American Association of Clinical Anatomists

2025 42nd annual meeting

JUNE 16–19

American Association of Clinical Anatomists

Hyatt Regency Bellevue on Seattle's Eastside | Bellevue, WA

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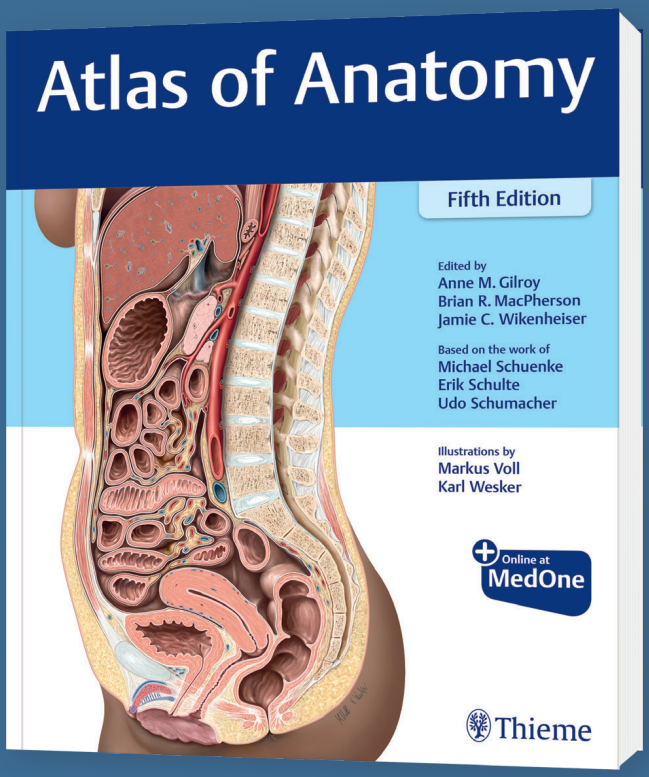

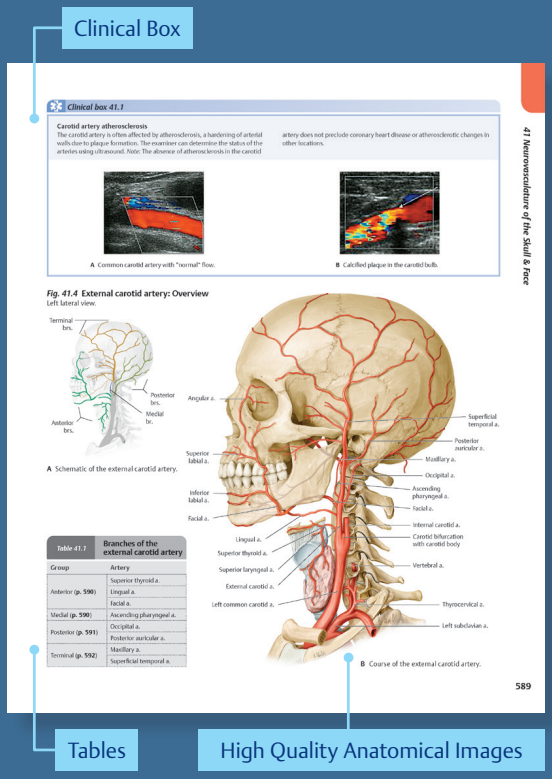

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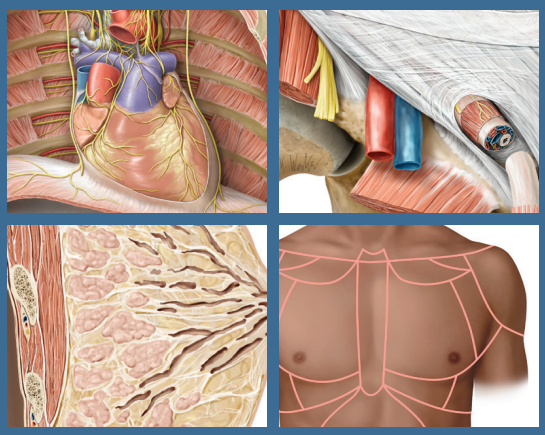

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American Association of Clinical Anatomists

President's Report

June 16–19, 2025

AACA Annual Meeting

PO Box 2945
LaGrange, Ga 30241
Ph: 706-298-0287
www.clinical-anatomy.org

Dear Fellow AACA Members and Guests,

Welcome to Seattle, Washington, for the 2025 Annual Meeting of the American Association of Clinical Anatomists. First and foremost, thank you for joining us—we are confident that you will find this year's program filled with engaging and enriching presentations.

This meeting provides an excellent opportunity to connect with fellow anatomists, colleagues, and educators from around the world and to explore the latest developments in anatomical science and educational techniques. We also encourage you to reach out to our new members and first-time attendees—help us make them feel welcome and invite them to join us again next year in Rochester, Minnesota, where we'll be hosted by the Mayo Clinic and our senior AACA member and colleague, Dr. Nirusha Lachman.

This year's Presidential Speaker is Dr. Ela Leshem, a legal theorist from Fordham University, who teaches and writes about the property and personhood status of human bodies, nation-states, animals, fetuses, religious artifacts, venerated objects, and artificial intelligence. We also look forward to our first-ever meeting-embedded Head and Neck Symposium, led by oral surgeon and anatomist Dr. Joe Iwanaga, featuring national and international speakers and a workshop dedicated to innovations in anatomy education.

The success of our annual meetings is made possible through the collaborative efforts of many. We are incredibly grateful to the vendors whose support has been instrumental to this year's event. Please visit their booths and express your appreciation for their generous contributions.

A special thank-you goes to the ASG for their hard work bringing together this year's meeting. The MOPP Committee, led by Dr. Kathleen Bubb of Weill Cornell Medicine, has, through exceptional coordination and commitment, put together a truly outstanding program that offers something for everyone interested in the anatomical sciences.

Lastly, while you're here, we hope you take full advantage of all the Greater Seattle area has to offer—and remember to "Live Anatomically!"

All best wishes,

R. Shane Tubbs
President, American Association of Clinical Anatomists

The AACA believes that each conference attendee should be treated with respect and dignity and that any form of sexual harassment is a violation of human dignity. The AACA condemns sexual harassment and maintains a "zero - tolerance" for sexual harassment. All conference attendees have the right to participate and learn free of sexual harassment. The AACA will take all reasonable efforts to prevent and promptly correct instances of sexual harassment. Any conference attendee who believes himself or herself to be a victim of sexual harassment is encouraged to report the information to the Program Secretary.

Notes:

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X “TWITTER”

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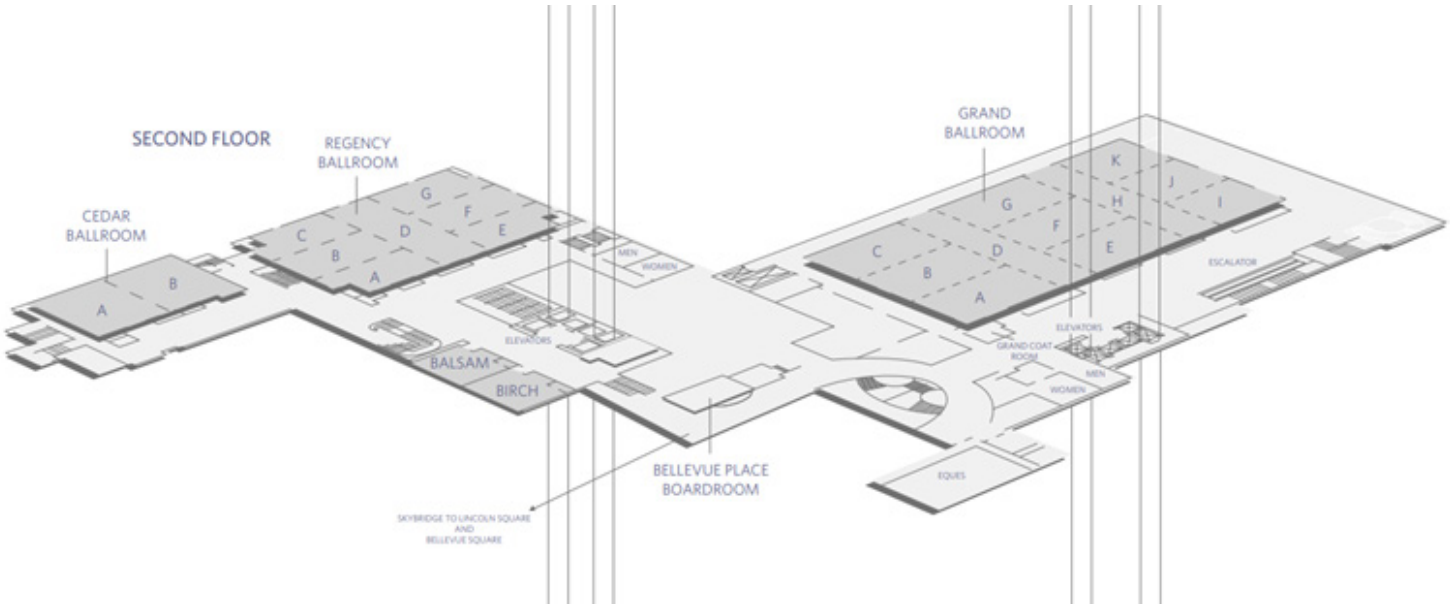
Hyatt Regency Bellevue on Seattle's Eastside



900 Bellevue Way NE
Bellevue, WA 98004

2025 AACA Annual Meeting Hyatt Regency Bellevue on Seattle's Eastside, Bellevue, WA

Monday, June 16

Registration Open 10:00 pm - 5:00 pm
Registration Desk/Coat Check (Grand Foyer)

AACA Council Meeting
7:30 am - 11:30 am
Juniper

Exhibitor Setup
12:00 pm - 5:00 pm
Grand Ballroom EFGH

Innovation in Anatomy Education Workshops - Open to All
1:00 pm - 4:00 pm
Grand Ballroom ABCD

Judges Orientation Meeting
4:15 pm - 5:15 pm
Grand Ballroom ABCD

Welcome Reception
6:00pm - 8:00pm
Grand Ballroom Foyer

Tuesday, June 17

Registration Open 7:30 am - 5:00 pm
Registration Desk/Coat Check (Grand Foyer)

CDC Meeting
7:30 am - 9:00 am
Grand Ballroom JK

Coffee with Exhibitors & Posters
7:30 am - 9:00 am
Grand Ballroom EFGH

BREAK

Welcome by AACA President and Others
9:15 am - 9:45 am

Presidential Speaker
9:45 am - 10:45 am
Grand Ballroom ABCD

BREAK

Platform Presentations Session 1 (Students)
11:00 am - 12:15 pm
Grand Ballroom ABCD

BREAK

BPOC Meeting
12:30 pm - 1:30 pm
Grand Ballroom JK

Editorial Board Lunch
12:30 pm - 1:30 pm
Juniper

BREAK

Poster Session 1 (Students) with Exhibitors & Coffee
1:45 pm - 2:45 pm
Grand Ballroom EFGH

BREAK

Platform Presentations Session 2 (Translational & Clinical Anatomy)
3:00 pm - 4:00 pm
Grand Ballroom ABCD

BREAK

Clinical Anatomy Fireside Chat
4:15 pm - 5:30 pm
Grand Ballroom ABCD

Trivia Night
6:30 pm - 8:00 pm
Grand Ballroom ABCD

2025 AACA Annual Meeting Hyatt Regency Bellevue on Seattle's Eastside, Bellevue, WA

	Wednesday, June 18		Thursday, June 19	
	Registration Open 7:30 am - 5:00 pm Registration Desk/Coat Check (Grand Foyer)		Registration Open 7:30 am - 5:00 pm Registration Desk/Coat Check (Grand Foyer)	
7:30	**DEIC Meeting** 7:30 am - 9:00 am Grand Ballroom JK	**Coffee with Exhibitors & Posters** 7:30 am - 9:00 am Grand Ballroom EFGH	**EAC Meeting** 7:30 am - 9:00 am Grand Ballroom JK	**Coffee with Exhibitors & Posters** 7:30 am - 9:00 am Grand Ballroom EFGH
7:45				
8:00				
8:15				
8:30				
8:45				
9:00	BREAK		BREAK	
9:15	**Platform Presentations Session 3 (Education)** 9:15 am - 10:45 am Grand Ballroom ABCD		**CAT Symposium** 9:15 am - 10:30 am Grand Ballroom ABCD	
9:30				
9:45				
10:00				
10:15				
10:30			BREAK	
10:45	BREAK		**Coffee with Exhibitors** 10:45 am - 11:45 am Grand Ballroom EFGH	
11:00	**Poster Session 2 with Exhibitors & Coffee** 11:00 am - 12:00 pm Grand Ballroom EFGH			
11:15				
11:30				
11:45			**CAT Committee Meeting** 11:45 am - 12:45 pm Grand Ballroom JK	
12:00	**ASC Committee Meeting** 12:00 pm - 1:00 pm Grand Ballroom JK			
12:15				
12:30				
12:45			BREAK	
1:00	BREAK		**Head & Neck Symposium (Local Hosts)** 1:00 pm - 3:00 pm Grand Ballroom ABCD	
1:15	**Techfair Presentations** 1:15 pm - 2:30 pm Grand Ballroom ABCD			
1:30				
1:45				
2:00				
2:15				
2:30	BREAK		BREAK	
2:45	**Poster Session 3 with Exhibitors & Coffee** 2:45 pm - 4:00 pm Grand Ballroom EFGH		**AACA Member's Business Meeting and Awards** 3:15 pm - 4:30 pm Grand Ballroom ABCD	
3:00				
3:15				
3:30				
3:45				
4:00			BREAK	
4:15				
4:30			**AACA New Council Meeting** 4:45 pm - 5:30 pm Juniper	
4:45				
5:00	**Awards Reception** 5:00 pm - 6:00 pm Grand Ballroom Foyer			
5:15				
5:30				
5:45				
6:00				
6:15				
6:30				
6:45				
7:00				
>7 pm				

Sponsors/Commercial Exhibitors

Generous donations and/or commercial exhibitor fees paid by the following companies and organizations have substantially reduced the Association's expenses in presenting this meeting. You are encouraged to visit the exhibits available for viewing in Grand Ballroom EFGH.

Exhibit hours:

12:00 pm – 5:00 pm Monday (set up)
7:30 am – 12:30 pm and 1:30 pm – 5:00 pm Tuesday
7:30 am – 12:00 pm and 1:00 pm – 5:00 pm Wednesday
7:30 am – 11:45 am Thursday

TEAR DOWN is from 12:00 pm – 4:00 pm on Thursday
(all exhibitors must be vacated from the hall at 4:00 pm)

*The hall will be closed for lunch for one hour each day.

LIST OF EXHIBITORS (as of 5.20.2025)

Anatomic Excellence, LLC | von Hagens Plastination
Booth #16/17

22 Angel Oaks Dr
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www.anatomicexcellence.com
Anatomic Excellence is the exclusive, full range agent for Dr. Gunther von Hagens Plastinated Human Tissue Specimens in the USA & Canada. We work with customers to establish a collection of ethically prepared specimens that meet the anatomical needs of the program and enhances learning opportunities for their students.

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Learning anatomy isn't easy. But with Toltech's comprehensive, immersive platform that features true-to-life visualizations and expert-level support, anatomy education becomes more accessible, impactful, and effective.

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GIVING TUESDAY

AACA is excited to participate in the Giving Tuesday initiative on December 2, 2025.
Your generous donation supports the continued growth of our organization.

Simply scan the QR code provided to donate.

We would like to thank our 2024 and 2025 Donors:
Kimberly Topp, PhD
Brian MacPherson, PhD

Pre Conference Events

Monday, June 16

7:30AM – 11:30AM	AACA Council Meeting - Invitation Only	Juniper
12:00PM – 5:00PM	Conference Registration	Grand Foyer
12:00PM – 5:00PM	Exhibitor Setup - Exhibitors Only	Grand Ballroom EFGH
1:00PM – 4:00PM	Pre-Conference Workshop – Innovation in Anatomy Education	Grand Ballroom ABCD
6:00PM – 8:00PM	Welcome Reception	Grand Ballroom Foyer

Scientific Program

Tuesday, June 17

7:30AM – 5:00PM	Conference Registration	Grand Foyer
7:30AM – 9:00AM	Career Development Committee (CDC) Meeting	Grand Ballroom JK
7:30AM – 9:00AM	Coffee with Exhibitors & Posters	Grand Ballroom EFGH
9:15AM – 9:45AM	Welcome by AACA President and Others	Grand Ballroom ABCD
9:45AM – 10:45AM	Presidential Speaker	Grand Ballroom ABCD
11:00AM – 12:15PM	Platform Presentations Session 1 (Students)	Grand Ballroom ABCD
11:00AM	Histology-MRI Registration Quality of Human Brains Fixed with Solutions from Anatomy Laboratories. *FRIGON, Eva-Marie.	
11:15AM	Donors through the Decades: A Historic Analysis of Cadaver Ledgers in the Midwest from 1911-2000. *WANG, Janice.	
11:30AM	Determining the Best Recipient Vessel Site with PAP Flap: An Anatomical Study. *LHUARIE, Martin.	
11:45AM	Clot Dissolution to Optimize Body Preparation for the Continuous Flow Perfused Cadaver Model. *PHARAND, Philippe.	
12:00PM	Plaques Observed in Anatomical Donors with Neurological Disease History Post Laminectomy Procedure. *MOBERG, Erick.	
12:30PM – 1:30PM	*Clinical Anatomy* Editorial Lunch Meeting – Invitation Only	Juniper
12:30PM – 1:30PM	Brand Promotion & Outreach Committee (BPOC) Meeting	Grand Ballroom JK
1:45PM – 2:45PM	Poster Session 1 (Students) with Exhibitors & Coffee	Grand Ballroom EFGH
3:00PM – 4:00PM	Platform Presentations Session 2 (Translational & Clinical Anatomy)	Grand Ballroom ABCD
3:00PM	Plantar Frenular Ligament - A Tendinous Connection Between Fibularis Longus and Plantar Aponeurosis. *WARD, Peter.	
3:15PM	Morphological and Biomechanical Trends in TMJ Osteoarthritis: Approaching a CBCT Imaging Study. *IMMONEN, Jessica.	
3:30PM	An Anatomical Model for Ultrasound-Guided Injections in Posterior Ankle Impingement Syndrome. *RIVERA-PEREZ, Juan Antonio.	
3:45PM	Anatomical Step-by-Step Dissection of the Transcortical Approach to the Insula. *LEONEL, Luciano.	
4:15PM – 5:30PM	Clinical Anatomy Fireside Chat	Grand Ballroom ABCD
6:30PM – 8:00PM	Trivia Night *Separate Pre-Registration Required*	Grand Ballroom ABCD

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Wednesday, June 18

7:30AM – 5:00PM Conference Registration ..... Grand Foyer

7:30AM – 9:00AM Diversity, Equity, and Inclusion Committee (DEIC) Meeting ..... Grand Ballroom JK

7:30AM – 9:00AM Coffee with Exhibitors & Posters ..... Grand Ballroom EFGH

9:15AM – 10:45AM Platform Presentations Session 3 (Education) ..... Grand Ballroom ABCD

- 9:15AM Anatomy Elective for 4th Year Medical Students -Impact on Reducing Learning Curve for PGY1 Resident. *SALINAS-ALVAREZ, Yolanda.
- 9:30AM Comparison of Traditional Teaching Methods and the Anatomy Glove Learning System in a DPT Cohort. *CENCETTI, Melissa.
- 9:45AM Metacognitive Accuracy - Imposter Syndrome Meets the Dunning-Kruger Effect in the Anatomy Laboratory. *WARD, Peter.
- 10:00AM Cadaveric Neurosurgical Procedure Engages Medical Students through Teamwork and Effort. *BRADSHAW, Emily.
- 10:15AM AACA and FRS Fascia Consensus and Definition Project. *DETTON, Alan.
- 10:30AM Effects of a Suturing Course on Medical Students' Comfort and Competency in Suturing Skills. *NOEL, Geoffroy.

11:00AM – 12:00PM Poster Session 2 with Exhibitors & Coffee ..... Grand Ballroom EFGH

12:00PM – 1:00PM Anatomical Services Committee (ASC) Meeting ..... Grand Ballroom JK

1:15PM – 2:30PM TechFair Presentations ..... Grand Ballroom ABCD

- 1:15PM Anatomical Mysteries Unveiled: AnatoMyst and the First Three-Dimensional Holographic Anatomy Atlas. *GIELECKI, Jerzy.
- 1:20PM Enhancing Anatomy Education with XR: Interactive 3D Lab Specimens and Immersive Dissection Videos. *BAIDYA, Ritwik.
- 1:25PM Comparison of 3D Printed and Cadaveric Hand Models in Anatomical Teaching. *LUTZ, Katherine.
- 1:30PM Transforming Medical Education: Harnessing Virtual Reality to Redefine Embryology Learning. *MAYER, Wyatt.
- 1:35PM 3D Scanning and Printing of the Brachial Plexus: A Cost-Effective Approach for Anatomical Education. *MEYER, Joshua.
- 1:40PM From Anatomy to Application: Low-Cost Endoscopy for Medical Students. *NGUYEN, Alicia.

2:45PM – 4:00PM Poster Session 3 with Exhibitors & Coffee ..... Grand Ballroom EFGH

5:00PM – 6:00PM Awards Announcements & Reception ..... Grand Ballroom ABCD & Grand Ballroom Foyer

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Thursday, June 19

7:30AM – 5:00PM	Conference Registration	Grand Foyer
7:30 AM – 9:00 AM	Educational Affairs Committee (EAC) Meeting	Grand Ballroom JK
7:30AM – 9:00AM	Coffee with Exhibitors & Posters	Grand Ballroom EFGH
9:15AM – 10:30AM	Clinical Anatomical Terminology (CAT) Committee Symposium	Grand Ballroom ABCD
10:45AM – 11:45AM	Coffee with Exhibitors	Grand Ballroom EFGH
11:45AM – 12:45PM	Clinical Anatomical Terminology (CAT) Committee Meeting	Grand Ballroom JK
1:00PM – 3:00PM	Head & Neck Symposium	Grand Ballroom ABCD
3:15PM – 4:30PM	AACA Member's Business Meeting & Association Awards	Grand Ballroom ABCD
4:45PM – 5:30PM	AACA New Council Meeting – Invitation Only	Juniper

Honored Member 2025

The American Association of Clinical Anatomists

Recognizes and Awards Honored Membership to

Robert J. Spinner, MD, FAANS, FACS

Robert J. Spinner, MD is the Burton M. Onofrio, MD Professor of Neurologic Surgery and a Professor of Orthopedics and Anatomy at the Mayo Clinic in Rochester, Minnesota. He served as chairman of the Department of Neurologic Surgery there from 2015-2024 and the Academic Appointments and Promotions Committee from 2012-2021. He is board certified in both orthopedics and neurosurgery. His clinical practice is limited to peripheral nerve surgery. He completed full residency programs in orthopedics (Duke University) and neurosurgery (Mayo Graduate School of Medicine); a 1 year peripheral nerve fellowship with Dr. David Kline at LSUHSC; and a 6 month traveling fellowship to several international centers as a CNS Cushing Fellow. He has served as President of the American Society for Peripheral Nerve, the American Association of Clinical Anatomists and the Sunderland Society.

Previous Honored Member Award Recipients

1984 – W. Henry Hollinshead*
1985 – Chester B. McVay*
1986 – Donald James Gray*
1987 – Russell T. Woodburne*
1988 – Oliver Beahrs*
1989 – N. Alan Green*
1990 – Frank H. Netter*
1991 – Ralph Ger*
1992 – M. Roy Schwarz
1993 – Carmine D. Clemente*
1994 – Keith L. Moore*
1995 – Ray J. Scothorne*
1996 – Robert A Chase*
1997 – Tatsuo Sato
1998 – John E. Skandalakis*
1999 – Donald R. Cahill*
2000 – Sandy C. Marks, Jr.*
2001 – David G. Whitlock*
2002 – Robert D. Acland*
2003 – Arthur F. Dalley, II
2004 – John V. Basmajian*
2005 – Ian Whitmore
2006 – Peter H. Abrahams
2007 – Gary Wind
2008 – T.V.N. (Vid) Persaud
2009 – Richard S. Snell
2010 – Raymond F. Gasser
2011 – Harold Ellis
2012 – Ronald A. Bergman
2013 – John Hansen
2014 – Victor M. Spitzer
2015 – Carol E. Scott-Conner
2016 – Carlos Machado
2017 – James D. Collins*
2018 – Anne Agur
2019 – Robert Anderson
2020 – Stephen W. Carmichael
2021 – Susan Standring
2022 – Cornelius Rosse
2023 – Bernell Dalley
2024 – Michael Nolan

** deceased*

R. Benton Adkins, Jr. Distinguished Service Award 2025

The American Association of Clinical Anatomists
Recognizes and Awards the R. Benton Adkins, Jr. Distinguished Service Award to

David J. Porta, PhD

David J. Porta has a Ph.D. in Anatomical Sciences and Neurobiology from the University of Louisville School Medicine. He is currently a tenured, full professor at Bellarmine University in Louisville, KY where he has taught A & P, Marine Biology, and Gross Anatomy over the last 33 years. He also spent 19 of those years teaching Gross and Neuroanatomy at the University of Louisville Schools of Medicine and Dentistry. He loves teaching and has been recognized with 6 University-wide Teacher of the Year awards. He holds memberships in 8 scientific organizations but is most active in the AACA which he joined in 1997 and has only missed one annual meeting since. At those meetings, he had 12 platform and 10 poster presentations. He has served on numerous committees and as Meeting Manager, Program Secretary, and Councilor. He also hosted a joint regional meeting of the AACA and HAPS, served as a Guest Editor for a special issue of *Clinical Anatomy* on Cadaver Use in Trauma Research, and continues to review meeting abstracts and for the journal.

His research is in Anatomy as well as the area of Trauma Biomechanics. He has presented 91 times at scientific conferences, published 23 peer-reviewed articles, 5 book chapters, and 51 abstracts. He has also shared his work by giving over 400 invited lectures. This work, along with his training in Accident Reconstruction and as an Emergency Medical Technician, has led to his serving as a Forensic Expert since 1992 on over 1,200 legal cases involving injury analysis. In 2011, Dr. Sherrie Downey invited him to consult with her for pharmaceutical companies and he has worked hundreds of cadaver-based programs providing advanced toxin injection training for physicians treating patients with Spasticity, Cervical Dystonia, and Chronic Migraine.

Of all of his accomplishments, he is most proud that he somehow convinced Nancy Crane to become his wife and together they were blessed with 2 amazing daughters- Dr. Emily Porta-Miller, Ph.D. and Dr. Layne Porta. Ph.D.

Previous R. Benton Adkins, Jr. Distinguished Service Award Recipients

2004 – Robert J. Leonard
2006 – Daniel O. Graney
2007 – Ralph Ger*
2009 – Arthur F. Dalley, II
2011 – Carol Scott-Conner
2012 – Keith L. Moore*
2013 – Stephen W. Carmichael
2015 - Lawrence M. Ross*
2016 – Thomas Quinn
2017 – Ronald S. Wade
2019 – Brian R. MacPherson
2020 – Neil S. Norton*
2021 – Fiona Stewart
2023 – Gregory R. Smith
2024 – Ameed Raoof

** deceased*

Presidential Speaker

Ela Leshem, PhD

"Dead Bodies as Quasi-Persons"

American law treats dead bodies as quasi-persons: entities with a moral status between things and persons. Across disparate areas of law, times, and regions, U.S. law conceives of dead bodies as holders of dignity interests, which it protects in a variety of ways. The law, for example, protects dead bodies against denigration to the status of property, waste, or nonhuman animals and ensures that dead bodies be treated as individuals with names. The law also protects dead bodies against visual, physical, and sexual abuse. As the case study of unclaimed bodies and their use for anatomical dissection shows, this account of dead bodies as quasi-persons casts a critical light on the mistreatment that some dead bodies suffer—especially those of Black Americans, Native Americans, and the poor. The account also illuminates common views of personhood, property, human nature, and mortality. And it raises questions about the law's treatment of other arguably liminal entities, such as animals, fetuses, plants, and AI models.

Biography:
Ela Leshem is an Associate Professor of Law at Fordham Law School. She is a legal theorist who writes about the property and personhood status of human bodies, nation states, animals, fetuses, religious artifacts, venerated objects, and artificial intelligence. Her work has appeared in the Vanderbilt Law Review and Yale Law Journal and received the Association of American Law Schools' Emerging Scholar Award for Aging and the Law in 2025.

Before joining Fordham, Leshem was a fellow at the Senate Judiciary Committee and clerked for Chief Judge David Barron on the U.S. Court of Appeals for the First Circuit. She holds a JD and BA from Yale, where she served as Editor-in-Chief of the Yale Law Journal. During her time at Yale, she worked for Gupta Wessler in D.C., Public Counsel in Los Angeles, Judge Jeffrey Meyer at the U.S. District Court for the District of Connecticut, and Justice Goodwin Liu at the California Supreme Court.

Leshem studied music at the University of the Arts in Bern, Switzerland, and at the State University of Music in Stuttgart, Germany. She completed a doctorate in philosophy and a masters in political theory at Oxford on a Rhodes Scholarship.

Innovation in Anatomy Education

Pre-Conference Workshop

Monday, June 16 | 1:00 PM – 4:00 PM

Grand Ballroom ABCD

Part 1: Introduction to 3D Slicer with David Nahabedian, MSMI, CMI

This workshop (1pm-3pm) will showcase 3D Slicer's capabilities, no experience is necessary. Attendees will be guided through loading a data set (anonymized data sets will be provided), learn how to isolate structures, and extract a 3D model for varied usage including research for publication and teaching.

Part 2: Integrating 3D Models into PowerPoint and Applying Morph Transitions with Sue Simon, MS, CMI

This workshop (3pm-4pm) will cover how to add 3D models to PowerPoint slides, and assign actions on those models such as morph transitions and highlighting of structures. Having 3D models in lectures increases student engagement and can help students better understand complex spatial relationships.

David Nahabedian and Sue Simon are both medical illustrators within the Center for BioMedical Visualization, Department of Anatomical Sciences, School of Medicine at St. George's University in Grenada, and are board-certified medical illustrators.
Questions: ssimon2@sgu.edu.

Included in conference registration for attendees.
Please bring your own laptop for this workshop.

Clinical Anatomy Fireside Chat

Tuesday, June 17, 2025 | 4:45 PM – 6:00 PM

Grand Ballroom ABCD

Pull up a chair and join us for a new and exciting addition to the AACA Annual Meeting: The Clinical Anatomy Fireside Chat. This informal, unscripted conversation brings together five experts in the field of clinical anatomy to share personal reflections and thought-provoking insights on the past, present, and future of clinical anatomy.

More than just a discussion, this Fireside Chat is a chance to connect with others who care deeply about the evolving role of clinical anatomy, the identity of the clinical anatomist, and what meaningful collaboration looks like. It's about shared experiences, candid advice, and imagining the future—together.

Whether you're just beginning your journey or have been in the field for years, this session promises inspiration, community, and a few laughs along the way.

Speakers:

Nirusha Lachman, PhD
Professor of Anatomy and Chair | Department of Clinical Anatomy | Joint Appointment Department of Surgery | Division of Plastic Surgery | Mayo Clinic College of Medicine and Science

Philip Adds, PhD
President, BACA | Editor of *Clinical Anatomy* (UK) | Retired Reader in Anatomy, St. George's University of London

Marios Loukas, MD, PhD
Dean, School of Medicine and Professor | St. George's University

Jeffrey Strakowski, MD
Clinical Professor and Associate Director of Medical Education | The Ohio State University | OhioHealth Riverside Methodist Hospital

Robert J. Spinner, MD
Burton M. Onofrio, MD Professor of Neurologic Surgery | Professor of Orthopedics and Anatomy | Mayo Clinic

Head and Neck Symposium

Thursday, June 19, 2025 | 1:00 PM – 3:00 PM

Grand Ballroom ABCD

Discover Cutting-Edge Head and Neck Clinical Anatomy with World-Renowned Experts!

Speakers:

Dr. Laligam N. Sehkar

"Extreme Lateral Approaches to the Clivus, Anatomy and Surgery"

Dr. R. Shane Tubbs

"Surgical Anatomy of the Skull Base"

Dr. Jeffrey A. Strakowski

"Ultrasound of the Neck with Clinical Correlations"

Dr. Mi-Sun Hur

"Detailed Anatomy of the Muscles of Facial Expressions"

Dr. Hee-Jin Kim

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Dr. Joe Iwanaga

"Surgical Anatomy of the Dental, Oral and Maxillofacial Regions"

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Elsevier

Committee Meeting Descriptions

(Open to all – not restricted to members of the committee | Breakfast and lunch meal tickets were pre-purchased options, only those who pre-purchased will be allowed into the meal line. All are welcome to attend the meetings.)

Career Development Committee Meeting
Tuesday, June 17th from 7:30 am – 9:00 am
Open to All Attendees

Effective Course Director Strategies: This session will provide a platform for experienced and aspiring course directors to share insights on anatomy curricula, assessments, and continuous quality improvement. The meeting will also include the selection of a new committee member and recognition of outgoing members.

Brand Promotion & Outreach Committee Meeting
Tuesday, June 17th from 12:30 pm – 1:30 pm
Open to All Attendees

For the Annual Meeting, the BPOC has organized a dynamic lunch session centered on the pivotal theme of member involvement and the future growth of the AACA. This interactive session will explore innovative strategies for increasing membership, including leveraging electronic media, digital platforms, and emerging AI tools to enhance outreach, engagement, and visibility. Attendees will have the opportunity to share ideas and collaborate on practical approaches to building a more vibrant and connected membership community. Your participation in this session is highly encouraged!

Diversity, Equity, and Inclusion Committee Meeting
Wednesday, June 18th from 7:30 am – 9:00 am
Open to All Attendees

"Reflections and Elaborations on Religious Diversity in Body Donation and Burial Practices: Voices from the Clinical Anatomy Roundtable and Beyond"

This breakfast session meeting during the AACA Annual Meeting that will serve as a recap of the April CART session, and it will serve as an opportunity for us to engage attendees about how they incorporate or accommodate for religious diversity within the class settings for the sake of their students. This session will also invites attendees to share their own experiences of how their body donation processes and paperwork may have been modified to accommodate various religious or spiritual traditions or to recruit donors from various religious or spiritual traditions.

Anatomical Services Committee Meeting
Wednesday, June 18th from 12:00 pm – 1:00 pm
Open to All Attendees

The Anatomical Services Committee invites you to join our lunch meeting where experts in the anatomical services, faculty and students come together to discuss pertinent questions arising in our field. This year each table will be tasked with working through a case study focused on timely and pertinent issues related to body donation and use. All perspectives are welcome! Additionally, come with questions as this is a great place to acquire the information you need about Anatomical Services including (but not limited to!) donor preparation, donor usage and the ins and outs of lab management. Active AACA members present will also elect a new committee member to serve for a 3-year term.

continued on next page

Educational Affairs Committee Meeting
Thursday, June 19th from 7:30 am – 9:00 am
Open to All Attendees

During the 2025 AACA Conference, the EAC will host a Breakfast Meeting. As part of this event, a workshop titled *"Critiquing Survey-Based Research: A Refresher and Upskilling Workshop"* by Dr. Adam B. Wilson, PhD (Associate Professor at Rush University Medical Center and Associate Editor for the journal Anatomical Sciences Education and Editorial Board Member for *Clinical Anatomy* journal) will be held.

Set within the context of anatomy education, this workshop will enable participants to:

1. Detect commonly missing manuscript elements related to context, the instrument used, and validity evidence.
2. Summarize approaches for ensuring survey credibility and identifying non-response bias.
3. Recommend sound reporting and presentation practices for survey outcomes.

At the end of the meeting, we will request attendees to nominate and elect a new member.

Adam Wilson, PhD is an Associate Professor and the Director of Anatomy Education in the Department of Anatomy and Cell Biology at Rush University in Chicago, IL. He has experience administrating and teaching gross anatomy to a wide range of health professions students and directs the gross anatomy curriculum for Rush Medical College. Dr. Wilson's research in the field of educational measurement and evaluation has included psychometric studies, meta-analyses, as well as national surveys and profession-level investigations. He currently serves as an associate editor for the journal *Anatomical Sciences Education.*

Clinical Anatomical Terminology Committee Meeting
Thursday, June 19th from 11:45 am – 12:45 pm
Open to All Attendees

The CAT will host a meeting over lunch on Thursday, June 19th from 11:45am – 12:45pm.

The meeting will begin with an introduction to the committee members and the goals and objectives of the CAT committee, and also the various subcommittees. Subsequently, there will be a presentation on the activities of the CAT committee, the subcommittees – Fascia, French TA2, and Female. Two new members-at-large will be elected. (Note that the committee has decided to merge its popular anatomy terminology trivia contest, which had previously been a part of its mealtime committee meeting, with Trivia Night (prepared and mounted by P. Ward and colleagues).

