal Health Research Council. Visibility in research helps in promotions and breaks the “teacher-only” stereotype.
6. **Advocate for institutional change:** Work with senior colleagues and administrators to create hybrid job descriptions. For example, propose that part of an anatomy professor’s load include clinical rounds or lab coordination. Highlight success stories (like PAHS’s integrated basic sciences) to show feasibility. Encourage departments to request budgets for “modern anatomy” tools.
7. **Network and professional development:** Join professional societies (SONA, telemedicine groups, genetics/genomics associations). Attend international workshops (e.g. medical illustration conferences, embryology symposia). Seek mentorship from advanced anatomy or med-ed academics in South Asia.



Conclusion

By diversifying skills and professional roles, anatomy faculty can evolve into healthcare innovators rather than remain confined to traditional lecturing. Nepal's changing health system and growing digital agenda provide a favorable environment for this transition. Initiatives such as telemedicine expansion and integration-focused reforms under the Medical Education Commission indicate increasing openness to interdisciplinary engagement and innovation.

At the same time, a critical structural issue persists. Current MEC guidelines on student–faculty ratios in anatomy departments are often insufficient to adequately meet prescribed credit hours and achieve intended learning objectives, particularly within competency-based and integrated curricula. This imbalance places additional strain on existing faculty and limits the effective implementation of modern teaching approaches, including small-group learning, simulation, and clinical integration. Addressing this gap is essential for any meaningful reform in anatomical sciences education.

Incremental efforts such as conducting medical education research, piloting digital tools like VR-based anatomy modules, or establishing collaborative genetics and embryology services can gradually reshape institutional culture. Through such sustained engagement, anatomy faculty can ensure that their expertise remains central to training future clinicians while also contributing to Nepal's broader biomedical and healthcare advancement.

Regenerative Anatomy: The Future of Tissue Engineering.



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Regenerative Anatomy is an emerging and transformative field that integrates principles of Anatomy, Cell biology, and Engineering to repair, replace, or regenerate damaged tissues and organs. Unlike traditional Anatomy, which primarily focuses on studying the structure of the human body, Regenerative Anatomy goes a step further by aiming to recreate functional biological structures. At the core of this discipline lies tissue engineering, which is based on three fundamental components: Cells, Scaffolds, and Signaling molecules. Stem cells, in particular, serve as the building blocks due to their unique ability to differentiate into various specialized cell types. Scaffolds provide a three-dimensional framework that mimics the natural extracellular environment, while signaling molecules such as growth factors regulate cellular growth, differentiation, and organization.

Recent technological advancements have significantly accelerated progress in this field. Stem cell therapy has emerged as a promising approach, with stem cells derived from bone marrow, adipose tissue, or induced pluripotent stem cells (iPSCs) being used in clinical applications like skin grafting and cartilage repair. Another major breakthrough is 3D bio-printing, which allows scientists to fabricate tissue-like structures layer by layer using bio-inks composed of living cells and supportive biomaterials. While the creation of fully functional organs remains a challenge, significant progress has been made in developing simpler constructs such as skin, blood vessels, and organoids, which are also valuable for disease modeling and drug testing.

In India, regenerative anatomy and tissue engineering have shown steady growth over the past decade. Organizations such as the Indian Council of Medical Research and the Department of Biotechnology have played a pivotal role in funding and promoting research in stem cell biology and regenerative medicine. Premier institutions like the All India Institute of Medical Sciences and the Indian Institute of Science are actively engaged in cutting-edge research involving biomaterials, stem cells, and organ regeneration. Despite these advancements, challenges such as inadequate infrastructure, limited funding, and complex regulatory frameworks continue to hinder large-scale progress.

Medical Anatomy departments have a crucial and evolving role in advancing tissue engineering. They provide essential knowledge of Gross Anatomy, Histology, and Embryology, which is fundamental for designing structurally accurate and functionally viable tissues. These departments can contribute by establishing tissue banks, performing detailed histological and microscopic analyses, and ensuring that engineered tissues replicate natural anatomical architecture. Additionally, Anatomy departments can collaborate with biotechnology and engineering faculties to aid in scaffold design, organ modeling, and validation of experimental outcomes. By incorporating regenerative medicine into the curriculum, anatomy educators can also train future healthcare professionals to understand and apply these advanced concepts, effectively bridging the gap between foundational science and clinical practice.

To further strengthen regenerative anatomy in India, medical colleges must invest in specialized infrastructure. This includes establishing stem cell research laboratories, tissue engineering and biomaterials units, 3D bio-printing facilities, and molecular biology labs. The development of translational research centers connected to hospitals is equally important to ensure that laboratory findings are effectively applied in clinical settings. Interdisciplinary collaboration between medical institutions, engineering colleges, and the biotechnology industry is essential for innovation. Increased government funding, streamlined regulatory policies, and skill development programs will also play a vital role in accelerating progress.

Regenerative anatomy represents a paradigm shift in modern medicine, offering the potential to restore damaged tissues and organs through innovative approaches. With the active involvement of anatomy departments, improved infrastructure, and strong collaborative efforts, India has the potential to become a global leader in tissue engineering. This advancement will not only enhance healthcare outcomes but also pave the way for a future where regeneration replaces conventional treatment methods.

Prenatal Screening for Genetic Disorders: Current Approaches and Clinical Utility



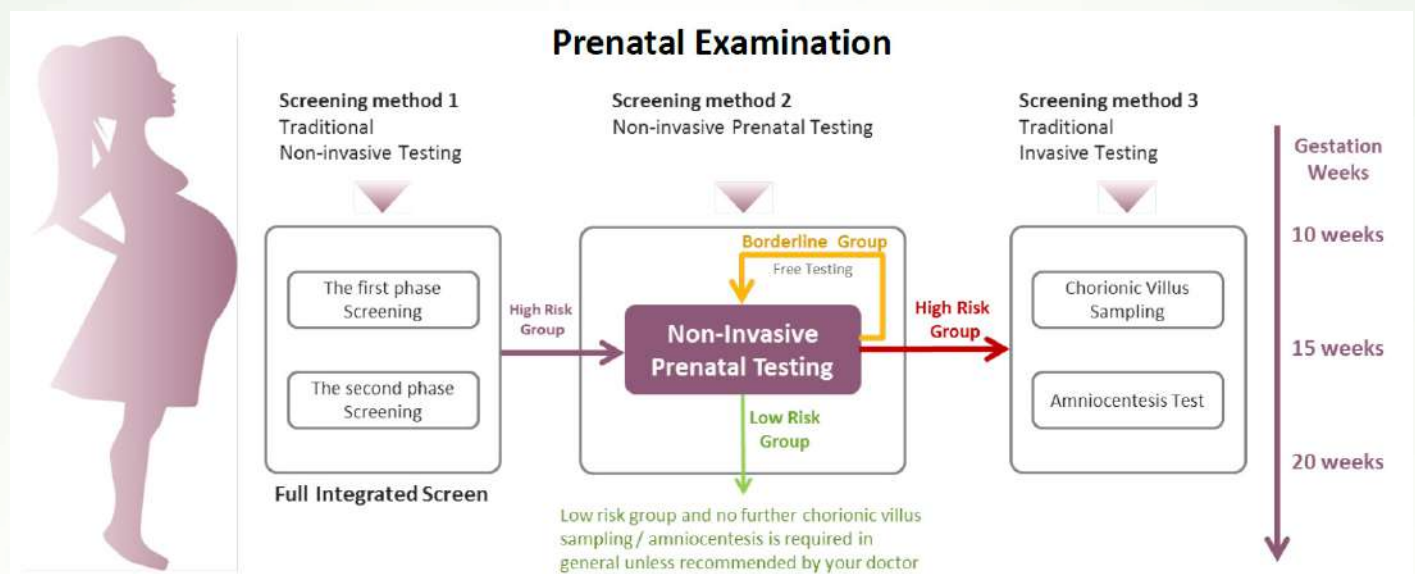
Dr. Ramendra Kumar Raman

General Secretary, Society of Nepalese Anatomists (SONA)
Director, Nita Polyclinic & Diagnostic Centre, Kathmandu, Nepal

Prenatal screening plays a critical role in identifying pregnancies at increased risk for chromosomal abnormalities and congenital anomalies. Advances in biochemical markers, ultrasonography, and cell-free DNA analysis have significantly improved early and non-invasive detection. This article reviews traditional maternal serum screening methods and the role of non-invasive prenatal testing (NIPT), with detailed insights into the biological parameters assessed and their clinical implications.

Prenatal screening tests are designed to estimate the probability of fetal genetic abnormalities, including chromosomal aneuploidies and structural defects. These tests are performed during the first and second trimesters and include biochemical assays, ultrasonographic markers, and molecular genetic techniques.

The interpretation of screening results is influenced by maternal factors such as age, weight, ethnicity, pre-existing medical conditions, and type of pregnancy. It is essential to emphasize that these are **screening tests, not diagnostic tests**.



Traditional Maternal Serum Screening

Double Marker Test

Parameters Assessed:

- Free β -human chorionic gonadotropin (β -hCG):
A glycoprotein hormone produced by the syncytiotrophoblast of the placenta. Elevated levels are associated with increased risk of trisomy 21, while decreased levels may be linked with trisomy 18.
- Pregnancy-associated plasma protein A (PAPP-A):
A placental glycoprotein involved in trophoblastic invasion and placental development. Reduced levels in early pregnancy are associated with trisomy 21, trisomy 18, and adverse pregnancy outcomes such as intrauterine growth restriction (IUGR).
- Nuchal Translucency (NT):
An ultrasound marker representing subcutaneous fluid accumulation behind the fetal neck. Increased NT thickness is associated with chromosomal abnormalities, congenital heart defects, and genetic syndromes.

Timing: 9–13 weeks (optimal: 10–13 weeks)

First Trimester Quadruple Screening (Auto DELFIA)

Parameters Assessed:

- Alpha-fetoprotein (AFP):
A fetal glycoprotein produced by the yolk sac and fetal liver. Abnormal maternal serum levels may indicate neural tube defects or chromosomal abnormalities.
- Free β -hCG:
Reflects placental function; altered levels are linked with chromosomal anomalies.
- PAPP-A:
Marker of placental health and chromosomal risk.
- Placental Growth Factor (PLGF):
An angiogenic protein essential for placental vascular development. Low levels may indicate placental insufficiency and are associated with chromosomal abnormalities and preeclampsia.

Timing: 9–13+6 weeks (optimal: 11–13 weeks)

Triple Marker Test

Parameters Assessed:

- Alpha-fetoprotein (AFP):
Elevated levels suggest open neural tube defects or abdominal wall defects; decreased levels may be associated with chromosomal abnormalities.
- Unconjugated Estriol (uE3):
A steroid hormone produced by the placenta from fetal adrenal precursors. Low levels are associated with trisomy 21, trisomy 18, and fetal compromise.
- β -hCG:
Produced by placental trophoblasts; elevated levels are commonly associated with trisomy 21, while decreased levels may indicate trisomy 18.

Timing: 15–20 weeks

Quadruple Marker Test

Parameters Assessed:

- Alpha-fetoprotein (AFP)
- β -hCG
- Unconjugated Estriol (uE3)
- Inhibin A:
A glycoprotein hormone secreted by the placenta. Elevated levels are strongly associated with trisomy 21 and improve the overall detection rate of the screening test.

Timing: 14–22 weeks (optimal: 15–20 weeks)

Non-Invasive Prenatal Testing (NIPT)

Parameters Assessed:

- Cell-free fetal DNA (cfDNA):
Fragments of fetal DNA released from placental trophoblasts into maternal circulation. These fragments are analyzed using advanced sequencing technologies.
- Chromosomal Aneuploidy Detection:
Quantitative analysis of cfDNA allows detection of:
 - o Trisomy 21 (Down syndrome)
 - o Trisomy 18 (Edwards syndrome)
 - o Trisomy 13
 - o Sex chromosome aneuploidies (e.g., Turner syndrome, Klinefelter syndrome)

- Fetal Fraction:

The proportion of fetal DNA in maternal plasma. A minimum threshold (typically $\geq 4\%$) is required for reliable analysis.

Key Features:

- Performed from 9 weeks of gestation
- Sensitivity and specificity $>99\%$
- Non-invasive and risk-free

Indications for NIPT

NIPT is recommended for all pregnancies and particularly in:

- Positive maternal serum screening results
- Advanced maternal age
- Family history of chromosomal abnormalities
- Previous child with genetic disorders
- Recurrent pregnancy loss or infertility

Interpretation and Follow-Up

A positive screening result indicates increased risk and requires confirmatory diagnostic testing.

Diagnostic options:

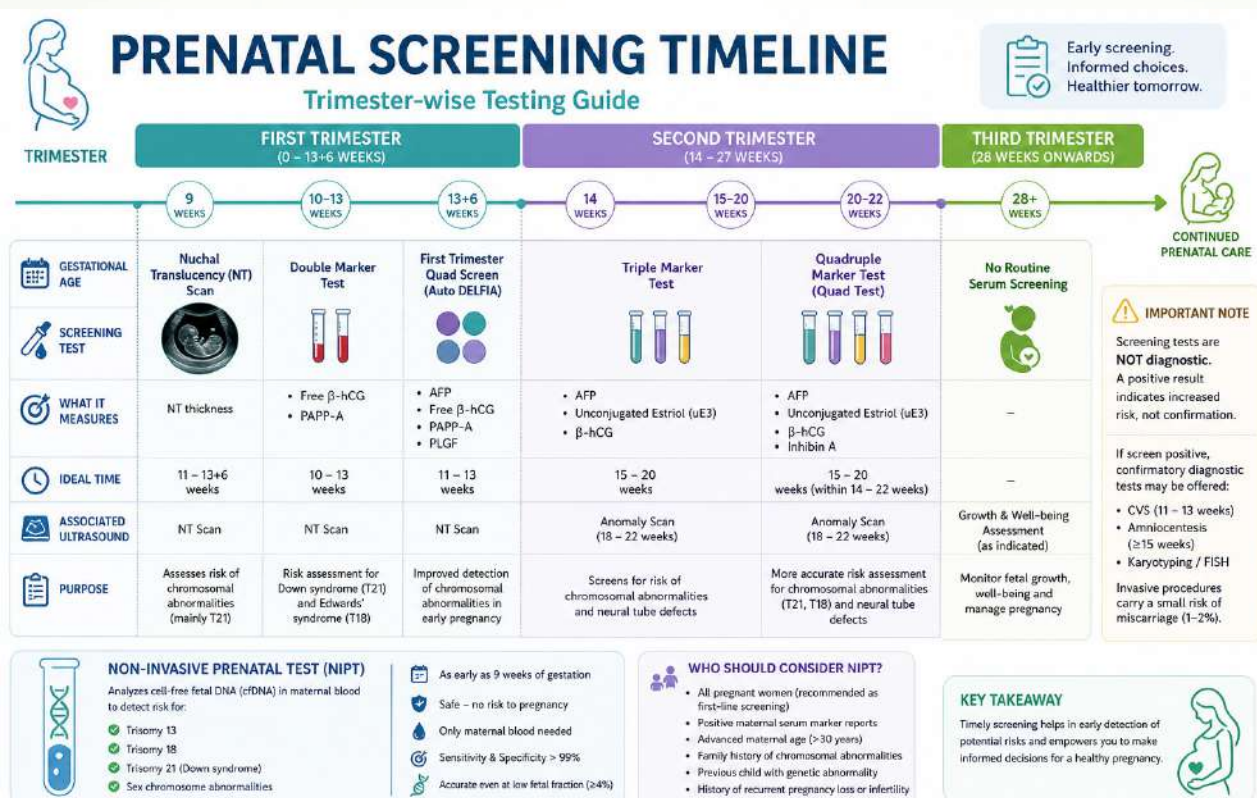
- Chorionic Villus Sampling (CVS)
- Amniocentesis
- Karyotyping and Fluorescence in situ Hybridization (FISH)

These procedures carry a small risk of miscarriage ($\sim 1-2\%$).

Conclusion

The evolution of prenatal screening from biochemical assays to genomic technologies has significantly enhanced early detection of fetal abnormalities. While traditional tests remain widely accessible, NIPT offers superior diagnostic performance. However, cost, accessibility, and the need for confirmatory testing remain key considerations.

Prenatal screening is a cornerstone of modern obstetric care. A thorough understanding of the parameters assessed in each test allows clinicians to interpret results accurately and guide appropriate clinical decision-making.



Cadaviz: A DICOM-Derived Framework for Integrated Anatomical and Clinical Education



Dr. Rounok Nandy

Medical Consultant,
ImmersiveVision Technology, Pvt. Ltd., Pune, Maharashtra, India.

Introduction

The evolution of anatomical education has consistently mirrored advances in technology, yet few innovations have redefined the discipline as profoundly as the data-driven virtual dissection tables (VDT). At the technological apex of this evolution stands Cadaviz, a state-of-the-art VDT that seamlessly bridges foundational learning with clinical application, by delivering anatomically precise representations of the human body across age, gender, and physiological conditions¹.

As demonstrated in Figure 1, Cadaviz features a suite of highly detailed, life-sized digital cadavers, including paediatric male and female, adult male and female, and geriatric male and female digital bodies. Learners can examine how anatomical relationships evolve across the lifespan, recognising variations in structure, proportion, and spatial arrangement. Such exposure fosters a more nuanced understanding of normal variation, an aspect that is often underrepresented through conventional approaches.

A particularly compelling dimension of Cadaviz is its integration of cross-sectional exploration (Figure 2). Through precise sectioning along sagittal, coronal, and transverse planes, learners can traverse successive anatomical layers while preserving the continuity of spatial relationships between systems. This approach allows musculoskeletal, vascular, neural, and visceral components to be understood as interconnected networks rather than isolated structures. The ability to dynamically orient, isolate, and revisit anatomical features further strengthens spatial reasoning, enabling the formation of accurate and enduring mental representations of complex human anatomy.

DICOM-Derived Anatomy: From Data to Digital Anatomy

What enables this seamless exploration is not only technological sophistication but also the integrity and origin of the underlying data. Cadaviz is built upon high-resolution DICOM datasets acquired through imaging modalities such as computed tomography and magnetic resonance imaging, ensuring that the resulting models reflect true human anatomy rather than constructed approximations.

As illustrated in Figure 3, the acquired imaging data are systematically transformed into anatomically coherent three-dimensional models through a scientifically grounded computational pipeline composed of the following stages²

- **Data Acquisition and Preprocessing:** Imaging datasets are

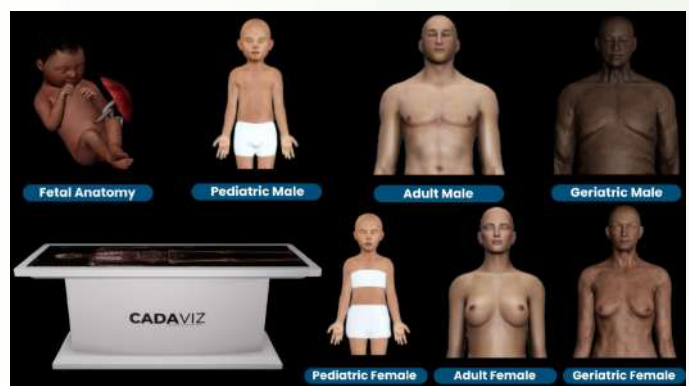


Figure 1: Cadaviz enables interactive visualization of human anatomy, from fetal to pediatric, adult, and geriatric stages, within a unified, DICOM-derived 3D framework.

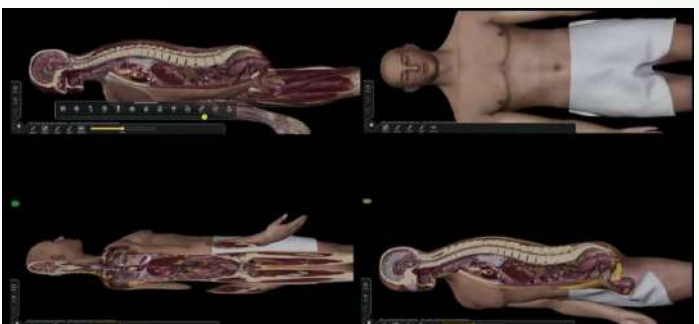


Figure 2: Multi-planar and interactive visualization of the Cadaviz digital human model demonstrating sagittal and longitudinal sections.

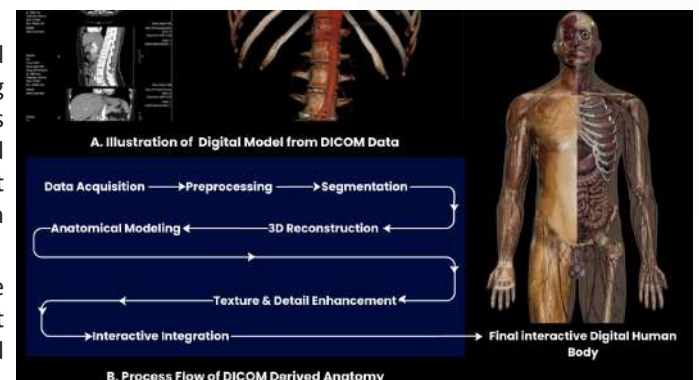


Figure 3: Workflow illustrating the generation of a digital human model from DICOM data

obtained from CT and MRI scans. These datasets are standardised, denoised, and optimised to ensure clarity, consistency, and suitability for computational analysis.