This lunch meeting was purposely scheduled to follow the Clinical Anatomical Terminology (CAT) Symposium conducted earlier in the day from 9:15 – 10:30am. During this lunch meeting, members will have the opportunity to participate in a panel discussion with the Symposium Speakers. – experts in the field of Fascia in the areas of Research, Nomenclature, and Clinical Practice, who at the symposium addressed issues related to the wide chasm in the nomenclature and the understanding of structural, functional, and clinical aspects of Fascia.

All are welcome to join

Meeting Overview:
Introduction – committee members
Overview of goals and objectives
Brief report from Sub-committees - Fascia, French TA2, and Female Pelvic Nomenclature
Nomination and voting of new members
Panel Discussion with Symposium Speakers
Announcement of election of new Members-at-large

Please also plan on attending the Trivia Night on Tuesday, June 17 from 6:30 – 8:00pm. This event will challenge contestants on various topics in Anatomy, including a the topic of Fascia. Included will be snacks and two drink-tickets before the opening of an open-bar.

Committee Symposium Description

(Open to all – not restricted to members of the committee)

Clinical Anatomical Terminology Committee Symposium
Thursday, June 19th from 9:15 am – 10:30 am

"The Anatomy of Fascia – Bridging Structure, Function, Education, and Clinical Practice for Fascia's Future in Medicine."

Get ready for a thought-provoking and inspiring symposium that will delve into one of the most dynamic and rapidly evolving areas of anatomy: fascia. This session will address the critical gaps in understanding and terminology surrounding the structural, functional, and clinical aspects of fascia—a structure that is often overlooked, despite its profound impact on human movement, health, and disease. This symposium brings together three leading voices in fascia research and clinical application. Each speaker will present groundbreaking perspectives, share innovative research, and open exciting new discussions that will challenge how we view and use fascia in both education and clinical practice. Whether you're a researcher, educator, clinician, or anatomist, this symposium will offer insights that will reshape your understanding of the human body and the way fascia influences every anatomical system.

Get Involved:

Participate in the interactive panel discussion during the Clinical Anatomical Terminology (CAT) lunch meeting (to follow the same day from 11:45am – 12:45pm), where you'll have the opportunity to ask questions and discuss the future of fascia terminology directly with the invited speakers.

Professor Carla Stecco, MD

Professor of Human Anatomy and Movement Sciences at the University of Padova

Professor Stecco leads a multidisciplinary team of anatomists, biomechanical engineers, physiotherapists, osteopaths, and plastic surgeons. Her groundbreaking research on the role of fascia in musculoskeletal health will challenge your understanding of the tissue's structural and functional importance in movement and pathophysiology.

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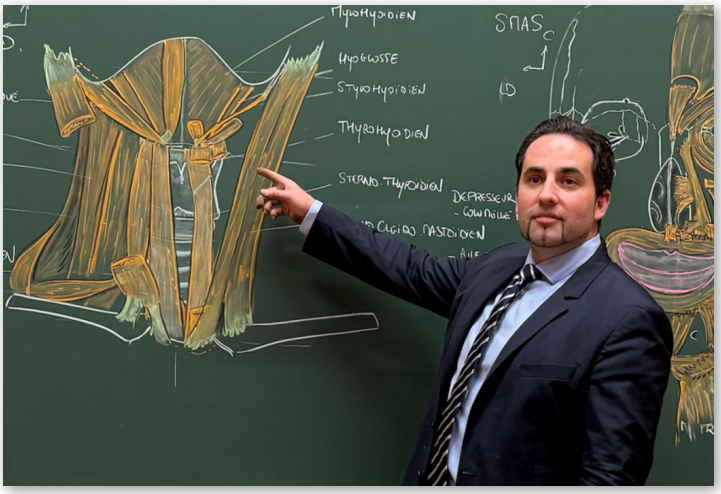
Professor Rebecca Pratt, PhD

Professor in the Department of Foundational Medical Studies at Oakland University William Beaumont School of Medicine

Dr. Pratt is an internationally recognized expert on fascia and its role in the complex systems of the body. Often dismissed in favor of muscles and bones, fascia is the connective tissue that holds everything together. Dr. Pratt's work highlights the critical role of fascia in medical education and will serve as a call to action for more current nomenclature.



Dr. Martin Lhuaire, MD, PhD

Clinical anatomist at the University of Paris Cité and plastic surgeon at Hôpital Européen Georges-Pompidou

Dr. Lhuaire's expertise combines detailed anatomical knowledge of fascia with its critical application in optimizing surgical reconstruction. His unique clinical perspective will provide invaluable insights into how fascia impacts surgical outcomes and patient care, reinforcing is long overdue addition into clinical anatomy education.

Don't Miss Out!

This is an extraordinary opportunity to learn from leaders in the field and to explore the anatomical, functional, and clinical significance of fascia in a new and exciting way. Join us for this not-to-be-missed event that promises to inspire, inform, and spark new ideas for clinical practice, research, and teaching.

You might also want to plan on attending the Trivia Night on Tuesday, June 17 from 6:30 – 8:00pm. This event will challenge contestants on various topics in Anatomy, including the topic of Fascia.

American Association of Clinical Anatomists

Annual Business Meeting Agenda

Thursday, June 19th, 2025
Bellevue, Washington

PO Box 2945
LaGrange, Ga 30241
Ph: 706-298-0287
www.clinical-anatomy.org

CALL TO ORDER: 3:15 pm
Approval of Minutes of 2024 Annual Business Meeting (ABM) and the 2025 ABM Agenda

1. **President's Report** – R. Shane Tubbs – **10 minutes**
   a. 2025 Election Results
   b. 2026 Election – Positions open to the AACA Membership in 2026
      i. Association Secretary
      ii. Special Councilor – Allied Health
      iii. Councilor-at-Large (2)
   c. Presidential Committee Appointments
   d. State of the Association
2. **Treasurer's Report** – Mathangi Rajaram-Gilkes – **5 minutes**
3. **Membership Committee Report** – Anthony D'Antoni – **5 minutes**
   a. Remembrance of Deceased Members – Mo Khalil – 1 minute
4. **Journal Report** from Editor-in-Chief of *Clinical Anatomy* – R. Shane Tubbs – **5 minutes**
5. **Meeting Organization & Program Planning Committee Report** – Kathleen Bubb – **10 minutes**
   a. Report of 2025 Annual Meeting Committee
   b. Future Meetings:
      i. 2026 AACA Annual Meeting: Mayo Clinic, Rochester, MN
      ii. 2027 AACA Annual Meeting: Texas Tech University Health Sciences Center, Lubbock, TX
6. **Annual AACA Awards** – R. Shane Tubbs – **5 minutes**
   a. Honored Member Award 2025 – Robert Spinner
   b. R. Benton Adkins, Jr. Distinguished Service Award 2025 – David Porta
7. **Old Business** – **2 minutes**
8. **New Business** – **3 minutes**

ADJOURNMENT: 4:30 pm

*The Special Interest Group (SIG) Committees (Brand Promotion and Outreach, Educational Affairs, Career Development, Clinical Anatomical Terminology, and Anatomical Services) elect members at their committee meetings.

American Association of Clinical Anatomists

Annual Business Meeting Minutes

Thursday, June 20th, 2024
New York, New York

PO Box 2945
LaGrange, Ga 30241
Ph: 706-298-0287
www.clinical-anatomy.org

CALL TO ORDER: 3:01 PM

1. **Approval of Minutes of 2023 Annual Business Meeting (ABM) and 2024 ABM Agenda**
   a. 2023 Minutes: No corrections – Carlos Suarez-Quain made a motion to approve, seconded by Mathangi Rajaram-Gilkes, all approved
   b. 2024 Agenda: No corrections – Stephen Carmichael made a motion to approve, seconded by Kazzara Raeburn, all approved

2. **President's Report** (R. Shane Tubbs) -- - - - -- - - -**3:02 PM**
   a. 2024 Election Results
      i. Program Secretary – Kathleen Bubb
      ii. Special Councilor, Anatomical Services – Guenevere Rae
      iii. Councilor-at-Large – David Ezra
      iv. Councilor-at-Large – Ameed Raoof
   b. 2025 Election – Positions open to the AACA Membership in 2025
      i. President Elect (1)
      ii. Treasurer (1)
      iii. Special Councilor, Clinical (1)
      iv. Councilor-at-Large (2)
   c. Special Interest Group Committee Updates
      i. Anatomical Services Committee
         (1) Presidential Appointees
            (a) 2022-2025: Evan Goldman
            (b) 2023-2026: Matthew McCracken
            (c) 2024-2027: Amberly Reynolds, Chair
         (2) Members Elected at Annual SIG Meeting of Committee
            (a) 2022-2025: Aron Davis
            (b) 2023-2026: Sarah Garnaat
            (c) 2024-2027: Malli Barremkala
      ii. Brand, Promotion and Outreach Committee
         (1) Presidential Appointees
            (a) 2022-2025: Maira du Plessis
            (b) 2023-2026: Mathangi Rajaram-Gilkes
            (c) 2024-2027: Deepak Sharma, Chair
         (2) Members Elected at Annual SIG Meeting of Committee
            (a) 2024-2027: Edgar Meyer
            (b) 2024-2027: Uma Pandalai

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(c) 2024-2027: Vacancy to be filled

iii. Career Development Committee
  (1) Presidential Appointees
    (a) 2022-2025: Priti Mishall, Chair
    (b) 2023-2026: Ewarld Marshall
    (c) 2024-2027: Santosh Sanguri
  (2) Members Elected at Annual SIG Meeting of Committee
    (a) 2022-2025: Gurvinder Kaur
    (b) 2023-2026: Jolene Harris
    (c) 2024-2027: Punnose Kattil

iv. Clinical Anatomical Terminology Committee
  (1) Presidential Appointees
    (a) 2022-2025: Brad Martin
    (b) 2022-2025: Efrain Miranda
    (c) 2023-2026: Peter Ward
    (d) 2023-2026: Alan Detton
    (e) 2024-2027: Geoffroy Noel, Chair
    (f) 2024-2027: Sunil Kumar Oza
  (2) Members Elected at Annual SIG Meeting of Committee
    (a) 2022-2025: Sasha Lake
    (b) 2022-2025: Carlos Suarez-Quain
    (c) 2023-2026: Sarah Tilden
    (d) 2023-2026: Chernet Tessama
    (e) 2024-2027: Heba Labib
    (f) 2024-2027: Anthony Weinhaus

v. Educational Affairs Committee
  (1) Presidential Appointees
    (a) 2022-2025: Yolana Salinas-Alvarez, Chair
    (b) 2023-2026: Mitesh Dave
    (c) 2024-2027: Jennifer Burgoon
  (2) Members Elected at Annual SIG Meeting of Committee
    (a) 2022-2025: Eiman Abdel Meguid
    (b) 2023-2026: Carolyn Meyer
    (c) 2024-2027: Padma Gadepally

vi. Ad Hoc Diversity, Equity, and Inclusion Committee
  (1) Edgar R. Meyer, Chair
  (2) Sasha Lake
  (3) Sarah Greene
  (4) Thomas Gest
  (5) Haley Nation
  (6) Jonathan Wisco
  (7) Adegbenro Fakoya
  (8) Abayomi Afolabi
  (9) Somesree Mitra
  (10) Heba Labib
  (11) Paul Neumann
  (12) Amberly Reynolds
  (13) Rosie Santos

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3. **Treasurer's Report** (Mathangi Rajaram-Gilkes) - **3:09 PM**
    a. Summary of Accounts (all as of April 30, 2024)
    b. Growth Over Time
    c. Status of Accounts: total assets $1,079,850
        i. This will decrease once meeting costs have been paid
        ii. Annual Meetings – Historical review
            (1) Projected to profit around $17,851 for the 2024 Annual Conference
        iii. Regional Meetings –
            (1) Generally have small net income
        iv. Other Income
            (1) Membership Dues
            (2) Journal Information
                (a) Carmichael noted that the overall asset increase in 2016 was from a journal grant from Wiley and Loukas noted that the goal was to have the endowment hit $1,000,000.
    d. Issues That Can Affect Fiscal Stability
        i. Vendors/Sponsorship – NYC had 13 vendors
        ii. Location of annual meeting, virtual Council meetings, regional meetings, vendors/sponsorship
        iii. Virtual Council Meetings
        iv. Regional Meetings
    e. Thanks to members of Financial Affair Committee

4. **Membership Committee Report** (Anthony D'Antoni) - **3:14 PM**
    a. Reviewed Membership Committee
    b. Reviewed membership types
    c. Reviewed membership dues structure
        i. Discussed possibility of institutional membership in addition to individual membership

5. **Remembrance of Deceased Members** (Mohammed Khalil) ---------- 3:19

6. **State of the Journal** (Shane Tubbs) - **3:22 PM**
    a. Reviewed editors and structure
    b. Reviewed trend of article views – continued increase
    c. Reviewed most viewed articles in *Clinical Anatomy* (top 10)
    d. Reviewed country/region of submission
    e. Reviewed county/region of authorship
    f. Reviewed Impact Factor
        i. Anatomy/Morphology category
        ii. Have remained stable at about 2.4 over the past few years
        iii. Reviewed comparison to other journals
            (1) Now above Journal of Anatomy and Annals of Anatomy
        iv. Reviewed articles that contributed to Impact Factor
    g. Reviewed upcoming articles of interest

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7. **Meeting Organization & Program Planning Committee Report** (Jennifer Burgoon) - **3:27 PM**
    a. Report of 2024 Annual Meeting
        i. Continued work on customizing Planstone software
            (1) A post-conference survey will be going out for feedback
        ii. Improved submission guidelines, reviewer guidelines, and the post-conference survey
        iii. Changed policy on late breaking abstracts (now postable on *Clinical Anatomy* website)
        iv. Developed the conference schedule
            (1) Utilized abstract reviewer's ratings to select presentation format for presenters; watched for IRB approval (when applicable)
            (2) Added artist Dan Thompson to the opening reception
            (3) Added the Papanicolaou lecture and reception on Tuesday
            (4) Continued Anatomy Trivia Night
            (5) Added third committee symposium to schedule
        v. Future conference planning
    b. Review of abstract submission statistics
        i. 132 initial submissions, 27 late-breaking
            (1) 124 postable, 10 non-postable
        ii. 306 registrants
    c. Thanks to Special Interest Committee Chairs
        i. Anatomical Services: Amberly Reynolds
        ii. Brand, Promotion, and Outreach: Soo Kim
        iii. Career Development Committee: Amanda Troy
        iv. Clinal Anatomy Terminology: Paul Neumann
        v. Educational Affairs Committee: Ameed Raoof
        vi. Diversity Equity and Inclusion Committee: Edgar Meyer
    d. Thanks to Meeting Managers
        i. Amberly Reynolds (2022-2024)
        ii. Brian MacPherson (2023-2025)
        iii. Adam Kolatorowicz (2024-2026)
    e. Thanks to others
        i. Peter Ward – Anatomy Trivia
    f. Thanks to Local Hosts
        i. Estomih Mtui & Anthony D'Antoni – 2024 (Weill Cornell Medicine, New York)
        ii. R. Shane Tubbs & Joe Iwanaga – 2025 (Bellevue/Seattle)
        iii. Nirusha Lachman & Jonathan Torrens-Burton – 2026 (Mayo Clinic, Rochester)
        iv. Kerry Gilbert & Keith Bishop – 2027 (Texas Tech University Health Sciences Center, Lubbock)
    g. Thanks to ASG
        i. Jennifer Walls
        ii. Grace Foster
        iii. Rhonda Freeman
    h. Future Meetings:
        i. 2025 AACA Annual Meeting, June 16-19, Hyatt Regency Bellevue, Bellevue/Seattle, WA – R. Shane Tubbs & Joe Iwanaga
        ii. 2026 AACA Annual Meeting, June 15-19, Mayo Clinic, Rochester, MN – Nirusha Lachman & Jonathan Torrens-Burton

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iii. 2027 AACA Annual Meeting, June 13-17, Texas Tech University Health Sciences Center, Lubbock, TX – Kerry Gilbert & Keith Bishop

i. Other Future AACA Annual Meetings
    i. If interested in hosting a conference (Regional or National) – please email ASG
j. Post-Conference Survey
    i. Please complete to help us improve future meetings

8. **Committee Updates**- **3:44 PM**
    a. Bylaws Committee
    b. Nominating Committee
    c. Financial Affairs Committee
    d. Journal Committee
    e. Membership Committee

9. **Old Business** - **3:45 PM**
    a. Loukas – Bylaws updates

10. **New Business** - **3:46 PM**
    a. Noel Boaz shares concern for AACA no longer being member of IFAA/FIPAT organizations
    b. Open seat on Brand Promotion and Outreach Committee
        i. Brian MacPherson is nominated
        ii. All approved for MacPherson to serve on BPOC from 2024-2027

11. **Motion to Adjourn** – Jennifer Burgoon
    a. Second – Mohammed Khalil
    b. All approved, motion passed

ADJOURNMENT: 3:48 PM

2024 – 2025
AACA Council Members

Officers

President – R. Shane Tubbs, Ph.D.

President-Elect – Anthony V. D'Antoni, MS, DC, Ph.D.

Secretary – Mohammed K. Khalil, DVM, MSEd, Ph.D.

Treasurer – Mathangi Rajaram-Gilkes, MBBS, M.Sc.

Past President – Thomas R. Gest, Ph.D.

Program Secretary – Kathleen Carol Bubb, MD

Councilors

Yoko Tabira, PT, Ph.D.

Guenevere Rae, MS, Ph.D.

Koichi Watanabe, MD, Ph.D.

David Ezra, Ph.D.

Ameed Raoof, MD, Ph.D.

Nirusha Lachman, Ph.D.

Estomih P. Mtui, MD

Mahindra Kumar Anand, MBBS, MS, Ph.D.

Kazzara Raeburn, MD

Marios Loukas, MD, Ph.D.

Clinical Anatomy

The Official Journal of the American Association of Clinical Anatomists and the British Association of Clinical Anatomists

Committee Reports

Anatomical Services Committee

Ad hoc Diversity, Equity, and Inclusion Committee

Brand Promotion and Outreach Committee

Career Development Committee

Clinical Anatomical Terminology Committee

Educational Affairs Committee

Journal Committee

Listserv Admin Report

Membership Committee

Meeting and Oversight Program Planning Committee

Nominating Committee

Bylaws Committee

Anatomical Services Committee Report

The Anatomical Services Committee (ASC) represents academic and technical members of the Association who are active in the operations and administration of institutional whole-body donation programs. ASC functions to serve the AACA membership by developing symposia, special sessions, courses, and guidance documents and promoting technical and academic aspects of human anatomical tissue use in healthcare, university education, and research. In addition, the group advocates for the informed, ethical, and safe operation of body donation programs to support the human anatomical tissue requests of students, faculty, staff, and researchers who contribute to the advancement of medicine through education and research. Information about the ASC, including position statements, best practices, contact information, and links, can be accessed from the Association website: http://clinical-anatomy.org/Committees

During 2024-2025, the ASC met regularly to identify key issues relevant to the operation of body donation programs, including current practices, compliance, preparations, ethics, public relations, and more which inform the discussion that will be facilitated during the annual lunch meeting. Additionally, they are and will continue to create resources on anatomical donors, education with donors, tissue preservation and key topics to be accessed through the AACA website. Two new documents to consider are “literature on the impacts of body donation” and “Key points for Anatomical Service for a Willed Body Program and Cadaver Lab.”

Presidential Appointees:
2022-2025: Evan Goldman, Penn State College of Medicine, egoldman1@pennstatehealth.psu.edu
2023-2026: Matthew McCracken, mmccracken006@gmail.com
2024-2027: Amberly Reynolds, Rocky Vista University, areynolds@rvu.edu, Chair

Elected Members:
2022-2025: Aron Davis, University of California, Davis ardavis@ucdavis.edu
2023-2026: Sarah Garnaat, Michigan State University, garnaats@msu.edu
2024-2027: Malli Barremkala, OUWB School of Medicine, barremkala@oakland.edu

Ex Officio:
Guenevere Rae, Tulane University School of Medicine, ASC Special Councilor, grae@tulane.edu

Anatomical Services Committee at the 2025 AACA Annual Meeting

Lunch Meeting, Wednesday, June 18, from 11:45a to 12:45p. The Anatomical Services Committee invites you to join our lunch meeting where experts in the anatomical services, faculty and students come together to discuss pertinent questions arising in our field. This year each table will be tasked with working through a case study focused on timely and pertinent issues related to body donation and use. All perspectives are welcome! Additionally, come with questions as this is a great place to acquire the information you need about Anatomical Services including (but not limited to!) donor preparation, donor usage and the ins and outs of lab management. Active AACA members present will also elect a new committee member to serve for a 3-year term.

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Diversity, Equity, and Inclusion Committee (DEIComm) Report

Members:

Edgar R. Meyer (Chair)
Yomi Afolabi
Fakoya Adegbenro
Thomas Gest
Somesree GhoshMitra
Sarah Green
*Heba Labib
Sasha Lake
Haley L. Nation
Paul Neumann
Amberly Reynolds
Rosaysela Santos
Jonathan J. Wisco

*Note: This member had to step down from service on the committee due to institutional obligations.

Mission:

Created in 2020, the Ad-Hoc Diversity, Equity, and Inclusion Committee (DEIComm), committee is charged by the AACA with promoting and fostering a culture that values diversity, equity, and inclusion in clinical anatomy. The charges of this ad hoc committee are as follows:

1. Surveying and evaluating AACA membership, statements, and activities on issues affecting diversity, equity, and inclusion in the clinical anatomy profession and
2. Identifying gaps and making recommendations to:
    a. Raise awareness and provide education on the importance of diversity and inclusion in the profession.
    b. Promote outreach and mentorship.
    c. Identify resources for training.
    d. Support a forum for discussion on diversity and inclusion.

Summary of Past and Ongoing DEIComm Activities

The committee met monthly to discuss the needs of the membership, proposed budgets, awards, and future projects. A meeting was held on the fourth Wednesday of each month in addition to the third of a series of three meetings discussing the drafting of a document on the differences in sex and gender from an anatomists' perspective. The following bullet points outline the tasks accomplished during and/or after these meetings up until the current timepoint:

- We have planned and scheduled the AACA DEIC CART webinar titled "Exploring Religious Diversity in Body Donation and Burial Practices: Perspectives from Across Faiths and Beliefs" on Tuesday, April 29, 2025, at noon Eastern Daylight Time. This CART webinar will feature a panel of individuals from various religious and spiritual traditions. The panelists were invited to respond to a set of guided questions inquiring about their faith's perspectives on body donation and the treatment of the body during burial. The discussion will be followed by a Q&A session.
- We have made plans for a breakfast session meeting during the AACA Annual Meeting that will serve as a recap of the April CART session, and it will serve as an opportunity for us to engage attendees about how they incorporate or accommodate for religious diversity within the class settings for the sake of their students. This session will also invites attendees to share their own experiences of how their body donation processes and paperwork may have been modified to accommodate various religious or spiritual traditions or to recruit donors from various religious or spiritual traditions.
- The committee continues to post blogs featuring DEI themes pertinent to the day and/or month. They have been shared on the AACA DEIC Blog page and via social media platforms. The blog page can be viewed by visiting the following link (https://clinical-anatomy.org/blog.php), and posts can be made in response to blog entries and other members' responses by logging in with your membership information.
- The committee has revised the Differences in Sex and Gender Terminology document based on feedback from the AACA Council and with the CAT and ASC committees for their feedback. The committee has prepared a near-final draft of a set of recommendations that it is sharing with additional members of the committee that have not been present during the sessions when this document was being discussed.

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Future DEIComm Activities

The committee aims to complete the following tasks prior to or during the 2025 AACA Annual Meeting:

- Facilitate a AACA DEIC CART webinar on Exploring Religious Diversity in Body Donation and Burial Practices: Perspectives from Across Faiths and Beliefs
- Review abstracts submitted for the Diversity, Equity, and Inclusion Student Award, judge their posters at the 2025 AACA Annual Meeting, and select an award recipient from the presenters.
- Facilitate the DEIC breakfast meeting at the 2025 Annual Meeting.
- The committee aims to have completed the Differences in Sex and Gender terminology document.

The committee aims to complete the following tasks in the future beyond the 2025 AACA Annual Meeting:

- Review AACA membership diversity.
- Initiate and/or improve relations with other national and international professional societies.
- Create a repertoire of DEI resources for membership access.

Brand Promotion & Outreach Committee (BPOC) Report

Deepak Sharma, St Georges University, Chair, dsharma1@sgu.edu

Brain MacPherson, University of Kentucky, brmacp@uky.edu

Mathangi Rajaram Gilkes, Geisinger Commonwealth School of Medicine, mrajaramgilkes@geisinger.edu

Edger Mayer, University of Mississippi Medical Center, emeyer@umc.edu

Maira du Plessis, St Georges University, Chair, mdupless@sgu.edu

Uma Pandalai, Oakland university, umapandalai07@gmail.com

The **Brand Promotion and Outreach Committee (BPOC)** is dedicated to advancing the strategic initiatives of the Association, with a primary focus on expanding membership and enhancing global engagement. Our efforts are particularly directed toward attracting and retaining graduate students and MD/PhD trainees.

For the upcoming **Annual Meeting,** the BPOC has organized a **dynamic lunch session** centered on the pivotal theme of **member involvement and the future growth of the AACA**. This interactive session will explore innovative strategies for increasing membership, including leveraging **electronic media, digital platforms, and emerging AI tools** to enhance outreach, engagement, and visibility. Attendees will have the opportunity to share ideas and collaborate on practical approaches to building a more vibrant and connected membership community. Your participation in this session is highly encouraged!

In addition, as of January, the BPOC has assumed editorial responsibilities for the **AACA Newsletter.** This exciting new role enables us to actively promote upcoming events and spotlight the outstanding achievements of our members—further supporting our mission to strengthen and celebrate the AACA community.

Career Development Committee Report

Priti Mishall (Chair), Santosh Sangari, Ewarld Marshall, Jolene Harris, Punnose Kattil, Gurvinder Kaur

The Career Development Committee (CDC) is committed to supporting the growth and advancement of clinical anatomy knowledge at all career stages. The CDC is excited to introduce the longitudinal Mentor-Mentee Program, designed to foster sustained, meaningful professional relationships beyond a single introductory meeting at the annual conference. This initiative aims to provide structured, ongoing mentorship to support career development and professional growth. Additionally, the CDC promotes high quality anatomical research and educational scholarship by overseeing key responsibilities, including judging student posters (Sandy C. Marks, Jr Award), evaluating platform presentations (Ralph Ger Award), and hosting a breakfast session (Presentation: Effective Course Director Strategies).

Over the past year, the committee met monthly to plan and coordinate events throughout the year. In alignment with the CDC's commitment to fostering a culture of mentorship within AACA, the committee planned for two major events: 1) Longitudinal Mentor-Mentee Program 2) Breakfast Meeting Presentation: Effective Course Director Strategies.

1) Longitudinal Mentor-Mentee Program: The purpose of Mentor-Mentee Program is to foster connections between members seeking career guidance with experienced mentors. To facilitate meaningful pairing, the CDC developed and distributed a mentor-mentee survey in mid-March 2025, closing on March 28. Responses were carefully reviewed to ensure optimal matches based on shared interests, expertise, and career goals. Participants will have

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the opportunity to meet in person at the AACA Annual meeting in Seattle (June 16-19, 2025). In recognition of their contributions, participating mentors will receive a Certificate of Appreciation signed by the AACA President.

2) Breakfast meeting: Effective Course Director Strategies: Scheduled for Tuesday, June 17 (7:30 am – 9:00 am), this session will provide a platform for experienced and aspiring course directors to share insights on anatomy curricula, assessments, and continuous quality improvement. The meeting will also include the selection of a new committee member and recognition of outgoing members.

   If you are passionate about mentoring, career development, or advancing professional growth, we invite you to join the CDC. A new committee member will be elected at our breakfast meeting.

Presidential Appointees
2022-2025: Priti Mishall, priti.mishall@einsteinmed.edu
2023-2026: Ewarld Marshal, emarshall@sgu.edu
2024-2027: Santosh Sangari, sks2005@med.cornell.edu

Members Elected at Annual SIG Meeting of Committee
2022-2025: Gurvinder Kaur, gurvinder.kaur@ttuhsc.edu
2023-2026: Jolene Harris, Jolene.harris@nwciowa.edu
2024-2027: Punnose Kattil, Kattil.Punnose@mayo.edu

Clinical Anatomical Terminology Committee Report

The *Clinical Anatomical Terminology (CAT) Committee* of the AACA studies the usage of anatomical terminology in biomedical sciences and in clinical practice. It strives to disseminate its findings through free web-based resources and through publications in the Association's journal, *Clinical Anatomy*. Lacking a budget to create and maintain a terminology website, the CAT committee is exploring ways to partner with the Open Anatomy Project to enhance the web-based browser TA2Viewer (ta2viewer.openanatomy.org; Halle, Kikinis & Neumann, 2024, *Clin. Anat. 37*:640-648).

The CAT committee forms subcommittees to work on its projects.

The Annual Meeting subcommittee (chaired by A. Weinhaus, and most recently PE Neumann) oversee the CAT Committee's responsibilities for hosting a breakfast or lunch session at the annual AACA meeting and for organizing a Symposium in alternate years at the annual AACA meeting. At the 2025 meeting in Seattle, the CAT committee will host a lunch during which activities of the committee will be presented and two new members-at-large will be elected. The 2025 CAT committee symposium will focus on the topic of Fascia (structural, functional, and clinical aspects), with three guest speakers: Drs. Carla Stecco (Italy), Rebecca Pratt (USA) and Martin Lhuaire (France). The CAT committee decided to merge its popular anatomy terminology trivia contest, which had previously been a part of its mealtime committee meeting, with Trivia Night (prepared and mounted by P. Ward and colleagues).

The Fascia subcommittee (chaired by A. Detton) was founded in 2023 to attempt to find a consensus definition and classification of fasciae because there is a wide chasm between the narrow definition in *Terminologia Anatomica* (FCAT, 1998) and the broader definition proposed by some members of the Fascia Research Society (e.g., Stecco and Schleip, 2016; Adstrum et al., 2017). The subcommittee's first project is a Qualtrics survey to assess perceptions of current definitions of fascia and opinions on what structures are included in the set of fasciae. The results of the initial sample (members of the subcommittee) were presented at the 2024 AACA meeting in New York City. The results of preliminary surveys of AACA and FRS (Fascia Research Society) members will be presented at the 2025 meetings of the AACA and FRS. The subcommittee plans to seek input from a gradually expanded community – other anatomists (e.g., BACA) and then other scientists and clinicians interested in fascia.

A French TA2 subcommittee (chaired by G. Noel) was formed in 2023 to produce a translation of the second edition of *Terminologia Anatomia* (TA2; FIPAT.library.dal.ca/TA2) as a resource for the francophone medical education programs in North America and the Caribbean, and other interested individuals and organizations. The subcommittee includes members from Canada (including émigrés from France, Switzerland, Belgium, Algeria and Morocco), U.S.A, Haiti, Mauritania, and France. The goal is to present the completed translation for adoption by the AACA at its annual meeting in 2026. The plan for the French translation includes open access publication on the AACA website and incorporation into TA2viewer.

A fourth subcommittee was recently formed. The Female Pelvic subcommittee (chaired by S. Tilden) is charged with reviewing the nomenclature recommendations of the Society of Gynecological Surgeons Pelvic Anatomy Group, which were published in a series of three papers (2018; 2019; 2021). The goal is to publish a report of the subcommittee's review in *Clinical Anatomy*.

In March, P. E. Neumann resigned as chair of the CAT committee because of the actions of President Trump concerning Canada. Canadian citizens have responded with efforts to avoid American products and forgo trips to the USA. Thus, the former chair was unable to fulfill the responsibility to plan and mount the events of the committee at the 2025 Seattle meeting. A. Weinhaus, the Vice Chair of the CAT committee, with the approval of the AACA President, has assumed the position of Chair of the CAT committee.

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Councilor, ex officio:

2023-2025: Mahindra Anand (manandk@hotmail.com)

Presidential Appointees

2023-2025: Paul E. Neumann (pneumann@dal.ca); **Vice Chair**

2022-2025: Michael W. Halle (mhalle@bwh.harvard.edu)

2023-2026: Peter Ward (pward@osteo.wvsom.edu); **Secretary**

2023-2026: Alan J. Detton (ajd2216@cumc.columbia.edu)

2024-2027: Geoffroy Noel (gnoel@health.ucsd.edu)

2024-2027: Carlos Suarez-Quian (suarezc@georgetown.edu)

Members-at-Large

2022-2025: Martin Lhuaire (martin.lhuaire@u-paris.fr)

2022-2025: Alexandra Wink (alexandra.wink@umassmed.edu)

2023-2026: Sarah Tilden (tildensa@msu.edu); **Deputy Secretary**

2023-2026: Chernet Tessema (chernet.tessema@med.und.edu)

2024-2027: Anthony Weinhaus (weinh001@umn.edu); **Chair**

2024-2027: Heba Labib (hlabib@wmcarey.edu)

Educational Affairs Committee Report

Purpose of Committee:

The Educational Affairs Committee (EAC) shall promote the teaching of clinical anatomy, track national and international curricular trends and changes, and develop educational initiatives that will benefit the Association's members, health care professionals, the education community, and the public.

The Committee disseminates data and recommendations for best practices for all aspects of anatomical education as it relates to clinical practice. The Committee shall plan and implement the Educational Affairs Symposium when scheduled by the Meeting Oversight and Program Planning Committee.

The Committee shall consist of six (6) members, each serving a three (3) year term. The President-Elect shall appoint one (1) member in the second year of his/her term, and the President shall appoint one (1) member in the first year of his/her term. One (1) member shall be nominated and elected by the Active Members in attendance at its annual open meeting.

During the 2024–2025 monthly EAC meetings, discussions focused on a variety of topics, including:

The role of artificial intelligence in anatomy education and its challenges:

Artificial intelligence is increasingly being integrated into anatomy education, from assisting instructors in creating teaching resources (questions, clinical anatomy cases, rubrics) to implementing AI tools directly into anatomy courses. The discussions highlighted both the significant benefits of these technologies and the challenges they present, including ethical considerations, the need for faculty training, prompting, and concerns related to data privacy and accuracy.

The importance of assessing anatomy education research articles:

The group emphasized the growing volume of research publications in anatomy education and the need for educators to develop strong critical appraisal skills. The ability to evaluate the quality, methodology, and relevance of these studies is essential for evidence-based teaching and curriculum development.

EAC Members:

Presidential Appointees

2022-2025: Yolanda Salinas-Alvarez, Chair

2023-2026: Mitesh Dave

2024-2027: Jennifer Burgoon

Members Elected at Annual SIG Meeting of Committee

2022-2025: Eiman Abdel Meguid

2023-2026: Carolyn Meyer

2024-2027: Padma Gadepally

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Journal Committee Report

Committee Members: Marios Loukas, Anthony D'Antoni, Tom Gest, Avriel Licciardi (Wiley editor), Phil Adds (ex officio; Editor BACA), Shane Tubbs (Editor-in-Chief), and Kazzara Raeburn (Presidential Appointee).

The Journal has continued to thrive this year with high quality submissions on clinical anatomy from around the world. Published articles in the Journal continue to have large numbers of downloads and citations. Our impact factor and placement among similar journals are the highest in their history. Please consider submitting your best work to the Journal and continue to follow us online, or on your mobile device with the *Clinical Anatomy* app for Android or iPhone users.

Listserv Admin Report

AACA's Education Issues Listserv was moved from the mail server at Einstein to being hosted on Google Groups in February of 2016. There are currently 1,123 subscribers to AACA's Listserv. From May 1, 2024 to May 1, 2025 there were 18 subjects posted. To the right of this report is a table of those posts that received the most responses.

AACA Education List

Total Subscribers (as of 5/15/25) = 1,124

May 2024 – May 2025 Monthly Email Activity

May '24 = 3

June '24 = 1

July '24 = 0

August '24 = 3

September '24 = 2

October '24 = 6

November '24 = 1

December '24 = 0

January '25 = 1

February '25 = 3

March '25 = 1

April '25 = 0

Total Emails = 21

Membership Committee Report

President-Elect – Anthony D'Antoni

Past President – Thomas Gest

(2023 – 2025) Presidential Appointee – Martha Johnson Gdowski

(2024 – 2026) Presidential Appointee – Hee-Jin Kim

The membership committee is pleased to state that 266 new members have joined the AACA from May 1, 2024, to May 1, 2025. The total number of active members in the association is 556.