- **Segmentation:** Distinct anatomical structures are identified and separated from surrounding tissues. Advanced segmentation techniques enable the precise delineation of organs, musculoskeletal elements, and intricate vascular and neural networks. Arterial, venous, and neural pathways are traced across successive slices, preserving continuity and connectivity.
- **Three-Dimensional Reconstruction:** Segmented image slices are integrated into volumetric representations. This stage restores spatial relationships, allowing structures to be visualised in their true anatomical context.
- **Anatomical Modelling:** The reconstructed volumes are refined to ensure morphological accuracy and correct positional alignment. This step enhances structural coherence and prepares the model for detailed exploration.
- **Texture and Detail Enhancement:** Surface refinement and visual enhancement techniques are applied to improve clarity. Fine anatomical features become more distinguishable, supporting deeper structural understanding.
- **Interactive Integration:** With support for multiplanar visualization and detailed structural analysis, the final models are transformed into dynamic, user-responsive environments that allow learners to manipulate, dissect, and explore the anatomy in real time.

Maintaining the fidelity of the original imaging data, Cadaviz uses this pipeline to produce digital anatomy that is both structurally authentic and clinically meaningful.

From Conception to Creation: The Digital Anatomy of Human Emergence

Extending this data-driven foundation into developmental anatomy, Cadaviz enables learners to visualise embryonic and fetal progression alongside corresponding radiological imaging, thereby establishing a clear connection between anatomical development and clinically relevant interpretation.

Understanding developmental anatomy has long been limited by the transient nature of early human structures. Rapid morphological change, small anatomical scale, and variability in imaging often disrupt continuity. As a result, fetal development is frequently presented as a sequence of isolated stages rather than a unified progression³.

Cadaviz addresses these limitations by situating fetal anatomy within a coherent, DICOM data-driven framework.

As illustrated in Figure 4, Cadaviz integrates three-dimensional fetal models with corresponding multiplanar



Figure 4: Integrated visualization of fetal anatomy and radiological imaging within the Cadaviz platform.

This combined visualization enables direct correlation between anatomical structures and imaging planes. It strengthens spatial understanding and reinforces the relationship between developmental processes and diagnostic practice.

While using the fetal development module in Cadaviz, students can trace progression across successive gestational stages with clarity and continuity. The general embryology module enables learners to follow the transformation from cellular origin to a fully formed human body, capturing, in essence, the complete narrative of human emergence. With Cadaviz, students can systematically explore foundational developmental processes, beginning with gametogenesis, including spermatogenesis and oogenesis, followed by the first week of development encompassing fertilization, cleavage, and blastocyst formation. This progression continues into the second week with the formation of the bilaminar germ disc and early implantation, and into the third week with gastrulation, the establishment of the trilaminar germ disc, and notochord development. The embryonic period, spanning the third to eighth weeks, highlights organogenesis, during which the three germ layers differentiate into major organ systems.

Further exploration includes the development of the primitive gut and body cavities, along with the formation of associated structures such as the diaphragm and serous membranes. The fetal period, extending from the third month to birth, focuses on growth, maturation, placental development, and the anatomical basis of parturition. Within this context, Cadaviz also facilitates understanding of clinically significant gestational conditions, including placenta previa, placental abruption (Figure 5) and the placenta accreta spectrum, by relating anatomical positioning and placental attachment to potential obstetric complications.

(A) Spectrum of placenta previa, including complete, partial, and marginal placenta previa in comparison to normal placental placement.

(B) Spectrum of placental abruption demonstrating varying degrees of premature placental separation, including partial, marginal, and complete (concealed) abruption, contrasted with normal placentation.

Functional Integration: Blood Circulation and Neural Pathways

The human body is not merely an assembly of organs, but a coordinated network in which circulation and neural communication sustain life and enable responsiveness.

Structural relationships gain deeper meaning when viewed through the lens of function, where movement, regulation, and adaptation are continuously maintained.

Cadaviz extends this understanding by enabling visualization of physiological processes within their anatomical context. It allows learners to trace pathways, follow continuity across regions, and appreciate how distant structures remain functionally interconnected. This perspective shifts learning from static observation to dynamic interpretation, where anatomy is understood not only in terms of form but also in terms of flow and signalling.

(A) Representation of systemic blood circulation illustrating the heart and continuous arterial and venous networks reconstructed from DICOM-derived data, enabling visualization of vascular pathways and flow continuity.

(B) Visualization of neural pathways demonstrating the central and peripheral nervous systems as interconnected networks, allowing detailed tracing of nerve origins, branching patterns, and distribution.

With the use of advanced segmentation technology, Cadaviz excels in capturing the clinical accuracy of the two fundamental systems that underpin human physiology: blood circulation and neural pathways (Figure 6). Derived from real DICOM datasets, these networks are reconstructed as continuous and anatomically faithful systems, allowing learners to visualise and interact with true human vascular and neural connectivity within a unified framework.

Within this environment, understanding blood circulation becomes more intuitive, as learners can trace the flow of blood from central organs to peripheral tissues, appreciating its role in oxygen delivery, metabolic exchange, and the maintenance of tissue viability. This foundational knowledge is essential for interpreting clinical conditions such as ischemia, shock, and cardiovascular disorders.

At the same time, the visualization of neural pathways enables learners to follow the transmission of signals across the body, linking structure with function. It supports a deeper understanding of how the brain forms memories, acquires skills, and

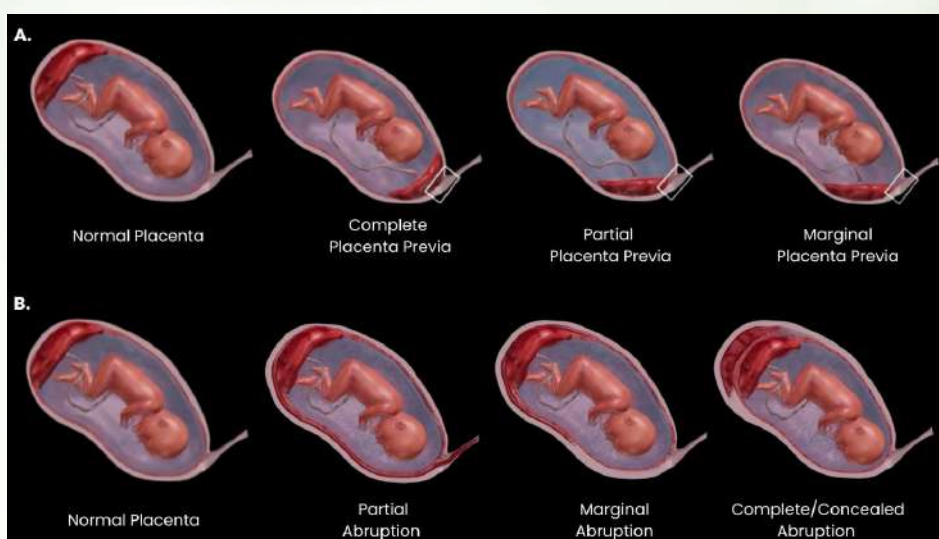


Figure 5: Comparative visualization of normal placentation and placental pathologies in Cadaviz.

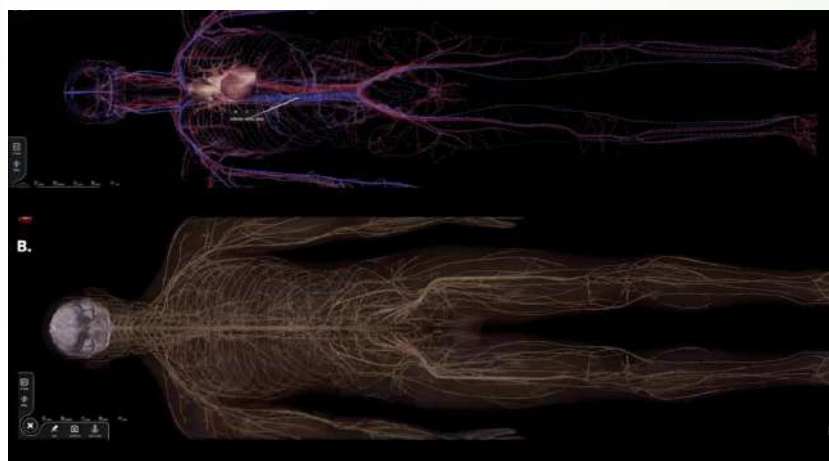


Figure 6: Integrated visualization of functional integration of vascular and neural systems within the human body.

adapts through neuroplasticity, while also providing insight into neurological disorders and functional deficits. Through this integrated and interactive approach, Cadaviz fosters a connected, clinically relevant understanding of both systems as dynamic and interdependent networks.

Kinesiology with Cadaviz

Kinesiology is the study of human movement, encompassing the interaction between muscles, joints, and the forces that govern motion. Understanding movement requires the integration of muscular activity with joint mechanics within an anatomically accurate framework. Traditional approaches often separate static anatomy from functional movement, limiting the ability to appreciate how structures interact dynamically. Cadaviz addresses this gap by enabling the study of kinesiology within a DICOM derived, three dimensional environment where structure and movement can be examined together.

Within this platform, muscle motion can be explored in relation to origin, insertion, and functional role. Learners can observe how muscles contract and coordinate during movement, including the interplay between agonists, antagonists, and synergistic groups. This facilitates a clearer understanding of how muscular forces generate motion while maintaining stability and control.

In parallel, joint motion can be analyzed through visualization of movements such as flexion, extension, abduction, adduction, and rotation. The relationships between articulating surfaces, ligaments, and supporting structures can be examined in detail, allowing learners to appreciate how joints enable mobility while preserving structural integrity. Multi planar visualization further supports the study of movement across different anatomical axes.

Cadaviz provides an interface for selecting specific muscles and movement parameters, enabling targeted exploration of musculoskeletal function. This supports detailed analysis of muscle groups involved in particular actions and reinforces the connection between anatomical structure and dynamic movement.

By integrating muscle activity with joint mechanics, Cadaviz offers a comprehensive perspective on human movement. This approach enhances understanding of functional anatomy and supports clinically relevant insights in areas such as rehabilitation, sports medicine, and orthopedics.

Digital Pathology with Cadaviz

A major application of a DICOM derived framework lies in its ability to integrate pathology with anatomical and radiological context, enabling a more connected understanding of disease. By anchoring learning in real imaging data, Cadaviz allows pathological processes to be interpreted in direct relation to true human anatomy rather than as abstract or isolated findings.

The platform incorporates a comprehensive repository of over 500 histology slides, 500 histopathology slides, 700 OSPE cases, and more than 1000 radiology images. These resources are systematically aligned with corresponding anatomical regions, enabling learners to transition seamlessly between gross anatomy, imaging, and microscopic structure.

Central to this approach is pathological mapping, where disease can be examined across multiple levels of organization. Learners can correlate structural changes observed in radiological images with underlying tissue level alterations and microscopic features. This integrated perspective supports a clearer understanding of how disease develops, progresses, and manifests within the body.

Radiological integration plays a pivotal role by linking anatomical models with clinical imaging, strengthening the ability to interpret scans in relation to structural anatomy. Histology and histopathology further extend this framework by revealing cellular architecture and pathological changes, allowing learners to connect microscopic alterations with macroscopic and clinical findings.

Through this multi-dimensional integration, Cadaviz transforms the study of pathology into a cohesive and clinically relevant experience, enabling learners to interpret disease within its full anatomical and diagnostic context.

Learners' Perception and Educational Experience

The impact of Cadaviz on anatomy education is reflected not only in its technical architecture but also in how it is experienced by learners. Student perception provides a meaningful extension of the integrative framework described in preceding sections, offering insight into how visualization, data fidelity, and clinical alignment translate into educational value in practice.

Rajan et al. 2025, undertook a quasi experimental study involving 250 undergraduate MBBS students, comparing cadaveric

practicals, Cadaviz based learning, and a combined approach. The findings demonstrated that the integration of traditional cadaveric dissection with virtual dissection tables provided the most effective understanding of human anatomy, reinforcing the value of blended learning as a pedagogically optimal model⁴ (Figure 7).

Khodke et al., 2025 conducted a qualitative, questionnaire based cross sectional study among 200 first year MBBS students following exposure to both cadaveric dissection and Cadaviz. The findings similarly indicated that a combined approach offers the most effective understanding, further supporting the role of virtual platforms as complementary to traditional methods rather than replacements. This preference for integration reflects the broader conceptual design of Cadaviz, where multiple domains are unified to enhance learning continuity⁵.

Sreenivasan, S. 2025 evaluated learner perception across visualization, spatial understanding, engagement, and usability, with students consistently reporting that the integrated and clinically guided visualizations improved three dimensional comprehension, engagement, and learning confidence. These observations align with the platform's emphasis on continuity across anatomical planes and systems⁶.

Devi, G. D. 2025 further demonstrated the effectiveness of Cadaviz in embryology education through a cross sectional study involving 250 first year MBBS students. High levels of agreement were observed across domains of knowledge retention, spatial connection, visualization, clinical understanding, and conceptual clarity. The highest scores in spatial connection and retention highlight the platform's strength in enabling learners to construct enduring mental representations of developmental processes⁷.

Expanding this perspective, Ramnika et al., 2026 conducted an observational study examining cognitive integration, affective engagement, and behavioural adoption among 143 first year medical students. Positive responses across all domains indicated that the platform supports not only cognitive understanding but also learner motivation and sustained engagement, with high scores in visualization and recall alongside increased confidence and reduced learning related stress⁸.

Collectively, these findings demonstrate that learner perception aligns closely with the structural and pedagogical principles underlying Cadaviz.

Closing Statement

In conclusion, Cadaviz is not merely a tool for virtual dissection, but a comprehensive medical education ecosystem in its own right. It integrates 12+ core medical subjects, including gross anatomy, regional anatomy, block dissection, osteology, anatomy of organs and parts, physiology, embryology, histology, histopathology, radiology, a clinically oriented case library, and prosection, delivering a structured and in depth learning experience from foundational anatomy to clinical application.

At its core, this platform is a DICOM derived framework, where anatomical representation originates from real human imaging data rather than constructed models, so as to ensure structural fidelity while enabling seamless integration across multiple domains of learning. Through this approach, anatomy is not encountered as isolated segments, but as a continuous, interconnected system that reflects its true biological and clinical complexity. Importantly, learner perception further underscores Cadavi's effectiveness as a modern educational tool.

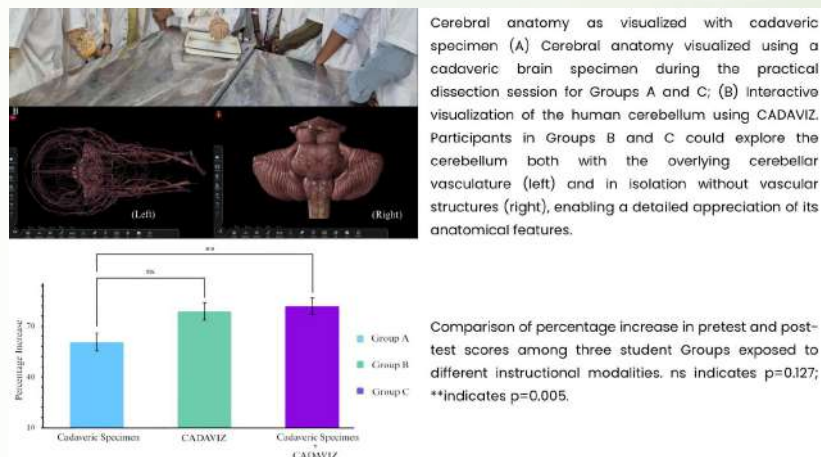


Figure 7: Stills and Data from the study "Exploring the effectiveness of CADAVID in enhancing learning outcomes in undergraduate medical students"

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PLENARY GUEST SPEAKER SESSION

Plenary Guest Speaker Session I (CME)

"From Conception to Creation: The Anatomy of Human Emergence"

Chairperson

Prof. Dr. Rajan Bhatnagar, *Department of Anatomy, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, India*

Prof. Dr. Surajit Ghatak, *Professor and Head, Department of Anatomy, AIIMS Jodhpur, India*

Dr. Anusuya Shrestha, *Associate Professor & Head of Anatomy, Maharajgunj Medical Campus (IOM), Kathmandu*

Dr. Sanzida Khatun, *Associate Professor & Head of Anatomy, Birat Medical College Teaching Hospital, Biratnagar*

Plenary Guest Speaker Session II

Chairperson

Dr. Swapna Parate, *Professor and HOD of Anatomy, SMBT IMS & RC, Nashik, India*

Dr. Ranjan Prasad Devbhandari, *Associate Professor Patan Academy of Health Sciences, Lalitpur, Nepal*

Dr. Muna Kadel, *Professor, Nepalese Army Institute of Health Sciences, Kathmandu, Nepal*

Dr. Ganpat Choudhary, *Assistant Professor, Ayurveda Campus and Teaching Hospital, Kirtipur*

Plenary Guest Speaker Session III

Chairperson

Prof. Dr. Yogesh Sontakke, *Additional Professor of Anatomy, JIPMER, Pondicherry, India*

Prof. Dr. Shamsher Shrestha, *Department of Anatomy, B. P. Koirala institute of Health Sciences, Dharan*

Prof. Dr. Ajaya Jang Kunwar, *Department of Anatomy, Janaki Medical College, Janakpur, Nepal*

Anatomists as Medical Geneticists: Converting Foundational Strength into Clinical Impact

Dr. Dnyandeo Chopade

Director, Genetic Health & Research Center
Nashik, India



ABSTRACT

Anatomists already possess a deep, structured understanding of human form, variation, and developmental pathways- exactly the foundation modern medical genetics depends on. Yet the field often presents itself as a distant, highly technical specialty, discouraging many who are already well-equipped to contribute. This talk challenges that assumption. I will argue that anatomists are not outsiders to medical genetics- they are under-recognized insiders.

The session will examine how core anatomical expertise translates directly into genetic interpretation: recognizing patterns of malformation, understanding developmental timing, appreciating structure–function relationships, and communicating complex biological concepts with clarity. These are the same competencies required for clinical cytogenetics, dysmorphology, and genomic medicine. With targeted training in molecular methods, variant interpretation, and current clinical workflows, anatomists can step confidently into roles in genetic diagnostics, interdisciplinary teaching, research, and even hospital-based genetic services.

By reframing genetics as an extension- from anatomy, the talk highlights a realistic pathway for anatomy educators and researchers to upskill and reposition themselves in an era where genomic literacy is becoming essential. The goal is to help participants recognize their existing strengths, see the feasibility of transitioning into medical genetics, and envision a broader professional future where anatomists can lead, innovate, and influence patient care through genetic insight.

The Blueprint of Life: Tracing the Genetic Journey from Conception to Creation



Dr. Shiva Shankaran Chettiar

Director, Genexplore Diagnostics and Research Centre
Ahmedabad, India

ABSTRACT

The transition from a single-celled zygote to a healthy neonate is governed by rigorous genetic selection, where complex genomic rearrangement is initiated by the union of parental gametes. This presentation outlines our findings on the "filtering" effect of natural selection across the developmental spectrum, evaluating samples from few-cell stage embryos and abortus material to prenatal (CV/Amnio) and neonatal stages.

We observed a descending gradient of genomic anomalies, with the highest complexity in early embryonic samples, implying that miss-encoded genomes are naturally selected against. Specifically, our data identifies **Chromosome 16** as a primary variant in abortus material, while **Chromosome 1** involvement is notably rare. Furthermore, we challenge the perceived benign nature of certain chromosomal polymorphisms (e.g., qh+, inversions), suggesting their contribution to anatomical and physiological alterations in developing fetuses, particularly within the CNS, cardiovascular, GI, and urinary systems.

While conventional methods (karyotype and aCGH) constitute only $\approx 37\%$ of genetic changes contributing to fetal anomalies, leaving a significant diagnostic gap, our study demonstrates the critical role of Next Generation Sequencing (NGS). In a cohort of 238 amniotic fluid samples, NGS provided an additional **21.42% diagnostic yield** that was missed by conventional methods. CMA data revealed CNVs in novel loci (e.g., *Chr19p13.11-p12*), and NGS analysis identified novel mutations in genes critical for cardiac and structural integrity (e.g., *DSC2*, *KCNQ1*, *FBN1*).

We conclude that no single method suffices. We advocate for a **comprehensive parallel approach** utilizing Karyotype, CMA, and NGS to accurately interpret the genetic etiology of developmental disorders and highlight the critical balance between genetic variation and biological viability.

GENERATIVE GENOMICS: A Quest to Reconcile Generative and Evolutionary Origins



Dr. Jae Kyu Lee, PhD,
President of the Generative Genomics Council, Professor Emeritus,
Korea Advanced Institute of Science and Technology (KAIST), Seoul, Korea

Why?

Comparative Genomics has traditionally aimed to discover homologous genes and proteins from the perspective of their evolutionary relationships through alignment-based procedures. However, orphan genes have revealed the potential limitation of the inherited path. Nevertheless, the origins of orphan genes have been explored from an evolutionary perspective under the assumption that they arose either through mutational transformations of ancestral genes or as de novo genes derived from non-coding sequences. However, the evolutionary origin perspective alone cannot explain the cause of the emergence of unique taxon-restricted genes and founder genes that are the first of the descendant gene lineages.

How?

Therefore, it is necessary to extend the perspectives on the origins of orphan genes beyond evolutionary mechanisms. To address this question, we propose the Generative Origin perspective, which identifies all the conditions necessary for the emergence of new species—not only the inherited genes from ancestors but also those that could not be inherited such as taxon-specific genes and founder genes. To conceptualize the generative origin, we need to distinguish the Emergence Conditions, viewed from a forward generative perspective, from the Survival Conditions that occur after emergence.

Based on the concept of generative origins, we define Generative Genes that are essential for the emergence of new species but are not inherited from ancestors. The generative genes can be classified into two categories: unique Taxon-Restricted Generative Genes and Founding Generative Genes that were inherited by diverse descendants. Generative Genomics identifies and annotates generative genes using the mutational path simulation and AI-enabled models, in contrast to homology-based comparative genomics. The generative view and evolutionary view are complementary to each other, enriching our understanding of the origins of orphan genes, and contributing to the identification of the boundary conditions of evolutionary theory

Artificial Intelligence in Human Emergence - From Conception to Creation



Dr. Reeha Mahajan

Associate Professor, Anatomy,
All India Institute of Medical Sciences, Jammu, India

Background

The theme "From Conception to Creation: The Anatomy of Human Emergence" explores the biological journey from zygote formation to fully developed human anatomy. Artificial intelligence (AI) is transforming this field by modeling embryogenesis, enhancing IVF outcomes, and simulating developmental stages, bridging computational power with developmental biology.

Objective

To outline key AI applications that dissect and replicate the anatomical and cellular processes of human emergence, from fertilization through organogenesis, enabling precise prediction, visualization, and intervention.

Methods

AI leverages generative models for synthetic embryo imaging, deep learning for time-lapse analysis and viability prediction, and multi-modal systems for IVF automation including sperm selection, ICSI, and grading. Stem cell simulations and organoid optimizations further model tissue differentiation pathways.

Key Topics

- Embryo imaging via generative AI producing high-fidelity blastocysts.
- AI-driven IVF yielding first successful births in 2025.
- Developmental stage prediction in embryo models and time-lapse data.
- Stem cell/organoid simulations for anatomical emergence.

Results/Insights

AI accelerates embryo research, improves pregnancy success rates by 20-30% through better grading, and reveals hidden developmental bifurcations previously undetectable by humans. Synthetic datasets enable ethical, scalable studies of rare anomalies.

Conclusions

AI redefines the anatomy of human emergence, from conception's cellular chaos to creation's structured form, with applications in regenerative medicine and personalized reproduction. Future integration with synthetic biology promises de novo human-like designs.

The Journey of Embryology: From Aristotle's Observational Philosophy to the Precise Engineering of Genes

Dr. Mushfika Rahman

Professor and Head of the Anatomy Department,
Dr. Sirajul Islam Medical College, Dhaka, Bangladesh



ABSTRACT

Embryology is the study of life's beginnings, specifically the early forms of life that exist before birth. It can provide evidence for evolution and has a rich history spanning over a thousand years.

The exploration of embryology has evolved remarkably—from ancient philosophical reflections to the sophisticated genetic technologies that shape medicine today. This journey began with Aristotle, the Greek philosopher often regarded as the first systematic observer of embryonic development. In *Generation of Animals*, he described chick embryo development through direct observation, proposing the theory of epigenesis—the idea that organisms develop progressively rather than existing fully formed from conception. Although constrained by the scientific tools of his time, Aristotle's insights laid the foundation for viewing development as a dynamic biological process rather than a mystical or spontaneous event.

In the late 17th century, Marcello Malpighi and Antonie van Leeuwenhoek provided the first microscopic descriptions of early embryos and ignited the debate between proponents of epigenesis and the preformationists. Preformationists believed the embryo was merely the unfolding of a miniature, perfectly formed individual (a *homunculus*) already present within either the sperm or the egg.

The 19th century proved to be the golden age of descriptive embryology, systematically dismantling the preformationist doctrine. Caspar Friedrich Wolff provided definitive evidence for epigenesis by showing that plant and animal tissues organize progressively.

The work of Heinz Christian Pander and Karl Ernst von Baer further solidified the modern understanding of development. Von Baer, in particular, established comparative embryology and articulated "von Baer's laws," observing that embryos of related species share general features that diverge into species-specific traits later in development. Crucially, he identified the primary germ layers (ectoderm, mesoderm, and endoderm) as the fundamental building blocks from which all tissues and organs arise, providing a concrete framework for developmental progression.

A major turning point arrived in the 20th century with the discovery of Mendelian genetics and the rise of molecular biology. Embryology and genetics converged as researchers connected gene expression to developmental processes. Techniques such as DNA sequencing, gene knockout models, and in situ hybridization illuminated how genes guide the formation of tissues and organs. These milestones transformed embryology into a molecular science.

The 21st century ushered in an era of unprecedented precision. Breakthroughs like CRISPR-Cas9 enabled scientists to edit embryonic genomes with accuracy unimaginable to earlier generations. Today, researchers can modify genes responsible for hereditary diseases, create animal models to study human disorders, and explore the mechanisms underlying early development.

From Aristotle's observational philosophy to the precise engineering of genes, the evolution of embryology reflects humanity's continual quest to understand development. What began as a simple observation has become a molecular narrative of life, offering not only scientific insight but also powerful tools for treating genetic disease and advancing regenerative medicine.

Gonadal Development and Effect of Teratogens



Prof. Dr. Biswabina Ray

Dean (Academic), Professor & Head, Anatomy,
All India Institute of Medical Sciences, Kalyani, India

1. Introduction : Gonadal development represents one of the most intricate and finely regulated processes in embryology. It determines the establishment of future reproductive capacity and the sexual differentiation of the individual. Beginning very early in gestation, this developmental sequence depends on the coordinated interaction of germ cells, somatic cells, and hormonal signals. Any disturbance during these tightly timed events can produce lifelong reproductive and developmental consequences. Teratogens, defined as environmental agents capable of causing structural or functional anomalies during development, pose significant risks to the proper formation and differentiation of the gonads.

2. Early Events in Gonadal Development : The earliest step in gonadal development is the specification of primordial germ cells (PGCs), which arise in the epiblast of the early embryo. These cells migrate along the hindgut and dorsal mesentery toward the genital ridges, a journey essential for establishing the germ cell population that will eventually produce gametes. Their arrival also contributes crucial inductive signals required for the proper formation of the gonadal primordium. At the genital ridges, the intermediate mesoderm gives rise to the bipotential gonad. At this undifferentiated stage, the gonadal tissue contains immature supporting cells, precursor steroidogenic cells, and a developing stromal framework. Importantly, this structure possesses the intrinsic capacity to differentiate into either a testis or an ovary depending on the signals it receives during the critical window of sex determination.

3. Pathways of Testicular and Ovarian Differentiation : Testicular differentiation begins when signals promoting the male pathway dominate. Supporting cells transform into Sertoli cells, which organize themselves around the germ cells to form testis cords. These Sertoli cells secrete anti-Müllerian hormone, which induces regression of the female internal duct system and helps shape the testicular architecture. At the same time, precursor steroidogenic cells differentiate into hormone-producing cells that generate the androgens necessary for masculinization of the reproductive tract. Conversely, ovarian differentiation occurs when testis-directing cues are absent. Supporting cells instead differentiate into granulosa cells, which envelop the germ cells to form primordial follicles. The ovarian cortex develops as the primary functional region, and germ cells enter meiosis during fetal life to establish the future ovarian reserve. Both testicular and ovarian pathways depend on sustained germ-somatic cell interactions and well-regulated hormonal influences.

4. Mechanisms of Teratogenic Disruption : Teratogens can disrupt gonadal development at multiple levels, depending on their nature, timing, and intensity of exposure. These agents include industrial chemicals, endocrine-disrupting compounds, certain medications, alcohol, tobacco constituents, heavy metals, radiation, and infectious organisms. Teratogens may interfere with the specification or migration of PGCs, resulting in insufficient colonization of the developing gonad. They may induce apoptosis or oxidative damage to germ cells, compromise the differentiation of supporting or steroidogenic cells, or distort the hormonal environment required for sex determination. In addition, teratogens may alter the epigenetic landscape during this sensitive developmental window, causing long-term changes in gene expression that impair reproductive capacity.

5. Developmental and Clinical Consequences : The consequences of teratogenic insult vary widely, ranging from subtle impairments of gonadal function to overt structural anomalies. Depending on when exposure occurs, outcomes may include gonadal dysgenesis, incomplete differentiation of reproductive ducts, disorders of sex development, reduced gamete production, infertility, or subfertility. Some effects may remain silent until puberty or adulthood, revealing the lasting significance of early developmental disruption.

6. Conclusion : A comprehensive understanding of the normal sequence of gonadal development and the mechanisms through which teratogens interfere with these events is essential for effective risk assessment, preventive strategies, and the protection of reproductive health. Because the developing gonad is highly vulnerable to environmental influences, safeguarding this critical period is central to ensuring healthy reproductive outcomes across the lifespan.

Applied Reproductive Anatomy: Morphological Determinants of Oocyte and Embryo Quality



Dr. Sarabpreet Singh,

Director, The Fertilis Academy and Head, Clinical Embryology & Andrology,
Artemis Health Institute, Gurgaon, India

Background

The earliest stages of human life are governed by a series of finely regulated structural and cellular events that begin even before fertilization. In assisted reproduction, where direct observation of gametes and embryos is possible, morphology remains the most widely used and immediately accessible window into developmental competence. This presentation explores the morphological determinants of oocyte and embryo quality and their relevance in predicting developmental potential, implantation, and ultimately live birth.

Oocyte quality is the cumulative result of folliculogenesis, nuclear and cytoplasmic maturation, and the integrity of the surrounding microenvironment. Key morphological features—including oocyte size, zona pellucida characteristics, cytoplasmic appearance, presence of vacuoles, granularity, smooth endoplasmic reticulum clusters, and the morphology of the polar body—reflect underlying cellular organization and metabolic readiness for fertilization and early embryogenesis. While no single feature is absolutely determinative, specific patterns are consistently associated with altered fertilization rates, cleavage behaviour, and blastocyst development.

Following fertilization, embryo morphology provides a dynamic record of early human development. Pronuclear alignment, nucleolar precursor body distribution, cleavage symmetry, degree of fragmentation, blastomere multinucleation, compaction, and blastocyst expansion and inner cell mass/trophectoderm architecture represent successive structural checkpoints in the journey from a single cell to a differentiated multicellular organism. These morphological landmarks are not merely descriptive; they mirror fundamental processes such as genome activation, cell cycle regulation, and lineage allocation.

Conclusion

For clinicians and anatomists alike, understanding these morphological signatures bridges classical structural biology with modern reproductive medicine. Although emerging technologies such as time-lapse imaging and artificial intelligence offer refined kinetic and predictive tools, morphology remains the foundational language through which embryologists communicate developmental potential in daily practice. Importantly, morphological assessment should be viewed not as a deterministic verdict but as a probabilistic guide,

integrated with clinical context, laboratory conditions, and patient-specific factors. From conception to creation, the form of the oocyte and embryo tells a story of developmental readiness, resilience, and limitation. Appreciating these early anatomical cues enhances both scientific understanding and clinical decision-making, reinforcing the central role of morphology in the pursuit of safe and effective assisted reproduction.

Male Infertility and Sperm Genetics



Dr. Laxmi Bhattarai

Assistant Professor, Anatomy
Devdaha Medical College, Nepal

Background

The earliest stages of human life are governed by a series of finely regulated structural and cellular events that begin even before fertilization. In assisted reproduction, where direct observation of gametes and embryos is possible, morphology remains the most widely used and immediately accessible window into developmental competence. This presentation explores the morphological determinants of oocyte and embryo quality and their relevance in predicting developmental potential, implantation, and ultimately live birth.

Oocyte quality is the cumulative result of folliculogenesis, nuclear and cytoplasmic maturation, and the integrity of the surrounding microenvironment. Key morphological features—including oocyte size, zona pellucida characteristics, cytoplasmic appearance, presence of vacuoles, granularity, smooth endoplasmic reticulum clusters, and the morphology of the polar body—reflect underlying cellular organization and metabolic readiness for fertilization and early embryogenesis. While no single feature is absolutely determinative, specific patterns are consistently associated with altered fertilization rates, cleavage behaviour, and blastocyst development.

Following fertilization, embryo morphology provides a dynamic record of early human development. Pronuclear alignment, nucleolar precursor body distribution, cleavage symmetry, degree of fragmentation, blastomere multinucleation, compaction, and blastocyst expansion and inner cell mass/trophectoderm architecture represent successive structural checkpoints in the journey from a single cell to a differentiated multicellular organism. These morphological landmarks are not merely descriptive; they mirror fundamental processes such as genome activation, cell cycle regulation, and lineage allocation.

Conclusion

For clinicians and anatomists alike, understanding these morphological signatures bridges classical structural biology with modern reproductive medicine. Although emerging technologies such as time-lapse imaging and artificial intelligence offer refined kinetic and predictive tools, morphology remains the foundational language through which embryologists communicate developmental potential in daily practice. Importantly, morphological assessment should be viewed not as a deterministic verdict but as a probabilistic guide,

integrated with clinical context, laboratory conditions, and patient-specific factors. From conception to creation, the form of the oocyte and embryo tells a story of developmental readiness, resilience, and limitation. Appreciating these early anatomical cues enhances both scientific understanding and clinical decision-making, reinforcing the central role of morphology in the pursuit of safe and effective assisted reproduction.

Endometriosis and Infertility



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Background

Endometriosis is presence of endometrial-like tissue outside the uterus which induces a chronic, inflammatory reaction. Prevalence of endometriosis among 2-10% and it affects 50% of infertile women. It affects women of reproductive age, causing pain and infertility problems. Women with endometriosis typically present with pelvic pain, infertility or an adnexal mass. Surgery for persistent adnexal masses may be indicated to remove an endometrioma or other pelvic pathology. Surgical or medical therapy is efficacious for pelvic pain due to endometriosis, but treatment of endometriosis in the female partner of an infertile couple raises a number of complex clinical questions that do not have simple answers.

The hypothesis that endometriosis causes infertility or a decrease in fecundity remains controversial. Several mechanisms have been proposed to clarify the association between endometriosis and infertility. Major pelvic adhesions, including those that result from endometriosis, can impair oocyte release from the ovary.

Many studies demonstrate that women with endometriosis have an increased volume of peritoneal fluid, increased concentration of activated macrophages and increased peritoneal fluid concentrations of prostaglandins, interleukin-1, tumor necrosis factor and proteases. These alterations may have adverse effects on the oocyte, sperm, embryo or fallopian tube function. Mounting evidence suggests that disorders of endometrial function may contribute to the decreased fecundity observed in women with endometriosis. Reduced endometrial expression of the $\alpha\beta$ integrin (a cell adhesion molecule) during the time of implantation has been described in some women with endometriosis.

A history and physical examination can yield a number of significant findings, including affected first degree relatives, chronic pelvic pain and dysmenorrhea, retroverted uterus, adnexal masses, cul de sac nodularity and uterosacral ligament thickening and tenderness, but none is diagnostic. Ultrasound can help the clinician establish a presumptive diagnosis of ovarian involvement with endometriosis, but laparoscopy is necessary to confirm the diagnosis.

Patients with minimal to mild endometriosis that have been surgically diagnosed. After the surgical intervention in cases of women suffering from stage I and II endometriosis, the pregnancy rate per therapy cycle and the cumulative live-birth rate were comparable in endometriosis and idiopathic infertility patients. Intrauterine insemination (IUI) is a relatively simple method and has been subject to a number of studies regarding couples characterized by milder stages of endometriosis and normal semen quality. IVF is the most successful treatment for infertile women with endometriosis. Patients suffering from endometrioma that underwent IVF had comparable live birth rates as well as clinical pregnancy and miscarriage rates when compared to women that were not affected by this disease.

Conclusion

The association between infertility and endometriosis is still controversial, it is clinically recognized and well supported by many studies. The treatment of endometriosis-associated infertility consists of reducing or removing the ectopic endometrial implant and restoring normal pelvic anatomy through medical and/or surgical treatment and assisted reproduction technology. ART includes IUI and IVF and comes into play when neither medical nor surgical therapy meets the desired outcome.

Precision Reproductive Medicine: Clinical Applications of PGS, PGD and Non-Invasive Preimplantation Genetic Testing



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Precision reproductive medicine has emerged as a transformative approach in assisted reproductive technology (ART), combining molecular genetics, embryology, and clinical decision-making to improve reproductive outcomes while minimizing genetic risk. The integration of preimplantation genetic screening (PGS/PGT-A) and preimplantation genetic diagnosis (PGD/PGT-M and PGT-SR) into routine IVF practice has redefined embryo selection strategies and enabled a shift from morphology-based assessment to genome-guided reproductive care.

This session will comprehensively examine the scientific basis and clinical workflow of preimplantation genetic testing, including ovarian stimulation protocols, embryo culture to the blastocyst stage, trophectoderm biopsy techniques, and the application of next-generation sequencing for high-resolution chromosomal and single-gene analysis. Emphasis will be placed on evidence-based indications such as advanced maternal age, recurrent pregnancy loss, repeated implantation failure, severe male factor infertility, and carrier status for inherited genetic disorders.

Clinical outcome data will be reviewed to highlight the impact of PGT on implantation rates, miscarriage reduction, time to pregnancy, and live birth rates, as well as its role in promoting elective single embryo transfer and reducing multiple gestations. Practical considerations including laboratory requirements, cost-effectiveness, counseling strategies, ethical boundaries, and regulatory variability across regions will also be discussed.

The presentation will further explore the rapidly evolving field of non-invasive preimplantation genetic testing (niPGT), which utilizes cell-free embryonic DNA released into spent culture media to assess embryo ploidy without direct biopsy. The biological rationale, analytical challenges such as DNA contamination and mosaicism, and current concordance data with conventional biopsy-based methods will be critically evaluated. While still under clinical validation, niPGT represents a promising step toward safer, more accessible, and ethically acceptable genetic screening in IVF.

By the conclusion of this session, participants will gain a clinically relevant framework for selecting appropriate genetic testing strategies, counseling patients effectively, interpreting genetic results accurately, and incorporating precision-based reproductive medicine into everyday fertility practice. This knowledge is essential for optimizing patient outcomes, preventing heritable disease transmission, and advancing reproductive healthcare in an era increasingly defined by personalized medicine.

Experience of Academic Fetal Autopsies in Tertiary Care Institute.

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Introduction: Fetal autopsy can be of two types academic and medico legal. Academic autopsy is done to determine the gestational age, document rate of growth, any congenital anomalies, analyze the clinical diagnosis and treatment and ascertain the cause of death. These findings help the clinician to determine the possible recurrence rate in subsequent pregnancies and counsel accordingly for future pregnancies. Fetal autopsy helps to understand the cause of death and acts as a confirmation to the clinician regarding the cause of death and play a major role in helping to understand and unfold the mystery of developmental anatomy. We have found Pentalogy of Cantrell, OEIS, Limb Body wall Defect, Tetralogy of fallot and Transposition of great arteries and many others. Aim of the present study was to use these anomalies or syndromes for embryology teaching and further for Counselling parents.

Materials and Methods: For academic and research purposes, fetuses are obtained through elective abortions conducted as per the MTP act Govt. of India (1971) and also through still births. A requisition form from a gynecologist or a neonatologist is a prerequisite in case of an academic postmortem. A competent fetal anatomist or pathologist should ideally carry out a fetal autopsy. Fetuses are preserved in 10% formalin to prevent postmortem autolysis and then transported to the lab. On receiving the fetus, a morphometric evaluation is conducted. Photography recommended Under all standard precautions, complete external examination was done, and general morphometric parameters were recorded. Y shaped incision was given for internal examination of thoracic, abdominal cavity and central nervous system.

Conclusion: Modern methods including prenatal ultrasonography, x-ray, and karyotyping are now commonly used in place of foetal autopsies. Fetal autopsy is still crucial since many related anomalies are missed through these examinations, even if these have revolutionised the process of determining the cause of foetal mortality.

Key Words: Fetal autopsy, developmental anomaly, abortion, Internal examination

Novel facial muscular and fascial anatomy-based precision aesthetic strategies for the clinical excellence



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The anatomical structures of the face related to aging comprise of the facial bone, fat tissue, fibrous connective tissue, and facial muscles. The bony tissue is a structure that forms the basic frame of the face and bone remodeling goes throughout a lifelong period. Up to now, it was known that bone resorption is accelerated and morphologic changes take place in the marginal area of bones, such as the orbital rim, maxilla, and the mandible. However, there is no any evidences of these bone resorption process and there are some controversy about this. Fat tissue shows different aging processes between superficial and deep fat of the face. In the superficial fat, drooping appears due to gravity. In the deep fat, relocation and atrophy take place due to the unbalanced change of the volume of fat compartments.

It is also well known that the structural imbalance between the tethering effect of retaining ligament and the volumetric change of the fat compartment appears as various aging signs such as nasojugal groove. While the ligamentous structure exists in all skin, it has been regarded as a supporting structure especially in the facial skin due to the tiny dimension of the facial structure. However, the confusion of the concepts originates from which the retaining ligament and fat compartment are not easily distinguishable to the naked eye and differentiation of them mainly relies on the sensation during surgical treatment. While there were some histological studies to identify these structures, it was not enough to define it clearly. Therefore, the concepts of them have been illustrated which results in the different illustration among papers and textbooks.

In my presentation, I would like to identify the anatomical feature of the retaining ligaments, fat compartments, and their topographic relationships using dissections and histologic examinations to investigate clear definitions for them which could be used generally in the clinical area.