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New AACA Members:

AFFILIATE

Beth Eischen
Kentse Mpolokeng

ASSOCIATE

Samuel Adams
Asma Ahmed
Yousef Alami
Sarah Aly
Bella Anders
Samantha Anderson
Richzeska A. Fandino
Merci Arbach
Khadeeja Asif
Simran Aulakh
Claire Baguley
Jarod Banks
Arene Barwari
Nicholas Belair
Olivia Bellomo
Zoe Bowen
Alexia Caposio
Andrew Casteel
Alexander Chang
Sonia Chen
Joseph Cherullo
Blakely Chong
Lokesh Coomar
Maureen Cranley
Garrett Davis
Hania Deen
Josue D. Castillo
Ishita Dhiman
Emma Dougherty
Bashir El-orm
Megan Ellis
Jacob Fagnani
Catherine Falkenstein
Emma Foust
Eve-marie Frigon
Ethan Fulsher
Victoria Furfey
Peter Girgis
Spencer Green
Colette Grypp
Yaizeth Gurrola-mares
Samantha Harris
Amaan Ismail
Tulasi Iyengar
Bidhi Kasu
Miranda Kennedy
Ashley Ko
Jordan Konstanty
Shelby Kvinta
Hunter Lemer
Andrew Levandowski
Kelly Lopez-cid
Emma Lusk
Brittany Luton
Katherine Lutz
Manouchehr M. Civi
Josef Maselli
Wyatt Mayer
Joshua Meyer
Carina Meyers
Megan Monroe
Jessica Morehouse
Raluca Narita
Alicia Nguyen
Riley Nitsch
Melina Pappas
Ishan Patel
Amy Pearson
Philippe Pharand
Jessica Pillatzki
Benjamin Pisarz
Julia Reimer
Rayan Rezaei
Finn Rieker
Rhiannon Robinson
Lily R. Yoos
Evan Rosenzweig
Maxwell Rowley
Vincent Schmidt
Mary Show
Sruthi Shriram
Ivan Soto
Megan Stacy
Morgan Stewart
Julian Stobaugh
Sidharth S. Menon
Tanacha Suwajo
Sadhita Suwansiri
Natalie Tan
Kyle Thurmann
Tia Tran
Christopher Turner
James Turney
Janice Wang
Wakin Wongkunanant
Lily Zahrai
Daniel V. Tonder
Julia K. Ms
Yu-Hsun Lin

ASSOCIATE POST-DOC ELECTRONIC

Juan A. Rivera Perez
Mohamed F. Al Gharyani
Morgan Forston
Yu-ran Heo
Reyhaneh Hooshmandabbasi
Elizabeth J. Maynes
Alexandria Landon

INSTITUTIONAL

University of Texas Health Science Center
Stanford University School of Medicine
University of Massachusetts Chan Medical School
Arkansas College of Osteopathic Medicine
St. George's University

REGULAR

David A. Morton
Sunita Athavale
Altayeb Ahmed
Mohamed A. Sidahmed Abdelrahim
Hassan Azari
Lauren Bagian
Erika Blanck
Elena Bozhikova
Vidya Cs
Sama Carley
Daniel Cawley
Dr.mrudula Chandrupatla
Kevin Christensen
Will Conrad
Paul-neil Czujko
Craig Day
Hayley Derricott
Shiv Dhiman
John Ferguson
Cindy Funk
Richa Gupta
Zachary Gallaher
Jickssa Gemechu
Kyung-Seok Hu
Micheal Habeab
Christian Heck
Ryan Hillmer
Jaime Hinojosa
Todd Hoagland
Mi-sun Hur
Seiichi Inoue
Ehab Ishteiwy
Qurratul-aine Jadran
Eric Johnson
Norio Kitagawa
Pankaj K. Singh
Rekha Lalwani
Jorge Lazareff
Evan Leonard
Ellis Locke
Ka M. Law
Samir Mardini
Eric Marr
Sakshi Mathur
Farida Mehrhoff
Bob Morreale
Ayman Mustafa
Abiola Omodan
Dr. Pratishtha Potdar
Mehnaz Parvez
Kayla Pavlick
Maria P. Celda
Kishore Rajendran
Chitra Ramasamy
Daniel Schlegel
Vinay Sharma
Najam Siddiqi
Heather Smith
Anne Su
Verner Swanson
Varna Taranikanti
John Tran
Nitin Vishwakarma
Jessica Williams
Darryn Willoughby
Steven Wilt
Liana Wooten
James Yaggie
Anna Zurada
Summer Karafiath
Sunil S. Shekhawat

REGULAR (Anatomical Services)

Amy Ciampi
Ye Liu
Johnathon Olivas

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Meeting Organization & Program Planning (MOPP) Committee Annual Report

Members:

Special Interest Committees

Anatomical Services Committee (ASC), Chair – Amberly Reynolds
Brand Promotion and Outreach Committee (BPOC), Chair – Deepak Sharma
Career Development Committee (CDC), Chair – Priti Mishall
Clinical Anatomical Terminology Committee (CAT), Chair – Paul Neumann/Anthony Weinhaus
Educational Affairs Committee (EAC), Chair – Yolanda Salinas-Alvarez

Meeting Managers (Formerly Known as Annual Meeting Committee Co-Chairs)
Brian MacPherson 2023-2025
Adam Kolatorowicz 2024-2026
Cara Fisher 2025-2027

Local Hosts
R. Shane Tubbs & Joe Iwanaga – 2025
Nirusha Lachman & Jonathan Torrens-Burton – 2026
Kerry Gilbert & Keith Bishop – 2027

ASG Representatives (Contracted Professional Organization Management Company)
Jennifer Walls, Executive Director
Rhonda Freeman, Meeting Specialist
Grace Foster, Program Coordinator

Executive Committee
R. Shane Tubbs, President
Anthony D'Antoni, President-Elect
Thomas Gest, Past President
Mathangi Rajaram-Gilkes, Treasurer
Mohammed Khalil, Association Secretary
Kathleen Bubb, Program Secretary & MOPP Chair

Non-Voting Members
Ad hoc Diversity, Equity, and Inclusion (Special Interest) Committee (DEIC), Chair – Edgar Meyer
2025 Special Event (Trivia Night) Coordinator – Peter Ward
Educational Technology Workshop Coordinator - Sue Simon

This report was submitted on April 22, 2025, and reflects the most accurate information available. It has been a privilege to serve as Program Secretary during the 2024–2025 academic year and to lead planning for this year's Annual Meeting—my first in this role. This process has been one of collaboration, creativity, and shared purpose, all in service of shaping a program that reflects the evolving landscape of clinical anatomy and the enduring values of the AACA.

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Planning for the 2025 AACA Annual Meeting began immediately following the close of the 2024 conference in New York City. Guided by feedback from the post-conference survey, the MOPP Committee met monthly to design a meeting grounded in excellence, inclusivity, and relevance. From early planning sessions to final logistics, this year's work has been marked by collective effort, deep listening, and mutual respect.

I sincerely thank our three dedicated Meeting Managers, Brian MacPherson, Adam Kolatorowicz, and Cara Fisher, for their steady leadership and logistical expertise. In particular, their experience and organization made typically complex tasks like abstract review feel easy, and their insight helped ensure fairness, clarity, and timeliness every step of the way. Special thanks to Jennifer Walls-Whitlow, Rhonda Freeman, and Grace Foster at ASG for their tireless behind-the-scenes support. Their combined efforts made this year's abstract process seamless and successful, as reflected in the strong submission and acceptance outcomes detailed below.

Meeting Stats	2025 Seattle	2024 New York	2023 Orlando	2022 Fort Worth	2021 Virtual	2020 Virtual	2019 Tulsa	2018 Atlanta	2017 Minneapolis
Initial Abstract Subs	126	132	96	97	78	141	97	147	135
Late-Breaking Subs	30	27	35	15	18	15	11	15	10
Returned for Format	21	7	1	32	0	15	16	13	10
Total Rejections	2	0	6	7	9	6	3	2	1
Registrants	259*	306	289	282	338	437	290	350	345
Platform Presentations	15	16	16	17	12	27	20	24	16
Tech Fair Presentations	6	8	5	7	0**	0**	0**	7	7
Publishable/Postable Posters	122	124	58	65	51	104	63	98	97
Non-Publishable/ Non-Postable Posters	7	10	45	5	17	19	11	29	22

** Registration for the 2025 AACA Annual Meeting is ongoing, and these numbers will be finalized post-conference.*

*** No Tech Fairs were held from 2019–2021 due to low submissions and virtual format limitations, which did not support the hands-on nature of the event.*

The active involvement of several key contributors further strengthened this year's planning: our local hosts, Drs. Shane Tubbs and Joe Iwanaga have been exceptional partners—providing support, structure, and vision throughout the planning process. The Chairs of the AACA's standing committees, Priti Mishall, Amberly Reynolds, Yolanda Salinas-Alvarez, Paul Neumann, Anthony Weinhaus, and Deepak Sharma, played an essential role in shaping this year's priorities. Drs. Nirusha Lachman and Jonathan Torrens-Burton, future hosts of the 2026 Annual Meeting, were consistently generous with their time and insights. Ms. Sue Simon led the development and coordination of our pre-conference educational technology workshop, furthering access to practical, future-facing teaching tools.

Although we were unable to offer a Post-Graduate Ultrasound Course this year, I want to acknowledge the outstanding efforts of Dr. Evan Goldman, Dr. Nina Mason, and Dr. Craig Goodmurphy, who spent several months developing a high-quality course. While logistical constraints prevented its execution this year, we are eager to explore this opportunity in future meetings. Their commitment exemplifies the spirit of innovation and volunteerism that defines the AACA.

New This Year

This year's program introduces several exciting inaugural events and structural enhancements:

- The **Pre-Conference Educational Technology Workshop**, led by Sue Simon and David Nahabedian, features hands-on training in 3D Slicer aimed at empowering educators with digital tools for teaching and visualization.
- The **Inaugural Clinical Anatomy Fireside Chat** offers an open, reflective conversation among five clinical anatomists on identity, mentorship, collaboration, and lived experience in clinical anatomy.
- The **Inaugural Clinical Anatomy Symposia**, curated by Dr. Joe Iwanaga, highlights cutting-edge work in head and neck anatomy across basic science and surgical domains.

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- The **Student Scientific Program** has been rescheduled to the start of the meeting week to ease financial barriers and enhance accessibility for student presenters—affirming our commitment to equity and early-career engagement.

Ongoing Highlights

We are also proud to continue several beloved features of the AACA Annual Meeting:

- The **TechFair** continues to be a vibrant, hands-on showcase of educational tools and peer-developed innovations.
- Member presentations—including platform talks, posters, and TechFair demonstrations—are available virtually through **Planstone**, enabling broader access, asynchronous engagement, and attendee feedback.
- **Trivia Night** returns by popular demand, organized by Dr. Peter Ward and co-sponsored by the Clinical Anatomical Terminology Committee. This year's event will continue to bring our community together in celebration of curiosity and camaraderie.

Looking Ahead

Confirmed future AACA Annual Meetings include:

- **2026** – Mayo Clinic, Rochester, MN (June 16–19), hosted by Drs. Nirusha Lachman and Jonathan Torrens-Burton
- **2027** – Texas Tech University Health Sciences Center, Lubbock, TX (June 17-21), hosted by Drs. Kerry Gilbert and Keith Bishop

As always, we welcome your ideas for improvement—please complete the post-conference survey or reach out to any member of the MOPP Committee. Your feedback helps us grow and ensures the AACA Annual Meeting continues to be a space where anatomy education, clinical insight, and community flourish.

In closing, I extend my deepest thanks to the MOPP Committee, our Meeting Managers, our partners at ASG, and every AACA member who contributed to this year's meeting. The AACA continues to grow because of its members' generosity, vision, and commitment. Thank you again for the opportunity to serve. It has been an honor to help shape this year's program, and I hope the experience has offered each of you renewed connection, inspiration, and a sense of what's possible—together.

Respectfully Submitted on Behalf of the MOPP Committee,

Kathleen C. Bubb, MD

AACA Program Secretary

Nominating Committee Report

The Nominating Committee consists of presidential appointees Jonathan Wisco (Chair) and Kimberly Topp, and elected members-at-large Edgar Meyer, Samir Anadkat, Rebecca Pratt. We identified a diverse group of candidates from active members of AACA for this year's election beginning in December/January. Over the subsequent two months, the committee deliberated over the candidates' qualifications and contributions to our association, then determined finalists to contact for interest in nominations. After receiving confirmation, a slate of candidates was sent to Mohammed Khalil, the Association Secretary. Each candidate was directed to send a copy of their CV and candidacy statement to the committee and to the association in care of Jennifer Walls, the Executive Director.

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Bylaws Committee Report

Kazzara Raeburn, Chair

Kathleen Bubb

Ameed Raoof

Rachael George-St Bernard

Adam Kolatorowicz

The Bylaws Committee advises the Council on potential amendments to the Bylaws. Committee members convened multiple virtual meetings to review suggested revisions, which were subsequently forwarded to the AACA Council. These amendments were proposed to ensure the bylaws reflect current practices, optimal standards, and recent organizational changes within the AACA.

The committee remains actively engaged in reviewing the bylaws available on the AACA website. Members interested in serving or learning more about the association's operations are encouraged to attend the annual business meeting, where they can meet and interact with current committee members.

American Association of Clinical Anatomists
Donor Statement

The AACA would like to thank the individuals who have donated their bodies and tissues for the purpose of advancing medical education and research.

Abstracts – Platform Presentations

***Tentatively Accepted for Electronic Posting on *Clinical Anatomy* Site**
(Listed by presenting author last name)

PLATFORM SESSION 1 (STUDENTS) - TUESDAY, JUNE 17 FROM 11:00 AM - 12:15 PM

Tuesday, June 17 at 11:00 AM

*CENCETTI, Melissa, Alana CARUSOTTO, Brett CALADIE, Jonus GURSKI, Ben HOFMANNER, and Trevor JONES. Physical Therapy Department, Misericordia University, Dallas, PA, 18612, USA.

Histology-MRI Registration Quality of Human Brains Fixed with Solutions from Anatomy Laboratories.

INTRODUCTION. The intricate relationships between hand structures are challenging for students to grasp. Traditionally, hand anatomy is taught via didactic lectures, textbooks, and cadaver dissections. One innovative interactive tool gaining attention as an alternative to traditional teaching methods is the Anatomy Glove Learning System (AGLS), which requires students to draw the anatomical structures on a non-dominant hand glove by following instructional videos. difficult to grasp for students. This system offers a solution to those perceived difficulties associated with learning hand anatomy. The purpose of the study is to determine if using an embodied teaching method such as the AGLS in conjunction with traditional methods is more beneficial to students learning about the structure and function of the hand than using traditional teaching methods alone. METHODS. First-semester graduate DPT students in a human anatomy course participated in this study during weeks 6 and 7 when hand anatomy was traditionally taught. Students who had been randomly assigned to one of two groups and participated in an extra 2-hour review session. Group 1 used the AGLS and Group 2 participated in a time-equivalent traditional review session. One week later, all students took a post-instruction quiz and survey specific to the method of instruction. SUMMARY. Forty students participated in the study - 20 in the AGLS group and 20 in the traditional review group. There was no difference in post-instruction quiz scores between the groups. The AGLS group members spent more time preparing for the quiz and appreciated visualizing the muscles with the glove. CONCLUSIONS. The results of this study suggest that variations in teaching methods do not affect students' performance. However, the AGLS system does provide a relatively inexpensive alternative for teaching hand anatomy and was well received by students.

Tuesday, June 17 at 11:15 AM

*WANG, Janice[1], Brock HALLING[2], Hannah CONNER[3], Whitney SHAE[3], Aaron SEGAL[4]. [1]Department of Pathology and Anatomical Sciences, Kansas City University, MO, 64106, USA; [2]College of Medicine, Kansas City University, MO, 64106, USA; [3]Center for Population Health, Kansas City University, MO, 64106, USA; [4]Department of Bioethics, Kansas City University, MO, 64106, USA.

Donors through the Decades: A Historic Analysis of Cadaver Ledgers in the Midwest from 1911-2000.

INTRODUCTION. Cadaveric dissection in medical schools has long been the foundation of teaching not only of the anatomical sciences, but also of humanistic values through students' interaction with the donor as their 'first patient.' The procurement of bodies for dissection in the United States has not been simple and has shifted from graverobbing in the 18th and 19th centuries, to the use of unclaimed bodies in the early 20th century, to consensual body donations which remains the sole source of the supply today. This shift occurred within less than a century during a period of massive cultural shifts through legislative changes, population demographic changes, scientific developments, and the spread of mass media, all of which have changed the perceptions and rituals of death in America. The history of how bodies were acquired for dissection in 20th century America is not well studied and the discovery of a unique dataset helps aid the understanding of this period. RESOURCES. Recent discovery of a collection of cadaver ledgers with handwritten records of donor information spanning from 1911 to 2000 allows for insight into the historical trends of cadavers at a Midwest institution. DESCRIPTION. Demographic analysis was conducted based on age, sex, race, and cause of death. The dataset was also analyzed for comparison with population census data in order to compare demographic makeup. Understanding the dataset aids in highlighting historical shifts in inclusivity in medical education and the extent to which cadavers have been representative of area populations. SIGNIFICANCE. This historical analysis helps to provide insight into the standards and practices of cadaver supply during a time period that is not well studied. This knowledge helps to provide a historical perspective to understand the history of body bequeathal to better inform how best to ethically institute these programs and highlight cultural considerations.

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Tuesday, June 17 at 11:30 AM

*FRIGON, Eve-Marie[1], Amy GÉRIN-LAJOIE[1], Jérémie FOUQUET[2], Yashar ZEIGHAMI[2], Denis BOIRE[1], Mahsa DADAR[2], and Josefina MARANZANO[1,3]. [1]Department of Anatomy, University of Quebec in Trois-Rivieres, Trois-Rivieres, QC, G9A 5H7, Canada; [2]Department of Psychiatry, Cerebral Imaging Center, Douglas Research Center, McGill University, Montreal, QC, H4H 1R3, Canada; [3]Department of Neurology and Neurosurgery, McConnell Brain Imaging Center, Montreal Neurological Institute, McGill University, Montreal, QC, H3A 2B4, Canada.

Histology-MRI Registration Quality of Human Brains Fixed with Solutions from Anatomy Laboratories.

INTRODUCTION. Brains from gross anatomy laboratories are currently not used for research purposes, since they are fixed with solutions appropriate for dissection, rather than neutral-buffered formalin (NBF) which is preferred in brain banks. Our goal is to assess whether the brains fixed with a saturated salt solution (SSS) or an alcohol-formaldehyde solution (AFS) used in anatomy laboratories are suitable in research that uses magnetic resonance imaging (MRI), histology, and registration of both modalities. METHODS. Human brain blocks (3x3x3cm) (N=12; NBF=4, SSS=4, AFS=4) were scanned using a 7T MRI scanner with a T2-TurboRARE sequence at a resolution of 0.13x0.13x0.5mm. They were sectioned (40mm) on a vibratome (parallel to the 0.13x0.13 plane) and stained by histochemistry (HC) and immunohistochemistry (IHC). Photomicrographs were manually aligned to the MRIs using landmarks and segmented using an intensity threshold to assess the histology quality (using the MincToolKit software). SUMMARY. More landmarks were needed to achieve proper alignment of the MRI to histology of the SSS-fixed blocks, consequently to the lower gray to white matter contrast in these brains. However, there was no significant difference in the staining intensity or distortion degree of the histology sections of blocks fixed with the three solutions. This resulted in a sufficient registration quality of all blocks, although more challenging when fixed with SSS. Finally, the histology quality variables were affected by the staining type (HC or IHC), but not by the fixatives. CONCLUSIONS. This work is promising for neuroscientists interested in using full brains from anatomy laboratories to study normal aging or neurodegenerative conditions. The suitability of the registration could also have a positive impact on the quality of post-mortem diagnosis following neurohistopathology. (Sponsored by Grant No. DGECR-2021-00228 from the Natural Sciences and Engineering Research Council of Canada).

Tuesday, June 17 at 11:45 AM

*PHARAND, Philippe[1], Anna NAYOUF[1], and Josefina MARANZANO[1,2]. [1]Department of Anatomy, University of Quebec in Trois-Rivieres, Trois-Rivieres, QC, G9A 5H7, Canada; [2]Department of Neurology and Neurosurgery, McConnell Brain Imaging Center, Montreal Neurological Institute, McGill University, Montreal, QC, H3A 2B4, Canada.

Clot Dissolution to Optimize Body Preparation for the Continuous Flow Perfused Cadaver Model.

INTRODUCTION. Surgical Anatomy Workshops (SAWs) are imperative for the education of medical trainees, as they facilitate experiential learning in near-patient conditions. The Continuous Flow Perfused Cadaver Model (CFPCM) is employed to ensure the highest degree of realism for vascular surgeon trainees. To prepare the CFPCM, the blood is drained from the body, then a pre-fixation solution is injected to clean the vessels and to dissolve the post-mortem clots (PMCs), followed by the injection of a fixation solution that prevents the decomposition of tissue. The preparation of CFPCM is often suboptimal when PMCs remain in the vessels, hindering the smooth running of the SAWs. Our goal was to optimize the preparation of the cadaver by using an innovative pre-fixation solution to increase clot dissolution. METHODS. We used a convenience sample of 10 cadavers, evenly split in 2 groups according to the pre-fixation solution used (Solution 1: Proflow; Solution 2: PI3N1). The efficacy of the pre-fixation solution was evaluated by comparing the total clot weight per vascular segment between the two groups. SUMMARY. The data did not reveal any statistically significant differences between the groups in terms of clot weight. However, a significant association was identified between the circumference of the thoracic aorta and the total clot weight in that segment (p=0.038) in both groups. Furthermore, the prevalence of PMCs was predominantly observed in the heart chambers and the abdominal aorta when comparing the entire sample. Specifically, the abdominal aorta and the left atrium exhibited the highest prevalence of total vessel obstruction by clots, and the left atrium demonstrated the highest clot weight. CONCLUSIONS. This information may help to better understand the factors of clot quality and quantity that hinder the CFPCM optimization. (Sponsored by Grant No. DGECR-2021-00228 from the Natural Sciences and Engineering Research Council of Canada).

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Tuesday, June 17 at 12:00 PM

*MOBERG, Erick J., Mariah L. BARTZ, Erinn T. CONLIN, Conor A. MCGREW, Grant J. BOXEY, and John H. GASSLER. Department of Anatomy, DeBusk College of Osteopathic Medicine, Lincoln Memorial University, Harrogate, TN, 37752, USA.

Plaques Observed in Anatomical Donors with Neurological Disease History Post Laminectomy Procedure.

INTRODUCTION. The discovery of observable plaques in the spinal cord region of human anatomical donors after a full laminectomy can offer significant insight into both spinal health and broader neurological conditions. Past studies have identified these plaques as arachnoid calcifications. The plaques may be potential characteristics of neurological diseases such as Alzheimer's, Dementia, or Parkinson's. METHODS. Laminectomies were performed on 34 whole-body, formalin fixed anatomical donors from the cervical to sacral regions using techniques described in Grant's Dissector 17th ed. Spinal cords were reflected to reveal the ventral side. The number of plaques and their location on the spinal cord was documented and photographed. The largest plaque of each donor was collected for future analysis. The past medical history and cause of death of the donors were collected. SUMMARY. By successfully completing 34 full laminectomies from the cervical to the sacral regions, the research team observed 19 of the human donors to obtain plaques. The plaques were mainly concentrated in the thoracic and lumbar regions on the dorsal side. By performing this study, it will help increase our understanding related to the prevalence of the plaques and their potential impact on patients, specifically those with neurological diseases. CONCLUSIONS. Observable plaques were found in 19 of the 34 whole-body donors dissected. Six anatomical donors presented with past medical histories of "Parkinsons disease", "Dementia", or "Alzheimer's disease". Four of the six were found to have observable plaques. Five donors displayed plaques on both the dorsal and ventral sides of the spinal cord, specifically in the thoracic and lumbar regions. The average size of the plaques found on the dorsal side was 5.5mm, while the average size on the ventral side was 9.0mm. The research team did not observe any plaques on the ventral side only.

PLATFORM SESSION 2 (TRANSLATIONAL AND CLINICAL ANATOMY) - TUESDAY, JUNE 17 FROM 3:00 PM - 4:00 PM

Tuesday, June 17 at 3:00 PM

*WARD, Peter J. Biomedical Sciences Department, West Virginia School of Osteopathic Medicine, Lewisburg, WV, 24901, USA.

Plantar Frenular Ligament - A Tendinous Connection Between Fibularis Longus and Plantar Aponeurosis.

INTRODUCTION. Plantar fasciitis is a debilitating condition that results from inflammation of the plantar aponeurosis. The plantar aponeurosis has medial, central, and lateral bands but therapy typically addresses only the central band and its connection to tightness of the calcaneal tendon and posterior leg muscles. The fibularis longus muscle is a lateral leg muscle that passes inferiorly from the fibula and attaches to the first metatarsal and medial cuneiform bones on the plantar side of the foot. During its descent, the fibularis longus tendon passes close to the lateral and central bands of the plantar fascia as it crosses the lateral and inferior surfaces of the cuboid bone. As it does so it sometimes gives off accessory connections to the fifth metatarsal or cuboid bone, called the anterior and posterior frenular ligaments. We noted the existence of another, previously-undescribed plantar frenular ligament that connects the fibularis longus to the plantar aponeurosis. METHODS. Dissection was performed on 20 lower limbs, 16 paired and 4 disarticulated, to identify connections between the fibularis longus tendon and the plantar aponeurosis. The width at their widest point as well as length of the ligament from its origin on the fibularis tendon to the plantar aponeurosis was measured using Vernier digital calipers. SUMMARY. Connective tissue between the fibularis longus tendon and the plantar aponeurosis was present in 16/20 (80%) of the feet. It was present as a single, broad, flat ligament in 14/16 of the specimens. The average width of the ligament at is widest point was 9.4 mm [range 4.0 - 20.1 mm] and its average length from the fibularis longus tendon to the plantar aponeurosis was 9.4 mm [range 5.0 – 11.8 mm]. In two cases, 2 bands inserted into the plantar aponeurosis. In one, a proximal band was 3 mm. wide and the distal band was 11 mm. wide; in the other, the proximal band was 1 mm. wide and the distal band was 15 mm. wide. CONCLUSIONS. This ligament may assist in stabilizing the arches of the foot during loading or may prevent irritation of the fibularis longus tendon as it turns sharply across the cuboid bone. This also suggests that the lateral compartment of the leg may be target for treatment of plantar fasciitis, particularly if it affects the lateral band of plantar aponeurosis.

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Tuesday, June 17 at 3:15 PM

*IMMONEN, Jessica A., Roberto VALENZUELA, Ashley JORGENSON, Jaden LEE, Michael SIMISTER, Quinton STEERE, and Tracey TRAN. School of Dental Medicine University of Nevada Las Vegas, Las Vegas, NV, 89106, USA.

Morphological and Biomechanical Trends in TMJ Osteoarthritis: Approaching a CBCT Imaging Study.

INTRODUCTION. Temporomandibular joint (TMJ) disorders, including TMJ osteoarthritis (OA), are the second most common musculoskeletal condition and may affect 5-12% of the population. The objective of this study was to assess trends in cadaveric TMJ condyle shape, OA disease severity score (DSS) and the symmetry of OA pathology. METHODS. A DSS of Grade 0-4, representing absent to severe disease, was awarded to each specimen's condyle and fossa. Disease scores of high-angled condyles were compared to low-angled condyles using a chi-squared test. Focal sites of disease severity are reliably assessed on condyles and articular eminences of the mandibular fossa; a single donor's condyles and fossae were compared bilaterally (N=29 pairs) to further deduce mechanism of degeneration. SUMMARY. A DSS of 4 was more prevalent among high-angled condyles (64.0%) whereas a DSS of 2 or 3 was more prevalent among low-angled condyles (88.9% and 75.9%, respectively; *p=0.002). Flatness ratio comparisons (*p=0.019) affirmed accurate qualitative shape classification. There was no correlation (R=0.17) between symmetry or asymmetry of disease sites in paired condyles and paired fossae indicating the mechanisms of OA pathogenesis affect the joint compartments differently. CONCLUSIONS. There is a significant association between condylar disease severity and shape therefore shape can be a risk factor for developing TMJ OA. Donors with symmetrical focal sites of disease severity on the TMJ fossa (38%; 11/29) demonstrated a greater average DSS (3.58) compared to asymmetrical donors (DSS=3.29; *p =0.059). Parafunctional movements of bruxism would theoretically lead to asymmetrical sites of disease based on the concept of transversal shift. Bruxism may drive the majority of OA pathogenesis but patients affected by systemic OA will present with more severe disease. Pilot CBCT imaging has been performed on 8 donors prior to dissection to determine the predictive value of the flatness ratio.

Tuesday, June 17 at 3:30 PM

*RIVERA-PEREZ, Juan Antonio[1], Brennan J. BOETTCHER[2], Morgan J. FORSTON[1], Punnose J. KATTIL[1], Nirusha LACHMAN[1], Yolanda SALINAS-ALVAREZ[1], Jacob L. SELLON[2], and Joshua M. ROMERO[2]. [1]Mayo Clinic, Department of Clinical Anatomy, Rochester, MN, 55902, USA; [2]Mayo Clinic, Department of Orthopedic Surgery, Division of Sports Medicine, Rochester, MN, 55902, USA.

An Anatomical Model for Ultrasound-Guided Injections in Posterior Ankle Impingement Syndrome.

INTRODUCTION. Posterior ankle impingement syndrome (PAIS) is common in athletes who perform hyperplantarflexion. Repetitive trauma to the os trigonum and Stieda process (8-34.2% prevalence) increase the risk of PAIS. Ultrasound-guided injections (USGI) offer greater accuracy, but a standardized approach for PAIS treatment is lacking. This study aimed to elucidate the flow patterns for USGI targeting either the posterior tibiotalar joint (TTJ) or the posterior ankle extraarticular (EA) soft tissue. RESOURCES. Two fresh frozen cadaveric lower extremities (Biospecimens #Bio00023405) were injected with methylene blue and Omnipaque using ultrasound guidance via a posterolateral in-plane approach and posteromedial acoustic window. The needle targeted the TTJ proximal to the lateral tubercle of the posterior talar process or soft tissues 3mm posterior to it. Fluoroscopic confirmation was obtained, followed by anatomical dissection exposing the posterior ankle joint and flexor hallucis longus (FHL). DESCRIPTION. Fluoroscopic images showed spread into the TTJ and FHL for the intraarticular (IA) injection, while the soft tissue injection spread into the pre-Achilles fat pad without IA spread. Dissection revealed the IA injection spread to the TTJ, os trigonum, posterior talofibular ligament, and FHL towards Henry's knot. The EA injection remained confined to the pre-Achilles fat pad and no os trigonum was found in this case. SIGNIFICANCE. This anatomical model highlights which structures may be involved with an ultrasound-guided injection targeting the posterior TTJ or posterior ankle EA space. These findings may aid clinicians in understanding the benefits and limitations in specificity for injections targeting each respective region. Due to the small sample size, this study is a proof of concept. Further research is needed to confirm findings, explore different injection volumes, and assess safety and spread with alternative windows and injectates.

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Tuesday, June 17 at 3:45 PM

*LEONEL, Luciano C.P.C.[1]; Megan M.J. BAUMAN, MS[2]; Noor MALIK, M.B.B.S.[2]; Amedeo PIAZZA[2]; Stephen GRAEPEL[2]; Charles Wes PRICE[3]; Nirusha LACHMAN[1]; Ian F. PARNEY[2] and Maria PERIS-CELDA[2]. [1]Department of Clinical Anatomy, Mayo Clinic College of Medicine and Science, Rochester, MN, 55905, United States; [2]Department of Neurologic Surgery, Mayo Clinic, Rochester, MN, 55905, United States; [3]Division of Biomedical and Scientific Visualization, Mayo Clinic, Rochester, Minnesota, 55905, United States.

Anatomical Step-by-Step Dissection of the Transcortical Approach to the Insula.

INTRODUCTION. Resection of insular gliomas are technically challenging operations due to their proximity to critical motor and speech areas, along with the dense and critical vasculature that surrounds the insula. Here, we describe the transcortical approach to the insula in a step-by-step manner using high-quality cadaveric dissections to create a comprehensive guide that holds educational value at numerous levels. RESOURCES. Four unilateral transcortical approaches to the insula were performed in formalin-fixed and latex-injected specimens. One additional specimen was dissected to didactically highlight the relevant anatomy of the insula. DESCRIPTION. The insula is located deep in the Sylvian fissure and is divided into three short gyri and two long gyri. The insula has a rich arterial blood supply, which is maintained by the M2 segment of the middle cerebral artery (MCA) and includes the superior trunk and inferior trunk following the bifurcation of M1. Throughout its course, the M1 segment of MCA gives rise to lateral lenticulostriate arteries (LSAs) that supply the basal ganglia and internal capsule. The lateral LSAs follow a tortuous path as they ascend, coursing medial initially, followed by posterolateral, and finally anteromedial trajectory. As an alternative to the transsylvian approach, the transcortical approach affords access to the insula via transversing the operculum overlying the insula. In this approach, a variety of cortical windows can be employed, including windows through the pars orbitalis, pars triangularis, pars opercularis, and superior temporal gyrus (STG), thus affording great flexibility with this approach. SIGNFICANCE. The transcortical approach offers a flexible and customizable technique to access the insula in glioma surgery. Our study provides a detailed guide for to enhance familiarity with the transcortical approach to the insula and the critical relationship between the insula and surrounding vasculature, including the LSAs.

PLATFORM SESSION 3 (EDUCATION) - WEDNESDAY, JUNE 18 FROM 9:15 AM - 10:45 AM

Wednesday, June 18 at 9:15 AM

*SALINAS-ALVAREZ, Yolanda and Nirusha LACHMAN. Department of Clincal Anatomy, Mayo Clinic, Rochester, MN, 55905, USA.

Anatomy Elective for 4th Year Medical Students -Impact on Reducing Learning Curve for PGY1 Resident.

INTRODUCTION. At Mayo Clinic, the Department of Clinical Anatomy offers 4th Year Medical students guided self-directed electives to help prepare for the postgraduate year 1(PGY1) training.This study describes the course design and explores the impact of enhancing student surgical and anatomical knowledge, potentially reducing the learning curve for PGY1. RESOURCES. This 40-hour course is customized to students' goals, clinical anatomy interests directed toward selected residency program. Student-Instructor engagement with clinical anatomist and clinician is used to define objectives and formulate a mini curriculum that builds in life long learning ACGME competency. DESCRIPTION. This study uses an elective that was designed for a student interested in ENT, aiming to improve head and neck anatomy knowledge, dissection, surgical and suturing skills. Instructional materials were provided from the head and neck video data base in the department of clinical anatomy with opportunity to attend current scheduled courses. Laboratory based activities included participation in a facial anatomy and ultrasound course, fresh tissue dissection and suturing, ENT procedural skills lab based activities. The student participated in multiple Curriculum offered opportunity to work directly with ENT residents observing and assisting in larynx and esophagus dissections, including surgical procedures (eg. Laryngectomy). SIGNIFICANCE. After 4 weeks, the student was assessed through presentation and oral knowledge check demonstrating improved head and neck anatomy knowledge, ability to apply it to clinical procedures, and enhanced suturing efficiency. Feedback indicated increased confidence in anatomy and surgical skills. This case represents 1 of over 20 students who have benefited clinical anatomy electives, designed to reduce the learning curve during residency training.

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Wednesday, June 18 at 9:30 AM

*CENCETTI, Melissa, Alana CARUSOTTO, Brett CALADIE, Jonus GURSKI, Ben HOFMANNER, and Trevor JONES. Physical Therapy Department, Misericordia University, Dallas, PA, 18612, USA.

Comparison of Traditional Teaching Methods and the Anatomy Glove Learning System in a DPT Cohort.

INTRODUCTION. The intricate relationships between hand structures are challenging for students to grasp. Traditionally, hand anatomy is taught via didactic lectures, textbooks, and cadaver dissections. One innovative interactive tool gaining attention as an alternative to traditional teaching methods is the Anatomy Glove Learning System (AGLS), which requires students to draw the anatomical structures on a non-dominant hand glove by following instructional videos. difficult to grasp for students. This system offers a solution to those perceived difficulties associated with learning hand anatomy. The purpose of the study is to determine if using an embodied teaching method such as the AGLS in conjunction with traditional methods is more beneficial to students learning about the structure and function of the hand than using traditional teaching methods alone. METHODS. First-semester graduate DPT students in a human anatomy course participated in this study during weeks 6 and 7 when hand anatomy was traditionally taught. Students who had been randomly assigned to one of two groups and participated in an extra 2-hour review session. Group 1 used the AGLS and Group 2 participated in a time-equivalent traditional review session. One week later, all students took a post-instruction quiz and survey specific to the method of instruction. SUMMARY. Forty students participated in the study - 20 in the AGLS group and 20 in the traditional review group. There was no difference in post-instruction quiz scores between the groups. The AGLS group members spent more time preparing for the quiz and appreciated visualizing the muscles with the glove. CONCLUSIONS. The results of this study suggest that variations in teaching methods do not affect students' performance. However, the AGLS system does provide a relatively inexpensive alternative for teaching hand anatomy and was well received by students.