Endoscopic Anatomy of Ear



Dr. Anupama Mahajan

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Endoscopic ear surgery has revolutionized the visualization and understanding of middle-ear anatomy through its wide-angle, high-definition, and minimally invasive approach. Unlike the operating microscope, which provides a straight-line and narrow field of view, the rigid endoscope enables surgeons to access deep recesses and hidden areas of the tympanic cavity with exceptional clarity. This presentation highlights the essential endoscopic anatomy of the external auditory canal, tympanic membrane, epitympanum, mesotympanum, hypotympanum, protympanum, and retrotympanum. Key anatomic landmarks, including the malleus-incus complex, Eustachian tube opening, cochleariform process, oval and round windows, pyramidal eminence, facial recess, sinus tympani, and hypotympanic cells, are demonstrated with their clinical significance.

The endoscope offers superior visualization of critical structures such as the sinus tympani and facial recess, which are traditionally challenging to view microscopically. Understanding these regions is crucial for safe and complete disease clearance, especially in cholesteatoma surgery. The presentation further outlines the advantages of angled endoscopes (30°, 45°, and 70°), which provide access to narrow and hidden spaces without extensive bone drilling. A detailed orientation of surgical corridors and anatomical variants helps enhance surgical precision and reduces complications. Emphasis is placed on the anatomical relationships of the facial nerve, ossicular chain, chorda tympani, tegmen tympani, and jugular bulb, which guide safe dissection.

This endoscopic anatomical overview aims to strengthen spatial orientation, improve surgical planning, and enhance outcomes in modern otologic practice. Mastery of endoscopic anatomy is essential for trainees and practicing otologists adopting minimally invasive ear surgery techniques.

Mental Health Status of First-Year MBBS Students in Bangladesh: A Study on Stress, Anxiety, and Depression



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ABSTRACT

Background: First-year MBBS students undergo a significant change as they enter a rigorous academic environment that demands quick adaptation to unfamiliar learning methods, extended study hours, and high expectations for performance. These academic challenges are often intensified by personal and social stressors, including being away from family support, peer competition, and the struggle to balance academic duties with personal life. Consequently, students in their first year of medical college are especially prone to psychological strain. Around the world, high rates of stress, anxiety, and depression have been frequently observed in this population, raising concerns about their mental health, academic success, and future professional growth. Gaining insight into how common these issues are and the factors that contribute to them is crucial for shaping early intervention and support measures.

Methods: This was a cross-sectional study over twelve weeks in the year 2025 conducted at the Department of Anatomy of Sir Salimullah Medical College, Dhaka. The Participant was 212 first-year MBBS students who complete their first term examination. After getting permission from the ethical committee data was collected by using DASS-42 questionnaire. The data was entered into MS Excell 2019 and SPSS version 29 was used for analysis.

Results: A total number of 212 student was participated in the study with age range 18-20 years. Among them 43.39% (92) were male and 56.60% (120). 92.45% students were stay in college hostel. The Mean Score of Depression, Anxiety and Stress was 8.79 ± 4.07 , 4.52 ± 2.74 , 11.84 ± 6.03 respectively. In this study 58.01% students were found in mild depression.

Conclusion: In this study showed a high frequency of Depression and a significant amount of Anxiety and Stress among 1st year MBBS students. A student support center can be formed who will help the students in addressing their emotional problems.

Surface Anatomy: Learning Approaches and Relevance in Clinical Practice



Prof. Dr. Prerna Gupta

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Surface anatomy forms the foundation of clinical examination by enabling clinicians to correlate visible and palpable external landmarks with underlying anatomical structures. As a learning approach, it bridges the gap between basic anatomical knowledge and its practical application at the bedside. Despite rapid advances in diagnostic imaging and minimally invasive techniques, accurate knowledge of surface anatomy remains indispensable for safe and effective clinical practice.

In undergraduate medical education, particularly for MBBS students, surface anatomy enhances three-dimensional understanding, clinical reasoning, and long-term retention when taught through integrated and student-centered learning methods. Traditional cadaveric dissection, when complemented with surface marking, living anatomy demonstrations, and clinical correlation, strengthens the transition from classroom learning to patient care. Innovative learning strategies such as body painting, peer-to-peer surface marking, palpation-based learning, use of mannequins and models, imaging correlation (X-ray, CT, MRI, ultrasonography), problem-based learning, case-based discussions, simulation, and technology-enhanced tools including point-of-care ultrasound, virtual anatomy platforms, and augmented reality further reinforce conceptual clarity and engagement.

In clinical practice, surface anatomy is essential for inspection, palpation, percussion, and auscultation, as well as for performing procedures such as venepuncture, lumbar puncture, nerve blocks, catheterization, emergency airway access, and trauma interventions. Sound knowledge of surface landmarks improves diagnostic efficiency, reduces iatrogenic injuries, and enhances patient safety—particularly in resource-limited settings where advanced imaging may not be immediately available.

This lecture emphasizes the evolution of surface anatomy teaching from cadaver-centered methods to integrated, clinically oriented, and competency-based approaches. A spiral and vertically integrated teaching model is advocated to reinforce surface anatomy across preclinical and clinical phases of the MBBS curriculum. Strengthening surface anatomy teaching through diverse learning methods—especially interactive approaches like body painting and living anatomy—can significantly enhance clinical competence, diagnostic accuracy, and the relevance of anatomical sciences in everyday medical practice.

Endoscopic Anatomy of Inguinal Region in the Context of Lap Hernia Surgery

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It is very important to clearly understand the surgical anatomy of the inguinal region for a safe and successful outcome of laparoscopic hernia repair.

The laparoscopic view of the groin anatomy is very different from the open one. In laparoscopic hernia repair, we go through a posterior approach while we are used to the anterior approach in open hernia repairs. Changing to a laparoscopic approach requires proper knowledge of anatomy. Certain structures like ilioinguinal nerve, inguinal ligament, pubic tubercle and lacunar ligament are clearly visible in open approach and not so in laparoscopy. Conversely, structures like Cooper's ligament and iliopubic tract that are not visible in the open approach are clearly visible with the laparoscopic approach.

In laparoscopic repair, we are targeting the point of origin of the hernia and not the point of presentation. So laparoscopy deals with all the potential sites at risk for hernia in the groin, i.e. it takes care of direct, indirect, femoral and obturator hernias.

For successful outcome of laparoscopic inguinal hernia repair it is very important to know anatomical structures before and after the reflection of peritoneum viz. three ligaments, three fossae and three structures before peritoneal reflection and three triangles, three ligaments, three vessels and three nerves after peritoneal reflection. Apart from Hesselbach's Triangle it is also important to know the boundaries and contents of Triangle of Pain, Triangle of Doom, Corona Mortis and Kessler's Triangle. Identification of iliopubic tract and Cooper's ligament is of paramount importance. The concept of bilaminar transversalis fascia of Gallaudet, myopectineal orifice of Fruchaud, space of Bogros, Dulucq's space and trapezoid of disaster should be clear for the successful outcome of laparoscopic inguinal hernial repair.

Clinical anatomy Insights Through Radiology: A Future Research Perspective

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Anatomists often rely on human cadavers for conducting research to explore the morphological variations and morphometry of various structures. Due to limited availability and technical issues in methodology, currently publishing data of cadaveric research in reputed journals is highly difficult. Radiology can be used as a substitute to conduct clinical anatomy research. In recent years, radiology-related publications in reputed journals have tremendously increased. Clinical anatomy-based research questions could be studied through radiology. For an example, the nasal and paranasal sinus anatomy is complex and its through-anatomy is essential in understanding the Surgical Management of Chronic Rhinosinusitis (CRS). The frontal sinus in particular is considered a real challenge, due to its unique location with its surroundings and its narrow drainage pathway, the frontal recess. Frontal sinus drainage pathway can be obstructed by frontal recess cells, leading to frontal sinusitis. Computed-tomography based study is helpful in identifying the association between frontal recess cells and frontal sinusitis. The process of conducting clinical anatomy research in radiology, including preparing a research proposal, the importance of obtaining ethics committee approval, selecting a suitable research methodology, and the scope of multi-disciplinary research collaboration and its importance in publishing in reputed anatomy journals, are highlighted with real-time examples. Current advances in research related to the application of artificial intelligence in the field of radiological anatomy are also being discussed in detail.

Keywords: Clinical anatomy, radiology, imaging, cadaveric research, artificial intelligence

The Approach to Successful Anatomy Performance at International Intercollegiate MRCS examination



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Introduction: It is a daunting task to excel in anatomy in international MRCS examinations conducted by different Royal College of Surgeons. Many individuals tend to forget the anatomy subject learnt during their initial years.

Methods: The different methods of preparation of anatomy subject involves a meticulous approach. These methods include proper understanding of clinical scenarios and a strong knowledge of anatomy. Orally structured examination (OSCE) is a test which is homogenous and an efficient tool to test the knowledge. Often the examinee is not aware of the format of OSCE in the MRCS part B. The depth and the scope of the examination need to be clearly understood.

Results: The passing and success of the intercollegiate examination depends on various factors and one such is the ability to reason and apply the knowledge. The marking scheme is also to be well-understood in order to clear the examination. Success in the examination can boost the individual in his or her career. Candidates may not be aware of a clear pass or fail or even borderline status.

Conclusion: The young medicos may not be oriented for any international examination unless the objectives are understood and the methodological steps are followed properly. Often different methods of teaching at different institutions may benefit the candidates. There is a need to train the young medicos with proper guidance, planning and support.

Keywords: Anatomy, intercollegiate examinations, preparation, surgeons.

Living Lessons from The Silent Teachers



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ABSTRACT

For surgical training and medical practice, an understanding of anatomy is required [1]. Even though cadaveric dissection and anatomy remain important topics in the first year of medical school, there is less time spent on them [1–3]. Nearly the past century, the amount of time spent on gross anatomy in the medical curriculum has declined, from nearly 550 h in 1902 to 50 h in 2000. A major decline in anatomy instruction, in particular among surgeons, is unjustifiable in the eyes of many medical professionals [4]. The challenges of applying gross anatomy knowledge in the operating room are a result of fewer hours spent in the gross anatomy lab [5].

Cadaveric dissection has been used for centuries to explore anatomy. The role of dissection in modern medical curricula has been a topic of intense debate. Anatomical education has been undergoing reforms in line with the demands of medical profession. Despite the rise of modern technology and evolved teaching methods, dissection continues to remain a cornerstone of the anatomy curriculum. Dissection helps to build discipline independent skills which are essential requirements of modern healthcare setup. Its utility is also reflected in the perception of students who believe that dissection provides them a foundation to develop clinical skills.

In this session I would like to put a light on the importance of Cadaveric Anatomy workshops for clinicians. Coming back to the cadaveric lab at regular intervals to refresh the knowledge of anatomy is the need of the hour.

From Dissection to Data: Integrating principles and practices Evidence based Anatomy in Anatomical Research

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ABSTRACT

Anatomy is at a pivotal transition—from a predominantly descriptive discipline to a quantitatively robust and evidence-driven science. “From Dissection to Data: Integrating principles and practices Evidence based Anatomy in Anatomical Research” introduces participants to the principles and practical framework of Evidence-Based Anatomy (EBA) and Anatomical Meta-Analysis (AMA), positioning them as essential tools for modern anatomical scholarship.

The session will begin by defining the concept and scope of Evidence-Based Anatomy, outlining its methodological foundations, including systematic review design, PRISMA reporting standards, and protocol development and registration. Participants will gain stepwise insight into constructing a sound EBA–AMA framework—formulating research questions, establishing inclusion and exclusion criteria, designing search strategies, and conducting systematic screening of anatomical literature.

Critical methodological considerations such as sampling strategies, common errors and biases in anatomical studies, and structured critical appraisal will be discussed. Emphasis will be placed on risk of bias assessment, grading of evidence, and methods of evidence synthesis to enhance research validity and reproducibility.

The lecture will then introduce the fundamentals of Anatomical Meta-Analysis (AMA), with practical orientation to interpreting forest plots, funnel plots, and heterogeneity measures. Key elements of scientific manuscript preparation for high-impact publication will conclude the session.

This 45-minute session will equip participants with a clear, structured roadmap to design, appraise, synthesize, and publish high-quality evidence-based anatomical research—bridging traditional anatomical inquiry with contemporary quantitative methodology.

Teaching Anatomy the Gen Z Way

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This guest talk explores how anatomy education can be redesigned to align with the expectations, learning behaviors, and cognitive styles of today’s Gen Z learners. As digital natives, Gen Z students thrive in environments that are interactive, visually rich, collaborative, and immediately relevant. This session presents a comprehensive framework that integrates active learning approaches like gamification, body-painting, histology rangoli, anatomy comics, flipped classrooms, peer-led teaching, and 3D/AR-based visualization to create a highengagement ecosystem. Drawing from practical classroom experiences and student feedback, the talk demonstrates how these multimodal strategies enhance attention, motivation, and conceptual understanding while reducing cognitive load and stress. Emphasis is placed on building psychologically safe spaces, fostering creativity, and encouraging learner autonomy—core elements valued by Gen Z. By blending creativity with technology and pedagogy, educators can make anatomy learning meaningful, memorable, and future-ready. This session provides actionable approaches to truly “teach anatomy the Gen Z way”.

Translational Anatomy of the Cochlea through Temporal Bone Dissection: Our Experience

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ABSTRACT

Cochlear implantation (CI) is one of the greatest advancements in the auditory rehabilitation of patients with severe to profound sensorineural hearing loss. Understanding the complex three-dimensional anatomy of the cochlea is fundamental for both anatomists and clinicians involved in otologic procedures, particularly CI. Cochlea is a sea shell-shaped part of the bony labyrinth housed in the petrous part of temporal bone, is challenging to explore due to its minute size and hidden location. Furthermore, CI surgery is performed in a confined anatomical region surrounding the cochlea, which contains critical neurovascular structures such as the internal carotid artery, jugular bulb, and facial nerve.

Given the anatomic complexity and gravity of inadvertent injury to the neurovascular structures adjacent to cochlea or misplacement of electrode, an intricate anatomical knowledge is essential for safe and effective surgical outcome. Temporal bone dissection remains the gold standard for comprehending the anatomy of the cochlea and its surrounding landmarks.

This guest lecture presents our experience in dissecting these concealed landmarks in cadaveric temporal bones. Special emphasis will be placed on exposure of key surgical landmarks such as the round window niche, basal turn of the cochlea, and nearby neurovascular structures. The steps of anatomic dissection of this area, observations from multiple specimen dissections along with their surgical implications will be discussed.

AI in Teaching-Learning & Evaluation: Paradigm Shift in Health Professions Education

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Artificial Intelligence (AI) is transforming health professions education by redefining teaching, learning, and assessment strategies. This presentation explores the paradigm shift driven by AI, highlighting its role in enhancing student learning outcomes, ensuring fair and efficient assessment, and promoting individualized learning. Applications discussed include adaptive testing, automated evaluation of MCQs, SAQs, LAQs, and assignments, as well as AI-driven OSCE management and virtual patient simulations. AI-powered tools such as CoGrader, TimelyGrader, and simulation platforms demonstrate how automation can streamline grading, provide instant feedback, and strengthen clinical reasoning. Beyond efficiency, AI addresses challenges of bias, subjectivity, and malpractice in assessments through anti-cheating mechanisms and data-driven analytics. The session also reflects on ethical concerns and limitations of AI in education. In conclusion, AI offers immense potential for competency-based medical education by personalizing learning paths, ensuring assessment reliability, and preparing students for safe, effective clinical practice.

ADSCs from visceral fat showed better corneal epithelial differentiation than those from subcutaneous fat when co-cultured with hTCEpi.

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ABSTRACT

Background: Adipose-derived stem cells (ADSCs), a mesenchymal cell type from human fat, show promise for corneal tissue engineering. *OCT4* controls their pluripotency, while *BMP4* directs ectodermal differentiation. This study aimed to assess the gene and protein expressions of *BMP4* and *OCT4* in primary ADSC from different adipose tissue depots and their potential in corneal differentiation via the co-culture method.

Methods: Primary subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT) derived ADSCs were isolated from six donors and characterised by morphology, mesenchymal stem cell (MSC) markers expression, multilineage differentiation, and basal *OCT4*/*BMP4* expression. Corneal epithelial differentiation was induced via chemical induction or co-culture with hTCEpi cells. Gene and protein expression of pluripotency (*OCT4*), multipotency (*ABCG2*), and corneal epithelial (*CK3*) markers were assessed using quantitative PCR (qPCR) and immunocytochemistry.

Results: VAT-ADSC expressed significantly higher *BMP4* than the control and SAT-ADSC. Individual comparisons showed that most VAT-ADSC expressed higher *OCT4* and *BMP4* than SAT-ADSC, respectively. Under chemical induction, *OCT4* and *CK3* were increased in both SAT and VAT. *ABCG2* was decreased in VAT but was unchanged in SAT. In co-culture, *CK3* expression increased markedly in VAT but not in SAT, accompanied by a reduced *OCT4* in both depots. Morphologically, ADSC from both depots acquired epithelial-like polygonal shapes; however, VAT-ADSC maintained its structural integrity, whereas SAT-ADSC showed structural degradation at day 15 of corneal differentiation.

Conclusions: VAT-ADSC demonstrated superior corneal epithelial differentiation compared to SAT-ADSC in the co-culture method. This is most likely due to the higher basal *BMP4* levels and its enhanced responsiveness to paracrine signalling from the hTCEpi. Thus, depot-specific cell sourcing, combined with co-culture and 3D biomimetic systems, may optimise ADSC-based corneal epithelial differentiation in the future.

Keywords: ADSC, pluripotent, *BMP4*, subcutaneous, visceral, *OCT4*, differentiation, cornea

Kelulut Honey as a Functional Natural Product in Supporting Bone Health and Osteoporosis Prevention

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ABSTRACT

Background: Osteoporosis is a progressive skeletal disorder characterized by reduced bone mass and microarchitectural deterioration, leading to increased fracture risk. Conventional pharmacologic therapies, while effective, may cause adverse effects with long-term use, prompting growing interest in natural adjuncts for bone health. Kelulut honey (KH), produced by *Trigona* stingless bees, is rich in polyphenols, flavonoids, and other bioactive compounds with potent antioxidant and anti-inflammatory properties that may confer bone-protective effects.

Objective: To explore the emerging evidence supporting KH as a potential adjunct in preventing and mitigating osteoporosis, particularly glucocorticoid and metabolic syndrome induced bone loss.

The bone-protective effects of Kelulut honey (KH) were investigated using two rat models of osteoporosis. Male rats were used in both studies. In the glucocorticoid-induced osteoporosis model, adrenalectomized rats received intramuscular dexamethasone (120 µg/kg/day) for two months. Animals were treated with normal saline (negative control), calcium water (positive control), or KH (200 or 400 mg/kg/day), and compared with sham-operated rats. Treatments were administered for two months prior to sacrifice. Blood and bone samples were collected for assessment of oxidative stress markers, bone biochemical markers, bone mineral density, and bone structural and histomorphometric parameters.

In the metabolic syndrome-induced osteoporosis model, rats were fed a high-carbohydrate high-fat (HCHF) diet and treated orally with normal saline or KH (200, 400, or 600 mg/kg/day) for 12 weeks following metabolic syndrome induction. Metabolic parameters and bone mineral density were assessed at the end of the 24-week study. Blood and bone samples were harvested for analysis of bone markers, biomechanical strength, histomorphometry, bone mineral density, and gene expression. The composition of KH was also characterized.

Results: Glucocorticoid treatment caused significant deterioration of bone microarchitecture, evidenced by reduced bone volume/tissue volume and trabecular number, increased trabecular separation, and decreased osteoblast surface, accompanied by reduced bone mineral density (BMD) and biomechanical strength. Kelulut honey supplementation significantly improved trabecular architecture, restored osteoblast surface, preserved BMD, and enhanced bone strength, with effects comparable to calcium treatment. In the metabolic syndrome model, Kelulut honey similarly restored bone histomorphometric parameters, increased BMD, and improved biomechanical properties. The most pronounced bone-protective effects were observed at 200 mg/kg/day, demonstrating the efficacy of Kelulut honey in preserving bone structure and mechanical integrity in both models of osteoporosis.

Conclusion: Kelulut honey shows strong potential as a natural adjunct for osteoporosis management by exerting bone-protective effects via its antioxidant and anti-inflammatory actions. Further clinical studies are required to confirm its efficacy, determine optimal dosing, and evaluate long-term safety in humans.

Authentic Anatomy Assessment: OSPE as A Tool For Competency Assurance in Practicum Among Medical Undergraduates

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ABSTRACT

Introduction: This study was to know how the content can be revised for better assessing anatomy competencies i.e identifying structures, relationships and correlation to clinical cases. This study helps to gain an idea on student performance in practicum.

Methods: An observational, cross sectional, quantitative study was conducted from 2022-2023. Upon ethical clearance (IRC-2144/02), 100 medical students of BPKIHS who were attending annual examinations for the digestive (GIT), endocrine and nervous system (CNS) were recruited through purposive sampling technique. Their annual theory and OSPE marks were recorded. Difficulty index, discrimination index and point biserial correlation (PBC) of the questions was calculated. Paired t test and Pearson correlation was applied to assess the relationship between their annual theory and OSPE performance.

Results: The OSPE difficulty index was highest for endocrine (0.93 ± 0.17) and CNS (0.93 ± 0.3), and followed by GIT (0.788 ± 0.18). The discrimination index of GIT ranged from ($0.071-0.66$) (0.27 ± 0.17), endocrine from ($0.090-1.00$) (0.44 ± 0.15) and CNS ranged from ($0.12-1.00$) (0.59 ± 0.36). Mean PBC indicated significant positive relationships between the theory and OSPE marks across all courses, with CNS demonstrating the strongest association (0.714 ± 0.06), followed by endocrine (0.69 ± 0.06) and GIT (0.63 ± 0.16). In contrast, the Pearson's correlation revealed no significant relationship between the marks in any courses ($p \geq 0.05$).