Wednesday, June 18 at 9:45 AM

*WARD, Peter J. Biomedical Sciences Department, West Virginia School of Osteopathic Medicine, Lewisburg, WV, 24901, USA.

Metacognitive Accuracy - Imposter Syndrome Meets the Dunning-Kruger Effect in the Anatomy Laboratory.

INTRODUCTION. Impostor syndrome is a commonly-experienced phenomenon where competent people feel fraudulent due to a lack of confidence in their own abilities. Conversely, the Dunning-Kruger (DK) effect describes how people with a deficiency is a certain domain also lack the ability to accurately assess their competency in that domain; or as the original authors described it, "unskilled and unaware of it". While both phenomena have been studied in many environments, no studies have looked at both simultaneously to see if imposter syndrome might actually be a "cure" of sorts for the DK effect. To study this in a rich learning environment, the gross anatomy lab, I hypothesized that students experiencing impostor syndrome will tend to be those who are actually performing well in laboratory, whereas students who have low "impostorism" scores will tend to manifest the DK effect and over-estimate their performance relative to their peers. METHODS. Students were recruited (n=246) into this pilot study starting in September of 2022 and will be offered a random chance at receiving an Amazon gift card. Once enrolled, students were given two short surveys at four timepoints: 1. Beginning of anatomy labs, 2. End of musculoskeletal labs, 3. Beginning of Head and neck anatomy, 4. End of GI anatomy labs. The surveys were: 1. The Clance self-assessment tool (10 item survey) and a single question: "How would you rate your current competency in the anatomy lab compared to the members of your class? Top quartile, second quartile, third quartile, bottom quartile". participants were then sorted into actual 1st, 2nd, 3rd, and 4th quartiles by exam performance. SUMMARY. Students in each actual quartile had relatively similar scores on the imposter scale, with students in the lowest quartile seemingly aware of their struggles, and students in the top quartile aware of their success. In addition, students tended to rank themselves accurately in each quartile. CONCLUSIONS. These results suggest that by the time students have reached medical school, they have undergone enough metacognitive development to accurately rank their own academic competence (although outliers certainly exist) in comparison to their peers.

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Wednesday, June 18 at 10:00 AM

*BRADSHAW, Emily L.[1], Samantha M. TUN[1], Rose M. MELTZER[1], Greg OLIVARRIA[1,2], and James L. SANDERS[1]. [1]Department of Medical Education, College of Medicine, University of Central Florida, Orlando, FL, 32827, USA; [2]Pediatric Neurosurgery, Nemours Children's Health. Orlando, FL 32827, USA.

Cadaveric Neurosurgical Procedure Engages Medical Students through Teamwork and Effort.

INTRODUCTION. Student interest groups (SIGs) can cultivate interest in various surgical fields and provide pre-clinical medical students an opportunity to gain hands-on experience performing procedures on anatomical donors. These interactions provide a rich environment with a relevant clinical scenario, which emphasizes anatomical structure identification and exposure to medical devices. We used this activity to evaluate pre-clinical student perceptions of teamwork skills and task load components. METHODS. In this study, 31 pre-clinical medical students received pre-brief on a ventriculostomy procedure and completed a pre-survey that included questions about student interest and teamwork preference. They were placed in teams of 3 students and were assigned to a donor in the anatomy laboratory. Each student performed a ventriculostomy; neurosurgical faculty were available for consultation. After the procedure, participants completed the NASA Task Load Index and Teamwork Performance Scale measures. SUMMARY. Participants rated teamwork performance items highly (AVE 5.3-5.8 on a 7-point scale) indicating a well-functioning team. However, participants who reported ambivalence toward working in a group on the pre-survey rated teamwork items about team engagement and communication lower than those participants who prefer working in teams. The average workload score was 49.5+17.1. Task load items with the highest average rating were effort (59.3/100), mental demand (55.5/100), and physical demand (54.3/100) with frustration being rated lowest (26/100). Items with the highest average weight were performance (3.3/5) and effort (3.2/5) with frustration being weighted lowest (1/5). CONCLUSIONS. SIG events like ventriculostomy procedures on anatomic donors appear to be an engaging way to emphasize anatomy and clinical duties for pre-clinical students. Future projects include opportunities to develop team communication, reduce mental demand, and acknowledge effort.

Wednesday, June 18 at 10:15 AM

*DETTON, Alan J.[1], Mahindra K. ANAND[2], Noel BOAZ[3], Katherine A. BRAKORA[4], Derek HARMON[5], Heba LABIB[6], Martin LHUAIRE[7], Geoffroy NOEL[7], Chernet TESSEMA[8], Peter J. WARD[9], Anthony WEINHAUS[10], Alexandra E. WINK[11], and Paul E. NEUMANN[12]. [1]Columbia University Irving Medical Center, New York, NY, 10032, USA; [2]AL-Falah School of Medical Science & Research Centre, NCR-Delhi, 121004, India; [3]Integrative Centers for Science and Medicine, Martinsville, VA, 24112, USA; [4]Texas A&M University College of Medicine, Bryan, TX, 77807, USA; [5]The Ohio State University College of Medicine, Columbus, OH, 43215, USA; [6]William Carey University, Hattiesburg, MS, 39401, USA; [7]University of California San Diego School of Medicine, La Jolla, CA, 92093, USA; [8]University of North Dakota, Grand Forks, ND, 58202, USA; [9]West Virginia School of Osteopathic Medicine, Lewisburg, WV, 24901, USA; [10]University of Minnesota Medical School, Minneapolis, MN, 55455, USA; [11]UMass Chan Medical School, Worcester, MA, 01655, USA; [12]Dalhousie University, Halifax, NS, B3H 4R2, Canada.

AACA and FRS Fascia Consensus and Definition Project.

INTRODUCTION. In the past quarter century, at least four multi-authored definitions of fascia have been published that overlap but also display conflicting ideas. A collective assessment of these definitions as well as anatomical and practitioner perspectives on potential composition and categories has not been previously conducted. A survey of fascia terminology by subject matter experts will hopefully clarify, from an anatomical perspective, which structures are considered fascia, update the classification of fasciae, and assist in improving educational clarity and interdisciplinary communication. METHODS. A two-part adaptive Qualtrics survey based on a 7-point Likert scale was developed by the CAT fascia subcommittee. Part A focuses on evaluation of existing fascial definitions and general perspectives on fascia. Part B consists of classification of approximately 300 candidate fascia terms compiled from the TA2 database and published resources terms into an expanded list of TA categories. The adaptive survey was distributed to members of the AACA and the Fascia Research Society (FRS) using a Qualtrics Survey link and QR code. SUMMARY. A provisional report of the survey results from the CAT fascia subcommittee will be presented primarily focusing on Part A of the data to inform AACA members of results and progress, and to provide input and be invited to complete the survey. Preliminary data show differences between the AACA and FRS members in responses to questions related to definitions, characteristics, classifications, and inclusion or exclusion of specified tissues. Expansion of the use of this survey tool is planned to include other anatomical, clinical, and other professional societies to gain a broader comparative perspective on fascia. CONCLUSIONS. Survey data will assist in framing a consensus definition incorporating clinical anatomical usage of TA2 terms and the growing knowledge of the structure, development, and function of "fascia" in the body.

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Wednesday, June 18 at 10:30 AM

*NOEL, Geoffroy P.J.C., Jackson FELKINS, Jessica FERN, and Joshua BARDIN. Division of Anatomy, Department of Surgery, University of California San Diego, La Jolla, CA, 92093, USA.

Effects of a Suturing Course on Medical Students' Comfort and Competency in Suturing Skills.

INTRODUCTION. Suturing is recognized as a critical procedural skill for medical students to acquire by graduation, as per the American Association of Medical Colleges (AAMC). Acquiring this skill is generally expected in the third year, especially through clinical rotations where students are tasked with performing suturing on live patients. This can be anxiety-provoking, often due to insufficient preparatory instruction and a lack of prior practice. This study aimed to assess an optional suturing course implemented for first- and second-year medical students at UCSD. METHODS. Utilizing pre- and post-course surveys, biosensors for force measurements, and video recordings with OSATS-based evaluations, the study captured both subjective and objective data on skill acquisition and confidence. RESULTS. The post-course survey revealed significant increases in students' self-reported comfort and skill in performing a variety of suturing techniques. On a scale of 1 – 5, students reported an average confidence level of 1.39 ± 0.04 before taking the course. After completion of the course, the average confidence level rose to 2.55 ± 0.09, an increase of 84%. All improvements were statistically significant. Objective video assessments and biosensor measurements suggested improvement trends, although sample limitations affected statistical significance. CONSLUSIONS. While students reported increased confidence and comfort with suturing post-course, additional studies with a larger sample size are recommended to confirm these findings quantitatively.

Abstracts – TechFair Presentations

***Tentatively Accepted for Electronic Posting on *Clinical Anatomy* site**
(Listed by presenting author last name)

TECHFAIR - WEDNESDAY, JUNE 18 FROM 1:15 PM - 2:30 PM

Wednesday, June 18 at 1:15 PM

*GIELECKI[1], Jerzy, Andrzej RUTKOWSKI[2], Michal CHLEBIEJ[2], Tomasz GRZONA[2], and Anna ŻURADA[3]. [1]Department of Anatomy, University of Warmia and Mazury; Olsztyn, 10-803, Poland. [2] Department of Informatics, Nicolaus Copernicus University; Toruń, 87-100, Poland. [3] Radiology Center; Olsztyn, 10-124, Poland.

Anatomical Mysteries Unveiled: AnatoMyst and the First Three-Dimensional Holographic Anatomy Atlas.

INTRODUCTION. AnatoMyst is the world's first three-dimensional anatomy atlas utilizing holographic technology on a 27" screen or a 12" tablet. This innovative educational tool is part of the Human Body Universe platform, designed to enhance the medical educational journey by visually exploring human anatomy. RESOURCES. The Human Body Universe platform integrates advanced modalities of three-dimensional visualization technology including 3D Gaussian splatting for real-time radiance field rendering. For 3D visualisation, 3D glasses, three-dimensional holographic screens (Android tablet and HBU 27" holographic screen), 3D visualisation without glasses, and red-cyan anaglyph glasses that do not require electronics are used. These technologies provide a comprehensive toolset for medical students and professionals, offering a detailed view of anatomical structures in a dynamic and interactive format. DESCRIPTION. AnatoMyst presents three-dimensional endoscopic images of patient surgeries and anatomical dissections, bringing a thorough and immersive holographic perspective to medical education. The platform simulates the environment of an operating room or anatomical dissection through 3D visualisation of all anatomical structures, allowing users to experience and interact with the spatial anatomical structures' localisation. This realistic setting is instrumental in teaching the human body's spatial relationships and complex functionalities. SIGNIFICANCE. Human Body Universe significantly enhances learning by providing a holographic reality experience documenting cadaver dissections. It builds confidence and proficiency among students, preparing them for real clinical challenges. The detailed three-dimensional visualization aids in the retention and understanding of complex anatomical structures and their spatial relationships, improving educational outcomes and preparing students for practical applications in medical careers.

Wednesday, June 18 at 1:20 PM

*BAIDYA Ritwik[1], Rob DIETZ[2] ,Clayton FAVOR[1], Kathleen C. BUBB[1], Sushil KUMAR[1], Tanya MAISTRY[1], Santosh K. SANGARI[1], Estomih P. MTUI[1], and Doug COHEN[2]. [1]Division of Anatomy, Department of Radiology, Weill Cornell Medicine, New York, NY, 10065, USA; [2]Information Technologies & Services, Weill Cornell Medicine, New York, NY, 10065, USA.

Enhancing Anatomy Education with XR: Interactive 3D Lab Specimens and Immersive Dissection Videos.

INTRODUCTION. The integration of Extended Reality (XR) into anatomy education represents a transformative and innovative approach to traditional learning methods, providing an interactive and immersive experience. The cost of developing an XR-based program for teaching human anatomy, leveraging 3D visualization and real-time interaction within medical school curriculums can be financially draining. This study integrated a cost and labor effective strategy for creating high quality extended reality resources using free and open-source technologies, making advanced educational tools more available and accessible. RESOURCES. Cadaveric material and laboratory resources were utilized from the anatomy division of the medical school. Anatomy dissections were constructed, performed, and recorded by faculty using the iPhone 16 Pro Max and Apple Vision Pro. The method utilized spatial videography and 3D Photogrammetry. 3D models were imported into Blender 4.3.2 (licensed as GNU GPL), converted into GLB format and imported to Google's free online model-viewer to visualize the 3D models. The resulting code can be edited and hosted on a web server. Spatial videos were edited with Apple Final Cut Pro. Models were designed for compatibility with mobile devices and XR headsets, ensuring accessibility. DESCRIPTION. The use of the open-source websites significantly reduced the development costs and maintained high quality. Leveraging iPhone 16 Pro Max and Apple Vision Pro's high-resolution capabilities, the 3D specimens allow users to explore the anatomical structures in detail, blending digital structures in the real world. Key features of the developed resources: (i) photorealistic 3D cadaveric dissections with high-resolution textures; (ii) fully labeled (as per curriculum) with pan-zoom-orbit functionality, and (iii) extended reality dissection videos from the dissector's perspective. SIGNIFICANCE. This XR approach has the potential to transform anatomy education by providing a cost effective, accessible, and interactive platform for students, faculty, and medical professionals.

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Wednesday, June 18 at 1:25 PM

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Comparison of 3D Printed and Cadaveric Hand Models in Anatomical Teaching.

INTRODUCTION. Knowledge of clinical anatomy is imperative for health professional students. Cadaveric dissection is the traditional method for teaching anatomy; however, 3D printed models of human anatomy have shown great potential as an alternative. This study aimed to compare the effectiveness of 3D printed hand models with cadaveric instruction in teaching first year medical students extensor digitorum (ED), flexor digitorum profundus (FDP), flexor digitorum superficialis (FDS), lumbricals (L), opponens pollicis (OP), ulnar claw (UC), and hand of benediction (HOB). METHODS. An open-source hand model was modified and 3D-printed (Phrozen Mini 8K). Ligaments were simulated with elastic cord, and muscles and tendons were represented with monofilament (Cortland Line) and molded silicon. During an optional review session, 16 first year medical students were randomized into two groups: one that learned anatomy and function of the hand on a cadaver, and another group that learned using 3D printed hand models. Both groups took a pre-test evaluating pre-existing knowledge on the subject, and a post-test evaluating how their knowledge changed after the standardized lesson, which demonstrated the flexion of FDS and FDP at the metacarpophalangeal (MCP), proximal interphalangeal (PIP), and distal interphalangeal (DIP) joints, flexion at MCP by L, extension of ED, opposition of OP, and the pathogenesis of UC and HOB. Statistical analysis was performed using SPSS. SUMMARY. There was no statistically significant difference between the cadaveric study cohort and the 3D printed model cohort with regards to pre-test and post-test scores ($p=0.544$) There was also not a significant difference between pre-test and post-test scores within cohorts. CONCLUSIONS. The results of this study suggest that 3D printed models offer a worthy potential alternative to cadaveric models with regards to demonstrating the anatomy and function of the hand and understanding ED, FDP, FDS, L, OP, UC, and HOB.

Wednesday, June 18 at 1:30 PM

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Transforming Medical Education: Harnessing Virtual Reality to Redefine Embryology Learning.

INTRODUCTION. Virtual reality (VR) has demonstrated significant benefits in medical education by enhancing the spatial understanding of anatomical structures. Despite advancements in this technology, its application in embryology education remains unexplored. We developed a VR-based embryology prototype designed to provide interactive, three-dimensional models of early embryogenesis. This study aims to evaluate the effectiveness of integrating VR technology inti embryology instruction for medical students, with the goal of improving comprehension, and ultimately clinical outcomes related to early embryology development. METHODS. Maxon Cinema 4D was utilized to create the VR embryology module. To standardize the experience and eliminate user variability, a video recording of the module was played using Meta Quest 3. Fifty second-year students at Sam Houston College of Osteopathic Medicine participated in the study. Knowledge retention was assessed through pre- and post-test administered before and after exposure to VR module. SUMMARY. Forty-seven matched pre- and post-test responses were analyzed. As the data were not normally distributed, a Wilcoxon rank sum test was performed. A statistically significant improvement in the quiz scores was observed following engagement with the VR module (2.77 ± 1.09 vs. 3.55 ± 0.65) $p<0.0001$. CONCLUSIONS. The VR embryology program developed in this study provides an innovative and immersive learning environment that enhances students' ability to visualize complex three-dimensional relationships in early embryonic development. This VR-based approach may offer a superior educational tool for embryology instruction. Improved understanding of embryological concepts could strengthen the clinical foundation of future physicians, leading to better patient care outcomes.

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Wednesday, June 18 at 1:35 PM

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3D Scanning and Printing of the Brachial Plexus: A Cost-Effective Approach for Anatomical Education.

INTRODUCTION. The brachial plexus is a complex anatomical structure that challenges students due to its intricate spatial configuration and the difficulty of cadaveric dissection. Mastery of the brachial plexus is essential for understanding upper limb innervation and diagnosing nerve-related pathologies. Yet, high-quality educational models remain largely inaccessible due to prohibitive costs of over a thousand dollars. This study aims to develop an affordable, high-fidelity 3D-printed model of the brachial plexus using high-resolution 3D scanning. RESOURCES. The brachial plexus of a donor cadaver from the anatomy lab at Creighton University (Phoenix) was resected. High-resolution 3D scanning was performed using a MIRACO Plus 3D scanner. The scanned data was processed and refined through digital modeling software, including Revo Scan 5 and Blender. The final model was 3D-printed using a Flashforge Creator 3 dual-extruder printer. DESCRIPTION. This method enables direct capture of the brachial plexus without extensive post-processing often required for traditional imaging modalities. The scanned data was digitally cleaned, refined, and converted into a printable format, ensuring accurate representation of the distinct branches of the brachial plexus. The 3D-printed model provides a detailed, tactile representation of the nerve network, preserving the intricate relationships necessary for anatomical education. SIGNIFICANCE. Commercially available brachial plexus modes are often too expensive for widespread educational use. This project demonstrates that high-fidelity anatomical models can be produced at a fraction of the cost ($1.38/model) using 3D scanning and printing, making them more accessible to students, educators, and institutions with limited resources. By offering a cost-effective, high-quality alternative to expensive commercial models, this project advances anatomical education and facilitates better student comprehension of complex neural structures.

Wednesday, June 18 at 1:40 PM

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From Anatomy to Application: Low-Cost Endoscopy for Medical Students.

INTRODUCTION. High costs and limited access to commercial endoscopic simulators hinder medical training. This study evaluates a repurposed endoscope for cadaver-based training as a cost-effective alternative. Traditional simulators necessitate significant investment and are constrained by scheduling and equipment. Cadaver-based endoscopy offers anatomically accurate, low-risk training. This study aims to address cost barriers by developing a repurposed endoscope (~$130) utilizing readily available components. METHODS**.** Body donors preserved with 3-5% formaldehyde from the Gross Anatomy course at Creighton University were studied. Equipment included hemostats, a scalpel, a TD 450 S dual lens borescope with LED illumination, a 4. 5- inch display, and a manual air pump. A 0.5 cm incision was made in the organ, and a needle was inserted and clamped to secure it. The endoscope was introduced through a 1 cm incision and advanced into the lumen. Insufflation at 6-10 mmHg was applied to distend organ walls. The procedure required two operators: one maneuvered the endoscope while the other monitored air pressure. SUMMARY. The repurposed endoscope allowed clear visualization of GI structures, including the stomach's rugae and the duodenum's plicae circulares. Image clarity and depth perception were adequate for anatomical identification, demonstrating feasibility for training. The technique was reproducible, suggesting broader applications. CONCLUSIONS. A low-cost, repurposed endoscope provides a practical alternative for medical students to practice endoscopic techniques. This method promotes teamwork, enhances anatomical visualization, and bridges the gap between basic anatomy and clinical application. Expanding access to affordable endoscopic training could improve procedural competency and patient safety, offering an innovative solution to financial and logistical barriers in medical education. (ACKNOWLEDGMENT. The authors thank the individuals who donated their bodies and tissues for education and research.)

Abstracts – Poster Presentations

***Tentatively Accepted for Electronic Posting on *Clinical Anatomy* site**
(Listed by presenting author last name)

POSTER SESSION 1 – TUESDAY, JUNE 17 FROM 1:45 PM - 2:45 PM

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The Need for Enhanced Screening Protocols for Abdominal Aortic Aneurysms in Older Females.

INTRODUCTION. Abdominal aortic aneurysms (AAA) are localized dilations of the abdominal aorta resulting from weakening of the aortic wall. If untreated, AAAs can enlarge, heightening the risk of rupture, intraperitoneal hemorrhage, and death. Current guidelines from the U.S. Preventive Services Task Force (USPSTF) recommend routine AAA screening for males aged 65 to 75 with a history of smoking, while largely excluding females in the same age group, despite similar risk factors. The USPSTF cites a decreased prevalence of AAA in females as the basis for screening guidelines, but evidence supporting this claim remains limited. RESOURCES. In a cohort of 16 donors from the Arkansas Colleges of Health Education (7 males, 9 females, mean age = 78.6), we identified three females over the age of 65 with AAAs (33%), a higher prevalence than that reported in the general population (0.0-5.2%). Two of these females suffered aneurysm ruptures, presenting with massive internal bleeding of the peritoneal cavity. One rupture was documented as the cause of death, one was discovered postmortem during cadaveric dissection, and the third female had two unruptured AAAs. DESCRIPTION. Notably, nearly half of U.S. adults over the age of 20 are diagnosed with hypertension, yet fewer than 40% of these patients have their condition adequately controlled. While men over 65 with a history of smoking are at high risk, it is crucial to recognize that both sexes may be affected, and these factors contribute to the development of AAAs. SIGNIFICANCE. Based on our findings and the existing gaps in current screening guidelines, we argue that the USPSTF recommendations for AAA screening in females are insufficient and propose expanding screening protocols to include females over 65, emphasizing the importance of considering key risk factors-such as age, tobacco use, hypertension, atherosclerosis, genetic predisposition, and family history-to improve early detection and prevention for this at-risk population.

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Ultrasonographic Analysis of Suprascapular Notch Variants & their Links to Demographic Factors.

INTRODUCTION. The suprascapular notch (SSN) is an anatomical groove through which the suprascapular artery, vein, and nerve traverse the superior aspect of the scapula. SSN classification is based on its superior transverse diameter (STD) and maximal depth (MD) and holds clinical relevance, particularly in suprascapular nerve blocks used for shoulder pain management. This study aims to investigate SSN variants using high-frequency ultrasonography and examine their correlations with sex, handedness, age, and ethnicity. METHODS. Seventy medical students with a mean age of 22 years (34 males and 36 females) participated in this observational study. A 10 MHz linear probe was used to visualize the acromioclavicular joint at the lateral clavicle, capturing SSN measurements. STD and MD were analysed against demographic variables using one-way ANOVA (Kruskal-Wallis) and Mann–Whitney U tests, while correlations were assessed via linear regression. SUMMARY. Median STD and MD were 3.2 cm (SD = 0.75 cm) and 0.6 cm (SD = 0.15 cm), respectively. Among the identified SSNs, 98.75% corresponded to Type III (depth < width). Males exhibited significantly deeper notches bilaterally than females (mean difference = 0.06 mm, 95% CI [0.01, 0.1], $p < 0.05$). A strong correlation was observed between right and left STD ($r = 0.81$, $p < 0.05$). No significant associations were found between SSN size and age, ethnicity, or handedness. CONCLUSIONS. This study highlights substantial inter-individual variability and bilateral symmetry in SSN morphology. The predominant prevalence of Type III SSNs may be attributed to the young study cohort, while precise ultrasonographic measurements may have contributed to lower detection rates of Type II SSNs. These findings reinforce the importance of SSN classification in clinical applications, particularly for suprascapular nerve blocks.

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Vascular Pathology: A Multifocal Cadaveric Analysis of Arterial Aneurysms.

INTRODUCTION. An arterial aneurysm is defined as a dilation of an artery where the diameter of the affected section becomes at least 1.5 times larger than its natural diameter, frequently occurring in the aorta and cerebral arteries. Aneurysms of the common iliac, internal iliac, femoral, and popliteal arteries are infrequent, particularly when occurring in conjunction with abdominal aortic aneurysms. This study examines the unique presentation of multisystemic arterial aneurysms in a cadaveric specimen to further our understanding of their rarity and potential clinical implications. RESOURCES. This study was conducted during an eight-week didactic course involving cadaveric dissection of an elderly white male with chronic obstructive pulmonary disease (COPD). Tissue samples collected from the superior lobe of the right lung, the left ventricle of the heart, and the right common iliac artery were analyzed using hematoxylin and eosin staining. DESCRIPTION. Cadaveric dissection revealed eleven non-ruptured and atherosclerotic aneurysms spanning the abdominal aorta (10.3cm), bilateral common iliac (R: 6.3cm, L: 7.0cm), internal iliac (R: 5.3cm, L: 6.0cm), femoral (R Proximal: 5.0cm, R Distal: 3.8cm, L Proximal: 5.0cm, L Distal: 3.6cm), and popliteal arteries (R: 2.8cm, L: 3.0cm) with no evidence of surgical intervention. Observational findings in the thoracic cavity consisted of an enlarged heart accompanied by lung discoloration with palpable pulmonary crepitus and potential calcification of the bilateral lower lung lobes consistent with COPD. Histological results indicated marked calcific atherosclerosis in the arteries and dilated airspaces with thickened alveolar septa in the lungs. SIGNIFICANCE. The rarity of this case emphasizes the potential of COPD and connective tissue disorders in aneurysm development. These findings provide valuable insight into the clinical anatomy of multisystemic arterial aneurysms, supporting further diagnostic and therapeutic research.

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Micro-CT Analysis of an Eagle Syndrome Styloid Process with Implications to the Styloid Apparatus.

INTRODUCTION. Eagle Syndrome (ES) is a rare disease that causes elongation (≥ 30 mm) of the temporal styloid process (SP) through osteogenesis (Type I) or ossification of the stylohyoid ligament (SHL) (Type II). Few cases conclude specific ES etiology with methods that inspect SP microstructure. This study aims to examine the cortical and trabecular structure of an ES SP with micro-computed tomography (micro-CT) and discuss implications to the styloid apparatus. RESOURCES. The present case was discovered during routine academic dissection of an adult male human cadaver. The styloid apparatus (stylohyoid, stylopharyngeus, and styloglossus muscles and the stylohyoid and stylomandibular ligaments – all attached to the SP) was examined bilaterally for non-typical morphologies, and a section of the right SP was collected and stored in 70% EtOH. Micro-CT analysis was performed (MicroXCT-200, Zeiss) on the SP sample to visualize bone structure, and ES diagnostic parameters and functional implications were compiled from literature. DESCRIPTION. The SP included a mid-shaft tubercle after which the diameter decreased and the angle of descent increased in the sagittal plane. Micro-CT cross-sections at proximal, mid-tubercle, and distal locations of the sample, as well as one longitudinal section spanning the entire sample, revealed the entire microstructure of the SP. The SP exhibited consistent trabeculae and cortical structure in each view, suggesting Type I etiology. SIGNIFICANCE. This case analysis demonstrates micro-CT evaluation of a cadaveric ES SP capable of provoking dysphagia, pain in the throat and neck, and neurovascular compression that could ultimately affect coordination of the hyoid, tongue, larynx, pharynx, and mandible. Clinical understanding of bone hyperplasia vs. ligament metaplasia (specifically of the SHL) as it applies to ES etiology and subsequent implications to the styloid apparatus is important for ES diagnosis, treatment, and patient outcomes.

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Gross and Histological Examination of Persistent Thyroglossal Duct Tissue with Clinical Review.

INTRODUCTION. The thyroglossal duct (TD) is a transient embryological structure that facilitates migration of the primordium thyroid gland from the base of the tongue to its definitive position in front of the trachea. The TD typically obliterates by embryological week 8-10. Persistent thyroglossal ducts (PTD) are rare, and gross and histological analyses of PTD tissue are thusly scarce. The aim of this study is to conduct a gross and histological examination of PTD tissue with clinical review. RESOURCES. PTD tissue was discovered during routine dissection of an adult human cadaver and photographed in situ with scale. Tissue samples (n = 5) were collected every 1 cm along the PTD tissue, and one sample was collected from the left lobe of the thyroid gland. The samples were processed for histology, cross-sectioned (5 µm), stained with hematoxylin and eosin (H&E), and scanned for examination via digital light microscopy. DESCRIPTION. The PTD tissue extended 5.00 cm superiorly, slightly to the left of midline, from a small pyramidal lobe and connected superiorly to the hyoid via a short band of connective tissue. The PTD tissue was 0.55 ± 0.11 cm wide, flattened in shape, and grossly resembled glandular tissue along its entirety. Examination of the PTD histology revealed characteristic thyroid glandular tissue surrounded by pretracheal visceral fascia. Intermittent voids may suggest remnants of a PTD. SIGNIFICANCE. A PTD is capable of provoking TD cysts, and the presence of accessory thyroid glandular tissue may be relevant to the risk, diagnosis, and treatment of ectopic thyroid carcinomas, Graves' disease (hyperthyroidism), Hashimoto thyroiditis, and other thyroid gland conditions. As it results from defective thyroid gland development, PTD tissue also often indicates the likelihood of congenital hypothyroidism. The gross and histological results from this study may provide insights to physicians and clinical anatomists about PTD tissue and its clinical implications.

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Synapse to Soul: Scientific vs. Symbolic Perceptions of Heart and Brain Function.

INTRODUCTION. The heart pumps blood throughout the body, and the brain manages complex thought, emotions, sensorimotor processing, and neurogenic regulation. Despite modern knowledge, symbolism from historical beliefs, cultural perceptions, and even religious ideologies may confuse patient-clinician communication with misinformation about these organs. This study aims to provide an account of scientific vs. symbolic perceptions of heart and brain function. RESOURCES. Medical texts, scholarly articles, historical documents, and other relevant resources dating from Ancient Mesopotamia to the modern era were studied. Scientific vs. symbolic perceptions of heart and brain function were identified and compared. Modern abstract artwork was created to visualize the scientific and symbolic links between the heart and brain. DESCRIPTION. Mesopotamians believed love resided in the liver, while Greek and Roman mythology construed the concept of love with arrows to the heart. Modern era human biology reveals that love involves higher-order emotional consciousness in the brain, yet society continues to associate love symbolically with the heart (e.g., broken heartedness vs. neurological grief). While science drives medicine, symbolism can be effective for understanding human spirit and soul – topics inevitably relevant to healthcare yet more deeply engrained in culture and religion. Thus, symbolism can be important for physicians to effectively communicate about medical information with patients from different backgrounds, cultures, and religions. SIGNIFICANCE. While medical education teaches objective scientific knowledge, symbolic perceptions from historical beliefs, cultural perceptions, and religious ideologies influence laypersons' (often uninformed patients') subjective understanding of clinical anatomy. Thus, a liberal review of scientific vs. symbolic perceptions of heart and brain function can provide insights for streamlining certain patient-clinician communications.

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Clinical and Lifestyle Implications of Concurrent Rare Pathologies and Variations.

INTRODUCTION. Anatomical variations have important clinical applications and possible impacts on quality of life. Variations in bone formation can increase susceptibility to injury. Tumors, benign or malignant, can suppress existing structures and affect physiological function. Variations in arterial branching impact blood flow and could impact surgical intervention. Without an accurate understanding of these variations, they could go unidentified and cause further injury. Reporting incidences of variations and pathologies is vital to awareness amongst practitioners so as to avoid unintentional injury and advise patient care. RESOURCES. A 90-year-old female donor underwent full body dissection as part of a 9-week anatomy course. DESCRIPTION. Four rare structural variations were observed during dissection. They are listed here along with their occurrences according to the literature: 1. biparietal thinning (0.4-2.37%), 2. benign renal papillary adenoma (19-40%), 3. gluteal intramuscular myxoma (<0.001%), 4. aberrant left vertebral artery (aortic origin, V1 ascending to C4 – 0.683%). SIGNIFICANCE. The statistical incidence of any of these individual observations, let alone the combination, is notable. Alone, biparietal thinning can increase susceptibility to brain trauma, papillary adenomas may impair kidney function, the intramuscular myxoma could impinge the sciatic nerve, and the aberrant vertebral artery could increase the risk of dissection or blockage. In addition, any of these observations would likely impact medical interventions. In combination, these findings could indicate an underlying condition and compound the impact on the donor's quality of life. Their concurrent presence highlights the impact on clinical practice and the importance of preventative radio imaging and early intervention. Finally, while these findings may not be related to their prevalence, they may necessitate a reassessment of their incidences in certain circumstances and populations.

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Pronator Quadratus Submuscular Hemangioma Case Analysis with Review of Clinical Implications.

INTRODUCTION. Hemangiomas are vascular lesions that comprise 7% of all benign soft tissue tumors. They are commonly found in subcutaneous tissue but can also develop within bone, viscera, and muscles. Hemangiomas are typically asymptomatic; thus, they are seldom considered as a differential diagnosis for conditions with common etiologies. The purpose of this study is to investigate a unique submuscular hemangioma located between the pronator quadratus (PQ) and the interosseous membrane (IOM). RESOURCES. The case was discovered during routine dissection of an adult human cadaver. Reflecting the PQ revealed the hemangioma which was carefully cleaned of extraneous fascia, weighed, cross-sectioned (axial), and photographed with scale. Two hemangioma tissue samples (5 mm3) were collected, processed for histology, sectioned (5 μm), stained (H&E), and scanned for examination via digital light microscopy. DESCRIPTION. The 4.85 g hemangioma elevated the center of the PQ, creating a substantial arch in its typically straight muscle fibers. The hemangioma was supplied by the anterior interosseous artery and was bound by the PQ, IOM, and distal radius and ulna (distal radioulnar joint). The hemangioma was roughly circular (r = ~2.65 cm) in the coronal plane, thicker on its radial side (1.88 cm) than its ulnar side (0.45 cm), and presented as a multi-lobed structure. Histological analysis revealed disorganized tissue structure consistent with vascular tumors. SIGNIFICANCE. Given its size and unique location, the PQ submuscular hemangioma in this study could instigate chronic musculoskeletal pain, provoke neurovascular lesions, complicate distal forearm fractures, contribute to compartment syndrome, and elicit carpal tunnel syndrome – all of which can significantly impact hand function. This study may inform clinical anatomists, medical educators, and orthopedists about the presentation of a PQ submuscular hemangioma when analyzing, diagnosing, or treating related cases.

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A Previously Undescribed Variation of the Anconeus Epitrochlearis Muscle.

INTRODUCTION. Other than size, variations of the anconeus epitrochlearis muscle (AEM) are scantly reported in the literature. Herein, we present a seemingly very rare finding of the AEM in a cadaveric donor. RESOURCES. Cadaveric dissection. DESCRIPTION. During the routine dissection of an adult cadaver, an AEM was identified bilaterally, with the left-sided muscle having a typical appearance, attaching from the medial epicondyle to the olecranon. However, on the right side, the AEM had three heads. The distal two heads traveled from the medial epicondyle to the olecranon in a parallel fashion, both crossing over the ulnar nerve, thus forming the roof of the cubital tunnel. The most proximal head arose from the olecranon and attached to the medial intermuscular septum and medial head of the triceps brachii and traveled deep to the ulnar nerve. SIGNIFICANCE. In cases of ulnar nerve compression in the cubital tunnel, the AEM should be considered. Moreover, based on the present case report, anatomical variations of the AEM should also be considered. To our knowledge, a three-headed AEM has not been previously reported.

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The Plantaris Tendon Insertional Surface Area by Anatomical Classification: A Cadaveric Study.

INTRODUCTION. The plantaris tendon (PT) is a highly morphologic structure classified into five anatomical types (A-E) based on insertional structure. Recently, PT involvement has been implicated in Achilles tendinopathy, however PT insertional surface area (ISA) has yet to be measured. The purpose of this study was to measure the ISA of the PT types from 20 cadaveric PTs that insert on the calcaneus or its tuberosity. It was hypothesized that these tendon types (A-C, E) would exhibit measurable differences in ISA based on their type. Types A and E were predicted to have larger ISAs, while types B and C were predicted to have a smaller ISAs based on their morphological description. Type D ISA was not measured due to its insertion blending into deep crural fascia. METHODS. This cadaveric study was performed on 9 left and 11 right PTs, which were dissected and separated from the overlying fascia to the insertion. Each insertion site was outlined using a 0.4 mm fine-tip marker. Photos of the insertion site were taken with a mirrorless digital camera and analyzed using an open-source image processing and analysis platform to obtain the ISA. SUMMARY. Type A (n=2) had the largest average ISA of 74.798 mm2, followed by Type C (n=8) at 48.275 mm2, Type B (n=9) at 33.686 mm2, and Type E (n=1) at 8.036 mm2. ANOVA analysis revealed no significant differences in ISA between all five tendon types ($p = 0.279$). The mean ISA for males and females were not significantly different, 43.687 ± 27.877 and 41.014 ± 38.508, respectively ($p = 0.861$). CONCLUSIONS. While no significant differences were observed between the four tendon types and ISA, Type A trended towards the largest ISA, while Type E trended towards the smallest ISA. While limited in sample size, this trend was consistent with our expectations, which may have clinical implications, as stress is concentrated at tendon entheses. This study provides a set of standards for the ISA of PT types, which contributes to our understanding of PT morphology.

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Rare Horseshoe Venous Confluence of Retroaortic Left Brachiocephalic and Dual Column Azygos Veins.

INTRODUCTION. The azygos system is vital for thoracic venous drainage and significantly varies due to complex embryologic development. Typically, the azygos system comprises the azygos, hemiazygos, and accessory hemiazygos veins and their tributaries. This case presents a previously unreported azygos system variation with clinical implications for thoracic imaging and surgery. RESOURCES. A 61-year-old male cadaver was received through the Saint Louis University School of Medicine Gift Body Program with informed consent. DESCRIPTION. Routine dissection revealed a retroaortic left brachiocephalic vein (LBCV) and a double-column azygos venous system forming a horseshoe confluence vein at TV5/TV6. Each azygos column received the fifth to eleventh posterior intercostal veins (PICV) from their respective sides. The right superior intercostal vein drained the first four PICVs and drained into the posterior LBCV, while the left superior intercostal vein was absent. The first four left PICVs drained directly into the LBCV. SIGNIFICANCE. This unique dual-column azygos system with a horseshoe confluence and retroaortic LBCV has important clinical implications. Recognizing such variations is essential for accurately interpreting imaging studies, surgical planning, and reducing procedural complications. The retroaortic LBCV and the abnormal horseshoe venous confluence may complicate central venous catheter placement and increase the risk of venous injury. Furthermore, these retroaortic veins may elevate the risk of vascular compression in cases of aortic aneurysm. This case underscores the importance of considering anatomical variations in both medical education and clinical practice to enhance patient safety and outcomes.

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A Rare Anatomical Variation Discovered Post Mortem: A Case Report.

INTRODUCTION. The Horseshoe Kidney (HSK) is an embryological malformation affecting 1 in 500 people with a male predominance of 2:1. In >90% of cases, the inferior poles of both kidneys undergo fusion during the ascension into the abdomen. The HSK discovered will be categorized by the arterial supply pattern criteria outlined via the Graves' Scale. RESOURCES. Upon discovering the HSK, the Graves Scale was consulted to classify the observed anatomical variation. DESCRIPTION. This case involves an 89-year-old male with no significant medical history related to his undiagnosed HSK. The cause of death included septic shock, acute respiratory failure, pneumonia with chronic congestive heart failure, atherosclerotic heart disease, hypertension, atrial fibrillation, and ischemic cardiomyopathy. After discovery, the HSK was carefully dissected using advanced preservation techniques to examine its anatomical structures. HSKs can be classified based on anatomical variations according to the Graves Classification, which includes five types: Type I: One renal artery per side; Type II: One renal artery per side with an aortic branch to the isthmus; Type III: Two renal arteries per side and one renal isthmus artery; Type IV: Two arteries per side, with ≥1 from the iliac arteries including the isthmus branch; Type V: ≥ 3 renal arteries from the aorta, mesenteric, and iliac branches. The literature states that a Type II HSK is the most common, found in 76% of patients, while Type V is the rarest, presenting in as little as 10% of patients. The HSK discovered had 3 renal arteries on both sides, classifying it as Type V. SIGNIFICANCE. With an incidence of <10%, this finding emphasizes the importance of thorough postmortem anatomical examination, particularly for rare anatomical variations. By acknowledging the abnormalities that often go undiagnosed in patients we enhance our learning and preparedness if and when we face these abnormalities in a clinical setting.

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Bridging the Layers: Advancing Medical Students' Understanding of Male and Female Perineal Anatomy.

INTRODUCTION. First-year medical students often find Pelvis and Perineum (P&P) anatomy the most challenging part of the Anatomy, Histology, and Embryology (AHE) block. A needs analysis of first-year medical students (class of 2028) revealed that 80% (n=128) identified P&P as the most challenging section of AHE. We hypothesize that integrating a P&P review session, paired with updated cadaveric prosections, will improve students' understanding and performance on P&P-related questions in the summative assessment. METHODS. A cadaveric male and female pelvis were dissected to expose key anatomical structures, which were subsequently made available for student exploration during the anatomy lab. A comprehensive P&P review was also provided. To evaluate baseline knowledge, a pre-quiz featuring cadaveric dissection images and clinical vignette-style questions was administered 15 minutes before the review session. To assess knowledge retention and understanding, a post-quiz was given 15 minutes after the session. SUMMARY. Student performance on the post-quiz (n=115) significantly improved compared to the pre-quiz (n=124; 58% vs. 46%; $p<0.0001$). However, the average score on summative assessments for attendees (n=116) and non-attendees (n=68) showed no significant difference on P&P questions (79% vs. 78%; $p=0.6$). Notably, after the review session, 90% of the students (n=120) felt confident in the material as compared to 54% (n=129) prior to the review. Furthermore, the proportion of students who felt unconfident decreased from 46% to 14% after the session. CONCLUSIONS. The P&P review session, combined with the updated cadaveric prosections, boosted student confidence in understanding P&P anatomy and improved immediate knowledge retention, as reflected in pre- and post-quiz scores. However, it had minimal impact on long-term summative exam performance. Despite this, the session offered a valuable supplementary learning experience, potentially reducing student anxiety. Future studies with larger sample sizes and alternative learning strategies may be needed to explore more sustained improvements in student performance. Approved by TTUHSC QIRB (protocol 2209).

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A Case of Persistent Left Superior Vena Cava and an Atypical Portocaval Anastomosis.

INTRODUCTION. Persistent left superior vena cava (PLSVC) is a rare congenital anomaly of the thoracic venous system resulting from the persistence of the left superior cardinal vein. PLSVC occurs in 0.3-0.5% of the general population and is co-present with the right superior vena cava in 80-90% of the cases. It is often asymptomatic and typically discovered incidentally during surgery, imaging, or invasive cardiovascular procedures. The inferior mesenteric vein (IMV) typically drains into the portal system. Drainage of the IMV to the left renal vein (LRV) seems to be rarely reported in the literature and may occur in less than 1% of the population. This case presented a combination of these extremely rare venous anomalies in one individual. RESOURCES. A 95-year-old female cadaver was dissected according to standard procedures during a first-year medical school anatomy course. DESCRIPTION. During an educational dissection, a PLSVC was observed, which was formed by the left subclavian and left brachiocephalic veins and received the left superior intercostal vein before draining into the enlarged coronary sinus. The azygos vein was typical and received the right superior intercostal, hemiazygos, and accessory hemiazygos veins. In addition, a natural portocaval anastomosis between the LRV and IMV was observed. The left gonadal vein followed an atypical drainage path as well, traveling posteriorly to the LRV and draining into the junction of the left suprarenal vein and left inferior phrenic vein as they drained into the LRV. SIGNIFICANCE. The presence of a PLSVC can be important to identify during cardiac procedures such as catheterization and routine pacemaker placement, as it can complicate accessing the right atrium via the left subclavian vein. Awareness of rare variations such as a natural portocaval anastomosis is also critical in clinical diagnosis or when performing gastrointestinal procedures and renal transplantation.

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Integrating Standardized Patient Scenarios with Ultrasound to Bridge Anatomy and Clinical Practice.

INTRODUCTION. Diagnostic skills are vital for medical students transitioning from foundational sciences to clinical practice. At Texas Tech University Health Sciences Center (TTUHSC) School of Medicine, first-year students in the Anatomy, Histology, and Embryology (AHE) block learn core concepts of health and disease. While anatomy is crucial for understanding pathology, students often struggle to apply this knowledge clinically. Standardized patient encounters (SPE) with bedside ultrasound (US) help students visualize anatomical structures and correlate them with clinical presentations. This study examines the impact of SPE with US as an imaging tool to improve diagnostic performance in the anatomy curriculum. This project was approved by the TTUHSC QIRB (#22069). METHODS. Three one-hour sessions on supraspinatus tear (SPE1), thyroglossal duct cyst (SPE2), and appendicitis (SPE3) were conducted during AHE. Each session included a pre-quiz, patient case introduction, and history. Groups of three students spent 30 minutes with SPs to develop differential diagnoses, perform US, and formulate treatment plans, followed by a post-test and faculty-led debrief. SUMMARY. Students showed significant improvement in post-quiz scores compared to the pre-quiz scores across all three sessions (SPE1: 76 $\pm$ 17 vs 92 $\pm$ 11, $p < 0.001$, SPE2: 74 $\pm$ 21 vs 86 $\pm$ 14, $p = 0.001$ and SPE3: 69 $\pm$ 20 vs 80 $\pm$ 16, $p = 0.002$). Attendees (n=49-66), 94-100% rated the educational value of the SPEs as extremely or moderately useful, and 96-100% reported that integrating physical exam findings with ultrasound significantly enhanced their understanding of the case study. CONCLUSIONS. SPEs integrated with ultrasound improved diagnostic skills and clinical reasoning, as shown by significant post-test gains. This approach promotes early application of anatomical concepts and suggests potential benefits for other medical training programs. Future studies should explore long-term knowledge retention.

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Development of Learning Assets to Accompany a Gross Anatomy Case Presentation of Intussusception.

INTRODUCTION. Case-based gross anatomy instruction is becoming used increasingly to provide real-life scenarios to analyze problems, apply knowledge and achieve solutions through dissection. This study demonstrates the development of instructional assets for an online case-based presentation within the abdominal dissection curriculum. RESOURCES. The case (75-y-o male) was drawn from permanent body donations (WBP, Univ. Hawaii SOM) with informed consent (IRB- 2018–00120). The donor was scanned postmortem (Siemens , MRI Prisma 3) consisting of Turbo Spin Echo sequence (T2w, FOV 240 mm, 128 slices, 150 deg flip angle, TR/TE 13750/97) and anonymized files were segmented using Monai and Slicer software, processed via photogrammetry and z-brush, and uploaded to sketchfab for Canvas LMS integration. DESCRIPTION. Characteristic features of intussusception, including the “pseudo-kidney sign,” were identified. 3D Slicer reconstructions visualized the affected bowel anatomy, showing small bowel telescoping around the cecum and ascending colon with a doughnut sign and crescent pattern. Dissection and photogrammetry confirmed the findings and features are effectively portrayed using sketchfab models that can be easily incorporated into an LMS. The patient also displayed metastatic non-small cell cancer that could have served as the malignant lead point, initiating bowel telescoping. SIGNIFICANCE. This case provides a base for a presentation regarding bowel anatomy. It also emphasizes the role of MRI and 3D reconstruction in identifying rare comorbidities and refining anatomical education on malignant-associated bowel abnormalities. Future work will be directed at creating Subject, Medical History, and Physical Exam information for case presentation with subsequent assessment of instructional effectiveness.

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Histological Evaluation of the Round Ligament of the Uterus.

INTRODUCTION. The round ligament of the uterus is reported to contain both smooth (Smm) and skeletal muscle (Skm) along its length. Still, the precise anatomical location and histological characteristics of Skm appearance are not well-documented. This study aims to characterize the area and histological features of the Skm within the round ligament of the uterus. RESOURCES. Specimens were obtained from cadavers donated through the Saint Louis University Gift Body Program. DESCRIPTION. Uterine round ligament samples were obtained and prepared for histological evaluation using H&E staining. Microscopic analysis was performed to examine stained tissue sections, assess muscle composition, and interpret histological findings. The round ligament of the uterus was divided into four segments: (A) within the broad ligament, (B) between the broad ligament and the inguinal canal, (C) within the inguinal canal, and (D) extending from the canal to its insertion. Smm and Skm were graded in each of these regions on a scale from 1 to 4: absent, sparse, moderate, and abundant, respectively. Our findings indicate that Smm is present throughout the entire length of the round ligament, with all segments graded 3 or 4. However, Skm first appears sparsely in segment B (grade: 2), becoming more prominent in subsequent sections, with moderate amounts observed in segments C and D (grade: 3). This is significant because existing research and anatomical texts describe the presence of Skm as the round ligament travels within the inguinal canal distally toward the labia majora and mons pubis. These findings provide new insight into the organization of muscle within the round ligament, contributing to a broader understanding of its structural and functional significance. SIGNIFICANCE. Understanding this muscle distribution enhances knowledge of uterine anatomy and may have implications for physical medicine and surgical practices and conditions affecting the round ligament.

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Diverticulosis with Suspected Epiploic Appendagitis in an Anatomical Donor: A Case Report.

INTRODUCTION. Diverticulosis is a condition that is often asymptomatic and thus hard to detect. It is caused when the diverticula in the vasa recta become separated from the intestinal lumen, leaving the affected area more susceptible to damage. If left untreated, inflammation caused by diverticulosis can spread through the serosa, causing a secondary condition called epiploic appendagitis (EA). EA occurs when intestinal torsion leads to ischemic infarction—tissue death due to inadequate oxygen supply caused by obstruction—in the appendage, resulting in its shortening. EA typically presents as acute abdominal pain and is often misdiagnosed due to the lack of information regarding its gross presentation. RESOURCES. In this study, we compare the difference in appendage length and width between a donor with documented diverticulosis (n=1) and non-pathological donors (n=5) from the same cohort. Specifically, we measured epiploic appendages of one pathological donor and epiploic appendages from five non-pathological individuals as controls. Each individual donor had five appendages measured from the sigmoid colon. All measurements were recorded in millimeters. Photographs with a scale bar for reference were taken to document the gross appearance of the pathologies. DESCRIPTION. Results of this study showed that the epiploic appendages of the donor with diverticulosis had a significant difference (p=0.05) in length, but not width, when compared to our nonpathological donors. SIGNIFICANCE. Due to a lack of awareness about EA, this condition is often misdiagnosed. Since EA presents similarly to other conditions like diverticulitis, appendicitis, or cholecystitis, patients may undergo unnecessary diagnostic tests and treatments. This study aims to raise awareness of EA to ultimately reduce the need for invasive procedures and improve outcomes for those affected by the condition.

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Optimizing Stress Recovery: The Impact of Cyclic Sighing on Superior Mesenteric Artery Vasodilation.

INTRODUCTION. Acute stress induces physiological changes in blood flow, including vasoconstriction in visceral circulation. Breathing techniques, such as cyclic sighing, have been proposed to mitigate stress-related vascular alterations, but their effects on visceral circulation remain unclear. This study examines the impact of acute stress and cyclic sighing breathing on the diameter of the superior mesenteric artery (SMA). METHODS. Twenty-eight healthy participants were randomly assigned to either a cyclic sighing group or a control group. Cyclic sighing, consisting of two inhales followed by a slow, prolonged exhale, was performed for 3 minutes and compared to quiet sitting for an equal duration. Acute stress induction was performed using a modified Maastricht Acute Stress Test (MAST), which involved ice-cold hand immersion and a mental arithmetic task for a total of 5 minutes. SMA diameter was measured via a GE LOGIQ ultrasound system and a 12-15 Hz curved transducer at three time points: baseline, post-stress, and post-intervention (breathing or quiet sitting). SUMMARY. Acute stress significantly reduced SMA diameter ($p < 0.001$). Both groups exhibited a significant increase in SMA diameter post-intervention ($p < 0.001$), but no statistically significant difference was observed between them. However, the cyclic sighing group showed a greater mean percentage increase in SMA diameter with lower variability. CONCLUSIONS. Acute stress is significantly associated with SMA vasoconstriction, and a brief recovery period—whether passive or guided by cyclic sighing—corresponds with increased SMA diameter. While cyclic sighing showed a trend toward greater vasodilation, it did not significantly outperform quiet sitting. These findings suggest cyclic sighing could serve as a simple, non-pharmacological intervention for stress recovery. Further research with larger sample sizes is warranted to assess its therapeutic potential in stress-related vascular conditions.

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Right Accessory Aortic Lower Polar Renal Artery: A Rare Variant Observed in Cadaveric Dissection.

INTRODUCTION. The accessory renal arteries (ARAs) have been studied in detail, and their anatomical variations have significant clinical implications. A single renal artery originating from the abdominal aorta and supplying the kidney through the hilum is considered typical anatomy with a prevalence of 78.92%. The pooled prevalence of one ARA is estimated to be 18.67%. The pooled prevalence of left-sided ARA was estimated at 18.94%, right-sided at 18.60%, and bilateral cases at 5.15%. RESOURCES. During a cadaveric dissection course at Creighton University, thirty cadavers preserved with 3-4% formaldehyde solution were systematically examined. One male cadaver, with a documented history of congestive heart failure (status post biventricular implantable cardioverter-defibrillator placement), coronary artery disease, and atrial fibrillation listed as cause of death, exhibited a rare anatomical renal artery variation. DESCRIPTION. Anatomical dissection revealed one accessory aortic lower polar renal artery in the right kidney. This variation has a cadaveric incidence of 3.48% and a radiologic incidence of 1.2%. Clinical history was not available to be accessed for other functional implications outside of the causes of death; however, ARAs have been found in patients with essential hypertension (HTN) at rates as high as 68%. SIGNIFICANCE. This case underscores the importance of a comprehensive understanding of typical and variant renal anatomies for anatomists, radiologists, surgeons, and clinicians. A detailed knowledge of these anatomical variations is essential to minimize iatrogenic injuries during complex procedures like kidney transplantation and interventions for resistant HTN. Early detection through imaging and anatomical knowledge can significantly improve the management of chronic conditions, including HTN. This finding contributes to the existing knowledge of renal anatomical variations and emphasizes the role of cadaveric dissection in medical school.

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Microdissection of the Brachial Plexus as it Relates to the Complex Movement of Feeding.

INTRODUCTION. Traditional descriptions of the brachial plexus associate terminal branches with specific spinal cord levels, but overlapping innervation among functionally related muscles suggests a more complex organizational pattern. This investigation aims to compare the commonalities found in shared spinal cord levels as they relate to the complex movement of "feeding," which includes elbow flexion, supination, and flexion of the shoulder. RESOURCES. Dissections were performed on cadaveric specimens donated through the Saint Louis University Gift Body Program and prepared using an ethylene-glycol solution. DESCRIPTION. Microdissection involved isolating axons from the surrounding tissues and vessels. Axons supplying muscles involved in this complex feeding movement were traced from their muscle termination to their associated root(s) of the brachial plexus. Preliminary findings suggest a refined segmental organization relative to coordinated movements, finding that the biceps brachii, a major flexor of the elbow and the main supinator of the forearm, received contributions from C5 and C6, and the Brachialis, a minor elbow flexor, received only a C5 contribution. Finally, flexors of the shoulder (anterior deltoid, coracobrachialis, and biceps brachii short head) were supplied by combinations of C5 and C6. All of this suggests that muscles involved in feeding are predominately supplied by the C5 and C6 spinal cord levels despite being supplied by disparate branches of the brachial plexus. SIGNIFICANCE. By mapping these neuromuscular pathways, this study provides deeper insight into upper limb innervation, which may enhance clinical approaches for diagnosing and treating brachial plexus injuries, particularly in localizing nerve root involvement based on functional deficits.

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A Case Report of Bilateral Variations in Formation of the Cords of the Brachial Plexus.

INTRODUCTION. In the typical formation of the brachial plexus (BP), the lateral cord (LC) is formed by anterior divisions of the upper and middle trunks, whereas the medial cord (MC) is a continuation of the anterior division of the lower trunk. RESOURCES. During routine cadaveric dissection of an 82-year-old female donor, bilateral variations in the formation of the MCs and LCs were observed. DESCRIPTION. Dissection of the posterior triangle revealed BPs in which the anterior divisions of the middle and lower trunks atypically contributed to the formation of the MC bilaterally. The anterior division of the middle trunk coursed deep to the axillary artery to join the anterior division of the lower trunk, forming the MC at the lateral border of the second rib. The branches from the MC appeared as expected. The anterior division from the upper trunk continued as the LC from which the lateral pectoral and musculocutaneous nerves and the lateral contribution of median nerve originated. Furthermore, there was an additional small branch from the MC that crossed over the axillary artery before traveling deep to the LC to innervate the coracobrachialis. The posterior cord formed in typical fashion, arising from the posterior divisions of the upper, middle, and lower trunks. Prior to the contribution of the posterior cord, the posterior division from the upper trunk gave off a small branch, an accessory upper subscapular nerve, supplying the upper portion of the subscapularis. SIGNIFICANCE. This case presented an atypical BP configuration, which was not reported. The potential clinical implications of such variations include altered patterns of motor and sensory innervation, which could have consequences for surgical approaches, nerve block techniques, and the management of BP injuries.

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Beyond the Dissection: Integrating Clinical Correlates into Anatomy Lab to Enhance Student Learning.

INTRODUCTION. During cadaveric dissections, medical students were provided with a clinical correlate resource to assess their understanding of clinical presentations involving the structures being dissected. To evaluate the effect of clinical correlate incorporation into the anatomy lab on student learning we followed the performance of students taking anatomy. METHODS. The resource consisted of four questions with four answer choices per question. At the end of the presentation, the correct answer along with rationales were provided. Additionally, the pre- and post-quizzes focused on clinical correlates and were administered at the start and end of each unit. To compare summative exam performance, students were categorized into three groups: group A (n=51-66; used the resource and the quizzes), group B (n=19-28; only took the quizzes), and group C (n=96-109; used neither). SUMMARY. Student performance on post-quizzes (n=81-95) was statistically better compared to pre-quizzes (n=74-126) throughout the anatomy course (Unit 1: 76% vs. 56%, $p<0.0001$; Unit 2: 87% vs. 56%, $p<0.0001$ and Unit 3: 89% vs. 39%, $p<0.0001$). Group A performed significantly better on the unit one exam when compared to groups B and C. There was no significant difference in the performance on Units two and three. CONCLUSIONS. The improved student performance on post-quizzes underscores the value of integrating clinical context into anatomy labs. Students who engaged with both the resource and quizzes performed better on the first summative exam. No significant differences were observed in the Units 2 and 3 exams, suggesting that the first exam may have served as a wakeup call, prompting other students to adapt their learning strategies by integrating clinical correlations more effectively. The data presented provides an insight into student learning, showing a variety of resource usage may provide the needed foundation for student understanding. Work on this project was covered under QIRB #22069.

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Design and Fabrication of a Multi-Layered Silicone Facial Phantom for Enhanced Anatomy Education.

INTRODUCTION. In clinical treatment and education related to the face, diverse educational methods are essential to enhance training effectiveness. While virtual reality (VR) and augmented reality (AR) are increasingly utilized, hands-on simulation training remains crucial for providing realistic tactile feedback. However, currently available silicone facial models often feature simplistic designs or inaccuracies in anatomical representation. This study aims to develop a multi-layered silicone facial phantom that accurately replicates the tactile experience of real procedures by incorporating the latest study reference in facial anatomy. METHODS. A virtual facial skin layer was reconstructed using 3D data obtained from a skull scan of a European female purchased from a 3dscanstore.com incorporating references to average soft tissue thickness. The anatomical structures, including the deep muscles, fascia, and fat, were digitally sculpted using Blender 3.5. To fabricate the phantom, four distinct layers were individually 3D printed using resin. Molds were then created, and each layer was cast with silicone of appropriate hardness to replicate the varying textures of human tissue before being assembled into a complete model. The skin layer was divided into two sections: one made of a transparent material for internal visualization and the other made of an opaque material to simulate realistic external conditions. SUMMARY. The completed facial phantom was presented as a prototype by the company in January 2025. Subjective assessments of its educational effectiveness were gathered from attendees, with verbally expressed strong interest and positive responses overall. CONCLUSIONS. These findings suggest that the developed phantom has the potential to enhance comprehensive anatomical education and provide a high level of satisfaction among clinicians. Sponsored by Grant No. 2023-31-0013 from the HEALUX Co., LTD Association.

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Aberrant Right Subclavian Artery and Truncus Bicaroticus in a 96-Year-Old Female Donor.

INTRODUCTION. Thorough understanding of both normal and abnormal aortic arch structure is necessary to prevent complications in surgical and medical procedures of the paratracheal and mediastinal structures. In this case report, we will discuss the co-presentation of two rare aortic arch variants: an aberrant right subclavian artery (ARSA) and the common origin of the carotid arteries (COCA). ARSA has an estimated incidence of <2%, while COCA is even rarer at <0.1%, and the co-incidence of ARSA with COCA is much lower at <0.05%. The frequency of ARSA increases in certain populations such as individuals with trisomy 21 or 22q11.2 deletion syndrome, individuals of Greek descent, and females. RESOURCES. Donor body donated to the University of Texas Southwestern Medical Center Willed body program. DESCRIPTION. During anatomical dissection of a 96-year-old female cadaver, it was noted that the donor body had both an ARSA (18.2 mm diameter at the base) and COCA (16.4 mm diameter at the base). SIGNIFICANCE. Individuals with ARSA are generally asymptomatic, but the most common symptoms include dysphagia lusoria (esophageal compression), dyspnea, and retrosternal pain, while more serious complications include right laryngeal nerve palsy and tracheal compression. Abnormal development of the aortic vasculature can lead to comorbid vascular anomalies such as COCA, Kommerell's diverticulum, or a right subclavian artery aneurysm. Clinician understanding of these anomalies are particularly important in surgical cases such as lymph node dissection in the right paratracheal fossa, thyroidectomies, tracheotomies, transradial coronary procedures, vagus nerve related procedures, and esophagectomies. Improved knowledge of such rare aortic arch anomalies allows clinicians to optimize surgical approaches and better manage patients requiring urgent interventions like catheterization.

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Anatomical Investigation of a Giant Intramuscular Lipoma in Rectus Femoris with Clinical Insights.

INTRODUCTION. Lipomas are slow-growing mesenchymal fatty tumors that frequently present in subcutaneous tissue. While they are often benign and rarely grow larger than 2 cm, lipomas measuring more than 5 cm in any dimension are termed "giant" lipomas. Furthermore, intramuscular lipomas are rare and are believed to develop from post-traumatic adipocyte proliferation. Giant intramuscular lipomas (GIL) can provoke significant clinical sequelae, though few cases have been thoroughly analyzed and published. This study aims to perform a comprehensive anatomical investigation of a GIL discovered in a rectus femoris (RF) muscle. RESOURCES. The GIL was discovered during routine academic dissection of an adult human cadaver and carefully excised from the RF. Gross measurements, in situ and ex situ photography with scale, and histological examination via light microscopy were performed on the GIF and RF tissues. A normalized maximal isometric force (Fmax) and intermuscular architectural comparability index ($\delta_{2,1}$) were calculated for and between each RF muscle to reveal functional and structural similarities. DESCRIPTION. The 7.23 g (5.17 cm x 2.89 cm x 1.14 cm) flattened ovoid GIL was capsulated and demonstrated typical lipoma histopathology. It was ~70% embedded in the distal third of the right RF (73.06 g; Fmax = 112.03 N) while the left RF (83.77 g; Fmax = 112.85 N) was unremarkable. The RF muscles exhibited significant architectural difference ($\delta_{2,1} \geq 0.80$). Notably, a total knee arthroplasty was evident on the left, but the right knee had no indications of surgical history. SIGNIFICANCE. A GIL can alter muscle architecture, impede function, compress contiguous neurovasculature, and create cosmetic deformities. This study may provide insights about potential etiologies of a GIL in the RF, such as from an EpiPen injection. The thorough investigation presented in this study may aid clinicians in diagnosing, evaluating, and managing similar cases to optimize patient outcomes.

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The Use of Cranial POCUS in a Resource-Limited Setting for Emergent Craniotomy: A Procedural Report.

INTRODUCTION. Acute intracranial hematomas are often the result of traumatic brain injuries and necessitate expeditious clinical decision-making. When life-threatening, these conditions require emergent intervention regardless of the setting and equipment availability in order to decompress the hematoma and mitigate mass effect on the cerebrum. RESOURCES. A Thiel-embalmed cadaver was used to model the proposed procedure. A balloon filled with simulated blood was used to mimic an intracranial hematoma and inserted between the temporal bone and dura mater through a controlled craniotomy. A point-of-care-ultrasound (POCUS) unit was then used to visualize the simulated hematoma. Lastly, the intracranial hematoma was evacuated. DESCRIPTION. To demonstrate feasibility and provide procedural instructions for utilizing cranial POCUS (cPOCUS) to diagnosis an intracranial hematoma and perform an emergent craniotomy to treat the simulated intracranial hematoma in an austere environment. SIGNIFICANCE. POCUS is a non-invasive, portable imaging tool that is widely used to aid in diagnosing a variety of pathologies. While non-traditional methods to treat emergent intracranial hematomas have been reported, none have utilized cPOCUS as an adjunctive modality for diagnosis and treatment. Therefore, this cadaveric feasibility study proposes a novel approach to the diagnosis and management of emergent intracranial hematomas through the use of cPOCUS.

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Variation in Extensor Indicis Proprius and Clinical Application for Antebrachial Procedures.

INTRODUCTION. The extensor indicis proprius (EIP) muscle is contained within the extensor compartment of the antebrachium, originating on the posterior surface of the distal ulna, with the muscle belly distal to that of extensor pollicis longus. The tendon of the EIP muscle forms proximally to the radiocarpal joint and passes deep to the extensor retinaculum, attaching to the ulnar side of the extensor digitorum tendon on the second digit. The EIP muscle frequently demonstrates variation in its' tendinous insertion, sending tendinous slips to locations other than what is described classically in literature. The previously established classification systems of known EIP insertion patterns has recently been combined by Georgiev (2018) into four main schemes. METHODS. Ninety-six upper limbs from 49 formalin-embalmed cadavers were dissected to expose the EIP muscle and determine the tendon morphology as classified by Georgiev. Measurements were recorded from the center of the established EIP muscle belly to 3 anatomical landmarks, along with measurements of EIP muscle bellies and tendons. SUMMARY. Out of the 9 morphologies observed, classic morphology was seen in 60.4% of samples (1 muscle belly, 1 tendinous insertion to the second digit). Three additional variations included 7.3% with 1 classic tendon and an accessory tendon to the radial side of the second digit, 6.25% with 1 classic tendon and an accessory tendon to the ulnar side of the second digit, and 6.25% with 3 tendons to the second digit. Muscle center was measured from the ulnar styloid process and compared with the presenting tendon morphology to determine relative location. CONCLUSIONS. An EIP muscle with 1 muscle belly and 1 tendon to the index finger was the most common variation. This study demonstrates predominant classification of EIP and relative muscle belly location. These findings are important for procedures and needle placement during treatments of the antebrachium and hand.

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A Novel Variant of the Suprascapular Neurovascular Morphology at the Suprascapular Notch.

INTRODUCTION. The suprascapular foramen is a landmark for the suprascapular nerve, artery, and vein. These neurovascular structures traverse the suprascapular notch in a variety of morphologies. However, the suprascapular nerve has always been described as coursing under the superior transverse scapular ligament (STSL). This report aims to describe a novel variant of suprascapular neurovascular structures found in a cadaver. RESOURCES. An 85-year-old Caucasian male was obtained through our institution. Measurements were taken using a digital caliper. Clinical images were taken of the suprascapular notch for descriptive value. DESCRIPTION. During dissection of a cadaveric upper extremity, the right suprascapular nerve, artery, and vein were found to course above the STSL, with no structures passing through the foramen of the notch. The STSL had a length of 12.91 millimeters (mm) and width of 0.84 mm on the right. At the level of the STSL, the suprascapular nerve was noted to have a diameter of 3.55 mm, the suprascapular artery had a diameter of 3.61 mm, and the suprascapular vein had a diameter of 3.86 mm on the right. A total of 94 upper extremities from 52 different cadavers were examined for the morphology of the suprascapular nerve, artery, and vein at the lever of the suprascapular notch. No other cadavers were found to have this morphology, resulting in an estimated prevalence of 1.1%. SIGNIFICANCE. This case study describes a unilateral shoulder anomaly and reviews the potential clinical significance of this variant, which should be considered during shoulder surgeries and peripheral nerve blocks. The suprascapular notch serves as a landmark for suprascapular nerve injections and, as such, this variant could complicate the injection process due to an aberrant nerve location. This could also lead to complications during rotator cuff repairs due to the lack of support of the suprascapular nerve which is normally afforded by the STSL.

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Biomechanics of a Duplicated Palmaris Longus Muscle with Analysis for Tendon Transfer Suitability.

INTRODUCTION. The palmaris longus (PL) is a muscle in the anterior forearm that originates from the medial epicondyle (via common flexor tendon) and inserts into the palmar aponeurosis. PL variations are common, though cases of duplicated PL muscles are infrequent and rarely include biomechanical analyses. This study aims to determine biomechanics of a duplicated PL muscle with analysis for tendon transfer suitability. RESOURCES. A left unilateral duplicated PL was discovered during routine dissection of an adult human cadaver. The variation was photographed in situ with scale, and gross parameters of each PL were measured bilaterally. Sarcomere lengths ($n > 300$) were measured via digital light microscopy, and a normalized maximal isometric force (Fmax) and intermuscular architectural comparability indices ($\delta 2,1$) were calculated for and between each PL muscle to reveal functional and structural similarities. DESCRIPTION. The left PL muscle and its duplicate were visibly and architecturally similar ($\delta 2,1 \leq 0.30$). The paired muscles emerged adjacently as distinct fusiform muscles, and each exhibited a distinct distal tendon. The left radial PL inserted into the palmar aponeurosis, while the left ulnar PL inserted into the transverse carpal ligament. The right PL (Fmax = 8.95 N) was architecturally similar ($\delta 2,1 \leq 0.30$) to the left radial PL (Fmax = 8.54 N) but was indifferent ($0.30 \leq \delta 2,1 \leq 0.80$) from the left ulnar PL (Fmax = 6.73 N). SIGNIFICANCE. The PL is one of the most variable muscles in the human body, but its long, slender tendon is a useful landmark for identifying the median nerve near the wrist and can be used as graft material in reconstructive/tendon transfer surgeries (as determined by $\delta 2,1$), lip augmentation, frontalis suspension slings, and plastic surgery. This study may provide orthopedic surgeons, physiotherapists, clinical anatomists, and other medical professionals with new insights about duplicated PL muscles and their clinical implications.

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Biomechanical Analysis of Concurrent Iliacus and Psoas Major Variations Involving the Femoral Nerve.

INTRODUCTION. The iliacus and psoas major muscles converge to form the iliopsoas muscle which chiefly flexes the hip. The femoral nerve enters the pelvis from between iliacus and psoas major, courses over the iliopsoas, and innervates the anterior myotome and contiguous dermatome in the thigh. Non-typical morphologies of the iliacus and psoas major can lesion the femoral nerve; however, reports of these aberrations with biomechanical analyses are rare. The purpose of this study is to perform a biomechanical analysis of concurrent iliacus and psoas major variations involving the femoral nerve. RESOURCES. The case was discovered during routine human cadaver dissection. The aberrations were photographed in situ with scale, and gross parameters of each muscle were measured bilaterally. Mean postmortem fixed sarcomere lengths (n > 300 per muscle) were evaluated via light microscopy to calculate a normalized maximal isometric force (Fmax) for each muscle. DESCRIPTION. The left psoas major (LPM1, Fmax = 102.22 N) presented with two sequential posterior accessory bellies (LPM2, Fmax = 12.04 N; LPM3, Fmax = 7.69 N), and the left iliacus (LI1, Fmax = 97.26 N) presented with one anterior accessory belly (LI2, Fmax = 8.26 N). LPM2 split the femoral nerve into a main component (LFN1, posterior) and a minor component (LFN2, anterior). LFN1 coursed under LI2 and united with LFN2 as they entered the proximal thigh. The right iliacus (RI, Fmax = 106.57 N), psoas major (RPM, Fmax = 102.07 N), and femoral nerve (RFN) were unremarkable for variations. SIGNIFICANCE. Non-pathognomonic sensorimotor femoral neuropathy can be challenging to diagnose. Understanding how iliacus and psoas major variations could implicate the femoral nerve may help differentially diagnose local musculoskeletal lesions from lumbar intervertebral disc herniation and other conditions. This study may provide translational insights about clinical anatomy to physicians and educators confronted with similar cases.

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Anatomical Variations of the Profunda Femoris Perforator Vessels: An Anatomical Study.