Conclusion: A low difficulty index is expected to correlate with a high PBC for items reflecting good performance and competence. The reliability of an OSPE in assessing competencies is strengthened when the PBC value exceeds 0.3 in a majority of its stations.

Keywords: OSPE, competencies, difficult index, discrimination index, point biserial index

SCIENTIFIC SESSION

Scientific Session- I Poster

Chairperson

Dr. Prachi Bhagat, *Department of Anatomy, Purbanchal University School of Health Sciences, Haraicha, Nepal*

Dr. Laxman Khanal, *Additional Professor, Department of Anatomy, B. P. Koirala Institute of Health Sciences, Dharan, Nepal*

Scientific Session- II Oral

Chairperson

Dr. Anand Kumar Singh, *Professor, Department of Anatomy, Dr. KNS Memorial Institute of Medical Sciences, Barabanki, India*

Prof. Dr. Muktyaz Hussein, *Professor, Department of Anatomy, Government Medical College Budaun, India*

Dr. Iju Shrestha, *Associate Professor, Department of Anatomy, Kathmandu Medical College, Nepal*

Scientific Session- III Oral

Chairperson

Dr. Kanhaiya Jee, *Professor, Department of Anatomy Dr. KNS Memorial Institute of Medical Sciences, Barabanki, India*

Dr. Sarbada Makaju, *Associate Professor, Department of Anatomy, Kathmandu Medical College, Nepal*

Dr. Sanjib Kumar Sah, *Associate Professor, Department of Anatomy, Birat Medical College Teaching Hospital, Biratnagar, Nepal*

Scientific Session- IV Oral

Chairperson

Dr. Pragya Shrestha, *Associate Professor, Department of Anatomy, KUSMS, Nepal*

Dr. Umesh Choudhary, *Associate Professor, Department of Anatomy, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India*

Dr. Subodh Kumar Yadav, *Professor of Anatomy, Birat Medical College And Teaching Hospital, Morang, Nepal*

Emotional Intelligence in Anatomy Faculty Predicts Enhanced Learning Outcomes and Reduced Emotional Distress Among First-Year Medical Students: A Cross-Sectional Study

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Background: Anatomy education presents unique psycho-emotional challenges for first-year medical students, particularly during cadaveric dissection sessions. The transition from preclinical learning to hands-on anatomical dissection frequently triggers anxiety, emotional discomfort, and stress related to the vast syllabus volume and unfamiliarity with human cadavers as "silent teachers." While faculty emotional intelligence (EI) is hypothesised to mitigate these challenges through empathetic communication, stress recognition, and supportive learning environments, empirical evidence quantifying these relationships remains scarce in medical education literature

Objective: This study systematically examined the predictive relationships between anatomy faculty emotional intelligence, student emotional distress levels, and cognitive learning outcomes during first-year MBBS training, with particular emphasis on cadaveric dissection experiences.

Methods: A cross-sectional survey was administered to 168 first-year MBBS students (65% male, age 17-23 years, mean 19.8±1.4) following cadaveric dissection exposure. Three psychometrically validated Likert scales (1-5) assessed key constructs: Emotional Distress Scale (5 items: dissection anxiety, dissection hall discomfort, cadaver respect, syllabus stress, practical session overwhelm; $\alpha=0.82$); Faculty Emotional Intelligence Scale (6 items: distress recognition, empathy, emotional self-regulation, adaptive teaching, composure, rapport building; $\alpha=0.91$); and Learning Impact Scale (5 items: anxiety reduction, concept understanding, attention improvement, retention enhancement, overall learning experience; $\alpha=0.89$). Data analysis included descriptive statistics, Pearson correlations with 95% confidence intervals, and internal consistency reliability (Cronbach's α).

Results: Students reported moderate emotional distress (17.08±3.04/25, 68% maximum score) associated with anatomy practical training. Faculty emotional intelligence received consistently high ratings (3.91±0.72/5, 78% maximum score), demonstrating strong positive correlation with learning outcomes ($r=0.68$, 95% CI [0.58-0.76], $p<0.001$), accounting for 46.2% variance in cognitive performance. Faculty EI exhibited moderate inverse correlation with emotional distress ($r=-0.42$, 95% CI [-0.53 to -0.30], $p<0.001$), explaining 17.6% distress variance. Teaching quality averaged 8.2±1.6/10. Stepwise regression confirmed faculty EI as the strongest independent predictor of both learning enhancement ($\beta=0.68$, $p<0.001$) and distress reduction ($\beta=-0.42$, $p<0.001$), controlling for age and gender. Cadaver dissection experience moderated these relationships, with stronger effects among students completing multiple sessions. All scales demonstrated excellent internal consistency ($\alpha>0.80$), supporting instrument reliability, with neurosurgery.

Discussion: These findings provide robust empirical support for emotional intelligence as a critical faculty competency in anatomy education. High EI facilitates empathetic recognition of student distress, adaptive pedagogical strategies during stressful dissection sessions, and creation of psychologically safe learning environments that enhance attention, retention, and conceptual understanding. The 46% variance explained in learning outcomes underscores EI's substantial educational impact, comparable to traditional pedagogical interventions.

Conclusions: Faculty emotional intelligence training should constitute a core component of anatomy educator professional development programs. Institutional implementation of EI assessment and targeted training for anatomy faculty represents a high-yield strategy for optimizing both cognitive learning outcomes and student emotional well-being during challenging preclinical training. Longitudinal intervention studies and multi-institutional replications are recommended to establish causality and generalizability.

Keywords: emotional intelligence, anatomy education, medical student well-being, cadaveric dissection, faculty development, MBBS training

Goniometric Comparison of Active Range of Motion (ROM) of Abduction and Adduction of Hip Joint Between Adult Female Bharatanatyam Dancers and Sedentary Women, Bangladesh

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Background: Bharatanatyam is a very popular classical dance form of the Indian Subcontinent. This involves repetitive and sustained postures such as Airmandi, which require considerable hip joint mobility, particularly in abduction. Regular practice of such movements may lead to adaptive musculoskeletal changes, enhancing joint flexibility and range of motion (ROM). In contrast, sedentary individuals are less likely to develop such adaptations due to limited physical activity. Although dance-related biomechanical benefits have been explored in various populations, there is a lack of documented evidence regarding hip joint ROM among Bharatanatyam dancers in Bangladesh. Understanding these differences is important not only for anatomical and functional insights but also for clinical applications in physiotherapy, rehabilitation, and injury prevention.

Here, we assessed the active range of motion of abduction and adduction at the hip joints by using a universal goniometer and compared the values between adult female Bharatanatyam dancers and sedentary women of Bangladesh.

Methods: This cross-sectional analytical study was conducted in the Anatomy Department of Dhaka Medical College from July 2022 to June 2023. Fifty female Bharatanatyam dancers and fifty sedentary women in the age group of 18-50 years were enrolled in this study. The active range of motion of adduction and abduction at the hip joint was assessed by a universal goniometer. The basic statistics were done to see the baseline parameters, and an unpaired t-test was done to see the mean difference between the two groups.

Result: The mean $\pm$ SD BMI of Bharatanatyam dancers was 21.4 ± 2.4 kg/m², while sedentary women had a BMI of 24.4 ± 3.2 kg/m². In dancers, the mean $\pm$ SD hip adduction ROM was $24.2 \pm 4.1^\circ$ (right) and $23.6 \pm 6.5^\circ$ (left), whereas hip abduction ROM was $64.2 \pm 11.8^\circ$ (right) and $60.6 \pm 12.4^\circ$ (left).

Among sedentary women, mean $\pm$ SD adduction ROM was $23.5 \pm 4.3^\circ$ (right) and $21.9 \pm 4.2^\circ$ (left), while abduction ROM measured $42.2 \pm 11.9^\circ$ (right) and $40.4 \pm 12.4^\circ$ (left).

Hip abduction ROM showed statistically significant differences between groups ($p < 0.05$), whereas adduction ROM differences were not statistically significant ($p > 0.05$).

Conclusion: Adult female Bharatanatyam dancers demonstrate significantly greater hip joint abduction ROM compared with sedentary women in Bangladesh, suggesting adaptive musculoskeletal changes associated with long-term dance practice.

Understanding Learner Engagement with Virtual Dissection Table: Student Insights into Learning with CADAVID

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ABSTRACT

Background: Virtual Dissection Tables (VDTs) such as CADAVID are increasingly being adopted in anatomy education; however, their effectiveness depends not only on learning outcomes but also on student perception and engagement. Understanding how learners interact with such technology through a pedagogical lens is essential to optimize its educational value and align it with contemporary, student-centered clinical anatomy teaching.

Objective: To assess the role of CADAVID in enhancing clinical anatomy learning by evaluating student perceptions related to interactive engagement, visualization, clinical integration, and pathology-oriented understanding, and to map these perceptions to established pedagogical theories within a perception-based framework.

Methods: A structured, theory-driven, cross-sectional perception study was conducted using a validated 5-point Likert scale questionnaire. The instrument comprised ten domains reflecting key pedagogical theories, including experiential learning, constructivism, situated learning, cognitive load, dual coding, embodied cognition, motivation, flow, social learning, and andragogy. The questionnaire captured cognitive, emotional, and engagement-related responses to CADAVID. Domain-wise analysis was performed to evaluate trends in student perception and learning impact.

Results: Students demonstrated a consistently positive perception of CADAVID across all evaluated domains. The platform significantly enhanced interactive and experiential learning, enabling active exploration and repeated practice. Learners reported improved spatial understanding and visualization of complex anatomical relationships, along with better integration of clinical and pathological concepts. CADAVID was perceived to reduce cognitive load and facilitate multimodal learning, thereby improving comprehension and memory retention.

Conclusion: CADAVID is perceived as an effective and engaging adjunct to traditional anatomy teaching, supporting interactive, clinically integrated, and student-centered learning. Its alignment with multiple pedagogical theories highlights its potential to enhance meaningful learning experiences. Incorporating perception-based evaluation frameworks can further optimize the implementation of VDTs and maximize their academic impact in modern medical education.

Keywords: Virtual Dissection Table (VDT), CADAVID, Anatomy Education, Student Perception, Learner Engagement

Assessing the Predictive Value of Maternal Serum Markers for Prenatal Diagnosis Across Different Trimesters

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ABSTRACT

Background: Prenatal diagnosis plays a crucial role in identifying potential health risks and complications during pregnancy. Maternal serum markers such as alpha-fetoprotein (AFP), human chorionic gonadotropin (hCG), unconjugated estriol (uE3), and Inhibin A have shown promise in predicting various pregnancy-related conditions. This research aimed to assess the predictive value of maternal serum markers across different trimesters for conditions including Trisomy 21 (Down Syndrome), gestational diabetes mellitus (GDM), preeclampsia, and neural tube defects (NTDs).

Methods: A retrospective cohort study was conducted involving 64 pregnant women with complete serum marker data across multiple trimesters. Serum markers measured included AFP, hCG, uE3, and Inhibin A, with corrected multiples of the median (MoM) values used for analysis. Correlation analysis, t-tests, and logistic regression were performed to evaluate the associations between serum marker levels and pregnancy-related conditions.

Results: The study found significant risk associations between AFP, hCG, uE3, and Inhibin A levels in women. Low AFP, high hCG, and high Inhibin A levels were associated with Trisomy 21, NTDs, preeclampsia, and GDM. Elevated AFP levels were associated with a higher risk of NTDs, with a highest individual risk observed at 41.9. Preeclampsia and GDM were also associated with elevated hCG levels. Pearson correlation coefficients showed modest correlations, with a negative correlation between AFP and Trisomy 21 risk and a positive correlation between AFP and NTD risk. T-tests showed significant differences in AFP levels between high-risk and low-risk groups for Trisomy 21 and NTDs. AFP and hCG were identified as significant predictors for Trisomy 21 and NTDs.

Conclusion: Maternal serum markers, particularly AFP and hCG, show significant predictive value for various pregnancy-related conditions. Integrating these markers with clinical characteristics can enhance early identification and management of high-risk pregnancies, ultimately improving maternal and fetal outcomes.

Key Words: Maternal serum markers, Alpha-fetoprotein (AFP), Human chorionic gonadotropin (hCG), Trisomy 21 (Down Syndrome), Gestational diabetes mellitus (GDM), Preeclampsia, Neural tube defects (NTDs)

The Ontogenetic Transformation Of The Atlanto-Axial Joint: Clinical Implications Of An Atlanto-Atlantal Articulation

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Introduction / Background: The craniovertebral junction is a highly specialized region balancing stability with mobility. While the human atlanto-axial joint is traditionally viewed as the articulation between the first and second cervical vertebrae, evolutionary and fossil evidence suggests the dens is actually a projection derived from the primitive atlas (C1) centrum. This suggests that the functional rotation occurs within components derived from a single segmental level.

Objective: This study aimed to delineate the caudal extent of the primitive atlas anlage's contribution to the axis (C2) and to determine if the superior articular processes of the axis are ontogenetically derived from C1.

Methods: A total of 400 dry adult human axis vertebrae and two specimens from a two-year-old child were examined. The specimens were sectioned into in frontal and sagittal planes. High-resolution radiographic imaging was employed to identify voids, hypodense areas, and disc remnants at the junction of the dens and the body of the axis.

Results: In the juvenile specimens, a distinct gap was observed between the axis centrum and the base of the dens, representing a cartilaginous disc that normally disappears with osseous union. In nearly all adult specimens, a consistent void or hypodense area was identified immediately caudal to the dens. This junction, including the basal plate of the dens, was found to lie below the level of the superior articular facets of the axis. These findings indicate that the cephalad portion of the axis body, including its superior articular processes, is derived from the primitive atlas anlage.

Conclusion: The study demonstrates that all components of the atlanto-axial joint—both median and lateral—are ontogenetically derived from the primitive atlas. These findings support the redefinition of the articulation as an "atlanto-atlantal" joint. Recognizing the hypodense zone caudal to the dens is clinically vital, as it provides insight into congenital anomalies like os odontoideum and highlights a region of reduced bone density that may compromise the stability of surgical fixation devices.

Anatomical Insights into the Lateral Crescent Septum of the Sphenoid Sinus for Endoscopic Skull Base Procedures.

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Introduction: The sphenoid sinus serves as a key anatomical corridor in transnasal endoscopic approaches for intracranial surgery. However, its variable pneumatization and intricate septal architecture often complicate surgical navigation. Resection of intrasphenoidal septa—especially the lateral crescent-shaped septum—carries a potential risk of injury to adjacent critical neurovascular structures, including the internal carotid artery and optic nerve. The present study is designed to assess the prevalence, morphological characteristics, and clinical relevance of the lateral crescent-shaped septum within the sphenoid sinus.

Materials and Methods: A total of 40 formalin-fixed cadaveric heads (yielding 80 sphenoid sinuses) and 5 dry skulls were examined. Each specimen was sectioned in the mid-sagittal plane. Following evaluation of the intersphenoidal septum, it was carefully removed to expose the sinus cavity. The presence, location, and orientation of the lateral crescent-shaped septum were documented. Morphometric measurements were obtained using digital calipers.

Results: Among the 90 sphenoid sinuses examined, 23 exhibited a lateral crescent-shaped septum. These septa were most commonly situated anterior to the sella turcica and originated from the lateral wall, forming a concave free margin directed anteriorly.

Conclusions: The identification of a lateral crescent-shaped septum within the sphenoid sinus carries important surgical implications. Its removal during endoscopic procedures requires meticulous care to avoid injury to adjacent critical neurovascular structures.

Anatomical Variations of the Coracoid Process of the Scapula: An Osteological Study with Surgical Correlation

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Introduction: The coracoid process is a key bony landmark of the scapula that serves as an attachment site for important muscles and ligaments and has major surgical relevance in procedures such as the Latarjet operation. Variations in its size and morphology may influence graft adequacy, screw fixation, and overall surgical safety in shoulder stabilization. This study aimed to evaluate the morphometric parameters, morphological types, and side-wise differences of the coracoid process and to assess their clinical significance.

Materials and Methods: A descriptive osteological study was conducted on 60 coracoid processes of adult scapulae. The maximum length, breadth, thickness, and height of each coracoid process were measured, and specimens were classified into fish hook, round, and square types based on morphology. Descriptive statistics were calculated, and comparisons among shapes and between right and left sides were analyzed statistically.

Results: The mean length, breadth, thickness, and height of the coracoid process were 35.44 ± 3.30 mm, 11.24 ± 1.86 mm, 5.89 ± 1.86 mm, and 10.40 ± 2.66 mm, respectively. Fish hook-shaped coracoid processes were the most common (35%), followed by square (33.3%) and round types (31.6%). No statistically significant differences were found among the three shapes for any morphometric parameter. On side-wise comparison, the right coracoid process showed significantly greater breadth, thickness, and height than the left side, while the difference in length was not statistically significant.

Conclusion: The coracoid process demonstrates considerable morphometric and morphological variability with significant side asymmetry. These findings are clinically important for preoperative planning in coracoid transfer procedures, particularly the Latarjet procedure, where graft size, shape, and thickness are critical for secure fixation and successful stabilization.

Predictive Mapping of the Sensory Posterior Interosseous Nerve Using Surface Landmarks: A Cadaveric Study

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Introduction: The terminal segment of the Posterior Interosseous Nerve (PIN) is widely used for autologous digital nerve grafting due to caliber compatibility and negligible donor morbidity. However, unpredictable graft length availability limits the preoperative planning.

Aim: To develop a clinically applicable, anatomy-based predictive framework for estimating harvestable sensory PIN length using surface landmarks, proportional indices, and surgical zoning.

Materials and Methods: Twenty-eight formalin-fixed cadaveric forearms were dissected. The sensory PIN length was measured from its terminal articular branch at the dorsal wrist capsule to the last motor branch, and various anthropometric parameters were recorded with respect to surface anatomy of radius to develop a predictable ratio for available PIN donor graft. Distal PIN branching patterns were classified into surgical zones to assess the practical usability of the graft.

Results: Mean sensory PIN length was 5.68cm (range 3.2–9.8 cm), and mean radial length was 25.14 cm (range 21.6-31.2 cm). The PIN-to-radial length ratio was 0.222. Using one-fifth of the radius length, the mean predicted length of PIN was 5.12 (range 4.32-6.1 cm). On univariate analysis, predicted PIN length using this ratio did not differ significantly from measured values ($p > 0.05$). Three distal branching patterns were identified, allowing definition of Safe Harvest Zones (SHZ I–III) relevant to graft length reliability.

Conclusion: A proportional index based on radial length combined with distal PIN zoning offers a reproducible, anatomy-driven method to predict graft availability. This framework enhances preoperative counselling and intraoperative decision-making in digital nerve reconstruction.

Keywords: Posterior interosseous nerve, hand surgery, peripheral nerve, reconstruction, digital nerve graft

Exploring Early Clinical Exposure: Students' perspective on its strengthsCorrelation

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Introduction The National Medical Commission of India implemented Competency-Based Medical Education (CBME) curriculum 2019 for teaching MBBS students in India. It includes early clinical exposure for first-year MBBS students. Early clinical exposure (ECE) is a crucial method for teaching basic sciences to MBBS students and involves integrating clinical Phase I with clinical phases II and III.

Aims and Objective This study was conducted to explore the students' insight on the effectiveness of ECE as a teaching tool for enhancing learning in preclinical subjects in first-year MBBS and their perspective about strengths in relation to Early Clinical Exposure

Material and Methods: This crosssectional survey based study was carried out at the GSVM Medical College, Kanpur, U.P. from August 2024 to January 2025, involving 240 Phase-I MBBS students. It was a quantitative study. A questionnaire in the form of a Google form was shared with the study population and the assessment was done based on the total number of responses (n= 225) received in the study. The result was statistically analysed. ECE feedback score was calculated based on liekert based questions.

Results: In the study it was found that students reported that ECE is helpful in motivating students to study medicine, it arouses interest in them for basic subjects and their understanding on the clinical scenario. It also helps students to learn communication skills while observing the senior faculty interacting with patients and attendants. It is one of the most important teaching tool in improving attitude and professional skills. Students gave feedback that hospital based ECE is more effective than LT/ classroom based ECE.

Dissecting The Anatomy of a Great Doctor

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Introduction: Anatomical education remains the bedrock of medical training. The main objective of the talk is to present a reflective, integrative account of how deep anatomical knowledge fosters essential medical cognition, refines clinical and surgical skills, supports professional resilience, cultivates wisdom, and contributes to career success; and to define the "Anatomy of a Great Doctor" by identifying core components and characteristics recognized by human anatomy.

Methods: A narrative and reflective synthesis was conducted, drawing on the author's progression from medical student to practicing surgeon. Key vignettes and clinical examples were selected that illustrate (i) the translation of anatomical knowledge to pathophysiology and diagnosis, (ii) the impact of anatomical familiarity on procedural planning and intraoperative decision-making, and (iii) the influence of dissection and anatomy teaching on professional attitudes.

Results: Progressive integration of anatomical knowledge into clinical practice was associated with improved diagnostic insight, more confident procedural performance, and enhanced appreciation of patient-centred care. Applied anatomy facilitated anticipation of anatomic variations, reduced intraoperative uncertainty, and supported safer, more efficient surgical interventions. Equally important, early exposure to human dissection fostered professionalism, promoting humility, patience, empathy, and ethical conduct.