INTRODUCTION. Current knowledge regarding the anatomical variations of the profunda femoris pedicle and its terminal branches remains limited. Studies addressing arterial variations of this pedicle are scarce, and data concerning venous variations are virtually nonexistent. The objective of this descriptive anatomical study was to investigate the frequency of arterial and venous variations of the profunda femoris pedicle and its terminal branches. METHODS. This study reports descriptive findings from 100 dissections of the medial thigh region. Fifty female cadavers, either formalin-preserved or fresh, were dissected. Each anatomical configuration was photographed and documented using a schematic drawing before analysis. SUMMARY. There is significant variability in the origin of perforator vessels supplying the medial thigh region. In 76% of cases, they originated from the profunda femoris pedicle, while in 13% they originated from the common femoral bundle, 7% from the superficial femoral bundle, 2% from the obturator bundle, and 2% from the inferior gluteal bundle. The number of perforator pedicles arising from the profunda femoris pedicle also varied, with a single perforator pedicle present in 64% of cases, a double pedicle in 33%, and a triple pedicle in 3% of cases. The average length of the perforator pedicles was 11.7 cm. Their course was musculocutaneous in 97% of cases and septocutaneous in 3%. CONCLUSIONS. Preoperative knowledge of the configuration and frequency of anatomical variations in perforator pedicles of the medial thigh region and their terminal branches can assist the surgeon when approaching the medial thigh for autologous microsurgical breast reconstruction using the PAP flap.

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Exploration of the Cutaneous Microcirculation of the PAP Flap: An Anatomoradiological Study.

INTRODUCTION. The perforator flap based on the profunda femoris artery (PAP) is frequently used in reconstructive surgery. Cutaneous microcirculation, a key element for flap viability, remains insufficiently studied and poorly documented. The objective of this study was to map the cutaneous microcirculation (arteriosome and venosome) of the PAP flap using advanced radiological imaging techniques, to better understand its vascularization and improve surgical planning. METHODS. This radio-anatomical study was conducted on 18 anatomical subjects, representing 36 fresh cadaveric flaps. Each flap was injected with a mixture of colored latex and barium to opacify the vascular structures. Specimens were then imaged using a Selenia mammography unit (Hologic, Inc., Marlborough, MA, USA) for 2D analysis, and a Naeotom Alpha photon-counting CT scanner (Siemens Healthineers, Erlangen, Germany) for 3D reconstruction of the microcirculation. SUMMARY. The analysis identified all main perforators for each flap. Mammography revealed the density of both arterial and venous networks, as well as the richness of anastomoses between adjacent perforators, demonstrating their mutual vascular compensation. Photon-counting CT allowed 3D reconstruction of arterial branches traversing the subcutaneous tissue to the subdermal plexus. It also revealed a network of anastomoses between the superficial venous system and venous perforators via large-caliber communicating veins. CONCLUSIONS. This cadaveric study demonstrated that the cutaneous microcirculation of the PAP flap can be precisely mapped using latex and barium injection combined with mammography and photon-counting CT imaging. The data obtained provide fundamental insights into the vascularization of this flap, which can improve surgical planning and help reduce complications.

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Use and Effectiveness of Heart and Lung Prosections in Learning Anatomy.

INTRODUCTION. There is little research regarding the use of optional prosections in addition to mandatory dissections on the exam scores of medical students. The purpose of this pilot study is to determine the effectiveness of prosections used within the anatomy lab. Our aims are to determine if there is a significant difference in the exam scores of medical students who interact with optional prosections compared to those who do not interact. We also looked at feasibility, and student demographics of students who use the prosections. METHODS. Heart and lung prosection stations were conducted for first-year medical students to interact while in the mandatory dissection lab. Students had the option to rotate through the prosections during the dissection lab. Exam scores of students who did and did not interact with the prosections, previous anatomical and healthcare experience, and their demographics were analyzed. SUMMARY. There is no statistically significant difference in exam scores between the students who interacted with the prosections compared to those who did not, nor between the demographics of those who interacted with the prosections and those who did not. The continued use of optional prosections is feasible for lab staff, provided there is continued student interest across different anatomical systems. CONCLUSIONS. This study bridges a previous gap in research regarding the additional use of optional prosections alongside mandatory dissections.This study was limited by the self-selection of students to engage with the prosections, sequencing of curricula, and student use of outside resources. This pilot study can be used to help structure medical school curricula and guide future research into how optional prosections impact exam scores on other anatomical systems.

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Variability in the Formation of Brachial Plexus in Man: A Study of 92 Plexuses.

INTRODUCTION. Brachial plexus injuries remain a considerable challenge in surgical practice and appear to be increasingly prevalent. Effective surgical management requires a detailed and complete understanding of the intricate anatomy of the brachial plexus. This study revisited the anatomy of the brachial plexus, emphasizing variations in the formation of its trunks and cords. We previously reported our data on the variability in the formation of brachial plexus based on an analysis of 30 plexuses. This study expands our findings by increasing the sample size to 92 plexuses, offering an updated account of the pattern of formation. METHODS. A total of ninety-two brachial plexuses were analyzed in the NSU MD anatomy lab between 2022 and 2024, using both qualitative and semi-quantitative methods. Dissections were conducted by removing the prevertebral fascia to expose the trunks, divisions, cords, and branches of the brachial plexus. SUMMARY. Among the 92 brachial plexuses examined, 13 (14%) exhibited atypical formations of trunks and cords. These variations were primarily unilateral and showed no correlation with gender. The most commonly observed anomalies included: (1) nonunion of C5 and C6 (5%) or C8 and T1 (2%), resulting in a four-trunk plexus, and (2) fusion of C7 with the lower trunk, producing a two-trunk plexus (4%). Other anomalies included fusion of the anterior divisions of the middle and lower trunks to form the medial cord, absence of the lateral cord compensated by a medial cord arising from the anterior divisions of all trunks, and the anterior division of C8 uniting with the anterior division of C7. In some cases, these anomalies occurred concurrently. CONCLUSIONS. Significant deviations from typical brachial plexus anatomy were observed in approximately 14% of cases, underscoring the importance of recognizing these variations. Understanding major anatomical differences is crucial for accurate diagnosis and treatment, ultimately improving outcomes in patients with atypical brachial plexus configuration.

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Hidden Dangers: The Silent Risk of Giant Abdominal Aortic Aneurysms and Concurrent Iliac Aneurysm.

INTRODUCTION. One-time screening for abdominal aortic aneurysm (AAA) with Doppler ultrasound is a standard recommendation by the USPSTF for men ages 65 to 75 who have ever smoked. Of approximately 25% of those patients that are screened positive, there is the potential for co-occurring internal or external iliac artery aneurysm (IIA). The prevalence of co-occurrence is believed to be high, though the exact prevalence is currently unknown. Given the asymptomatic nature of many aneurysms and the potential for complications from undiagnosed co-occurring aneurysms, revised screening protocols that also seek to screen the iliac arteries may be advisable. Expanding current screening guidelines in this manner would provide an affordable, non-invasive supplementary option for assessing patients thoroughly for both types of aneurysms and improving early detection rates. Additionally, current treatment approaches should be assessed for efficacy in these complex and unique cases. RESOURCES. During routine prosection at USUHS, a large abdominal aortic aneurysm (5 inches in length, 3 inches in diameter) with a concomitant internal iliac aneurysm was discovered. The inferior mesenteric artery remained patent despite aortic calcifications. The aorta bifurcated at L4 into the left and right iliac arteries, both aneurysmal and calcified. Renal arteries and veins, gonadal veins, and other extremity arteries were patent. DESCRIPTION. Currently, endovascular aneurysm repair (EVAR) is a preferred method of AAA repair due to its minimally invasive technique. A PubMed search using “EVAR AND Aortoiliac aneurysm case reports” was conducted to explore EVAR treatment for this condition. SIGNIFICANCE. This discovery of a large AAA and IIA in a cadaver emphasizes the need for increased clinical awareness and improved screening practices for co-occurring aneurysms. Adopting Doppler ultrasound screening of the iliac arteries as part of routine AAA screening is a simple and affordable method to enhance detection rates.

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Aberrant Venous Drainage from Right Gonadal Vein to Left Renal Vein: A Case Report and Review.

INTRODUCTION. The anatomy of gonadal veins can vary significantly, with numerous documented cases including duplication, variations in number, atypical drainage into iliac or right renal veins, and partial divisions. RESOURCES. An unusual gonadal vein variant (with only one prior documented case) was discovered during the routine dissection of a 79-year-old male cadaver. DESCRIPTION. The right gonadal vein, typically draining directly into the inferior vena cava (IVC), was found to cross over the IVC and drain into the left renal vein, which is the usual drainage site for the left gonadal vein. The remainder of the cadaver's renal vasculature followed typical anatomy. This anatomical anomaly suggests abnormal embryological development of the left subcardinal vein and has important clinical ramifications. SIGNIFICANCE. Knowledge of variations in gonadal vein anatomy are critical factors in genitourinary-vascular and oncologic surgeries, as well as procedures like varicocele treatment (a major cause of male infertility) and renal transplants. Preoperative planning and awareness of these variations can greatly influence surgical outcomes. Proper identification and preservation of these vessels during surgery are essential for obtaining safe positive results and minimizing iatrogenic injury. Therefore, further research into gonadal vein anatomical variations across diverse patient groups is needed to enhance treatment strategies and outcomes for procedures involving these veins. (USU-WRNMMC Surgery: The opinions or assertions contained herein are the private ones of the author/speaker and are not to be construed as official or reflecting the views of the Department of Defense, the Uniformed Services University of the Health Sciences or any other agency of the U.S. Government.)

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Cadaveric Analysis of Variability and Relationships Between the Pterion and Middle Meningeal Artery.

INTRODUCTION. The pterion is an anatomic landmark formed via junction of the temporal, sphenoid, parietal, and ethmoid bones on the lateral aspect of the cranium. Due to the close proximity to the middle meningeal artery (MMA), trauma and pterion-based surgical approaches risk arterial rupture and epidural hematoma formation. This study characterized the relationship between pterion and MMA in the four main pterion configurations. METHODS. Ninety-two pterions from 49 formalin-embalmed donors were exposed and suture patterns were uncovered to determine pterion classification. Dura mater was removed from the cranial base to expose the groove for MMA and relationship to the pterion was measured. Skull thickness at pterion center was collected for each specimen. SUMMARY. The pterion was located bilaterally in all crania, with Sphenoparietal (Type I) present in 67.39%, Frontotemporal (Type II) in 2.38%, Stellate (Type III) in 16.30%, and Epipteric (Type IV) in 5.43% of specimens. Only 50% of specimens demonstrated the same type bilaterally. A significant difference was observed in distance between pterion center and MMA (3.50±1.51mm, 2.82±2.35mm, 1.05±0.76mm, 1.93±1.67mm; $p<0.001$), with the distance between Type III and MMA 2.45- and 1.775-times smaller than that of Types I and II. Skull thickness also showed significance (4.64±1.42mm, 4.70±1.31mm, 2.30±1.06mm, 4.93±1.30mm; $p<0.001$), with Type III 2.34-, 2.4-, and 2.64-times thinner at pterion center than Types I, II, and IV, respectively. CONCLUSIONS. Type I is the most prevalent configuration of pterion, with Type III most closely situated to the course of the MMA. Overall, this study demonstrates the importance of determining pterion type pre-operatively to ensure vascular preservation of MMA.

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Medial Plantar Artery Dominance of the Plantar Arch: Unique Anastomosis with Clinical Implications.

INTRODUCTION. Forefoot structures are vascularized via the deep plantar arch, an anastomotic network classically composed of the lateral plantar artery (LPA) and deep plantar artery (DPA), with no contribution from the medial plantar artery (MPA). This report aims to describe a unique variant of deep plantar arch vascular dominance in a cadaver. RESOURCES. A 96-year-old Caucasian male was obtained through our institution. Measurements were taken using a Vernier caliper to assess vessel diameters and distances. Clinical images were taken of the deep plantar arch for descriptive value. DESCRIPTION. During dissection of bilateral cadaveric lower extremities, the superficial branch of the medial plantar artery (sMPA) was found to course laterally and anastomose with the DPA to form the deep plantar arch, with no contribution from the LPA. A total of 89 feet from 49 cadavers were examined to characterize the morphology of the deep plantar arterial arch. No other cadavers exhibited this distinct morphology, resulting in an estimated prevalence of 2.25% of feet. SIGNIFICANCE. Reconstructive procedures to repair soft tissue defects of weight-bearing regions of the foot commonly involve flaps from the medial plantar foot, a region supplied by branches of the MPA. Performing these procedures in patients with anomalous vascular dominance of the deep plantar arch via the MPA can compromise vascularization of the forefoot and increase post-procedural complications.

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A Microvideo Study of Renal Vascular Anomaly and its Clinical Implications.

INTRODUCTION. The common anatomic variants involving renal arteries and veins are the byproduct of abnormal embryonic development, and these variations affect procedures such as renal transplantation, percutaneous biopsy, aortic aneurysm repair, and venous compression syndrome repairs. To enhance learning, microvideos provide a tool that facilitates quick learning and understanding of the variations and clinical significance, in a simple and appealing way to an audience. RESOURCES. Variations in the renal vasculature were examined in a male cadaver during a routine dissection, and microvideos are recorded on mobile devices to illustrate their normal anatomy and anatomical variations. DESCRIPTION. This cadaveric model includes pre-hilar segmentation of right and left renal arteries. There are 3 pre-hilar arteries on the right. The superior segmental artery supplies the superior pole, and the inferior segmental artery subdivides into 3 interlobar arteries supplying the hilar and inferior poles. One more direct branch from the aorta supplies the lower pole. The left kidney features pre-hilar segmentation into 3 arteries, supplying the superior, hilar and inferior poles. Regarding the veins, the superior and hilar poles are drained by 2 segmental pre-hilar veins draining into the left renal vein, and another from the inferior pole joins the left renal vein. Similar to arteries, the 4th additional renal vein from the lower pole drains directly into the inferior vena cava. On the left, veins accompany the arteries. SIGNIFICANCE. Renal arteries and veins can be affected by embryological variations as well with both primary and secondary neoplasms from adjacent structures. Knowledge of renal vasculature plays a critical role in the diagnosis of vascular abnormalities with specific imaging features, including aneurysms, pseudoaneurysms, arteriovenous malformations, and arteriovenous fistulas, and learning them with microvideos might have a great impact on auditory, visual, and kinesthetic learners.

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Unveiling the Hidden Contributions: A Historical Analysis of Pioneer Female Anatomists.

INTRODUCTION. Pioneering female anatomists, despite historically being dominated by men, have significantly contributed to our understanding of the human body. This study explores their lives, achievements, and the obstacles they overcame, shedding light on the complex history of women in science and their enduring impact on anatomy. RESOURCES. This study combines historical research and content analysis to explore the lives and contributions of pioneering female anatomists. It examines their challenges, how they overcame them, their anatomical contributions, and how their discoveries shaped our understanding of the human body. It also explores how their experiences reflected and shaped their time's social and cultural context. DESCRIPTION: This study explores the groundbreaking contributions of early female anatomists who defied societal norms to advance human anatomy. It examines their contributions, challenges, and lasting impact on modern anatomy, medical education, and future female scientists. By highlighting these pioneers, it sheds light on women's overlooked role in anatomy and inspires further studies on their medical science contributions. SIGNIFICANCE. This study illuminates anatomy's history and women's roles in science. It inspires future female STEM leaders and offers a nuanced understanding of women's scientific contributions.

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Variation of Typical and Anomalous Extensor Tendons of the Fingers: A Comprehensive Cadaveric Study.

INTRODUCTION. The extensor tendons of the fingers typically include the extensor indicis (EI), extensor digitorum (ED), and extensor digiti minimi (EDM). Variation of the multiplicity of these tendons is prevalent. Anomalous extensor tendons to the fingers have been reported but are considered rare. This study aims to provide a comprehensive collection of the incidence of tendon multiplicity, anomalous tendons, and measurements to aid providers in diagnosis and surgical interventions. METHODS. 70 upper limbs from 37 embalmed cadavers were dissected in routine student dissections to reveal the posterior forearm and hand. For each extensor tendon, the length and proximal and distal widths were all measured using a ruler. The multiplicity and juncturae tendinae were assessed visually. SUMMARY. The most common distribution of extensor tendons found in this study was mostly consistent with previous reports: a single EI, single ED index, single ED long, single ED ring, absent ED small, and double EDM. This study found that 38 hands (54.3%) had at least one clinically relevant anomalous tendon, a higher percentage than previously reported, and the variability among typical tendons was large. These variations included the extensor pollicis et indicis communis (1.43%), extensor indicis radialis (4.29%), extensor indicis et medii communis (5.71%), extensor medii proprius (15.7%), anomalous EI (32.9%), and a unique ED tendon to the long finger that has a tendinous interconnection between the ED muscle and an accessory muscle belly in the hand before entering the extensor hood (2.86%). Understanding the anatomy, frequency, and variability of the extensor tendons will allow for proper diagnosis and surgical planning. CONCLUSIONS. Incorporating this knowledge of extensor tendon variations can aid clinicians in properly diagnosing tendon injuries and pain in the dorsal hand or forearm, and inform optimal approaches for tendon transfers and repairs.

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Vascular Status as a Predictor of Postoperative Complications in Axillary Artery Trauma.

INTRODUCTION. Assessment of circulation is a key component of evaluation and management of extremity trauma. Presence or absence of pulse in the affected extremity can help determine if operative management is needed. Injury to the axillary artery accounts for 3-9% of arterial injuries in military personnel. Although relatively uncommon, injuries to the axillary artery are associated with high rates of neurologic and vascular complications. This study aimed to evaluate the association between preoperative vascular status in the affected extremity and postoperative complications in patients with penetrating injuries to the axillary artery. METHODS. 28 cases of surgical management of penetrating trauma to the axilla were identified in the literature. Those that met the inclusion criteria were selected from PubMed, Embase, Cinahl, and Ovid All EBM Reviews (Cochrane). Patients aged 18-40, patients with penetrating trauma to the axilla, and cases that mention surgical outcome were included for analysis. Fisher's test was performed to assess the correlation between pulse status of patients on presentation and postoperative neurovascular complications. All statistical analyses were reported in R. SUMMARY. Overall, 8/28 (28.6%) of the cases reported present pulses at time of presentation. 5/8 (62.5%) of these patients had some type of postoperative complication. In addition, 11/28 (39.3%) total cases reported absent peripheral pulses in the affected extremity upon presentation. 8/11 (72.7%) of these patients had postoperative complications. CONCLUSIONS. Further studies are needed to determine whether or not the outcome associated with absent pulses on presentation is helpful in predicting postoperative complications of penetrating trauma to the axillary region. Proper assessment of vascular status on presentation can help triage and manage patients with axillary injuries. Assessing for "hard" and "soft" signs of vascular injury is important for triage and management.

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Biomechanical Parameters of Asymmetrical Pronator Quadratus Variations with Reversed Tendons.

INTRODUCTION. The pronator quadratus (PQ) is a deep, quadrangular muscle in the anterior compartment of the forearm that executes pronation and stabilizes the distal radioulnar joint. A thin, superficial tendon is commonly present on its ulnar side. Reports of non-typical PQ morphologies involving tendon variations and biomechanical analyses are scarce but no less clinically significant. The purpose of this study is to investigate biomechanical parameters of asymmetrical PQ variations with reversed tendons. RESOURCES. A case of bilateral PQ variations was discovered during routine human cadaver dissection. The variations were photographed in situ with scale, and anatomical parameters of each muscle were measured. Mean postmortem fixed sarcomere states were evaluated via light microscopy to calculate a normalized maximal isometric force (Fmax) for each muscle. Intermuscular architectural comparability indices ($\delta 2,1$) were calculated between each muscle to indicate suitability as flap/graft tissue. DESCRIPTION. Each variant PQ presented with a reversed tendon and was located proximal to a characteristically typical PQ. The left typical PQ (3.81 g; Fmax = 2.22 N), left accessory variant PQ (4.13 g; Fmax = 2.72 N), and right typical PQ (6.97 g; Fmax = 4.16 N) differed in size and functional capability but were architecturally indifferent ($0.30 \leq \delta 2,1 \leq 0.80$). Each muscle was significantly different in structure ($\delta 2,1 \geq 0.80$), size, and functional capability compared to the right accessory variant PQ (0.87 g; Fmax = 0.79 N). SIGNIFICANCE. The PQ is encountered and utilized in many surgical procedures including open reduction and internal fixation for distal forearm fractures. Chronic refractory myofascial pain in the forearm/wrist may warrant a differential evaluation for proximal variations of the PQ, particularly those involving reversed tendons. This study may provide orthopedists and general practitioners with useful insights for treating patients with PQ variations.

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Impact of Sphenoid Expansion on Cranial Base Morphology: Sphenoid & Maxillo-Mandibular Relationships.

INTRODUCTION. Craniofacial features, including the sphenoid and dental arches, may be subject to evolutionary changes influenced by environmental and lifestyle factors. Previous studies have shed light on the impact of diet, specifically masticatory-heavy whole and unprocessed foods, on arch expansion, suggesting an interplay between forces at the TMJ and expansion of the cranial base. This study explores the relationship between cranial base expansion and the development and expansion of dental arches, hypothesizing that the width of the sphenoid dictates the width of the dental arch, and that the widths are becoming smaller in younger generations, which may be, in part, associated with dietary changes to more soft, processed foods. METHODS. A sample of head and neck computed tomography images were selected for data collection on PACS imaging system. Once optimally aligned, axial measurements of mandibular condylar width and maxillary tuberosity width as well as coronal measurements of lateral pterygoid plates were taken. A total of 113 patients were analyzed, 51 females and 62 males. Descriptive statistics were used to summarize the dental measurements across age groups and sex. SUMMARY. A significant positive correlation exists between sphenoid width and maxilla width in both females ($p \leq 0.05$) and males ($p \leq 0.0001$). This suggests that there is a positive relationship between sphenoid expansion and maxilla width. Similarly, a significant positive correlation between the sphenoid and condyle width was observed in both females ($p < 0.01$) and males ($p < 0.01$). Aligning with previous studies indicating generational changes in the dimensions of the skull and dental arches, our data reveals a trend in narrowing maxillary and mandibular dimensions which directly correlates to age. CONCLUSIONS. While the generational window captured by this data is relatively small, further study is warranted to elucidate the significance of this trend over time.

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Ultrasonographic Assessment of Cephalic Vein Origin and Its Relationship to the Anatomical Snuffbox.

INTRODUCTION. The cephalic vein (CV) is a key superficial vein frequently accessed for venous cannulation and surgical procedures. While its anatomical variations have been studied extensively, the relationship between its origin and the anatomical snuffbox (AS) remains unclear. This study utilizes high-frequency ultrasound imaging to assess the variability in the CV's origin in relation to the AS and its association with the superficial branch of the radial nerve (SBRN). METHODS. An observational study was conducted on a cohort of 73 medical students with a mean age of 21 years (31 males and 42 females). The trajectory of the CV, its point of origin, and its positional relationship to the AS were evaluated using ultrasonography. Statistical analysis was performed using the Mann–Whitney U test and one-way ANOVA (Kruskal-Wallis). SUMMARY. Results demonstrated that the CV originated within the AS in 79% of participants, distal to the AS in 15%, and proximal to the AS in 3%. No cases were observed where the SBRN was superficial to the CV. Statistical analysis revealed no significant correlation between CV origin and hand dominance, age, sex, or ethnicity ($r^2 = 0.04$, $p = 0.09$). These findings contrast with previous studies using infrared vein imaging, which suggested an association between CV origin and the AS. The observed discrepancies underscore methodological differences in data collection and highlight the advantages of direct ultrasonographic visualization for vascular mapping. CONCLUSIONS. This study highlights the inherent variability of superficial venous anatomy and suggests that ultrasound imaging provides superior accuracy in assessing superficial vein morphology compared to alternative imaging modalities. Further research is warranted to explore factors contributing to these discrepancies and to establish a standardized approach for CV assessment.

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A Supernumerary Biceps Brachii Muscle Found Unilaterally in a Cadaveric Anatomical Donor.

INTRODUCTION. The biceps brachii muscle typically presents with a short head that attaches to the coracoid process and a long head that attaches to the supraglenoid tubercle that join for a distal attachment site on the radial tuberosity and the deep fascia of the forearm to primarily flex and supinate the forearm. Innervation is provided by musculocutaneous nerve, and blood supply most often comes from the brachial artery. While supernumerary heads and muscle bellies of biceps brachii have been found, each variation comes with its own circumstances of neurovascular and movement deficits. The most common variation is a third head of biceps brachii (tricipital biceps muscle) which can result in deficits to the musculocutaneous or median nerves and can alter the course of the brachial artery. RESOURSES. A supernumerary head/belly of the biceps brachii was discovered during anatomic dissection in the anatomical donor lab at Arkansas College of Osteopathic Medicine. The donor was received through the willed body program. DESCRIPTION. The supernumerary muscle belly measured 27.2 cm in length with a superior coracoid process attachment and an inferior medial epicondyle of the humerus attachment. The muscle coursed medially in the arm to brachial artery, basilic vein, and the median nerve, but anterior to the ulnar nerve. Both the brachial artery and median nerve coursed laterally, causing entrapment between coracobrachialis and the supernumerary belly. SIGNFICANCE. Due to the close relationship biceps brachii shares with the brachial plexus, small variations can cause significant downstream effects, ultimately affecting patient care and outcomes. Typically, the median nerve lies medial to the biceps brachii. However, in this presentation the brachial artery, basilic vein, and median nerve coursed between the coracobrachialis muscle and the supernumerary bicep, indicating a potential unilateral deficit to all distal components associated with these structures.

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Aberrant Left Testicular Artery Finding: Potential for Clinical Significance.

INTRODUCTION. Visceral blood vessels exhibit significant anatomical variability. A meta-analysis of 115 studies identified a higher prevalence of testicular artery (TA) variations on the left side compared to the right. RESOURCES. During routine cadaveric dissection in an institutional anatomy lab, an aberrant left TA was identified in an 88-year-old male cadaver with no documented renal or testicular pathology. The individual's cause of death was severe protein malnutrition with essential hypertension. DESCRIPTION. The left TA originated from the abdominal aorta at an unusually high level, near the L1 vertebra, and was partially covered by the left renal vein. It ascended superiorly, looping around the left renal vein and artery and gave rise to a superior lateral branch entering the adrenal gland, consistent with the inferior suprarenal artery. Additionally, a renal branch originated from the inferior suprarenal artery, and extended directly into the left kidney. The left renal artery showed no abnormal anatomical variations and traveled upon its normal route. The TA then descended towards the deep inguinal ring to join the spermatic cord. The left renal vein also gave rise to two left testicular veins, both following a typical course alongside the TA. SIGNIFICANCE. To our knowledge, this is the first reported case of inferior suprarenal originating from the left TA and giving off the renal arterial branches. The aberrant branching pattern and unusual looping around the renal vasculature have significant clinical implications, particularly for surgeons and interventionalists performing percutaneous renal biopsies. Awareness of such variations is critical to reducing the risk of complications, including retroperitoneal hemorrhage during ultrasound-guided renal biopsies. Work on this project was covered under QIRB # 22069.

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Anatomical Variations in Left Coronary Bifurcation Angle: A Cadaveric Study.

INTRODUCTION. The left coronary artery (LCA), originating from the left coronary aortic sinus, typically bifurcates into the left anterior descending (LAD) artery and the circumflex (LCX) artery. The left coronary bifurcation angle (LCBA) between these two branches is of critical importance in assessing atherosclerosis risk and selecting appropriate angioplasty stenting strategies. However, the potential impact of branching variations in LCA, such as trifurcation, on the LCBA has not been extensively investigated in cadaveric studies. This study aims to explore the relationships between these structural variations, address overlooked vascular details in imaging, and contribute to a deeper understanding of coronary vasculature. METHODS. 40 embalmed cadavers from the Faculty of Medicine at the University of British Columbia were dissected to examine the anatomical features of the heart and coronary vessels in situ. The diameters of LCA, LAD, and LCX were directly measured through a vernier caliper. The LCBA was measured at the intersection of the midlines of the LAD and LCX at the carina. This intersection was initially marked externally on a transparent acrylic sheet placed over the vessel and subsequently quantified using a digital angle finder for precise measurement. SUMMARY. Among the cases studied, typical bifurcation was observed in 14 cases (35%), with an average LCBA of $53.9^{o} \pm 19.5^{o}$. Trifurcation was present in 24 cases (60%), with an average LCBA of $88.4^{o} \pm 28.6^{o}$. Quadfurcation was identified in 2 cases (5%), with an average LCBA of $110.2^{o} \pm 41.6^{o}$. Statistically significant differences in LCBA were found across these groups. CONCLUSIONS. The branching pattern of LCA is significantly correlated with its LCBA. Trifurcation of the LCA is associated with a wider LCBA compared to typical bifurcation and may occur more frequently than previously reported. Clinically, these findings have potential applications in improving coronary angiogram interpretation and refining stenting strategies to better address augmented atherosclerosis risk and coronary artery disease in interventional cardiology.

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Understanding Hiatal Hernias: Morphological Variations and Clinical Significance.

INTRODUCTION. Hiatal hernia (HH) is characterized by the protrusion of abdominal contents, primarily the gastroesophageal junction and stomach, through the esophageal hiatus into the mediastinum. Type I HH (sliding hiatal hernia), accounts for over 95% of cases, with the remaining 5% being paraesophageal hernias. Studies estimate that nearly 50% of adults exhibit some degree of HH, and many remain asymptomatic. RESOURCES. This study examined HH through cadaveric dissection of 22 donors (11 female and 11 male). Two female donors (94 and 86 yrs) exhibited sliding HHs characterized by stomach displacement and gastroesophageal junction displacement into the thoracic cavity. DESCRIPTION. To classify the type of hiatal hernia observed in cadaveric donors based on anatomical displacement of the stomach and associated structures, in order to provide insight into its morphological variations and potential clinical significance. SIGNIFICANCE. In both cases, severe stomach displacement obscured key anatomical landmarks, including the gastroesophageal junction and esophageal hiatus. This finding highlights potential challenges in anatomical education and clinical diagnosis. The presence of large HHs in two elderly female donors may suggest an underrecognized predisposition or progression beyond the conventional Type I classification. These findings emphasize the need for further research into age- and sex-related factors that influence HH development, which could improve diagnostic accuracy and surgical approaches in affected populations.

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From Cadaver to Clinic: Enhancing Anatomy Education Through Spinal Cord Stimulator Dissection.

INTRODUCTION. Anatomy education is evolving with the integration of technologies like 3D models and virtual reality, yet dissection remains essential for understanding complex anatomy, particularly in the context of donor pathologies and surgical interventions. Spinal Cord Stimulators (SCS), an implantable treatment for chronic pain, offer a unique opportunity to connect classroom learning with clinical applications. This study explores spinal stimulation through laminectomy, enhancing student comprehension of spinal cord anatomy, surgical techniques, and pain management while simulating early surgical exposure. METHODS. A cohort of M1-M2 (n = 30) students participated in this study. Laminectomy was performed on one donor to expose the SCS device. Participants watched an educational video detailing spinal anatomy and the surgical applications of SCS. A mixed-methods survey assessed the video's impact on students' understanding of spinal anatomy and SCS use, with responses analyzed for changes in comprehension and interest in research exploration of the field. SUMMARY. The laminectomy revealed the positioning of electrodes within the epidural space, adjacent to the dorsal nerve roots. Over 80% of students reported improved understanding of spinal anatomy and increased awareness of its clinical applications. Three key themes emerged from qualitative data: 1. Cultivating Curiosity: Greater interest in spinal anatomy and surgical techniques, 2. Research Inclination: Increased motivation to explore chronic pain research, 3. Shaping Professional Identity: Strengthened enthusiasm for surgical specialties and clinical careers. CONCLUSIONS. This study highlights the value of integrating anatomical dissection with clinical practice to simulate early clinical exposure and foster professional identity development in students. The combination of hands-on dissection and educational content on SCS use reinforces the critical role of dissection in medical education.

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Aberrant Vertebral Artery Anatomy: Clinical Significance and Prevalence in a Cadaveric Study.

INTRODUCTION. Aberrant vertebral arteries, particularly on the right side, pose significant risk for catastrophic outcomes if unrecognized during surgical procedures. These variations may also lead to lifestyle challenges and the development of chronic conditions. Raising awareness to the prevalence of aberrant vertebral arteries is crucial for medical professionals to avoid potential surgical errors. RESOURCES. A full body dissection of an adult male human body donor was conducted as part of a gross anatomy course. Dissection procedures for the head, neck, and thoracic regions followed Grant's Dissector: 16th Edition. Pathologic and gross changes were observed and recorded. DESCRIPTION. Both right (R) and left (L) V1 vertebral segments originated from their respective subclavian arteries. RV1 measured 85 mm from its origin to entry of the C4 transverse foramen (average 45mm), with a 7-8 mm diameter (average 5mm), and a 10 mm ectasia near the origin. LV1 length, diameter and cervical entry were normal (39mm, 3-4 mm, C6 transverse foramen). The left and right V4 segments formed a tortuous basilar artery. The donor also had a 746g heart with fibrous changes over both ventricles. SIGNIFICANCE. Right vertebral artery abnormalities are rarer compared to the left. Reported estimates for RVA dominance (18%), C4 entry (7%), ectasia (3%), and tortuous basilar artery (3%) are rare individually. The combination of these findings in a single patient is an exceedingly rare occurrence. These abnormalities, combined with pronounced cardiac comorbidities, significantly increase the risk of vertebrobasilar insufficiency and surgical complications. Increased reporting of such variations is crucial for surgeons to prevent catastrophic outcomes during invasive procedures. These findings emphasize the importance of multidisciplinary preoperative planning, detailed imaging, and awareness of anatomical variations to prevent iatrogenic injuries.

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Variations in the Atrioventricular Nodal Branch and Clinical Implications: A Cadaveric Study.

INTRODUCTION. Intraoperative injury to the atrioventricular nodal branch (AVNb) of the coronary artery during catheter ablation and valvular surgical operations may lead to a life-threatening, post-operative complete AV block. Precise anatomical knowledge of the AVNb is crucial for prevention; yet its detailed branching pattern and location remain inadequately defined. Therefore, this study aims to investigate the AVNb variations and its origin relative to the crux cordis. METHODS. 37 formalin-embalmed adult cadaveric hearts from the Department of Anatomy, Faculty of Medicine, Chulalongkorn University were dissected to examine the AVNb, posterior interventricular artery (PIA), right coronary artery (RCA), and left coronary artery (LCA). AVNb variations were classified based on their origin in relation to PIA. Measurements of AVNb length, arterial diameter, and AVNb distance from the crux cordis were taken using a digital Vernier caliper. Alternative branching patterns of AVNb were also documented. SUMMARY. AVNb variations were observed as follows: Type I (24.32%): AVNb originating from RCA proximal to PIA, Type II (13.51%): AVNb originating from the RCA-PIA junction, Type III (37.84%): AVNb originating from RCA distal to PIA, Type IV (16.22%): AVNb originating from PIA, Type V (8.11%): AVNb originating from the circumflex branch of LCA. The mean AVNb length was 17.73 ± 3.91 mm, external diameter 1.49 ± 0.44 mm, and distance of the AVNb's origin from the crux cordis 10.30 ± 9.08 mm. Notably, an uncommon case of a common trunk from the RCA giving rise to AVNb and a penetrating septal branch to the ventricular septum was identified, along with cases of dual (8.11%) and triple (2.70%) AVNbs. CONCLUSIONS. The findings of this study can further assist in establishing a precise anatomical framework of AVNb. This will help improve diagnoses based on imaging as well as minimize potential post-operative complication risks from invasive cardiovascular surgical interventions.

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Anatomical Variations in the Musculocutaneous and Median Nerves: A Cadaveric Study.

INTRODUCTION. The anterior branches of the brachial plexus consist of three primary nerves: the musculocutaneous (MCN), median (MN), and ulnar nerves. Classically, the MCN arises from the lateral cord, pierces the coracobrachialis (CBM), and innervates the biceps brachii (BB) and brachialis before continuing as the lateral cutaneous nerve of the forearm (LCN). The MN is formed by branches from the lateral and medial cords and traverses the arm without branching to innervate the flexors of the forearm. Anatomical variations of the MCN and MN, including alternative CBM piercing patterns and MCN-MN communications, have been documented in the literature as relatively uncommon. Knowledge of these variations is crucial for optimizing surgical outcomes in upper limb (UL) injury, and nerve grafting and transfer procedures. METHODS. Twenty-four formalin-fixed adult cadavers (twelve female, twelve male) were dissected in a routine introductory anatomy course. One left and one right UL were excluded due to poor previous dissection, and the remaining forty-six UL were further dissected for analysis. Descriptive analysis and measurements of the branching points of the cords and nerves with respect to the coracoid process of the scapula were completed. SUMMARY. In eight UL, the MCN did not pierce the CBM. In five UL, the MCN pierced the CBM twice. In three UL, there was a nerve branch from the lateral cord that pierced the CBM separately from the MCN. Five UL were found to have fibers from the MCN rejoin the MN distally after LCN branching. One UL was found to have its LCN branch coming from the MN instead of the MCN. Lastly, four UL lacked a distinct MCN, with three branches from the MN directly and discretely innervating the CBM, BB, and brachialis muscles instead. CONCLUSIONS. Several variations in MN and MCN were identified, some of which occurred at a higher incidence than previously reported in the literature. Specifically, 34.8% of UL had a variation in CBM piercing by the MCN, and 21.7% of UL had atypical branches coming to or from the MN. The latter is particularly significant as the MN is typically thought to have no branches in the arm. Knowledge that these branching variations are more common than previously expected should impact future surgical preparation and approach.

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Abnormal Kinking of the Internal Carotid Artery: Potential Association with Alzheimer's Disease.

INTRODUCTION. Vascular anomalies may contribute to neurodegenerative diseases like Alzheimer's disease (AD) due to chronic cerebral hypoperfusion. This report examines an internal carotid artery (ICA) kinking anomaly in a cadaver with a history of AD. RESOURCES. A 95-year-old female cadaver with documented AD was donated to Creighton University's School of Medicine Anatomy Lab and dissected as part of the anatomy curriculum for medical students. Significant kinking of the right ICA was identified, and to further document this anomaly, 3D scans of the right common carotid artery were performed. Additionally, extensive atherosclerotic plaque formation was observed in the carotid vasculature. The pathologist suggested that this plaque burden may have led to multi-infarct dementia, which clinically resembled AD and contributed to the patient's diagnosis. DESCRIPTION. Profound anteroinferior kinking of the ICA can potentially alter hemodynamics and contribute to chronic cerebral hypoperfusion. Chronic cerebral hypoperfusion triggers pathophysiological mechanisms, including increased oxidative stress, inflammation, and blood-brain barrier disruption, all of which contribute to neuronal damage. Furthermore, extensive atherosclerotic plaque formation may promote multi-infarct dementia, highlighting the role of vascular pathology in neurodegeneration. The overlap in clinical presentation between multi-infarct dementia and AD underscores the need for improved differentiation between vascular and amyloid-driven pathways in dementia diagnosis. SIGNIFICANCE. This case adds to the growing evidence linking cerebrovascular anomalies to neurodegeneration. Recognizing ICA kinking and atherosclerosis as contributors to brain hypoperfusion is crucial for understanding vascular contributions to dementia. Further research is needed to clarify how vascular pathology influences neurodegenerative disease progression.

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Atypical Drainage with a Bilateral Triplication of Gonadal Veins and Right Renal Segmental Veins.

INTRODUCTION. Duplications, bilateral anomalies, and atypical connections occurring within the drainage of the gonadal vein (GV) are rarely reported within the literature. However, awareness of GV variations can improve clinical outcomes, especially in cases of surgery, transplants, and managing conditions like male infertility. RESOURCES. This report highlights the observation of multiple GVs and renal vein (RV) variations in an 89-year-old male cadaver during a routine medical school gross anatomy course dissection. DESCRIPTION. Dissection revealed a combination of unique venous variations including atypical drainage of the right segmental RVs and bilateral triplication of the GVs. On the left side, three GVs were observed and named left medial, middle, and lateral GVs based on their anatomical position. These veins measured 3.22 mm, 6.01 mm, and 0.68 mm in diameter, respectively. The left medial and middle GVs drained directly into the left RV, and the lateral GV was observed traveling with the left gonadal artery to joined with the middle GV just prior to its junction with the left RV. Three GVs were also observed on the right side, and were named as right medial, middle, and lateral GVs according to their locations. The diameter of these veins was measured as 7.32 mm, 1.49 mm, and 5.9 mm respectively. The right medial and middle GVs drained directly into the inferior vena cava adjacent to one another. The right lateral GV joined with the inferior segmental RV atypically and drained into the right RV. Additionally, the right apical and posterior segmental RVs drained into the inferior vena cava separately. The right gonadal artery was accompanied by the right middle GV. SIGNIFICANCE. Triplications of GVs are rare. These retroperitoneal variations have significant surgical implications. Variations in the GVs can increase the risk of varicocele, potentially leading to infertility in male. Variations in the renal vessels may contribute to conditions such as hematuria and ureteropelvic junction obstruction. Additionally, encountering these unexpected variations during surgery and transplantation can lead to errors in diagnosis and vascular complications.

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Sex, Height, and Weight Influence Hyoid Shape Change from a Neutral to a Flexed Position.

INTRODUCTION. Ontogeny, evolutionary pressures, and movement of the head and neck all play a role in achieving safe and efficient swallowing, breathing, and vocalizations. A modern addition to how we use the head/neck is the addition of smartphones and other digital devices that encourage users to flex the head for long periods of time that often overlap with eating, breathing, and talking. The purpose of this study is to assess if full flexion of the head changes the shape and size of the posterior aspect of the oral cavity, pharyngeal opening, and laryngeal opening. METHODS. Geometric morphometric analyses were used to quantify variation in form and position of the hyoid relative to the head and neck. In this study, we placed 66 landmarks (39 fixed, 27 semi) on two sets of x-ray data from 85 subjects: one in a neutral, upright position and the second in a position of full neck flexion. A generalized Procrustes analysis, principal components analysis (PCA), ANOVAs, and linear regression models were used to assess variation in hyoid position based on sex, height, and weight. SUMMARY. PCA indicated that the majority of variance within the sample is represented by the two x-ray positions along PC1 (43.99%) while PC2 accounts for 13.43% of variance. A regression analysis of shape on centroid size indicated a low amount of allometry across the sample ($p = 0.0001$, $R2 = 0.03$). For the neutral position, shape exhibited differences between sexes ($p < 0.001$), weight ($p = 0.002$), and height ($p = 0.003$), and in the flexed position shape differed between sexes ($p < 0.001$), weight ($p = 0.007$), and height ($p = 0.042$). CONCLUSIONS. Shape changes were observed between sexes and across body size indicating they influence hyoid movement and thus could potentially influence swallowing mechanics. Future research is needed to assess how the hyoid changes in shape during swallowing in different positions to discuss the efficacy of postural changes in patient care.

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Localization of the Greater Occipital Nerve through Palpation of Bony Landmarks: A Cadaveric Study.

INTRODUCTION. Occipital neuralgia, a debilitating headache disorder, often involves compression or irritation of the greater occipital nerve (GON). Clinical success of nerve blocks targeting the GON depends on accurate localization, often achieved in the clinic using palpable bony landmarks. This study aimed to confirm the reliability of palpation-based localization of the GON relative to the external occipital protuberance (EOP) and mastoid processes (MP). METHODS. Fifty-seven anatomical donors underwent bilateral dissections. The EOP and MP were identified by palpation to locate the medial trisection point of the EOP-MP line (EM-MTP), where a 4 cm circular region was excised. Within this region, the subcutaneous emergence of the GON and occipital artery (OA) was mapped. Dissection results were analyzed for quadrant-specific emergence frequencies. SUMMARY. The GON emerged within the dissection circle in 84% of 114 dissections, with 90% of these in the inferior quadrants. The OA emerged within the circle in 88% of dissections, predominantly in the inferior lateral quadrant. Co-localization of the GON and OA within quadrants was observed in 60% of cases. No significant differences were found between male and female donors. These findings support the clinical relevance of palpation-based localization for GON nerve blocks. CONCLUSIONS. Palpation of the EOP and MP reliably identifies the likely emergence site of the GON. Targeting anesthetic delivery inferior and lateral to the EM-MTP trisection point may optimize the likelihood of effective nerve blockade for managing occipital neuralgia.

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An Anatomical Variation of the Superficial Epigastric Vessels in a Neonate: A Case Report.

INTRODUCTION. This case report describes a novel anatomical variation of the superficial epigastric vessels found during the dissection of a neonatal cadaver. The study aimed to document and analyze this previously unreported (to our knowledge) variation, highlighting its potential clinical significance. RESOURCES. The study included a donated stillborn, formalin-fixed (submersion) neonatal cadaver obtained through the National Tissue Bank in Pretoria, Gauteng, South Africa, and dissection facilities at the University of Pretoria, Faculty of Health Sciences (Ethics Reference No: 224/2023). DESCRIPTION. The dissection revealed that the inferior epigastric vessels penetrated the anterior abdominal wall at the level of the umbilicus and branched superiorly to supply the superficial abdominal wall, a pattern different from the typical symmetrical arrangement and previously described asymmetrical variations observed in adults. SIGNIFICANCE. This variation is clinically significant, particularly for laparoscopic procedures in neonates, as it may alter the expected location of vessels coursing within and outside of the anterior abdominal wall, potentially leading to surgical complications if not considered during trocar placement. (This work is supported by Grant No. 120410 from the National Research Foundation of South Africa.)

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The Person Behind the Body: Empathy and Detached Concern in the Approach to Cadaveric Dissection.

INTRODUCTION. Cadaveric lab is often medical students' first introduction to death and dying, becoming one of the most profound moments of their journey in medicine. This experience initiates the process of drawing focus to students' own attitudes towards the ill and dying patient, laying the groundwork for the student's interactions with all their patients to come. While there is a robust case for the use of dissection as a tool for teaching anatomy, there is a divided conversation about its use as a tool for cultivating empathy and humanism. The goal is to better understand the change in empathy alongside death anxiety and detached concern throughout cadaveric dissection in order to better understand students' experience in their medical education. METHODS. Two surveys were administered to a first-year class of medical students: one at the beginning of the year before their first dissection lab, and the other at the end of the anatomy lab course. Student demographic information collected included gender, undergraduate degree, and specialty interest. Empathy and death anxiety were measured with the Toronto Empathy Questionnaire and the Templer Death Anxiety Scales. Statistical analysis was then conducted, comparing scores before and after the anatomy dissection course. SUMMARY. This study aims to follow first year medical students' empathy scores before and after cadaveric lab to understand how the anatomical dissection course affects students' empathy as well as attitudes towards death. CONCLUSIONS. With the growing body of literature supporting the use of human dissection as a means to teach values of humanism and professionalism, understanding the current practices in anatomy lab can offer guidance on how to better use the cadaveric lab to train future cohorts with the skills to provide humanistic care and better approach to end-of-life care and the ill and dying.

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Anatomical Variations of the Left Adrenal Vein: Implications for Adrenal Venous Sampling.

INTRODUCTION. Adrenal venous sampling (AVS) is the reference standard procedure for lateralization of primary aldosteronism. Knowledge of anatomy and possible variations of adrenal veins is essential in succesful cannulation. Thus, this study aims to explore anatomical variations of adrenal veins within Thai population for AVS. METHODS. 41 embalmed adult cadavers were dissected with course and confluence of adrenal veins to other venous structures being categorized into types. Length and diameter of adrenal veins were measured. Distances between left adrenal vein (LAV) termination into left renal vein (LRV) and other venous structures, such as inferior vena cava (IVC) and left gonadal vein (LGV) drainage into LRV, were taken using a digital vernier caliper. Additionally, the angle from LRV to LAV were also collected with a protractor. SUMMARY. Variations of LAV were categorized into types. Type a – LAV and inferior phrenic vein (IPV) form a common trunk before entering LRV superiorly - was the most prevalent being found in 28/41 subjects (68.29%). The second most prevalent was type b - double LAVs with one forming a common trunk with IPV and the other draining into LRV independently - which was found in 7/41 cadavers (17.07%). Other variations of LAV were also found communicating with double renal vein, lumbar-hemiazygos vein, and lumbar vein. Mean length and diameter of LAV was 20.23 ± 7.00 mm and 6.11 ± 1.50 mm, respectively. The mean distance between LAV termination into LRV and IVC was 29.37 ± 6.58 mm. Average distance between LAV and LGV drainage into LRV was 15.97 ± 6.98 mm, and the angle from LRV to LAV was 57.34° ± 11.88°. CONCLUSIONS. Variations and anatomical measurements that were noted in this study help in identifying types of variation present within Thai population. This will aid in the cannulation of the adrenal veins and reduce failure in sampling.

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A Study of Sex Difference of Lumbar Vein Drainage and ALV Connection Patterns in Human Cadavers.

INTRODUCTION. Previous studies have established patterns of drainage of the lumbar veins (LVs) and formation of the ascending lumbar veins (ALVs) in the human body, but there has been little investigation into differences between the sexes. Typical anatomy includes 4 or 5 pairs of LVs draining directly into the inferior vena cava (IVC) and ALV establishing connections between LVs, the common iliac and iliolumbar veins. It is clinically important to study these patterns because vascular injuries were the most common complication in anterior lumbar spine surgeries with males showing a significant number of vascular injuries. RESOURCES. 18 cadavers were received through a body donation program with signed informed consent from the donors. DESCRIPTION. The purpose of this study is to compare and analyze drainage patterns of LVs and ALVs connection bilaterally in 50 cadavers, focusing on any differences between sexes. In preliminary sample of 18 cadavers (8 male and 10 female), 27.8% were observed symmetrical - with 12.5% of males and 40% of females. Symmetry was defined as 4 pairs of LVs draining into IVC and were connected to an ALV. Meanwhile, 72.2% were found to be asymmetrical – 87.5% of males and 60% of females. Within the asymmetrical group, four patterns were observed. 1) 38.5% were found with right LV1-2 joining together before draining into IVC. 2) 38.5% were found with LV1-2 uniting to drain into left renal vein. 3) 23.1% were found with LV3-4 combining to drain into IVC on either side. 4) 23.1% were missing right ALV. SIGNIFICANCE. Tributary LVs and ALVs draining into the IVC has a high frequency of variation. Awareness of various venous patterns in posterior abdominal wall is important radiologically and surgically. Such as, bleeding from veins in anterior lumbar spine surgery which is often required for the treatment of infection, deformity, tumor, trauma and degenerative spine disease.

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POSTER SESSION 2 – WEDNESDAY, JUNE 18 FROM 11:00 AM - 12:00 PM

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Histological Study of Hippocampus and Frontal Cortex in a Vascular Dementia Cadaver - Case Report.

INTRODUCTION. The cognitive impairment of vascular aetiology is the second most common cause of dementia. Recent evidence implies that vascular dementia together with Alzheimer's disease is the most frequent cause of dementia in developing countries. The epidemiological data also delineate that dementia is worsened by neurodegenerative and cerebrovascular pathology which remains highly prevalent in elderly adults. RESOURCES. A male cadaver aged 76 years was voluntarily donated to the Department of Anatomy under body donation program with a history of vascular dementia. Retrospectively detailed report was obtained and found to be known hypertensive and had ischemic heart disease. Previously the deceased person had severe memory impairment and the MOCA score was 5/30 and severe behaviour impairment for the past 3 years. Biochemical investigations showed raised homocysteine level due to decreased vitamin B12 and folate levels. Atrophy changes in frontal lobe, enlarged ventricles, the presence of a lacunar infarct involving the subcortical region and white matter hyperintensities was reported in MRI images. For microscopic investigation hippocampus and frontal cortex tissue was extracted from the deceased brain and subjected to tissue processing and H & E staining and observed under research microscope. DESCRIPTION. On microscopic examination of hippocampus and frontal cortex showed the impacts of the microbleeds and micro-infarcts which are considered as manifestations of ageing and cerebrovascular pathologies in the progression of vascular dementia. SIGNIFICANCE. The microscopic features along with radiological findings confirms the diagnosis of vascular dementia and helps to distinguish it from other forms of dementia. This report emphasizes the importance of early detection and management of vascular risk factors such as hypertension and diabetes to prevent the progression of vascular dementia.

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Anatomical Localization of the Parotid Duct: Clinical Correlation with Facial Landmarks.

INTRODUCTION. This study aimed to accurately localize the parotid duct using reliable facial landmarks such as the tragus, mouth corner, philtrum, and medial and lateral canthi. Establishing these anatomical relationships provides practical guidelines to facilitate parotid duct identification during facial surgeries, minimally invasive procedures, and parotid duct stone removal, thereby enhancing surgical safety and reducing complications. METHODS. Sixteen specimens from eight adult Korean and Caucasian cadavers were analyzed. The trajectory of the parotid duct was examined in relation to key facial landmarks, with a focus on its path over the anterior border of the masseter muscle and its penetration of the buccinator muscle. SUMMARY. The parotid duct crossed the anterior border of the masseter slightly above the line connecting the tragus and the mouth corner in 93.8%. However, in the specimen with an accessory parotid gland, the parotid duct crossed below this line (6.3%). The horizontal level of this crossing point corresponded to the mid-philtrum in 75% and to the upper third of the philtrum in 25%. The penetration site of the parotid duct through the buccinator muscle was medial to a vertical line passing through the lateral canthus in 75%. In 18.8%, it was at the midpoint between the medial and lateral canthi, while in 6.3%, it aligned with the vertical line passing through the lateral canthus. CONCLUSIONS. This study provides precise anatomical guidance for localizing the parotid duct relative to facial landmarks. The findings demonstrate the practical application of these relationships in clinical settings, particularly through ultrasound imaging. These results are critical for minimizing the risk of complications, such as duct perforation or facial nerve injury, during surgical and minimally invasive procedures.

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Analysis of Diameter Asymmetry of the Superior Labial Artery and Its Clinical Significance.

INTRODUCTION. This study quantitatively analyzed the diameter asymmetry of the superior labial artery (SLA) along its course in the upper lip and explores its clinical implications. METHODS. A total of 28 SLAs from 14 Korean adult cadavers were dissected. The diameter of the SLA was measured using a digital caliper at specific points: the left corner of the mouth, left lateral upper lip, mid-upper lip, right lateral upper lip, and right corner of the mouth. SUMMARY. The right SLA was dominant in 35.7%, while the left SLA was dominant in 57.1%. In 7.1%, the left and right SLA had similar diameters. Among the 14 cadavers, SLA thickness patterns were classified into five types. In 35.7%, the SLA became thicker toward the midline on either the left or right side, while the opposite artery maintained a consistent thickness. In 28.6%, the SLA was thinner at the center, while both lateral arteries were thicker. In 21.4%, the thickness was consistent on each side (right and left), but one side was thicker than the other. In 7.1%, the left and right SLAs maintained a consistent thickness throughout. In the other 7.1%, the SLA became thinner toward the midline on the left side, while the right SLA maintained a consistent thickness. The mean diameters of the SLA at different locations were as follows: 1.4±0.5 mm at the left corner of the mouth, 1.5±0.5 mm at the left lateral upper lip, 1.5±0.5 mm at the mid-upper lip, 1.7±0.6 mm at the right lateral upper lip, and 1.3±0.6 mm at the right corner of the mouth. The SLA was more than 1.5 times thicker on the right side in 21.4% at the corner of the mouth and in 35.7% at the lateral upper lip. CONCLUSIONS. These findings contribute to a more detailed understanding of the anatomical characteristics of the SLA and provide valuable guidance for safer and more effective lip-related procedures.

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Layered Structure and Muscle Bundle Arrangement of the Buccinator Around the Parotid Duct.

INTRODUCTION. This study aimed to classify and analyze the layered structure and muscle bundle arrangement of the buccinator around the site where the parotid duct pierces the muscle, including the newly identified deepest layer. METHODS. The buccinator was examined in 42 specimens of embalmed adult Korean and Caucasian cadavers. SUMMARY. The upper bundles above the parotid duct ran obliquely downward, while some lower bundles below the parotid duct ran obliquely upward or horizontally, forming a crossing pattern around the duct in all specimens (100%). Below the duct, three distinct layers were identified: superficial, intermediate, and deepest. The deepest layer, newly identified in this study, initially ran horizontally before curving obliquely inward and downward to attach to the mucosa of the lower vestibule. Some bundles coursed obliquely inward, attaching to the mucosa at the mouth corner and lower lip. In some specimens, some fibers of the deepest layer also merged with the lower orbicularis oris muscle. On the deeper aspect of the buccinator, the upper buccinator bundles above the parotid duct and the deepest layer located below the duct formed a continuous layer. The intermediate lower bundles ran horizontally toward the lower lip and the corner of the mouth, while some originated from the mucosa at the inferior edge of the lower vestibule. The superficial lower bundles exhibited three orientations: slanting upward toward the mouth corner, running horizontally, or slanting downward to overlay the intermediate lower bundles. The masseteric fascia and buccopharyngeal fascia extended to envelop the parotid duct. The buccopharyngeal fascia was firmly attached to the buccinator bundles on the superficial surface of the muscle adjacent to the duct. CONCLUSIONS. These findings provide a detailed anatomical basis for understanding the interaction between the buccinator and the parotid duct, which may have implications for surgical and clinical applications.

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Universal Anatomical Organization (UAO): Advancing Global Collaboration in the Anatomical Sciences.

INTRODUCTION. The Universal Anatomical Organization (UAO) was established in January 2025, with AACA as one of its founding member groups, to advance the anatomical sciences and foster global collaboration. This abstract aims to share the UAO's mission and initiatives to break down invisible barriers in anatomical education and research by uniting the global anatomical community. RESOURCES. The UAO launched with over 3,700 members from 33 founding groups representing 18 countries and regions. Membership is exclusively available to professional groups, departments, and organizations with an interest in anatomy, and there are no annual fees. The UAO is built on a foundation of anatomical education and global collaboration through digital platforms. A monthly newsletter keeps member groups informed about activities and updates. The UAO operates under ethical guidelines and consensus reports established by leading anatomical journal editors. DESCRIPTION. The UAO has already initiated global anatomical education through video resources and international collaborations. A new Terminology Commission has also been formed to promote standardized communication among professionals and improve clarity in the scientific literature. Looking ahead, the UAO plans to host in-person conferences, fostering a more engaging and life-like academic community. SIGNIFICANCE. The UAO aims to eliminate barriers to education and collaboration by providing free access to resources. This initiative facilitates cooperation between anatomists and clinicians, advancing anatomical research and improving patient care.

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Bilateral Reversed Palmaris Longus Muscle: A Case Report.

INTRODUCTION. The palmaris longus (PL) is a variable anterior forearm muscle, absent in approximately 15% of individuals. The reversed palmaris longus (RPL) is a rare variation characterized by a muscle belly located distally near the wrist and a tendon extending proximally. This variation has clinical significance, as it can contribute to nerve compression syndromes and complicate surgical procedures. RESOURCES. A 68-year-old male cadaver was obtained through the Anatomical Gift Program (Dayton, OH, USA) for gross anatomy training. The specimen was embalmed in a formalin-based fixative solution within 24 hours of death. DESCRIPTION. During routine dissection, bilateral RPL muscles were identified. The muscle bellies were positioned distally near the wrist, with tendons extending proximally between the flexor carpi radialis and ulnaris muscles. Digital caliper measurements recorded the midpoint muscle belly widths as 16 mm on the right and 10 mm on the left. SIGNIFICANCE. The reversed palmaris longus is a moderately rare anatomical variation with potential clinical implications. Its altered positioning may affect wrist biomechanics and increase the risk of nerve compression syndromes, such as median or ulnar nerve entrapment. Additionally, this variation can complicate procedures like tendon grafting or carpal tunnel release. Such variations are essential for accurate clinical diagnosis, surgical planning, and osteopathic manipulative treatment.

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Strategic Planning for Anatomical Donation Programs.

INTRODUCTION. Whole-body anatomical donation programs require myriad resources to carry out the goals of health science education and research. A strategic plan helps to provide a clear direction for a program by identifying its long-term goals, recognizing required actions, and distributing resources effectively. Such plans can be used for outcomes assessment and quality assurance purposes, and are typically required by offices, programs, and units at academic institutions as part of continual improvement processes. However, little information is available on constructing a strategic plan for a willed body program. The Lincoln Memorial University – DeBusk College of Osteopathic Medicine Anatomical Donation Program began a restructuring process in 2022 which prompted the creation of a strategic plan to address an increasing class size across multiple academic programs and a nationwide donor shortage. The purpose of this presentation is to share with the anatomical services community the rationale and process for creating a strategic plan, as well as provide an example plan that could be used by other donor programs. RESOURCES. The medical school's strategic plan was used as a template. DESCRIPTION. First, a new mission statement with supporting goals and core values was created. Next, a Strengths, Weaknesses, Opportunities, and Threats analysis was completed to identify internal and external factors for achieving the goals. Lastly, a strategic plan was crafted to guide the program's growth and development and approved by the college's Dean's Council. Objectives, actions, timeline, responsibility, measures/data, and assessment targets were outlined for each program goal. SIGNIFICANCE. Strategic plans can help donor programs align objectives with their mission and values. A formal plan can be used to leverage existing resources and provide administrators with a clearer understanding of a program's operations and needs.

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Use of 3D Scans of Plastinated Anatomical Specimens for Preparing Anatomy Practical Examinations.

INTRODUCTION. At our institution, we use plastinated anatomical specimens (plastinates) during anatomy labs. To aid students in preparing for the labs, we provide annotated 3D scans of our plastinates (referred to as Study Mode scans) alongside other learning materials. Surveys have indicated that students find Study Mode scans to be valuable tools for learning anatomy. This study aims to assess the usage and efficacy of Study Mode scans as learning aids in preparation for anatomy exams. METHODS. At the end of the 4-week Genitourinary Unit, a cohort of 51 first-year medical students took a multidisciplinary integrated exam constructed from the multiple-choice questions. The exam included 6 conceptual anatomy (CA) questions (obtained from the NBME's Customized Assessment Service (CAS) question bank and 12 practical anatomy (PA) questions (written by anatomy instructors). Each PA question required the identification of anatomical structures on provided non-annotated versions of 3D scans of the plastinates (referred to as Exam Mode scans). CAS questions did not include any 3D scans. SUMMARY. Prior to the exam, 44 students accessed at least one of the five Study Mode scans, while 7 students did not access any 3D scans. Students performed comparably on both the PA and CAS exam items, with mean scores of 86.3% and 88.9%, respectively. However, the PA item scores demonstrated a significant correlation ($r^2=17.6$, $p=0.002$) with the number of Study Mode scans used by each student. Although many students viewed the same Study Mode scan multiple times, the frequency of views did not correlate with the PA item scores. CONCLUSIONS. This study identified a significant positive correlation between the use of annotated 3D scans of plastinates as learning tools and performance on PA exams. These findings suggest that annotated 3D scans of plastinates are valuable resources for studying anatomy.

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Comparative Analysis of Valvular Tissue in Hearts in Relation to the Chiari Network.

INTRODUCTION. The Chiari network is known to be a remnant valvular structure in the right atrium and has traditionally been considered a benign anatomical variant. However, recent findings suggest that the Chiari network may play a role in intra-atrial conduction and contribute to development of arrhythmias and other pathological conditions. A recent study identified a Chiari network in approximately 11% of 80 cases, leading to a reevaluation of its clinical significance. This study aimed to elucidate the functional significance of the Chiari network and its potential involvement in arrhythmogenesis by histological analysis of the valvular tissue of hearts, focusing on regions containing specialized myocardial cells. METHODS. Formalin-fixed hearts from donated bodies used in anatomy training were examined to determine the presence of the Chiari network and its attachment sites, with particular emphasis on the region near the opening of the inferior vena cava and the Eustachian ridge. Histological analyses were performed on the valvular tissue of hearts with and without a Chiari network using Masson's trichrome staining and other techniques to observe the tissue composition. SUMMARY. Regions containing specialized myocardial cells were identified in the valvular tissue of hearts with a Chiari network. In contrast, the valvular tissue of hearts without a Chiari network was found to be composed predominantly of connective tissue. CONCLUSIONS. The findings of this study indicate that the Chiari network is not merely a benign anatomic variant and may include specialized myocardial cells that contribute to intra-atrial conduction. The Chiari network may have a role in the development of arrhythmias and other pathological conditions. Further investigations are needed to clarify the functional significance of the Chiari network and its clinical implications.

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Unilateral Duplication of the Palmaris Longus Muscle: An Anatomical Case Report.

INTRODUCTION. The palmaris longus muscle/ tendon is frequently used as a graft to repair tendons and ligaments during reconstructive surgery. This muscle exhibits significant anatomical variation, including congenital absence in about 20% of the population. We report a rare unilateral duplication of the palmaris longus muscle and its tendon. RESOURCES. During routine dissection of the elbow and forearm in an 85-year-old male cadaver, a duplication of the palmaris longus tendon was noted unilaterally. DESCRIPTION. A bilateral elbow and forearm dissection revealed palmaris longus on both sides. The primary palmaris longus muscle originated from the common flexor tendon at the medial epicondyle. Careful dissection of the Right antecubital and forearm region revealed the secondary palmaris longus muscle belly originating from the flexor carpi radialis muscle. Both muscle bellies traversed the superficial surface of the wrist flexor muscular complex and inserted into the palmar aponeurosis of the hand. The two tendons coursed distally with a clear separation of approximately 3cm and remained distinct. The duplication of the palmaris longus muscle/ tendon was observed unilaterally in the right forearm, while the left forearm exhibited a single palmaris longus muscle. SIGNIFICANCE. Knowledge of duplicated palmaris longus muscle is clinically significant, as it may influence the diagnosis and management of nerve compression syndromes, particularly carpal tunnel syndrome. Preoperative awareness of palmaris longus duplication is crucial for tendinoplasty planning, enabling precise graft utilization and minimizing complications. (Acknowledgements: TTUHSC Lubbock, Institute of Anatomical Sciences- Willed body program)

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Anatomical Evaluation of the Tibial Attachment of the Deep Tibial Collateral Ligament.

INTRODUCTION. A thorough understanding of the superficial and deep tibial collateral ligaments (sTCL and dTCL) of the knee is crucial for the total knee arthroplasty (TKA). While the sTCL has been extensively studied, there is limited evidence regarding the dTCL. The aim of the present study was to histologically evaluate the morphology of the dTCL and its tibial attachment to aid in tibial cut procedure in TKA. METHODS. Eleven unpaired formalin-fixed cadaveric knees were used in this study. The tibia and sTCL were sectioned in the paracoronal plane along the midline of the sTCL. In the paracoronal section, the dTCL was identified running from the medial meniscus to the proximal tibia, located deep to the sTCL. The dTCL and its attachment were histologically observed using Hematoxylin and Eosin and Masson's trichrome staining. The distance from the joint line to the proximal margin of the dTCL tibial attachment, and the thickness of the dTCL (at three levels: the inferior border of the medial meniscus, the midsubstance of the dTCL, and the proximal margin of the dTCL tibial attachment) were measured. SUMMARY. The proximal margin of the dTCL tibial attachment was located 3.93 ±1.37 mm from the joint line, adjacent to the articular cartilage. The dTCL fibers blended with the periosteum. The thickness of the dTCL was 1.16 ± 0.48 mm at the level of inferior margin of the medial meniscus, 0.58 ± 0.35 mm at the midsubstance of dTCL, and 0.66 ± 0.31mm at the proximal margin of the tibial attachment. CONCLUSIONS. Anatomical findings enhance the understanding of the dTCL and its role in TKA and related surgical procedures.

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Comparative Analysis on Learning Outcomes Between Cadaver Dissection and Peer Instruction.

INTRODUCTION. Cadaver dissection is a fundamental aspect of gross anatomy education, offering hands-on learning. Peer instruction, an active learning method, is often used as a complementary strategy, particularly in resource-limited settings. This study aims to compare the learning outcomes of these two methods by evaluating student performance in identifying anatomical structures learned through hands-on dissection versus peer instruction. METHODS. Due to limited lab capacity, the 88 first-year medical students were divided into two groups (n = 44) for each block. Each group dissected half of the structures while learning the remainder through peer instruction. Final lab practical exam scores were analyzed by dividing questions into two categories: those pertaining to structures students dissected hands-on and those related to structures learned through peer instruction. Differences in students' average scores between the two methods were analyzed using the Wilcoxon matched-pairs signed-rank test. All four blocks of the academic year were analyzed independently to ensure consistency. SUMMARY. Overall, the class practical exams' average was 81.21% for the academic year, suggesting that both cadaver dissection and peer instruction are effective learning strategies. However, students consistently scored higher on questions related to structures they had dissected compared to those learned through peer instruction (overall: 82.35% vs. 80.07%, P=0.001). This trend was observed across all four blocks: Block 2 (85.00% vs. 83.33%, P=0.093), Block 3 (83.86% vs. 81.82%, P=0.124), Block 4 (78.47% vs. 74.95%, P=0.006), and Block 5 (82.05% vs. 80.17%, P=0.468). CONCLUSIONS. This study suggests that the cadaver dissection method is more effective for learning anatomy compared to peer instruction. It also proves the value of peer instruction as a complementary strategy to enhance anatomy learning, particularly in resource-limited settings.

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Impact of Different Moisture Retention Strategies on Cadaver Tendon Desiccation.

INTRODUCTION. Maintenance of cadaver donor tissues in a moist and biofidelic state aids in student learning; however, tissues rapidly dry out during dissection, requiring use of different moisture retention strategies (MRSS), such as wetting solution and fabric draping. Tendons are most prone to drying, and although hydrogel applied to exposed tendons is common in wound care, gel is not routinely used for cadaver preservation. The purpose of the present study was, therefore, to compare the impact of different MRSS on the extensor hallucis longus (EHL), and flexor hallucis longus (FHL) tendons, and tibialis anterior muscle belly (TA). METHODS. Ten limbs were tested on 5 formalin-fixed cadavers and were preserved with 5 different MRSS, with structures exposed to air for 60 minutes, 2 times per week, for 6 weeks. These MRSS included variation in application of hydrogel and wetting solution, and use of different draping cloths. At the end of 6 weeks, a blinded photographic rating session was conducted. SUMMARY. A statistically significant difference was found between the mean moisture level of the control and 4/5 of the MRSS conditions for both EHL and FHL, but not for TA. Mean moisture level was rated higher for EHL, but slightly lower for FHL, when hydrogel was applied to the tendon. Mean absorption ability of thick vs. thin cloth, showed that the thick cloth was significantly (> 5X) more absorbent than the thin cloth. Moisture retention ratings were, however, mixed, with moisture of EHL wrapped in the thin cloth rated higher; and FHL wrapped in thin cloth rated lower. CONCLUSIONS. We believe this pilot study is the first to both investigate the use of hydrogel to preserve moisture in cadaver tissue, and to assess the absorption abilities of commonly used draping fabrics in gross anatomy labs. Hydrogel applied to tendons showed promise, but would likely require more frequent, weekly, application to show significance. Thick cloth draping was significantly more absorptive, but a larger sample size would be required to confirm a positive role for cloth thickness in tissue moisture retention.

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The Impact of an Anatomy Summer Program in the Career Goal Decision-Making of High School Students.

INTRODUCTION. Early exposure for high school students to medical school activities: lectures and anatomy labs, and guest lectures with specialists may influence the decision-making process of pursuing a medical career. The Clinical Anatomy Summer Program (CASP) at the Division of Clinical Anatomy at Stanford University is an annual teaching program for high school students interested in pursuing a healthcare career as established in 2013. The purpose of this study is to assess the impact of CASP on high school students' choice to pursue a health care career. METHODS. An online survey was sent to 470 students who participated in the program from 2013 to 2019. The survey included questions about their career goals before and after CASP, the educational institutions they attended in recent years and their current occupation. SUMMARY. Eighty-one students responded to the survey. The percentage of students that planned to attend medical school increased from 82% to 88% after participating in CASP, while the number of undecided students decreased from 15% to 5%. 100% of the students attended undergraduate studies, while 60% pursued a graduate education. 89% of them attended or are attending medical school, nursing, or pharmacy school; and 89% of them are working or studying in the health care field (including MD, PA, PhD students, residents, and medical assistants). Ninety-six percent of the students acknowledged that CASP influenced their decision to pursue a healthcare career to varying degrees (little, moderate, a lot). CONCLUSIONS. CASP was a key factor in guiding high school students toward a health care career. These results support the idea that exposure to medical school activities significantly influences students' decision to choose and pursue a healthcare career.

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Architectural Pattern and Properties of Muscles of Posterior Compartment of Leg.

INTRODUCTION. The functional capabilities of skeletal muscles are largely influenced by their architectural properties, which determine force production and movement range. Existing research has predominantly focused on forearm muscles, leaving a gap in the study of leg muscles. The cadaveric dissections remain the gold standard for analyzing architectural properties. This study aims to analyze the architectural pattern and properties of posterior leg muscles in adult cadavers. METHODS. Ninety six muscles of the posterior compartment of the leg were harvested from twelve formalin fixed cadavers. Architectural patterns of each muscle were noted and parameters (Muscle weight, Muscle length, Fiber length, Pennation angle and Sarcomere length) were recorded. Physiological Cross-Sectional Area (PCSA) and PCSA to muscle weight ratio was also calculated. SUMMARY. The flexor hallucis longus, flexor digitorum longus and tibialis posterior had a combination of fusiform and pennate arrangement. Gastrocnemius and soleus had aponeuroses covering their superficial and deep surfaces with fibres extending from one aponeurosis to another. An additional bipennate muscle belly was observed plastered on the deep surface of the Soleus muscle. Popliteus had an intramuscular aponeurosis from which the muscle fibres coursed superficial and deep. Gastrocnemius had the longest fibre length and Soleus the shortest. Sarcomere length was higher in smaller muscles of the leg i.e. plantaris and popliteus and was smallest in soleus. Flexor hallucis longus and Tibialis posterior had higher PCSA as compared to other muscles. CONCLUSIONS. A repository of architectural features of the posterior compartment leg muscles has been developed to provide baseline normative data for musculoskeletal modeling and simulation platforms for studying movement mechanics.It shall also facilitate comparative analysis of musculotendinous structures within and outside the compartment. This information can help determine the most suitable muscle for surgical transfer to restore function.