Conclusion: Robust, clinically oriented anatomical training is foundational not only for technical competence but also for the cultivation of essential professional qualities in physicians. Curricular reforms that emphasize applied anatomy, integrated with early clinical exposure, simulation, and reflective practice, may better prepare future surgeons and clinicians for the complexities of modern medicine.

Keywords: Anatomy education; applied anatomy; medical professionalism; surgical training; curriculum development.

An Evaluation of Psychological Responses, Physical Symptoms, and Demeanor Toward Cadaveric Dissection Among First-Year Medical Students

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Introduction: Cadaveric dissection has long been a cornerstone of medical education, offering invaluable hands-on understanding of human anatomy. However, first exposure to the dissection hall can evoke a range of psychological, emotional, and physical reactions in novice medical students. Feelings such as anxiety, fear, curiosity, empathy, and even distress are commonly reported. Physical symptoms like nausea, dizziness, palpitations, and loss of appetite may also occur, particularly during initial encounters. Understanding these responses is essential for educators to provide adequate psychological support and create a positive learning environment. This study aimed to evaluate the psychological responses, physical symptoms, and behavioural demeanor of first-year medical students toward cadaveric dissection.

Materials: A cross-sectional descriptive study was conducted among first-year medical students at a medical college during their initial months of anatomy training. A structured, self-administered questionnaire was distributed after students had attended at least three dissection sessions. The questionnaire included sections assessing emotional responses (such as anxiety, fear, sadness, curiosity, and empathy), physical symptoms (including nausea, dizziness, sweating, palpitations, and faintness), and behavioural demeanor (respectful attitude, avoidance behaviour, professional conduct, and coping mechanisms). Responses were recorded using a Likert scale. Demographic details such as age, gender, and prior exposure to death were also collected.

Results: Most students demonstrated a positive psychological outlook toward cadaveric dissection, with 90% expressing curiosity and 86.1% reporting excitement about the experience. Despite this enthusiasm, nearly half of the participants (49.1–50%) experienced minor physical discomforts such as eye and nasal irritation, whereas 37.29% did not report any physical symptoms. Overall, cadaveric dissection was well accepted among the cohort. Analysis of personality traits revealed that neuroticism scores were associated with levels of social awareness and cooperative behaviour, suggesting that individual personality characteristics may influence how students emotionally respond and adapt to the dissection environment.

Discussion: The findings indicated that a significant proportion of students experienced mild to moderate anxiety and emotional discomfort during their initial exposure to cadaveric dissection. Curiosity and a sense of professional responsibility were also frequently reported, suggesting a gradual process of emotional adaptation. The majority of students demonstrated a respectful and professional demeanor toward the cadaver, recognizing its role as a “first teacher.” Coping strategies included peer discussion, humour, and focusing on academic objectives. Early orientation sessions, faculty guidance, and psychological preparedness programs may help reduce distress and promote healthy coping. These findings align with previous research highlighting the dual nature of dissection as both emotionally challenging and professionally formative. Early orientation sessions, faculty guidance, and psychological preparedness programs may help reduce distress and promote healthy coping.

Conclusion: Cadaveric dissection elicits a spectrum of psychological and physical responses among first-year medical students, particularly during initial exposure. While transient discomfort is common, most students gradually adapt and develop a professional and respectful attitude. Recognizing these reactions and providing structured emotional support can enhance students’ well-being and optimize their learning experience in the dissection hall.

Keywords: Cadaveric dissection, Psychological response, Medical students, Anatomy education, Coping strategies

Revisiting the Ligamentum Mucosum: A Cadaveric Study Based on the Gonera et al. Classification

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ABSTRACT

Background: The ligamentum mucosum (LM), also known as the infrapatellar plica, is a synovial fold of the knee joint that exhibits significant anatomical variability. Despite its frequent presence and potential clinical relevance in anterior knee pain, osteoarthritis, arthroscopy, and radiological interpretation, the LM remains poorly understood.

Objective: To study the morphological variations of the ligamentum mucosum in cadaveric knee joints and classify them according to the classification proposed by Gonera et al.

Materials and Methods: A descriptive cadaveric study was conducted on 20 formalin-fixed lower limbs obtained from donated cadavers (14 male, 6 female). Standard dissection techniques were employed to expose and isolate the ligamentum mucosum. Morphological features and attachment patterns were documented and classified into Type I, Type IIa, Type IIb, or Type III variants.

Results: Type I ligamentum mucosum was the most common variant, observed in 65% of specimens. Type IIa and Type IIb variants were observed in 15% and 10% of cases, respectively. Type III ligamentum mucosum was not identified in any specimen.

Conclusion: The ligamentum mucosum demonstrates marked anatomical variability, with Type I being the predominant configuration. Absence of Type III variants in the present study may be attributed to the limited sample size. Adoption of a standardized classification system improves anatomical understanding and has important implications for arthroscopy, imaging interpretation, and clinical management of anterior knee pain.

Keywords: Ligamentum mucosum; Infrapatellar plica; Knee joint; Cadaveric study; Anatomical variation

Teratogenic effects after Exposure to Turner (Insecticide) on the Development of Chick Embryos

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ABSTRACT

Introduction: Insecticides are chemical compounds that are extensively used for pest management in agriculture, urban and household environments as well as in the medicine to control different diseases. The turner Insecticide Launched in March 2024, this patented product is an innovative broad-spectrum insecticide with two active ingredients, Thiamethoxam + Bifenthrin, that protects crops from white grubs and termites. The purpose of the current study was to investigate the teratogenic effects of the turner insecticide on the developing chick embryos.

Methods: The present current study was carried out in the department of Anatomy Govt. Medical College, Budaun U.P. on 180 fertile eggs of white leghorn chicken obtained from government poultry farm after taking permission from ethical committee. The fertile chicken eggs were exposed to turner insecticide with the doses of 5µg, 10µg and 20µg in a volume of 5µl, 10µl and 20µl respectively and control same as test group. The teratogenic effects and morphological changes were observed, recorded and photographs.

Results: The results show that experimental group had comparatively more cases of teratogenic effects; growth retardation resulting into failure of retraction of yolk sac, limbs defects, Ectopia Viscerale and morphological changes as compared to controls group. Conclusion: This study concluded that the exposure of turner insecticide on chick embryos during embryonic development can cause significant teratogenic effects on chick embryos, including increased mortality, growth retardation, external deformities, skeletal abnormalities and damage of organ and comparatively higher doses proved more teratogenic and cause many morphological changes. **Keywords:** Turner insecticide, chick embryos, teratogenic effects and morphological changes.

Keywords: Turner insecticide, chick embryos, teratogenic effects and morphological changes.

Three-Dimensional Computerized Tomographic Evaluation Of Morphology Of Styloid Process And Frequency Of Elongated Styloid Process In Respective To Age And Gender.

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ABSTRACT

Background - Styloid process is cylindrical, part of temporal bone, project inferiorly and medially up to varying length. It can form varying angle with vertical plane medially and anteriorly. The inter-styloid distance varies in different individual, and gender. The frequency of elongated styloid process varies in different gender, age groups and two sides in same individual.

Aim of study – The study was aimed to know the morphology of styloid process also frequency of elongated styloid process in different age and both genders.

Material and method – This study has been conducted on 384 3D CT in department of anatomy and department of radiology, National Institute of Medical Science, NIMS University, Jaipur, Rajasthan, India. The Philips incisive CT 128 slice is the type of computed tomography that utilizes 128 detectors to capture multiple images of the body. 3D reconstruction was done with RadAnt Dicom software and parameters related to length of styloid process were taken and angulation was measured by Digimizer software. The posterior length, Inter- styloid distance and VMA were measured was measured on posterior view while lateral length. Anterior (VAA) angulation was measured on lateral view.

Observation and result – This study included 285 3D CT of male and 99 females of 18 to 80 year of age. The median length on right side was 2.599 cm SD=0.869, left side 2.603 cm SD = 0.821 on lateral view and on right side 2.993 cm SD=0.860, left side 2.991 cm SD= 0.854. The length was lower on lateral view as compared to posterior view on both side, male and female and all age groups. The mean length was higher in male, and more than 41 years of age group. The mean vertical medial angulation (VMA) on right side was 20.810 and on left side was 20.190. The mean vertical anterior angulation was 27.530 SD= 5.96 and left side 27.560 SD= 5.99. The mean Inter-styloid distance was measured at the base was 8.34cm SD= 0.493, at middle 7.21cm SD= 0.511 and at the tip 6.15cm SD=0.723. ESP was found in 30.47% of 3D CT on lateral view and 49.74% on posterior view. In female 25.25% on lateral view and 39.39% on posterior view and in male 32.28% on lateral view and 53.33% on posterior view. SP was one in number, no double and triple styloid process was found.

Conclusion – This is to conclude that 3600 3DCT image of face /head provides bony detail of whole skull, also part of it like styloid process. Styloid process is part of temporal bone runs inferiorly and medially up to different distance, in different age, gender and even on two sides in same person, it depends on length and angulation of styloid process. The lateral view of 3DCT provide information about the lateral length and anterior angle while posterior provide information like posterior length of styloid process, medial angle and inter-styloid distance. The symptoms cause by elongated styloid process is not only depend on length of styloid process but also medial angle (VMA) on posterior view.

Morphometric measurements of knee joints using magnetic resonance imaging (MRI) scan

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ABSTRACT

Background: Most commercially available total knee arthroplasty implants are designed for western populations, which typically have larger build and stature compared to their Asian counterparts often leading to mismatch between resected bony surfaces and implant components. There is paucity of morphometric data of distal femur and proximal tibia in Nepalese population, hence this study was conducted.

Methods: A prospective, cross sectional study was performed in knee MRI of patients attending Patan Hospital, Lalitpur, Nepal. One hundred and seventy digital knees MRI of patient fulfilling inclusion criteria were included in study. Different parameters were measured from distal femur and proximal tibia using RadiAnt DICOM viewer software. Student's t-test was applied to assess whether there were significant gender differences and sidewise (right and left) variations in measured femoral and tibial parameters.

Results: The mean mediolateral and anteroposterior dimensions of distal femur were 7.39 ± 0.71 cm and 4.94 ± 0.48 cm respectively, whereas for proximal tibia, 6.94 ± 0.64 cm and 4.56 ± 0.48 cm respectively. The mean aspect ratio for femur was 1.50 ± 0.11 and for tibia was 1.52 ± 0.94 . All measured morphometric parameters in distal femur and proximal tibia were found to statistically significantly higher in males compared to female ($P < 0.001$). However, there was no significant gender difference in tibial aspect ratio ($P > 0.05$).

Conclusion: This study provides knee joint morphometric data to help orthopedicians in selecting appropriately sized prostheses, thereby reducing mismatches and minimizing postoperative complications. It also emphasizes the importance of considering anatomical differences between genders and highlighting the need for gender-specific knee implants.

Keywords: Distal femur; gender difference; knee morphometry; proximal tibia; total knee arthroplasty.

Multi-Modal Embryo Selection in IVF: Integrating PGT, Artificial Intelligence, and Non-Invasive Multi-Omics for Improved Implantation Outcomes.

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ABSTRACT

Background: Embryo selection remains a critical determinant of success in in vitro fertilization (IVF), with implantation failure persisting despite technological advances. Preimplantation Genetic Testing (PGT), particularly next-generation sequencing (NGS)-based PGT-A, has improved detection of chromosomal aneuploidy and reduced miscarriage rates. However, a significant proportion of euploid embryos fail to implant, indicating that genetic competence alone is insufficient to predict viability.

Methods: This study proposes current evidence on PGT and Artificial Intelligence (AI)-based embryo assessment, including time-lapse morphokinetic analysis and clinical data integration. Additionally, emerging non-invasive approaches such as analysis of spent culture medium and multi-omics profiling (genomics, transcriptomics, proteomics, and metabolomics) were evaluated for their potential in embryo selection.

Results: PGT-A demonstrates high diagnostic accuracy ($< 1\%$ error rate) and improved live birth outcomes but is limited by invasiveness and inability to assess developmental competence. AI-based models achieve 90–96% accuracy with area under the curve (AUC) values up to 0.91 in predicting implantation potential, outperforming conventional morphology. Integration of PGT, AI, and clinical parameters yields predictive performance exceeding AUC 0.90. Non-invasive PGT using spent culture medium shows promising concordance (78–90%) with biopsy-based methods, while multi-omics approaches provide deeper insights into embryo physiology and viability.

Conclusion: A multi-modal, non-invasive framework integrating PGT, AI-driven morphokinetics, and multiomics analysis—particularly via spent culture medium—represents the future of precision embryo selection. This approach has the potential to enhance implantation rates, reduce procedural risks, and improve IVF outcomes, while advancing toward personalized and ethically responsible reproductive medicine.

CT-Based Analysis of Frontal Recess Cells and Their Association with Frontal Sinusitis in Omani Subjects

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ABSTRACT

Background: Frontal recess cells (FRCs) are important anatomical variants influencing frontal sinus drainage and disease. The International Frontal Sinus Anatomy Classification (IFAC) offers a standardized system for identifying these cells. Baseline data regarding the prevalence of FRCs and their association with sinusitis in Middle Eastern populations are still limited. This study aimed to evaluate the prevalence, laterality, and clinical relevance of FRCs in an adult Omani population using IFAC criteria.

Materials and Methods: CT scans of 244 adult Omani patients (488 sides) were retrospectively examined to identify frontal recess cells (FRCs) using the IFAC criteria. Sinusitis was present in 123 patients: bilateral in 37, right-sided in 38, and left-sided in 48. The study assessed the prevalence of FRCs, their laterality, and differences between genders. Additionally, the relationship between FRCs and sinusitis was evaluated using chi-square tests and further analyzed with multivariable logistic regression.

Results: Among the 244 patients (488 sides), agger nasi cells were the most common (79.5%, n = 388), followed by supra bulla cells (64.1%, n = 313), whereas frontal septal cells were the least frequent (8.8%, n = 43). Laterality differences were noted for frontal septal cells, which occurred more frequently on the right side ($p = 0.01$), while no significant side differences were observed for other cell types. The presence of supra agger frontal cells was positively associated with frontal sinusitis (OR = 1.544, 95% CI: 1.02–2.23, $p = 0.03$), whereas supra bulla cells were inversely related to sinusitis (OR = 0.61, 95% CI: 0.41–0.93, $p = 0.01$). No significant association was observed between FRC type and the severity of sinusitis ($p > 0.05$). Gender differences were significant for supra orbital ethmoid cells ($p = 0.01$), showing a predominance in males.

Conclusions: This study establishes baseline data on the prevalence of frontal recess cells in the Omani population. Supra agger frontal cells were found to be associated with frontal sinusitis. Most other FRC types showed no significant differences related to gender or laterality. Identifying supra agger frontal cells preoperatively may aid in surgical planning, especially for endoscopic sinus procedures.

Keywords: computed tomography; frontal recess cells; variation; sinusitis; supra bulla cell; supra agger frontal cell; supra orbital ethmoid cell

Variations of Renal Artery in Cadavers

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ABSTRACT

Introduction - The kidneys are a pair of excretory organs which excrete end products of metabolism and excess water. Each kidney is usually supplied by a single renal artery which is a lateral branch of abdominal aorta at the level of L1. The arteries supplying the kidneys show variation in the number, source and branching pattern which also include the presence of an accessory or additional and aberrant renal arteries.

During embryogenesis, the kidneys ascend from the pelvic region to the lumbar region, during when they are supplied by several segmented arteries extending from internal iliac artery to the dorsal aorta. The lower vessels usually disappear and some may persist. Persistence of those arteries will result in accessory renal arteries which will cross the corresponding ureter and may cause ureteric obstruction.

With the advancement of interventional and therapeutic urological procedures these days awareness in these variations become important for the urologists to minimize the accidental bleeding during surgeries or prevention of rejection and poor graft functions.

Objective - The main objective of this study was to note the variations of the arteries supplying the kidneys.

Methods - An observational study was conducted on thirty kidneys of fifteen cadavers in the Department of Human Anatomy of Nepal Medical College and Teaching Hospital from July 2018–June 2019. The kidneys of both sides were included and those having damaged renal arteries were excluded from the study. During dissection, the abdominal cavity was opened up, all the viscera were gradually taken out and were preserved in formalin. The posterior abdominal wall was exposed and the dissection was carried out to explore the vascular supply of kidney along the length of the abdominal aorta. The renal artery and its variations in origin and branching pattern and the presence of accessory renal arteries and their variations were noted and recorded. The frequencies of their variations were calculated.

Results -

1. Single main renal arteries were found in 80% specimens on both sides
2. Early division of main renal arteries were found in 16.66 % on both sides
3. Origin of main renal arteries were at higher level on left side in 16.66 %
4. Presence of additional renal arteries were found in 20% on both sides

Conclusion – The variations were noted at the level of origin and also at their division. The additional renal arteries were equally common on both sides and were found arising either from abdominal aorta or from the main renal arteries. Frequency of an accessory renal arteries were also common on both sides. Among the aberrant renal arteries, both superior and inferior polar arteries were equally common on both sides.

As the wide variations were observed in the renal arteries and there are scanty literatures available about the variations of renal artery amongst Nepalese population this study will be helpful to urologists and to the radiologists performing various endourologic procedures and can also be used as an important guideline for academic purposes.

Anatomical Variations of The Biceps Brachii Muscle in The Nepalese Population: A Cadaveric Study

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ABSTRACT

Introduction: The biceps brachii is the primary muscle of the anterior compartment of the arm and typically consists of two heads: the long head and the short head. However, it frequently exhibits anatomical variations including additional heads, variations in insertion and differences in nerve supply. Understanding these variations is important for clinical diagnosis and surgical procedures.

Objectives: To assess anatomical variations of the biceps brachii muscle in the Nepalese population with particular focus on additional heads, insertional variations and nerve connections.

Methods: This study was conducted on 40 dissected upper limbs from 20 cadavers (18 males and 2 females) in the Department of Human Anatomy at Nepal Medical College Teaching Hospital, Attarkhel, Gokharneshwor-8, Kathmandu, Nepal, from November 2024 to April 2025.

Results: Anatomical variations were observed in 12.5% of cases, specifically involving additional heads of the biceps brachii. A rare bilateral variation (2.5%) showed four heads on one side and three heads on the other. The four-headed variant included two additional heads originating from the pectoralis major muscle while the three-headed variant was of the inferomedial humeral type. The inferomedial humeral variation was the most common type, observed in 10% of limbs, with three cases on the right side. Additionally, a communicating branch between the musculocutaneous nerve and median nerve was identified.

Conclusion: The study reveals that the inferomedial humeral type is the most prevalent variation of the biceps brachii in the studied population. The presence of additional heads and nerve communications may influence muscle function, complicate clinical diagnosis and have important implications for reconstructive surgical procedures.

Sexual dimorphism in permanent mandibular canine

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ABSTRACT

Introduction: Sexual dimorphism, which refers to differences in size, stature, and appearance between genders, is significant in dental structures and can be used for identifying sex from skeletal remains. Mandibular canines are highly stable, less prone to decay, and likely to survive trauma, making them ideal for forensic identification. The study aims to determine sexual dimorphism in mesiodistal diameters of the mandibular canines.

Methods: A cross-sectional study was conducted at private dental hospital in Kathmandu, involving 120 participants (60 males and 60 females), 20 participants from the Brahmin, Chhetri, and Newa ethnicities. The data were entered into a Microsoft Excel sheet and analyzed using the Social Package for the Statistical Sciences (SPSS) version 16.

Results: The study reports mean mesiodistal diameters of 7.42 mm (right) and 7.24 mm (left) for males, and 6.78 mm (right) and 6.62 mm (left) for females, indicating a statistically significant difference between the sexes. Significant sexual dimorphism was found in the mesiodistal diameters of mandibular canines between males and females. The right canine showed more dimorphism (9.45%) than the left (9.36%). Among ethnicities, Brahmins exhibited the highest dimorphism, followed by Newa and Chhetri. The study confirmed larger canine dimensions in males across all groups.

Conclusion: The study provides valuable data on sexual dimorphism in mandibular canines among Nepalese populations, highlighting its potential use in forensic science for sex determination. Future research should expand to include more diverse ethnic groups and regions within Nepal to enhance the applicability of these findings.

Overcoming Barriers to Dentin Repair: The Roles of Prickle2 and MG132

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ABSTRACT

Introduction: Regeneration of the dentin-pulp complex is a critical goal in endodontic therapy. Successful reparative dentinogenesis requires overcoming pulpal inflammation while precisely coordinating the molecular pathways that drive odontoblast differentiation. Recent evidence indicates that the Wnt signaling pathway as a crucial regulator of tooth morphogenesis and repair. This study synthesizes two novel, complementary approaches to facilitate dentin regeneration: the functional modulation of the planar cell polarity (PCP) protein Prickle2 (a non-canonical Wnt pathway component) and the pharmacological application of the proteasome inhibitor MG132.

Objectives: To investigate the potential effect of the Wnt/PCP pathway via modulating the functional expression of Prickle2 and controlling the inflammatory microenvironment via MG132 to promote odontoblast differentiation and reparative dentinogenesis in both in vitro and in vivo models.

Methods: The developmental function of Prickle2 was first examined by analyzing its expression in the primary enamel knot. Gain- and loss-of-function studies were performed using in vitro organ cultivation and renal capsule transplantation, utilizing siRNA knockdown of Prickle2 at embryonic day 13 (E13) to assess histogenesis and cellular physiology. Likewise, in vitro studies investigated the signaling pathways activated by MG132 in human dental pulp stem cells (hDPSCs). To evaluate clinical applicability, both approaches were tested in vivo using murine maxillary first molar pulp-exposure models. Either siRNA against Prickle2 or MG132 was locally administered into exposed pulp cavities. Results were evaluated using in situ hybridization, RT-qPCR, histological staining, immunohistochemistry, and micro-CT.

Results: Both studies successfully promoted hard tissue formation, but through distinct primary mechanisms. In situ hybridization revealed that Prickle2 is distinctly expressed in the primary enamel knot. Targeted siRNA knockdown of Prickle2 significantly altered histogenesis, yielding a thicker pre-dentin layer, an opaque crown in renal capsule transplants, and facilitated dentinal bridge formation in the pulp-exposure model. Concurrently, MG132 administration in hDPSCs upregulated Wnt signaling-related dentinogenic molecules. In vivo, MG132 significantly attenuated early inflammatory responses by day 5, evidenced by reduced MPO, F4/80, NF- κ B, and TNF- α expression. Furthermore, MG132 robustly enhanced odontoblast differentiation and mineralization, upregulating key markers including nestin, COL1A1, TGF- β 1, Runx2, osteopontin, and osteocalcin, ultimately resulting in distinct dentin bridge formation by day 42.

Conclusion : Our Findings suggest that effective reparative dentinogenesis can be enhanced by targeting multiple pathways. Prickle2 regulates dentin structure via Wnt/PCP signaling, while MG132 reduces inflammation and promotes odontoblast differentiation with Wnt-related gene expressions, offering a promising strategy for vital pulp therapy.

O-GlcNAcylation as a pivotal mechanism in oral tissue development and regeneration

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ABSTRACT

Introduction: O-GlcNAcylation is a dynamic and reversible post-translational modification regulated by O-GlcNAc transferase (OGT) and O-GlcNAcase (OGA), playing essential roles in cellular processes such as proliferation, differentiation, signaling, and inflammation. Developmental study revealed that proper O-GlcNAcylation mediated by OGT is vital for tooth morphogenesis. However, its role in salivary gland morphogenesis and reparative dentin formation remains unexplored.

Objective: This study aimed to investigate the role of O-GlcNAcylation in oral tissue development and regeneration, and to evaluate its therapeutic potential by modulating O-GlcNAcylation using pharmacological inhibitors.

Methods: For salivary gland development, mouse submandibular glands were cultured in vitro and treated with the OGT inhibitor OSMI-1 or OGT-targeting siRNA. Morphological and molecular changes were analyzed using histology, immunohistochemistry, Western blotting, and RT-qPCR to assess acinar cell differentiation and signaling pathways. For dental regeneration analysis, human dental pulp stem cells (hDPSCs) were treated with the OGA inhibitor Thiamet-G to assess cell viability, alkaline phosphatase (ALP) activity, and expression of reparative dentin-related genes. An in vivo mouse model using 8-week-old ICR mice with mechanically exposed dental pulp of the upper first molar was used to evaluate the effects of local Thiamet-G delivery through histology, immunohistochemistry, and micro-computed tomography (micro-CT).

Results: Inhibition of OGT using OSMI-1 or siRNA impaired salivary gland morphogenesis, disrupted terminal bud formation, and altered acinar cell differentiation. This was evidenced by changes in key regulatory markers including Sox9, Sox10, E-cadherin, Mist1, and cytokeratins (CK14 and CK18), indicating disturbed epithelial organization and functional differentiation. Conversely, OGA inhibition via Thiamet-G treatment enhanced proliferation, ALP activity, and upregulated expression of dentin-related genes, including BMP2, BSP, DSPP, OCN, and RUNX2 in vitro. In vivo, it modulated inflammatory and regenerative markers such as NESTIN, NF- κ B, MPO, OPN, RUNX2, TGF- β 1, and TNF- α during early stages, and significantly promoted dentin-bridge formation at later stages, as confirmed by histology and micro-CT.

Conclusion: O-GlcNAcylation plays a critical and context-dependent role in both organ development and tissue regeneration by regulating key signaling pathways involved in differentiation and inflammation. Inhibition of O-GlcNAcylation disrupts salivary gland morphogenesis and acinar cell differentiation, whereas its enhancement promotes reparative dentin formation. These findings highlight the therapeutic potential of targeting O-GlcNAcylation in regenerative dentistry and developmental biology.

Evaluating the quality and duration needed to clean various bone types using hydrogen peroxide, both with and without the removal of soft tissue

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ABSTRACT

Background: The study of human bones is a significant aspect of medical education for understanding of human anatomy. While various other sources like plastic bones and digital media are available for study, real human bones are still the best option for a complete anatomical understanding due to their precise anatomical features. However, the preparation of human bones has become a challenging task in recent times due to ethical, financial and scientific limitations of traditional methods like long-term burial for bone preparation. Recently, hydrogen peroxide has been studied as a potential solution for this issue. However, there is a lack of scientific evidence regarding its efficacy on various types of bones. In this study, we modified previously described bone extraction methods to produce clean bones while minimizing the time, cost, and effort required.

Methods: A prospective study was done in the Department of Anatomy in Patan Academy of Health Sciences in Nepal. The bones of the upper limb of human embalmed cadavers were included in the study and were divided into various groups based on the type of bones and the presence or absence of soft tissue. The bones included in this study were long bones like humerus, radius and ulna, and short bones like phalanges, metacarpals, and carpal bones. The bones were divided into four groups: long bone with soft tissue attached, long bones without soft tissue attached, short bone with soft tissue attached and short bones without soft tissue attached. All these bones were immersed in a 6% hydrogen peroxide solution. The process of cleaning the bones using hydrogen peroxide solution was observed at 24-hour intervals to assess the process of cleaning and to avoid any potential damage to the bones due to excessive exposure to hydrogen peroxide solution.

Results: Evaluation of the entire process was based on the time required to clean the bones completely and the quality of the prepared bones. The quality of the bone was based on the absence of any leftover tissue, absence of any structural damage to the bone, and a clean and white appearance of the bone. It was evident that the use of hydrogen peroxide proved to be an efficient method of cleaning both long and short bones.

Conclusion: From the above observations, it is evident that 6% hydrogen peroxide is a simple, cost-effective, and time-efficient method of preparing human bones, especially for medical institutions with limited resources, and this method could prove to be useful in improving the standardized protocols of bone preparation and providing high-quality anatomical specimens for teaching and research purposes.

Anatomical Variations in the Origin and Branching Pattern of the Posterior Segmental Artery of the Human Kidney: A Cadaveric Study

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Background: The posterior segmental artery serves as an end artery which provides dedicated blood supply to a specific kidney segment and holds significance for surgical procedures. The artery shows common variations in its origin and branching pattern which surgeons must understand because these variations affect surgical results during partial nephrectomy and renal transplantation operations.

Objective: To study the anatomical variations in the origin and branching pattern of the posterior segmental artery of the human kidney.

Materials and Methods: This cadaveric study was conducted on 100 adult human kidneys. Eighty-two specimens were studied by dissection, and eighteen were analysed using corrosion cast technique. The posterior segmental artery was examined for its origin and branching pattern.

Results: Six distinct patterns were discovered through this study. The most common type was Type 2 which occurred in 42 cases (42%) and showed that the artery originated directly from the renal artery together with all other segmental branches. The posterior division continued as Type 1 which occurred in 39 cases (39%) of the study sample. The study found two uncommon patterns which occurred in Type 3 at 8 (8%) and Type 4 at 7% of cases, along with five rare patterns which included Type 5 at 3% and Type 6 at 1% of observed cases.

Conclusion: The posterior segmental artery shows significant anatomical variability. Awareness of these variations is essential for safe surgical interventions to prevent vascular injury and preserve renal function.

Keywords: Posterior segmental artery, Renal artery, Anatomical variations.

A Comparative Ultrasonographic Evaluation of Maternal Pelvic Morphometry and Fetal Cranial Biometric Parameters in Relation to Maternal Age

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ABSTRACT

Background: Maternal age is a crucial determinant affecting pregnancy outcomes and fetal development. Changes in maternal pelvic morphology and fetal cranial biometric parameters can influence the progress of labor and neonatal health. With increasing trends of early and delayed pregnancies, it is important to evaluate these relationships for better clinical outcomes.

Aim: To comparatively assess maternal pelvic morphometry and fetal cranial biometric parameters in relation to maternal age using ultrasonography.

Materials and Methods: This cross-sectional observational study will be conducted on pregnant women in the second and third trimesters. Maternal pelvic dimensions will be measured using ultrasonography, and fetal cranial parameters such as biparietal diameter and head circumference will be recorded. Participants will be divided into different maternal age groups. Statistical analysis will be performed to evaluate correlations and differences among groups.

Results (Expected): The study is expected to demonstrate significant variations in maternal pelvic dimensions and fetal cranial biometry across different maternal age groups, along with possible correlations between these parameters.

Conclusion: Understanding the influence of maternal age on pelvic morphometry and fetal cranial development may help in early identification of obstetric risks and improve antenatal care and clinical decision-making.

Keywords: Maternal age, Pelvic morphometry, Fetal cranial biometry, Ultrasonography.

Supratrochlear Foramen of the Humerus and its Clinical Implications

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ABSTRACT

Objectives: There are many forms of skeletal variations in the human body and an important variation is the presence of the supratrochlear foramen associated with the lower end of the bone of arm i.e. humerus. In case of the supracondylar fracture of humerus, treatment by an orthopedic surgeon may involve intra-medullary nailing of the humerus. However, it is interesting to note that the medullary canal width of humerus was narrower and the medullary canal ended more proximally as well, in humerus that had the supratrochlear foramen. An orthopedic surgeon taking this fact into consideration will appropriately plan for the intra-medullary nailing in the clinical scenario (Akpinar et al. 2003).

The X-ray of the upper limb will reveal a radiolucent area at the lower end of humerus, when the supratrochlear foramen is present. In the absence of the knowledge of this variation, the radiologist may find it hard to differentiate it from an osteolytic or cystic lesion (Wilde et al. 2004).

Methods: A quantitative cross-sectional observational study was conducted on 152 dry humeri available at the museum of Department of Anatomy, Maharajgunj Medical Campus. The bones without external deformity were selected and grouped into right and left sides. The presence of supratrochlear foramen was noted and when present its transverse diameter, vertical diameter, shape and the distance from the epicondyles were measured. Data was computerized and analysis was done in SPSS version 21.

Results: Of the total 152 humeri (84 right and 68 left) studied, the supratrochlear foramen was noted in 42 bones (27.6%). In bones without STF translucency and opacity was observed in the supratrochlear septum which was found to be in 93 bones (61.2%) and 17 bones (11.2%), respectively. The most commonly encountered shape of the STF was oval (64.3%). The mean transverse diameter, vertical diameter, distance from medial epicondyle and distance from lateral epicondyle were 4.78 ± 2.11 mm, 3.43 ± 1.54 mm, 24.53 ± 3.48 mm and 25.68 ± 3.06 mm, respectively.

Conclusions: The STF is a neglected, but a very important, anatomical structure present at the lower end of the humerus. The present study observed high frequency of the STF (27.6%) and it tries to caution the orthopedic surgeons for appropriate pre-operative planning of the fractures at lower end of humerus. Similarly, radiologists are also suggested to be aware of such variations at the lower end of arm.

Recommendations: As it is observed that the presence of the supratrochlear foramen is quite common in our population, prior investigation and identification of such variation is recommended before an orthopedic surgery involving the lower end of humerus to avoid further adverse effects.

Keywords: Humerus, supratrochlear foramen, supratrochlear septum, variation

A South Indian Cadaveric Study on The Variations in The Gluteal Region

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Background: Variations in the structures of gluteal region can lead to clinical conditions such as piriformis syndrome and even complicate the procedures like hip surgery, nerve blocks and intramuscular injections. The gluteal region is anatomically complex, containing major neurovascular and muscular structures such as the sciatic nerve, gluteal nerves, gluteal vessels and deep gluteal muscles. The variations of these structures are not uncommon. There are several cadaveric studies reporting such variations, especially involving the sciatic nerve and piriformis muscles. We have attempted to document the variations found in the gluteal region of South Indian cadavers.

Objective: To document the incidence and patterns of anatomical variations in muscles and neurovascular structures of the gluteal region in adult cadaveric lower limbs.

Materials and method: The current study was conducted on 54 cadaveric lower limbs (27 right and 27 left). Standard dissection of the gluteal region was performed. Structures examined included muscles of the gluteal region, sciatic nerve, posterior cutaneous nerve of thigh, gluteal nerves, and gluteal vessels. Each structure was observed and categorized as normal or variant. Data from both right and left sides were compiled and analysed using descriptive statistics, expressed as incidence and percentage.

Results: Sciatic nerve division was the most frequent variation, observed in 27.8% of limbs. It divided within the pelvis in 25.9% of limbs and in the gluteal region in 1.9% of limbs. Right limbs showed a slightly higher incidence (16.7%) compared to the left (11.1%). Among the smaller nerves of the region, inferior gluteal nerve and posterior cutaneous nerve variations were noted in 3.7% of limbs. Variations in superior and inferior gluteal vessels were seen in 5.6% of limbs. Piriformis muscle variations were noted in 11.1% of limbs; superior gemellus variations were observed in 5.6% of limbs and gluteus medius variation was observed in only one limb (1.9%). Overall, variations demonstrated mild right-sided predominance, particularly in sciatic nerve.

Conclusion: Anatomical variations in the gluteal region were observed in a considerable proportion of specimens, with a slightly higher frequency on the left side. Sciatic nerve and piriformis variations were most prevalent, followed by superior gemellus and inferior gluteal nerve variations. Knowledge of awareness of these patterns is essential for anaesthesiologists, surgeons dealing with the hip joint, nurses giving injections and radiologists in diagnostic precision.

Lateral Cord of Brachial Plexus, Median and Radial Nerves Innervating the Musculocutaneous Nerve Territory in its Absence

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Musculocutaneous nerve is a branch of lateral cord of brachial plexus which supplies coracobrachialis, biceps brachii and brachialis muscles and continues as lateral cutaneous nerve of forearm. Its absence is considered as one of the rare variations. During routine dissection of upper limb, absence of musculocutaneous nerve in an adult male cadaver was noticed. Here the coracobrachialis was innervated by a direct branch of lateral cord of brachial plexus, whereas biceps brachii and brachialis muscles were supplied by branches from the median nerve. Lateral cutaneous nerve of forearm was arising from the median nerve in common with nerve to brachialis and was partly supplying the area of innervation of a normal lateral cutaneous nerve of forearm. The remaining area was supplied by the posterior cutaneous nerve of forearm, a branch of radial nerve. Patients with such variations may present weakness of forearm flexion, and supination in high median nerve injury. Such variations should also be considered in posttraumatic evaluation and exploratory interventions of arm for peripheral nerve repair. Ignorance of such variations may also result in unexpected nerve injuries during flap dissection.

Qualitative Assessment of Neural Cell Structure in Prefrontal Cortex and Hippocampal CA1 and CA3 Regions in Diabetes Induced Male Wistar Rats

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Introduction: Diabetes mellitus affecting the peripheral nervous system is well known. Recently its effect on the central nervous system is widely being debated. Chronic hyperglycaemia has been associated with structural changes in the brain mainly in hippocampus and prefrontal cortex, associated with cognitive decline. This study examined the structural changes in the neural cells of prefrontal cortex and hippocampal regions in diabetic wistar rats.

Objective: To examine the structural changes in the neural cells of prefrontal cortex and hippocampal regions in diabetic wistar rats.

Methodology: Male albino wistar rats were divided into three groups: Normal control; 4- week diabetic and 8-week diabetic groups (n=18). Diabetic group animals were administered an intraperitoneal injection of 50 mg/kg body weight of streptozotocin (STZ) to induce diabetes. After 7 days of STZ injection, the blood glucose level was measured using glucometer and glucose level $\geq 200\text{mg/dL}$ was considered as diabetic. At the end of disease period [4 weeks (n=6) and 8 weeks (n=6)], animals were sacrificed. The normal control groups were kept undisturbed in their home cage and sacrificed at the end of 4th week (n=3) and 8th week (n=3). Brains from all the animals were processed for qualitative assessment of neural cells of the prefrontal cortex and hippocampal CA1 and CA3 regions.

Result: Haematoxylin and Eosin (H&E) stained sections of brain showed noticeable structural changes in 8-weeks diseased group and slight changes in 4-weeks diseased group in CA1 & CA3 regions of hippocampus and prefrontal cortex. In 8-week diabetes group, CA1 and CA3 regions showed dispersed neural cell layer, contracted neurons and degenerated cells with eosinophilic cytoplasm. A greater number of nuclei were pyknotic (shrunken), karyolytic (Fragmented nucleus), hyperchromatic (dark stained) than control group. Similar but slight changes were observed in 4-week diabetes group. In prefrontal cortex, the 8-week diabetes group showed more degenerated neurons with eosinophilic cytoplasm and the nuclei were pyknotic, hyperchromatic when compared to 4-week diabetes group and age control group.

Conclusion: Streptozotocin induces drastic and gradual neural structural changes in hippocampus and prefrontal cortex. The neural cell structural changes in hippocampal CA1 region are more severe than that of CA3 region and the prefrontal cortex both in 4- and 8-week diabetes groups. Further, 8-week disease group showed more noticeable neural structural changes than that of 4-week disease group.

Unlocking the Mandibular Gateway: A Morphometric Insight into the anatomy of the mandibular foramen

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Background: Detailed knowledge regarding the precise location of the mandibular foramen (MF) is essential to avoid iatrogenic injury to the inferior alveolar nerve and vessels during dental procedures. This study was designed to study the various morphometric measurements of the mandibular foramen and its relation to mandibular landmarks. **Materials and methods:** MF from sixty dry adult mandibles were observed for variation in shape and location. The distance between the foramen and nearby bony landmarks of the ramus of the mandible was measured and analysed statistically. **Results:** The mean vertical diameter of the MF on the right side was 3.31 ± 0.02 mm, and on the left side was 3.49 ± 0.01 mm, which was statistically significant ($p=0.007$). On the right side, the horizontal diameter was 2.95 ± 0.03 mm, and on the left, it was 3.03 ± 0.05 mm. The distance between the MF and the mandibular notch, anterior, posterior, and inferior border of the ramus of the mandible, showed slight variations on the right and left sides of the ramus. Statistically significant difference was observed in the measurement of MF and the anterior border of ramus between the right and left sides ($p=0.02$). **Conclusion:** There were slight changes in the dimensions of MF and its distance to nearby mandibular landmarks between the right and left sides of the mandibular ramus. The precise localization of the MF is crucial for achieving a successful inferior alveolar nerve block and for avoiding injury to the neurovascular bundles passing through it during surgeries involving the lower jaw.

Assessment of emergence patterns of the mental nerve through the mental foramen in orthopantomograms

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ABSTRACT

Background: The mental nerve, a branch of inferior alveolar nerve, exits mandibular canal through the mental foramen to innervate lower chin, lip and buccal vestibule. Variations in its emergence pattern, including linear, anterior loop, and perpendicular types, are clinically significant, as unrecognized patterns may cause nerve injury during dental procedures.

Objective: To find out the proportion of mental nerve emergence patterns in relation to gender and mandibular sides using orthopantomograms.

Methods: A retrospective cross-sectional study was performed on 381 archived orthopantomograms of patients aged 19 years and above from the Dental Department database of Patan Academy of Health Sciences. Radiographs with high-quality and bilaterally visible mental foramina were included. Mental nerve emergence patterns were classified as linear, anterior loop, or perpendicular. Data were analyzed using SPSS 16.0, with frequencies and percentages of each pattern by side and gender were calculated.

Results: Of 762 sides examined, linear pattern was most common (63.5%), followed by anterior loop (25.8%) and perpendicular pattern (10.6%). The linear pattern was slightly more common on the left side. Linear emergence predominated in both males (58.9%) and females (67.7%), while anterior loop was more frequent in males (30.0% vs. 22.1%). Minor bilateral asymmetry was observed for all patterns.

Conclusion: The linear pattern is most common, however, notable presence of anterior loops, minor bilateral asymmetry, and gender-related variations highlight the importance of careful radiographic assessment of each side of mental region in every patient to avoid inadvertent mental nerve injury.

Keywords: Anterior loop, linear pattern, mental nerve, orthopantomogram, perpendicular pattern.

Anatomical variation in the origin of the lateral circumflex femoral artery and its surgical implications - A South Indian cadaveric study

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ABSTRACT

Background: Knowledge of arterial variations is extremely important as these may be the source of intraoperative iatrogenic haemorrhage or postoperative complications. Lateral circumflex femoral artery is one of the most important branches of profunda femoris artery. It is an artery which supplies the head and neck of femur and forms anastomosis around its upper part. Lateral circumflex femoral artery is important during surgical approaches to the hip joint; its branches are often used as grafts and pedicled flaps. Hence, the knowledge of variations of artery and its branches are useful during operations such as total hip arthroplasty and other surgeries to prevent haemorrhage and other complications. **Materials and Methods:** The study was conducted on 104 lower limbs (52 left and 52 right) of formalin fixed adult human cadavers. Lateral circumflex femoral arteries were dissected and cleaned. Variations in the origins of the lateral circumflex femoral arteries were noted. Relevant photographs were taken. Results were expressed as percentages. **Results:** The origin of lateral circumflex femoral artery from lateral aspect profunda femoral artery was observed in 82 limbs (78.85%). Origin of lateral circumflex femoral artery from femoral artery having common stem with profunda femoris artery was observed in 4 limbs (3.85%). Origin of lateral circumflex femoral artery from femoral artery having common stem with medial circumflex femoral artery was observed in 1 limb (0.96%). Origin of lateral circumflex femoral artery from femoral artery superior to profunda femoris artery was observed in 10 limbs (9.61%). Origin of lateral circumflex femoral artery from femoral artery inferior to profunda femoris was observed in 4 limbs (3.85%). Origin of double lateral circumflex femoral artery from profunda femoris artery was observed in 3 limbs (2.88%). **Conclusion:** Though in majority of the cases, the origin of the lateral circumflex femoral artery was normal, many types of variant origins were observed. The knowledge of both normal and variant origins of the lateral circumflex femoral artery is not only surgically important during vascular diagnostic interventions and other surgeries, but also it helps in reducing the chances of intra-operative secondary haemorrhage and post-operative complications.

Key words: Lateral circumflex femoral artery, profunda femoris artery, femoral artery, variations.

Epimuscular Myofascial Force Transmission of Bilateral Gluteus Maximus muscles to Latissimus Dorsi and Lower Trapezius in chronic low back pain patients

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ABSTRACT

Introduction: The gluteus maximus (GMx) is the largest and powerful extensor muscle. It plays a significant role in the chronic low back pain due to its involvement in stabilizing the sacroiliac joint and ensuring efficient weight transfer. The GMx is linked to the latissimus dorsi (LD) and lower trapezius (LTZ) via the posterior layer of the thoracolumbar fascia. This fascia serves as the primary myofascial connection for myofascial force transmission. The present study compares the electrical activities of the bilateral latissimus dorsi (LD) and lower trapezius (LTz) during isometric contraction of GMx in chronic low back pain patients.

Materials and Methods: The present descriptive observational study included thirty male chronic low back pain patients aged 30 to 45 years. Delsys Trigno wireless Biofeed back system sensors were used to assess the RMS value of the surface Electromyographic (sEMG) signal of the bilateral LD and LTz. The sEMG assessment was conducted at normal contraction, at minimum resistance (load of 1kg) and at maximum voluntary contraction (MVC) with resistance (2- 5.5 kg) of bilateral gluteus maximus muscles.

Results: When right GMx contracted without any resistance (normal), the mean RMS value of left LD, left LTz, right LD, right LTz was $27.26 \pm 3.08\mu V$, $25.83 \pm 1.01\mu V$, $14.45 \pm 0.58\mu V$ and $24.18 \pm 2.28\mu V$ respectively. When Left GMx normally contracted the mean RMS value of Right LD, Right LTz, Left LD, Left LTz was $18.21 \pm 2.12\mu V$, $23.48 \pm 3.93\mu V$, $14.85 \pm 1.73\mu V$ and $17.25 \pm 0.82\mu V$ respectively. MVC of GMx showed 15% increase in RMS values of contralateral muscles compared to the normal contractions. A significant ($p < 0.001$) Pearson's correlation was observed between the contralateral muscles during the different contractions.

Conclusion: A significant change in the RMS value of sEMG of muscles on the contralateral side indicates that epimuscular myofascial force is transmitted via the PTLF during various degrees of contraction of bilateral gluteus maximus muscle to latissimus and lower trapezius muscles. In pathological conditions, connections through the PTLF may influence the altered biomechanics of the posterior trunk. In chronic low back pain, a more integrated approach may be useful instead of concentrating on individual muscles or fascia in isolation.

Key words: Electromyography, Isometric Contraction, posterior layer of thoracolumbar fascia, Myofascial Force Transmission.

Anatomy Education in the Digital Age: Exploring EdTech Platforms and Innovations

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The rapid evolution of EdTech has transformed anatomy education in the digital age, moving beyond traditional cadaveric dissection toward interactive, accessible, and highly immersive learning experiences. This abstract explores how digital platforms and dedicated immersive labs address persistent challenges such as cadaver shortages, difficulties in spatial visualization, and the demand for remote or self-paced study. These innovations enhance student engagement, knowledge retention, and conceptual mastery through advanced 3D models, virtual dissection, augmented reality (AR), virtual reality (VR), mixed reality (MR), and gamified simulations.

In India, indigenous EdTech innovations are effectively bridging resource gaps in medical colleges, particularly through immersive labs and virtual dissection solutions tailored to local needs. Emerging evidence from meta-analyses underscores that high-immersion VR experiences significantly outperform non-immersive tools in improving anatomy knowledge scores and long-term retention.

These immersive labs and platforms not only mitigate cadaver scarcity and ethical concerns but also foster deeper multisensory engagement, collaboration, and clinical readiness. However, challenges persist around equitable access especially in rural institutions, faculty development, integration with hands-on training and minimizing the simulator sickness in VR environments.

This poster will examine comparative features of select platforms and immersive labs, present case studies from Indian and international medical institutions, and discuss future trajectories—including AI-enhanced personalization, hybrid VR-AR models, and haptic integration. It emphasizes the value of global-local collaboration to build inclusive, effective, and future-ready pedagogical frameworks for anatomy education in the digital era.

Status of Cadaver for Anatomy Education in Medical Schools of Nepal

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Introduction: Anatomy is a core subject in medical sciences where cadavers play a pivotal role in understanding the subject. As the number of medical institutions tends to grow the demand for medical resources is increasing. However, the sources of cadavers vary in different geographical regions due to differences in related laws and sociocultural aspects. The predominant sources of cadavers are donated, unclaimed and bequeathed bodies.

Objective: This study aims to explore the status of cadavers in medical colleges of Nepal.

Methods: A descriptive, cross-sectional study was conducted from 2023 to 2025 in 18 fully functioning medical colleges. Data was collected by a non-probability convenience sampling method. Professionals working in the anatomy departments were contacted via telecommunication after ethical clearance. The authors filled self-structured proforma sheets which included the number, sources, gender of cadavers and the total number students in the medical institutions.

Results: Among all medical colleges there were 91 cadavers, predominantly of male gender in the academic year 2023/2024. A total of 1715 students were recruited in these medical colleges. The ratio of cadaver and students was 1:19 and the sources were mostly unclaimed. The ratio of cadaver and students ranged from 1:5 to 1:100.

Conclusion: The cadavers being used in the medical colleges were mostly males and unclaimed bodies.

Keywords: Anatomy; Cadavers; Medical Education.

Fusion of the musculocutaneous nerve with the median nerve and their continuation as a common neural trunk: A case report

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ABSTRACT

Introduction

Variations attributable to aberrant communications and, occasionally, complete fusion of the musculocutaneous nerve and median nerve have been reported in the past. Identification and knowledge regarding these kinds of variations can help clinicians justify the aberrant symptoms. In this case aberrant termination of the musculocutaneous nerve, the site of formation of the common neural trunk communicating the musculocutaneous and media nerve, and the branch supplying the brachialis formed by the communication of branches from musculocutaneous and median nerve are unique. This case is an addition to variant patterns of common neural trunks reported in the past.

Methods

During routine cadaveric dissection of the axilla and arm of a male cadaver of unknown age, unknown ethnicity an unusually thick and aberrant musculocutaneous nerve was found in the right side. A meticulous dissection of the axilla and arm was done following standard textbook procedures. Nerves were separated and veins of the arm and their tributaries were removed.

Results

An unusually thick cord of musculocutaneous nerve (2.86 mm) was observed branching from the lateral cord. The median nerve was relatively thin (2.24 mm) and formed 56.72 mm from the Coracoid Process (CP) by the fusion of the lateral root of the lateral cord and the medial root of the medial cord. The musculocutaneous nerve perforated the coracobrachialis 63.67 mm from the CP and divided into two branches. The branch that took a lateral and downward course supplied the biceps brachii, perforating it 117.89 mm from CP, and another branch took a medial course and traversed downward in between the biceps brachii and brachialis. At the distal end, it fused with the median nerve, forming a common neural trunk of 4.50 mm in diameter, 162.57 mm from the coracoid process. The common neural trunk passed distally towards the cubital fossa. The branching pattern of the brachial plexus was normal in the left hand.

Conclusion

This case reports a rare anatomical variation that presents as a complete fusion of the musculocutaneous and median nerve, forming a common neural trunk. The knowledge of these variations is utmost for nerve grafting and understanding precise neurophysiology because nerve conduction studies can also be affected by these kinds of aberrant communications.

Keywords: Anatomic variation; communication; musculocutaneous nerve; median nerve; peripheral nerve injuries.

Morphological study of the foramen transversarium of the typical cervical vertebrae with clinical correlation.

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ABSTRACT

The foramen transversarium (FT) a distinctive anatomical structure in the cervical vertebrae for the passage of vertebral artery, vein, and sympathetic plexus. Foramen transversarium is a feature in all cervical vertebrae and is important for normal vertebral physiology. In this article the anatomy of the foramen transversarium is presented and discussed with respect to the variability of this foramen, its structural dimensions and its clinical applications. The relevance for the contents of foramen transversarium are important because they contain the nerves and blood vessels, and given its intimate relation with the neurovascular structures, even minor anatomical variations may cause potentially severe clinical implications. One potential danger is vertebral artery damage, occurring due to a blow or sudden twisting of the cervical spine. The injury could cause vertebrobasilar insufficiency a temporary reduction of blood flow to the rear of the brain that causes dizziness, nausea and even a stroke.

Aim of the study The study aims to perform morphometric analysis of the variations in the appearance of the foramen transversarium and the related accessory foramen.

Material and methods An observational study was conducted in the Department of Anatomy. The present study utilized 97 cervical vertebrae (C3-C7) of unknown sex and age. Damaged vertebrae in the form of partial breakage or fusion are excluded from the study.

Results In the present study, the incidence of abnormal or accessory foramen transversarium is 12.37%. The unilateral variation in the accessory FT on the right side (5.15%) is more than on the left (4.12%). The incidence of double foramen transversion is only 3.09%. The maximum anteroposterior diameter of the FT ranges from 2.92 mm to 7.86 mm on the right side compared to 3.2 mm to 8.01mm on the left side. The transverse diameter of the FT ranges from 3.49 mm to 8.12 mm on the right side compared to 2.12 mm to 8.20 mm on the left side. Various diameters were measured using the freely available Image J analysis software.

Conclusion In the present study, the foramen transversarium of the typical cervical vertebrae were identified and measured. Understanding the variations in the FT is utmost important for the surgeons and radiologists, as the FT is closely associated with various neurovascular structures.

Keywords Foramen transversarium, Morphometry, Vertebral artery, Image J, Surgical Anatomy

An intermediate filament and its role in neuronal population in human fetal dorsal root ganglia

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ABSTRACT

Background: Fetal pain perception remains a subject of ongoing debate, particularly in the context of advancing intrauterine surgical procedures. While early gestation lacks fully developed nociceptive pathways, the progressive maturation of the peripheral nervous system— especially the dorsal root ganglia (DRG)—may indicate the onset of pain perception. Understanding the development of nociceptive neurons is crucial for guiding fetal anesthesia practices.

Aim: To identify and characterize selective nociceptive (small to medium-sized) neurons in the fetal DRG.

Objectives: To classify DRG neurons based on size using histological staining and to evaluate peripherin expression as a marker for nociceptive neurons in human fetuses.

Methods: This observational study was conducted in the Department of Anatomy, AIIMS Nagpur, on human fetal specimens (12–20 weeks gestation) obtained following spontaneous or therapeutic abortions with ethical approval and parental consent. DRG tissues were isolated, fixed in 10% formaldehyde, and subjected to histological and immunohistochemical analysis. Neuronal populations were categorized by soma diameter, and peripherin antibody expression was assessed.

Results: Fetal DRG showed a higher neuronal density compared to adults, though with smaller soma sizes (10–60 μ m). Neurons were categorized into small to medium (10–60 μ m) and large (60–90 μ m) groups. Satellite glial cells were fewer (2–4 per neuron) compared to adults. Increased vascularity was noted in fetal DRG. Peripherin expression was minimal between 12–16 weeks but increased significantly from 16–20 weeks, predominantly in small to intermediate neurons, indicating maturation of nociceptive neuronal populations.

Conclusion: The study demonstrates that nociceptive neurons in the fetal DRG begin to differentiate significantly after 18 weeks of gestation. However, complete pain perception likely requires further maturation of central pathways. These findings have important implications for fetal pain assessment and the use of anesthesia during intrauterine procedures.

Keywords: Fetal pain, dorsal root ganglia, nociception, peripherin, immunohistochemistry, fetal anesthesia

Motivations for body donation among Nepali donors: a cross-sectional qualitative study

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Introduction: Body donation is the voluntary act of donating one's body after death to medical institutions for educational purposes. Cadaveric dissection is essential in medical training, and the use of unclaimed bodies for teaching learning raises ethical concerns. Ideally donated body should be used. This study explores the motivations for body donation and the challenges faced by donors.

Methods: A cross-sectional study was conducted among 25 participants, divided into three groups (8, 8, and 9) for focus group discussions. One participant from each group was selected for in-depth interviews at the Department of Anatomy, Maharajgunj Medical Campus. Separate interview guides were used for discussions and interviews. Responses were audio-recorded, transcribed using TurboSoft, and analyzed through thematic coding using Dedoose software.

Results: Most donors were retired professionals motivated by personal values, religious beliefs, and social influences like family distance. Some viewed donation as a way to avoid costly and environmentally harmful funeral practices, while others considered it a final act of service. Awareness was largely informal, and barriers included cultural norms, family resistance, and superstition. Despite challenges, donors reported fulfillment and often inspired others through sharing their decisions. Participants recommended increasing awareness, involving religious leaders, strengthening policies, and improving institutional support.

Conclusions: Body donation in Nepal is driven by selflessness of the donors and the passion for social welfare, environmental concerns, cost reduction, and the desire to support medical education. However, inadequate legal frameworks and institutional support remain key barriers.

Keywords: Body donation, Cadaveric dissection, Medical education

OVERVIEW OF NEPALGUNJ MEDICAL COLLEGE

Teaching Hospital, Kohalpur

The Main Teaching Hospital of 700 bedded capacities is located at Kohalpur, 10 Km south from the basic science campus, Chisapani and 16 Km north from Nepalgunj. Kohalpur is a new township at the junction of East- West highways & the North-South Nepalgunj-Surkhet Highway.

- Spread over 9 bigha 13 kattha 17 dhur.
- Total Built-up area 5/8,653 sq. ft.
- 700 Bedded Hospital.
- Lecture theatres, class rooms etc.
- Hostels for clinical students (separate for Girls & Boys)
- Accommodation available for Doctors as Fairly Quarter and Single person.
- Quarter (with attached bath & kitchen)

Nursing Campus, Kohalpur

The Institution is located in the Mid Western Region of Nepal, 16km. Kolhapur, Banke-Est.-2057 North from Nepalgunj city in Banke District, total Built-up area 64,578 sq. Nepalgunj Nursing campus, Kohalpur is marvelously running the proficiency level three years nursing program having 100% result almost every year.

LIBRARY

There is a central library at Kohalpur, well furnished, spacious study hall, which cov-

ers 14000 sq. ft. The library has the capacity to accommodate around 330 readers at any given time. Separate sections have been provided for girl students, faculty and lady staff. The books and medical journals and different disciplines of medical sciences are in abundance. Along with the course books and reference books, plenty of reading materials are there in the collections. Newly added CD section provides advance methodologies of Hi-Tech learning with the aid of computer. There is separate library at Chisapani and Nepalgunj.

HOSPITAL SERVICES

- General Medicine
- ICU, CCU, PICU
- Cardiology
- Orthopedics
- Psychiatry
- Physical Rehabilitation
- Dermatology
- ENT
- General Surgery
- Ophthalmology
- Laparoscopic Surgery
- Dental & Facio
- Burn & Plastic Surgery
- Maxillary Surgery
- Neurosurgery
- Ultrasonography
- Bronchoscopy
- CT SCAN
- Colonoscopy
- MRI
- Nephrology
- DIGITAL
- Urology

- MAMMOGRAPHY
- TURP - URS &
- Echo Cardiograph
- Endo-urological
- TMT services
- Computerized EEG
- Lithotripsy
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- WWW Pediatrics
- Endoscopy
- Pediatric surgery
- Digital X-ray

PUBLIC HEALTH SERVICES

- HIV/AIDS
- STI
- CAC/PAC
- ANC checkup
- Immunization
- DOT's
- Leprosy
- Safe Motherhood program

FREE SERVICES

Free Delivery and Caesarean Section: Under the agreement with Government of Nepal, delivery and caesarean section are done free of cost
Free Antenatal Check-up and Investigation Hb%, TC, Blood grouping, urine ME/Re Blood sugar, VDRL done free 50% discount on USG, HIV, HBsAg

Free Services:

Conflict victims, displaced people, Mukht Kamaiya, very poor patient: Operation and bed charge free, 50% discount on investigation.
Medicine, blood and food free by NGMC helping Hands (A NGO run by medical

students & staff) to very poor patients.

SAFE MOTHERHOOD

Aama suraksha program has been started since Jestha 2066. Since then free delivery service provided with the help of GOVT. of NEPAL

Since 2011, we have started bridge course for candidates passing BDS to make them eligible to join MD MS in basic sciences subjects under Kathmandu University. We send PG Residents for further training in sub specialties to the following institutions:

- NAMS
- TUTH, SGHF
- B.P. Memorial cancer hospital, Chitwan
- Patan Academy of medical Sciences.

It is noteworthy that there is a great shortage of teaching faculty at the junior level in Nepal. To ameliorate this problem, Additional number of seats for PG subjects is highly desirable

EVIDENCE OF EXCELLENCE IN MEDICAL EDUCATION

- NGMC graduates have been doing very well in USMLE, PLAB, MCI Screening test and working in USA, INDIA, AUSTRALIA and other foreign countries.
- Many of them have passed PG entrance test of NEPAL/INDIA/USA and are doing PG and working as specialists after completing MD/MS.

AFFILIATION AND ACCREDITATION

Nepalgunj Medical College fulfills the recommendations of Nepal Medical Council, Medical Council of India and other Medical councils of SAARC and other countries. It follows the curriculum prescribed by Kathmandu University. Spe-



cial emphasis is laid on clinical training from day one. This college arranges seminars, conferences and guest lectures by eminent people in the field of medicine from abroad also.

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Sri Lanka Medical Council.
World Health Organization
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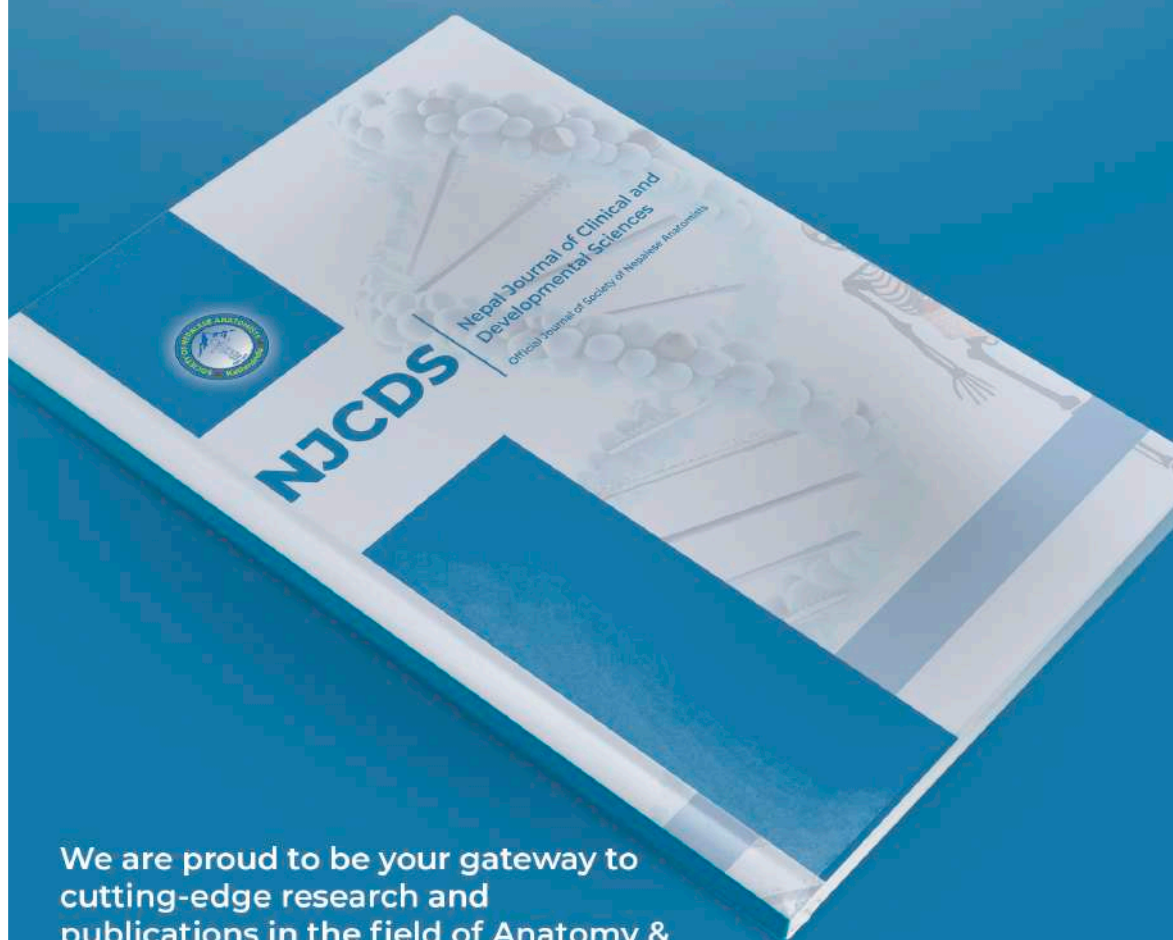
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