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Addressing Medical Students' First Dissection Anxiety: Asynchronous Unique Donor Introduction Videos.

INTRODUCTION. Medical students experience high anxiety (33% prevalence), three times that of the general population. Anticipation of the first dissection contributes to this anxiety. At Oakland University, YouTube videos about the dissection lab failed to reduce anxiety, with prior donor experience being the only effective factor. This study examines whether donor-specific videos reduce pre-dissection anxiety. METHODS. During the first semester, first-year medical students (N=129) participated in full-body dissections in small teams of six. For each of the 22 donors, a short video showing anterior and posterior views was created. During lab orientation, students were informed about the videos, confidentiality, and professionalism. They received a secure link to their donor's video and an assessment form, which they could review before the first dissection. Before dissection, students completed a demographic questionnaire and the State-Trait Anxiety Inventory (STAI) to assess baseline (trait) and scenario-specific (state) anxiety. A one-way ANOVA, controlling for prior donor exposure, compared anxiety levels between video watchers and non-watchers (α=0.05). SUMMARY. Analysis of the data revealed no significant difference in anatomy-related anxiety between students who watched the videos and those who did not (p=0.41), nor between those who completed the donor assessment form and those who did not (p=0.62). However, significant differences in anxiety levels were observed based on gender with women reporting higher anxiety than men ($p < 0.001$) and religious affiliation (p=0.05). CONCLUSIONS. Providing students with a donor-specific video did not significantly reduce pre-dissection anxiety. However, gender and religious affiliation were significant factors influencing anxiety levels. These findings suggest that alternative approaches, potentially tailored to demographic differences, may be more effective in addressing anatomy-related anxiety.

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Physical Therapy Student Perceptions of Different Gross Anatomy Instructional Methodologies.

INTRODUCTION. Gross anatomy is a foundational course in physical therapy (PT) program curricula. Most widely used instructional methodologies in the gross anatomy laboratory have been dissection, prosection, computer-assisted technologies, and 2D images. The literature reveals that dissection and prosection may show slightly improved student learning; however, other factors may influence anatomy knowledge beyond lab instruction. The purpose of this study is to investigate PT student perceptions of different anatomy instructional modalities on their learning. METHODS. First-year PT students at UT Health San Antonio (n=49) were exposed to different anatomy instructional methods during their anatomy course: (1) 2D images, (2) prosection with 2D-images, and (3) dissection. A post-course survey was developed and administered to investigate which instructional method students preferred and why. Qualitative analysis using NVivo® identified codes, which were then categorized into dominant themes and subthemes. SUMMARY. PT students preferred learning anatomy in a prosection-based lab with 2D images (n=42, 85.7%). Student responses identified themes of clarity and consistency of expertly-prosected donors, which led to a positive prosection-based lab experience that improved learning of gross anatomy. Time required to dissect, mental and physical fatigue after dissection, lack of dissection experience, and fear of cutting essential structures were the main emergent themes as to why students did not prefer dissection as part of their anatomy curriculum. CONCLUSIONS. PT students viewed prosection as a better instructional method over dissection, as dissecting took away time and energy from learning anatomy. In addition, surgical procedures not being in the scope of their future professional career may have influenced student preference for prosection over dissection. Results of this study may help inform gross anatomy curriculum design or reform.

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Septa in Sphenoid and Maxillary Sinuses: A Cadaveric Case Report.

INTRODUCTION. A comprehensive understanding of the anatomy and variations of the paranasal sinuses is essential for diagnosing and treating sinus-related conditions and for performing surgical procedures with precision. Preoperative evaluation of sinus morphology is crucial to reducing intraoperative risks and preventing postoperative complications. RESOURCES. During a routine dissection of a 78-year-old female cadaveric head at the Department of Biomedical Science, Mercer University, School of Medicine, Columbus, GA, a hemisection of the head was performed to facilitate direct observation of the sphenoid and maxillary sinuses. The intersinus sphenoid septum and the medial walls of the maxillary sinuses were carefully removed, enabling the identification of multiple septa within both sinuses. DESCRIPTION. Four accessory septa were observed in both sphenoid sinuses. In the left sphenoid sinus, two vertical septa were identified. One septum was attached to the lateral wall and the carotid prominence, while the second was connected to the antero-lateral wall. In the right sphenoid sinus, the first septum was located on the inferior wall, while the second was positioned on the postero-superior wall and was attached to the carotid prominence. Additional septa were identified in both maxillary sinuses. In the left maxillary sinus, a vertical septum was found on the anterior wall, extending to the prominence of the infraorbital canal. In the right maxillary sinus, a septum was present on the anterior wall, attaching to the roof of the sinus. SIGNIFICANCE. With the increasing adoption of functional endoscopic sinus surgery and transsphenoidal approaches for treating paranasal sinus diseases and accessing the skull base, a comprehensive understanding of sinus anatomy and its variations is imperative. The presence of accessory septa, particularly those attached to critical structures such as the carotid prominence and infraorbital canal, underscores the necessity of preoperative imaging and meticulous surgical planning. A thorough assessment of sinus morphology can help mitigate complications and enhance surgical outcomes.

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Intramuscular Course of the Accessory Nerve Through the Sternocleidomastoid Muscle.

INTRODUCTION. Knowledge of the anatomical course of the accessory nerve in relation to the sternocleidomastoid (SCM) is critical to preventing nerve injury resulting from surgical approaches in the neck. Even in techniques attempting to spare the accessory nerve, lesions result in ~30-80% of patients. Mounting evidence suggests challenges in preserving the intramuscular portion of the accessory nerve within the SCM. Previous studies have identified variations in innervation to the SCM, however, no reports have described the intramuscular course of the accessory nerve. This study aimed to characterize the course of the accessory nerve through the sternocleidomastoid muscle. METHODS. Preliminarily, embalmed cadaveric hemisected head and neck specimens (n=13) were dissected to observe the course of the accessory nerve within the SCM. Digital calipers were used to measure the intramuscular course of the accessory nerve and calculate the angle of a novel accessory nerve genu. SUMMARY. Assessment of the course of the accessory nerve revealed an intramuscular genu that redirected the nerve posteriorly either above (n=11) or below (n=2) Erb's point. The angle of the genu ranged from 48.6-132.2° (M=85.6°, SD=24.7°). The sternal (n=4) or clavicular (n=9) heads of the SCM gave rise to a previously undescribed muscular slip which formed a myofascial tunnel for the accessory nerve before the nerve exited the SCM posteriorly. The mean length of the accessory nerve proximal to the genu was 34.9 mm (SD=4.5) and 19 mm (SD=5.2) distal to the genu. CONCLUSIONS. The novel characterization of the genu and muscular slip fills a gap in the description of the intramuscular course of the accessory nerve. Clinically, the awareness of the intramuscular course of the accessory nerve through the SCM could mitigate unintentional nerve trauma during surgical dissection, resulting in the preservation of neck and shoulder function.

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Evaluation of Bone Retrieval Techniques: A Comparative Study on Maceration and Curation Methods.

INTRODUCTION. The retrieval of bones from embalmed cadavers is essential for medical education and research. Traditional methods are time-consuming, requiring an optimized approach to meet the growing demand for high-quality skeletal specimens. This study evaluates three bone retrieval techniques a) burial with plastic covering (Type 1), b) burial with direct mud covering (Type 2), and c) maceration in a sealed water-filled container (Type 3), to determine the most effective method based on quality of bones retrieved and processing efficiency. METHODS. Forty-five bones from embalmed cadavers, including femur, tibia, fibula, and articulated foot specimens, were carefully prepared by removing soft tissues for processing. The bones were distributed among the three retrieval methods, ensuring each group had an equal number and similar types of bones. A validated scoring system assessed debris removal, grease presence, odour, bone integrity, and overall quality. Post-maceration treatments including boiling, cold water immersion, and lime water soaking, were used to enhance cleaning efficiency. A novel scoring sheet, validated by anatomists, was developed to standardize assessment. SUMMARY. Type 2 yielded the best results, producing bones with minimal debris, reduced grease retention, and superior structural integrity. Type 1 showed moderate effectiveness, while Type 3 performed the worst, with significant grease retention, offensive odour, and compromised integrity. Boiling with detergent and caustic soda proved to be the most effective post-treatment. CONCLUSIONS. The burial with direct mud covering method (Type 2) emerged as the most efficient technique, yielding high-quality bones. The validated scoring sheet enhances objectivity in bone assessment, addressing the lack of standardized evaluation methods. These findings can help institutions optimize bone retrieval and processing techniques, improving efficiency in anatomical education and research.

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3D Neuroanatomical Techniques: Comparison between Photogrammetry and Structured Light Scanning.

INTRODUCTION. Cadaveric dissections, which are considered the most realistic model to study neuroanatomy, are expensive and not readily available in all centers. Given the surge of technological advances, incorporation of three-dimensional (3D) scanning technologies and 3D models has gained popularity, both in the educational and clinical settings. METHODS. We present our institutional experience in creating high fidelity neuroanatomical 3D models using three 3D scanning techniques: structured light 3D scanning, "manual" photogrammetry with a single DSLR camera, and "automatic" photogrammetry using a scanner equipped with five vertically arranged DSLR cameras and automatic turntable within a square box. A survey study was conducted with 20 neurosurgical residents to assess the quality of the three resulting 3D models. SUMMARY. When comparing the three 3D scanning techniques, "manual" photogrammetry was the most cost-effective technique, while "automatic" photogrammetry was the most time-effective and user-friendly technique. "Automatic" photogrammetry produced the largest file size and had the most polygons in the mesh model (i.e. points that define the final shape of the structure). However, the best visual quality was obtained using "manual" photogrammetry, as determined by formal survey responses from 20 neurosurgical residents. While structured light 3D scanning had the lowest quality of resolution of the texture map, this technique was the most accurate to use for determining measurements, with a fixed accuracy of 0.05 mm. CONCLUSIONS. In our experience, "manual" photogrammetry allows for the most detailed 3D models and is the most cost-effective strategy, while structured light 3D scanning is most suitable for obtaining clinically relevant measurements given the high degree of structural accuracy. "Automatic" photogrammetry represents a hybrid between obtaining relatively high-quality models in a time-effective and user-friendly manner.

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Ectopic Intraspinal Stent Misplacement: A Rare Complication with Anatomical Implications.

INTRODUCTION. Clinically integrated anatomy teaching relies on a comprehensive understanding of anatomical relationships, particularly in the context of surgical and endovascular interventions. Venous stenting is a common procedure for managing chronic peripheral venous disease, yet complications such as bleeding, in-stent restenosis, stent misplacement, and migration remain concerns. This report presents a rare case of intraspinal stent misplacement, leading to lumbar nerve root compression, with implications for anatomical education and clinical practice. RESOURCES. A detailed evaluation of venous stenting complications necessitates the use of multiple imaging modalities, including high-resolution computed tomography (CT) and angiography, to assess stent positioning. This case emphasizes the importance of integrating radiological findings with anatomical knowledge to recognize and manage complications effectively. DESCRIPTION. A 68-year-old female with left lower limb swelling was diagnosed with left common iliac vein thrombosis and severe compression of the left common iliac vein by the right common iliac artery, consistent with May-Thurner syndrome (Cockett syndrome). She underwent endovascular stenting of the left iliac vein. Postoperatively, she developed right L5 radicular pain, hypoesthesia in the left leg, and weakness of the left extensor hallucis longus muscle. A lumbar CT scan revealed an ectopic stent misplacement through the left L5 intervertebral foramen into the spinal canal, causing nerve root compression. SIGNIFICANCE. This case underscores the critical importance of anatomical precision in interventional procedures and highlights the potential neurological risks of misplaced stents. Understanding the spatial relationships between vascular structures and the lumbosacral plexus is essential for preventing complications. This report also reinforces the need for interdisciplinary collaboration among vascular surgeons, interventional radiologists, and neurosurgeons to ensure patient safety and optimal outcomes. By integrating clinical anatomy with radiological imaging, this case serves as a valuable educational tool for enhancing anatomical and procedural knowledge in medical training.

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Schematic Drawings in Anatomy Education: Enhancing Medical Student Learning During Dissection.

INTRODUCTION. Medical education often relies on a combination of visual aids and hands-on practicals to convey complex anatomical concepts. Chalkboards provide a dynamic and interactive medium for collaborative learning. This study explores the efficacy of using chalkboards for schematic drawings by medical students during anatomical dissections, assessing its impact on learning and collaboration. METHODS. An experimental study was conducted across four dissection sessions for the 2nd year MBCHB students. The students were divided in groups of 4 - 6 in a dissection table between two dissection floors. The students incorporated chalkboard schematic drawings and anatomical structures on a large classroom chalkboard to aid their understanding of dissection materials and encourage peer discussion into their sessions. SUMMARY. A number of students in a class of 241 second-year medical students used the chalkboard to make anatomy schematic drawings during their anatomy dissection course. Students found chalkboard schematics helpful for understanding anatomical relationships and improving collaboration among peers. The use of chalkboard schematics during dissection appears to enhance both knowledge retention and student engagement. The collaborative nature of creating and discussing diagrams may foster deeper understanding and teamwork. The results suggest that incorporating chalkboard drawings can be a beneficial addition to anatomy education. This approach could improve clinical skills like spatial awareness, teamwork, and application of anatomical knowledge in practice. CONCLUSIONS. Chalkboard schematic drawings can be an effective tool for medical students during dissection, leading to improved comprehension and collaborative learning. Further studies could explore the long-term impact of this approach on retention and application of anatomical knowledge.

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Neuroanatomical and Histological CNS Abnormalities in a 3-Year-Old with Rare Neurological Disorders.

INTRODUCTION. This case study presents a comprehensive neuroanatomical and histological analysis of the central nervous system from a 3-year-old donor with a rare complex neurological condition characterized by progressive encephalopathy, Lennox-Gastaut syndrome, microcephaly, and infantile spasms. RESOURCES. This analysis was conducted using a combination of detailed gross dissection and histological examination to assess structural and neuronal abnormalities across multiple brain and spinal cord regions. DESCRIPTION. External and internal analysis of the central nervous system revealed profound developmental and atrophic changes across various brain structures, including absent central sulci, abnormal gyration patterns, and severe cerebellar and cerebral atrophy. Key findings included multilobar polymicrogyria, severe ventriculomegaly, and gray matter nodular heterotopia. Histological examination confirmed these anomalies, revealing cortical dysplasia, neuronal malorientation, abnormal neuronal migration with the presence of multifocal nodular heterotopia, and reduced neuronal maturation, quantity, and density. The hippocampal formation exhibited incomplete rotation, with no signs of hippocampal sclerosis. The cerebellum and brainstem exhibited significant hypotrophy, including severe reduction of the basilar pons and medullary pyramids, consistent with impaired corticospinal tract development. Genetic testing is needed to confirm the molecular etiology underlying these migration defects and neuronal developmental disruptions. SIGNIFICANCE. This case details the neuroanatomical and histological findings of a rare, complex neurological condition, highlighting structural abnormalities that may underlie conditions like Lennox-Gastaut syndrome and associated developmental defects.

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A Rare Variant of Inferior Thyroid Artery Originating from the Common Carotid Artery - A Case Report.

INTRODUCTION. The inferior thyroid artery (ITA) usually originates from the thyrocervical trunk in majority of the human population (90.5%), or from the subclavian artery in few populations of humans (7.5%). It is quite rare to find the ITA originating from the common carotid artery (CCA). Gross dissection offers understanding of the anatomical variations in vascular system especially in critical regions such as the neck. This knowledge is needed by surgeons and interventional radiologist to limit incidence of hemorrhagic complications and nerve injuries in surgery. RESOURCES. An embalmed cadaver was used for gross dissection during the surgical anatomy course. The neck region of a 54-year-old male cadaver was dissected following the steps outlined in the Grant dissector handbook of Sauerland. DESCRIPTION. The case report presented two inferior thyroid arteries on the left side, with one branch originating directly from the left thyrocervical trunk going to the inferior pole of the thyroid gland (ITA1). Another branch of the inferior thyroid artery originated from the left common carotid artery (ITA2). The relationships to the inferior thyroid artery registered were the left recurrent laryngeal nerve (LRN). The inferior thyroid artery on the right side was one and from the normal source. SIGNIFICANCE. An inferior thyroid artery rarely originates from the common carotid artery; this is why our case is worth reporting. The inferior thyroid artery has a close relationship with the recurrent laryngeal nerve which plays an important role in vocal cord mobility, phonetic function and respiratory tracts protective function as a sphincter. For this reason, the visualization of the anatomical relationship of recurrent laryngeal nerve with the inferior thyroid artery is essential for its preservation. This anatomical variation poses a risk of perioperative bleeding and nerve injuries especially during a surgical intervention in the neck region.

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A Review of Free Resources for 3-Dimensional Anatomical Visualization.

INTRODUCTION. The visualization of anatomical structures as 3-dimensional (3D) models can act as an additional resource in the comprehension of complex structural relationships for medical education and clinical application. The utility of these models, though, relies solely on their accuracy. RESOURCES. Sketchfab is a website that displays 3D models of innumerable subjects that can be browsed and uploaded for free, with hundreds of users contributing to the anatomical models exhibited. However, not all these users have a foundation of anatomical knowledge or create models with the intention of lifelikeness. DESCRIPTION. A review of 20 Sketchfab users from an institution or organization with medical or medical illustration association was conducted. These were chosen for assessment based on the rational in which models created in conjuncture with medical affiliation would have a higher likelihood of accuracy and intention for medical application. This review denotes models categorized across major anatomical systems and methods in which they were created including digital sculpting, photogrammetry, 3D scanning, and MRI/CT extraction. SIGNIFICANCE. Utilizing a free unfiltered resource can have a direct benefit of accessibility but comes with a drawback in reliability of content. Thus, a curated inventory of options for viewing 3D models of different anatomical systems can negate this obstacle and be used as an enhancement for anatomical comprehension, as well as bolster areas where 3D models of certain anatomical subjects are lacking or can be approved upon.

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Exploring AACA Members' Perceptions of Integrating Educational Technologies in Anatomy Education.

INTRODUCTION. The adoption of technological tools in anatomy education has grown significantly, particularly in response to the shift toward online modalities during the pandemic. While prior studies often focus on specific tools, this work evaluates the broader integration of diverse educational technologies, based on feedback from AACA members. The study aims to provide insights into the effectiveness, challenges, and potential of these tools, offering practical guidelines for educators. METHODS. An online survey utilized Qualtrics software was distributed to AACA members. It explored faculty perceptions across four domains: (1) Current Educational Technology;(2) Impact on Teaching Anatomy; (3) Technical Challenges; and (4) Comparison with Traditional Dissection. Data were collected and analyzed to identify key trends. SUMMARY. Among 63 respondents (~20% of AACA membership), digital textbooks and e-resources (e.g., Access Anatomy) were the most utilized tools, followed by online platforms. The majority (70%) agreed that technology enhances the explanation of complex anatomical concepts, with 74% reporting increased student engagement and 72% citing improved accommodation of diverse learning styles. However, 66% identified cost as a significant barrier, and 45% reported challenges with technical support. Notably, 81% preferred traditional cadaver dissection over technology-based methods, with 83% endorsing its superior educational value in understanding anatomical variability. CONCLUSIONS. This study reveals strong support for the role of technology in anatomy education while reaffirming the value of cadaver dissection. The findings underscore the need for balanced integration, addressing cost and technical challenges, and prioritizing faculty development programs to optimize the effective use of technology. This study offers a comprehensive perspective on current practices and challenges, guiding the effective use of technology in anatomy curricula.

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Impact of Cadaveric Dissection on Medical Students' Interest and Preparedness for Surgery.

INTRODUCTION. Curricular compression in medical education has reduced anatomy teaching time, shifting from dissection to non-cadaveric methods. The COVID pandemic further disrupted dissection-based teaching. This study explores students' perceptions of cadaveric dissection, its impact on surgical rotation performance, and surgical residency choices. METHODS. The study included two consecutive classes that took anatomy in 2020 and 2021 (cohorts A and B). Both cohorts included 150 students of similar admission metrics. Cohort A had online classes and assessments, while cohort B had dissection-based anatomy and in-person assessments. The overall class performance in anatomy and surgery was compared based on institutional assessments. An anonymous survey was conducted during the fourth year to assess the interest, perceived skills, and attitude toward anatomy and surgery. SUMMARY. There was no significant difference in the academic performance of the two cohorts. The survey highlighted that more cohort B students strongly agreed that cadaveric dissection was important for understanding anatomy and surgical procedures and that anatomy training was engaging, prepared them for surgical rotations, and stimulated their interest in surgery. Most students in cohort A were neutral regarding whether the lack of cadaveric dissection affected their preparedness for surgical rotations. CONCLUSIONS. In conclusion, while academic performance between the two cohorts was not significantly different, the survey results demonstrated that students who experienced cadaveric dissection reported a stronger belief in its importance for understanding anatomy and surgery. These students also expressed greater engagement in their anatomy training and increased interest in surgical specialties. This suggests that cadaveric dissection may have a more pronounced impact on fostering interest in surgery and preparing students for clinical rotations despite similar academic outcomes.

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Cadaveric Variants in Medical Education - A Case Report Suggestive of Cranial Nerve Zero.

INTRODUCTION. Nerves are typically considered less variable than other soft tissue anatomical structures, which can lead to underrepresentation of cranial nerves in standard texts used by both students and clinicians. This case describes a likely nervus terminalis (i.e. cranial nerve zero) discovered during routine examination of cadaveric specimens that underscores the importance of understanding anatomical variants. RESOURCES. Further examination was undertaken through visual examination, consulting of anatomical atlases, and a systematic literature search. The variation was also documented in detail through photographs, measurements, and written reporting. DESCRIPTION. The variant consisted of bilateral divergence of the olfactory tracts emerging from the region of the olfactory trigone that coursed anteriorly over the surface of the gyrus rectus. Alternative interpretations (e.g. accessory branches or axonal misrouting) could not be disconfirmed due to insufficient case representation in the literature as well as the limited ability to explore additional in situ relations with a prosected specimen. SIGNIFICANCE. This case highlights the need to further incorporate variations within the extant biomedical literature. Until sufficient documentation of cases leads to emerging consensus criteria, there will remain anatomical questions about variability in embryological and evolutionary pathways related to the olfactory nerve. Extending knowledge of variants into anatomical curricula may also better prepare trainees through encouragement of adaptive reasoning, critical discussions, and research opportunities when confronted with non-standard anatomy.

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Biomechanical Analysis of a Flexor Carpi Radialis Brevis with Review of Orthopedic Implications.

INTRODUCTION. Musculoskeletal variations around the distal radius can have significant implications to medical anatomy education and orthopedic practice. Variant muscles such as the flexor carpi radialis brevis (FCRB) can complicate open reduction and internal fixation (ORIF) procedures (e.g., volar plate fixation, intramedullary rod placement) for correcting intra- and extra- articular distal radius fractures (i.e., Colles fractures), but a thorough biomechanical analysis of FCRB is missing from clinical literature. The purpose of this study is to conduct a biomechanical analysis of a FCRB with review of orthopedic implications. RESOURCES. The FCRB was discovered during routine dissection of a human cadaver. The muscle's mass (m), total length (lm), fascicle length (lfo), and pennation angle (θ) were measured. In situ and ex situ photography with scale was captured, and a tissue sample was collected, processed for histology, sectioned (5 μm), and stained with H&E. Mean postmortem fixed sarcomere lengths (n > 300; lso) were measured via digital light microscopy to calculate a normalized (lfn) maximal isometric force (Fmax). DESCRIPTION. The unliteral right FCRB (m = 2.81 g; lm = 9.66 cm) was unipennate ($\theta = 7.9^{o}$) in form. It originated along the anterolateral distal third of the radius, coursed over the pronator quadratus, and inserted onto the tubercle of trapezium. It presented in a semi-contracted state (lso = 2.15 μm vs. 2.64 μm) as the donor presented in partial radial deviation. Normalization of the FCRB fascicle lengths (lfo = 3.61 cm to lfn = 4.44 cm) yielded a Fmax of 13.38 N. SIGNIFICANCE. The presence of an FCRB may complicate ORIF procedures necessitated by FOOSH injuries, and its functional impact may provoke indistinct refractory myofascial and periosteal pain in the forearm/wrist. This study demonstrates clinical anatomy translational research that provides important differential insights to orthopedic physicians treating patients with FCRB muscles.

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Gross Anatomy Exam Grades Differ Among Undergraduate Pre-Professional Groups.

INTRODUCTION. Predictors of success in gross anatomy courses have been examined in medical graduate programs but are less studied in undergraduate or other graduate health professional programs. This study explored the relationship between undergraduate major/pre-professional preparation and performance in a 400-level regional cadaver-based human gross anatomy course that serves as a prerequisite course for in-house Doctor of Physical Therapy and Occupational Therapy programs. METHODS. Records of students accepted into professional graduate programs between 2017-2023 were cross-referenced with records of students who completed the gross anatomy course. A total of 234 student records were extracted: 35 pre-medical (MD/DO), 8 pre-dental (DDS/DMD), 20 pre-physician assistant (PA), 6 pre-anesthesia assistant (AA), 80 pre-occupational therapy (OT), 76 pre-physical therapy (PT). ANOVA and posthoc tests were used to compare scores on course assessments among students of each professional group. SUMMARY. For the eight low-stakes online quizzes, no differences were found among groups in total semester quiz score or any individual quiz score. Conversely, group differences were found in the four summative in-person regional exams. In total semester exam score, the pre-OT group was significantly lower than other groups. For Exams 1 (Upper Limb) and 3 (Back and Lower Limb), pre-medical/dental and pre-PT scored significantly higher than pre-OT and pre-PA/AA. For Exam 2 (Thorax/Abdomen/Pelvis), pre-OT scored significantly lower than other groups; there was no difference among the other groups. For Exam 4 (Head/Neck), pre-medical/dental and pre-PA/AA scored significantly higher than pre-OT and pre-PT. CONCLUSIONS. Differences in gross anatomy lecture exam grades among pre-professional groups may reflect levels of interest in content areas or preparation from previous courses. Prerequisite courses in a pre-OT curriculum should be re-evaluated to enable student success in anatomy.

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Reverse Vertical Integration of Anatomy and Surgery During Clinical Rotations.

INTRODUCTION. Medical students in the 4th year of their MD (Medical Doctor) program show sequential loss of the anatomy knowledge gained in preclinical years. The loss of knowledge of other preclinical subjects is not as much as the anatomy as physiology, biochemistry get reviewed again in pathology and pharmacology sessions. To review anatomy for surgery, a novel approach of reverse vertical integration was used. RESOURCES. The surgery and anatomy faculty had multiple meetings in which it was decided to give anatomy revision sessions during surgical rotations at the beginning of the rotation. The surgery faculty identified important anatomical regions and made the learning objectives based on the outcomes they wanted. The anatomy teachers face-validated the learning objectives and a teaching plan was devised. The teaching was conducted in a 2-hour session in anatomy lab. The anatomy and surgery professors were present together in the session at the same time. The teaching happened in following session – 1. Demonstration of the regional anatomy by anatomists, 2. Review of session and Q & A by students, 3. Review of surgery procedures/ surgical importance of the region by surgeons, 4. Review of session and Q and A by students. At the end of session, students were given a questionnaire to give their opinions about the sessions. The study was conducted for two consecutive academic years in every surgical rotation covering all the students. Approval for the study was obtained from institutional Ethics and Research Committee. The feedback was noted. Majority of students agreed that these sessions were effective to clarify surgical concepts. Students expressed need for such sessions for abdomen and perineum as anatomy of these regions is most difficult to understand. Students also agreed that anatomy of abdomen and thorax is more clinically relevant and should be taught more in preclinical years with emphasis on clinical relevance. DESCRIPTION. Novel approach for reviewing the surgically important anatomy and reverse integration of anatomy into surgery. SIGNIFICANCE. Reverse vertical integration of the anatomy and surgery is important for deep learning and correlating anatomical basis behind surgery. This study describes a method well accepted by students and can be replicated easily in resource constrained situations.

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Mitochondrial Susceptibility to Mobile Phone Electromagnetic Radiation: A Study on Embryonic Cells.

INTRODUCTION. The increasing use of mobile phones by children and pregnant women has raised concerns, as embryonic stem cells are more sensitive to radiation than adult cells. This study aims to examine the effects of electromagnetic radiation (EMR) on the embryonic development of cardiomyocytes, hepatocytes, and neurons in developing chick embryos. METHODS. A total of 40 fertilized chicken eggs were used, with 20 eggs placed in an incubator alongside an EMR-generating mobile phone, while the remaining 20 served as the control group without EMR exposure. Embryos were sacrificed on days 10 and 15, and heart, liver, and brain tissues were collected for electron microscopy study. EMR-exposed groups exhibited structural abnormalities, including elongated, dumbbell-shaped mitochondria in hepatocytes, swollen mitochondria in neurons, and damaged mitochondria and intercalated discs in cardiomyocytes. SUMMARY. These findings align with previous reports, demonstrating that EMR-induced reactive oxygen species (ROS) production increases calcium permeability, leading to mitochondrial swelling. The accumulation of ROS triggers a feedback loop that disrupts mitochondrial membrane integrity, increases superoxide-ion radical production, and ultimately initiates apoptosis. As oxidative stress persists, mitochondria undergo morphological changes, elongating before degenerating completely. CONCLUSIONS. EMR exposure leads to mitochondrial damage and oxidative stress in developing chick embryos, highlighting potential risks associated with radiation exposure during early development. Chronic exposure to EMR may lead to cumulative mitochondrial dysfunction, which has been linked to neurodegenerative diseases, cardiovascular problems, and developmental abnormalities.

POSTER SESSION 3 – WEDNESDAY, JUNE 18 FROM 2:45 PM - 4:00 PM

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BELLOMO, Olivia T., Heather M. GUZIK, Victoria G. FURFEY, Liesl B. KRONE, Haven S. YOUNG, and Lucyna A. BOWLAND. Arkansas College of Osteopathic Medicine, Fort Smith, AR, 72916, USA.

Gross Appearance of Chronic Myelogenous Leukemia and Graft-Versus-Host Disease in a Cadaveric Donor.

INTRODUCTION. Chronic Myelogenous Leukemia (CML) is a hematologic malignancy often treated with allogeneic Hematopoietic Stem Cell Transplant (allo-HSCT). A major complication of allo-HSCT is Graft Versus Host Disease (GVHD), which occurs in up to 50% of recipients and commonly affects the skin, gastrointestinal tract, and liver. While the risks of GVHD are well-documented, there is limited research on the gross anatomical presentation of both CML and GVHD in cadaveric donors. This study aims to document the co-occurrence of these conditions in a single donor. RESOURCES. A routine cadaveric dissection was performed on a donor with a documented history of CML and GVHD. Gross examination focused on the abdominal viscera, with particular attention to the greater omentum, liver, and spleen. Standardized digital calipers were used to measure tissue abnormalities, and high-resolution images were taken for documentation. Measurements were recorded at 2 cm intervals along the greater omentum, starting from the greater curvature of the stomach. Adhesions between the greater omentum, spleen, and vermiform appendix were also measured to assess inflammatory changes. DESCRIPTION. The examination revealed extensive adhesions within the greater omentum, particularly involving the spleen and vermiform appendix, consistent with prior inflammatory changes. The liver and spleen displayed morphological changes suggestive of disease progression. SIGNIFICANCE. This study provides valuable insight into the gross anatomical manifestations of CML and GVHD, contributing to the limited body of research on their co-occurrence in cadaveric donors. By documenting these findings, this study enhances understanding of the pathological presentations of GVHD and CML and may inform future clinical and anatomical research.

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Evaluating the Use of Virtual Reality in Teaching Brain Structures: A Feasibility Study.

INTRODUCTION. Immersive virtual reality (VR) is gaining traction in medical education, particularly for clinical and communication skill development. This study examined the feasibility of incorporating VR-based lessons into a first-year medical student neuroanatomy course, aiming to improve students' understanding of brain structures and spatial relationships. METHODS. Twelve first-year medical students (M = 24.58 years, SD = 1.17; 3 female, 9 male) participated. They completed a pretest assessing neuroanatomy knowledge, including cortical regions, brain surface orientation, structure relationships, and arterial supply. Participants then used a Meta Quest 2 VR headset and syGlass software to explore 3D volumetric brain renderings with narrated guidance from a neuroscience professor. Afterward, they completed a posttest and subjective usability questionnaire. SUMMARY. Results showed a significant improvement in posttest scores (paired t[11] = -3.594, p = .004, d = 1.038), with an average gain of 14.58% (SD = 14.05%). However, the System Usability Scale (SUS) score was low (M = 51.46, SD = 14.16), suggesting usability concerns. Despite this, 92% found the lesson relevant, 75% believed it improved their performance, and 58% indicated willingness to use VR in the future. CONCLUSIONS. Our findings demonstrated significant improvements in posttest scores following VR lessons, the low usability score suggests developments could be made to improve students' experience in VR. Conversely, students positively rated their subjective experience, indicating perceived benefits of using VR and intent to use VR for training in the future. These mixed results underscore the potential of VR for medical education but also highlight the need for further refinement to optimize usability.These findings suggest VR can enhance neuroanatomy education but require usability refinements for broader implementation in medical curriculum.

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Nociceptors Sprout Peripherally following Spinal Injury and Clinically Modeled Physical Therapy.

INTRODUCTION. Following spinal cord injury (SCI), nociceptive afferents exhibit anatomical plasticity within the dorsal horn. This plasticity is largely maladaptive, contributing to secondary complications such as pain and spasticity. Physical therapy remains a standard clinical approach for combatting sensory-related sequalae such as spasticity. However, previous studies show that clinically modeled hindlimb stretching of rats after SCI not only inhibits recovery but exacerbates intraspinal sprouting of nociceptors. Studies have indicated that peripheral nociceptor activation, in addition SCI-induced inflammation and atrophy, contributes to this sprouting. Despite these findings, it remains unknown whether nociceptors sprout within peripheral tissues post-SCI, and if clinically applied therapies modulate peripheral plasticity. The purpose of this study was to anatomically characterize nociceptor innervation within peripheral tissues such as the medial gastrocnemius (MG) and calcaneal tendon following SCI and stretching. METHODS. Female, Sprague Dawley rodents (n=34) were divided into four groups: Transection SCI, Contusion SCI, Contusion SCI + Stretching, and Naïve. At 4 days post-SCI Stretching animals received physical therapy for 5 days/week until 6 weeks post-SCI. Muscles were weighed and the MG and calcaneal tendon underwent iDISCO clearing and immunohistochemistry. High-resolution, volumetric images were captured of nociceptor innervation (Nikon C2 Confocal) and quantified using Nis.AI. SUMMARY. After contusion SCI, the MG displayed mild atrophy without changes in C-fiber innervation. However, when a contusion SCI was combined with stretching, the muscle demonstrated robust atrophy and C-fiber sprouting that was similar to transection animals. CONCLUSIONS. Nociceptors undergo peripheral anatomical plasticity post-SCI that is correlated with muscle wasting. These findings, combined with exacerbated sprouting following stretching, indicate the importance in evaluating therapies that are applied to patients post-SCI and offer novel peripheral mechanisms contributing to sensory-dependent complications.

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A Chronology of Comorbidity Onset in a Hurler Syndrome Patient Who Received Bone Marrow Transplants.

INTRODUCTION. Hurler Syndrome (HS), a subtype of mucopolysaccharidosis type I, is a rare (1:100,000 births) and incurable autosomal recessive disorder caused by the absence of alpha-L-iduronidase. The average life expectancy for HS patients is approximately five years. Bone marrow transplant (BMT) therapies have been shown to extend patient lifespans, though subsequent comorbidities are not well understood due to so few cases. This study aims to construct a clinical narrative about the onset of comorbidities in a 31-year-old male HS patient who received BMT therapy. RESOURCES. The patient was identified through a pre-existing relationship, and Institutional Review Board approval was granted to conduct the case study. A chronology of medical events and relevant medical records were ceded by the legal guardians (parents) of the patient, and key records were compared to medical literature referencing other cases of HS patients who received BMT therapy. DESCRIPTION. The patient was diagnosed with HS at 11 months and received two BMTs (15 mo: failed to engraft; 23 mo: effective). Subsequent medical events with HS etiology included cataract surgery (5 yrs), posterior spinal fusion to treat scoliosis (6 yrs), and medial physeal stapling to treat genu valgum (14 yrs). A lemon-sized meningioma was resected via two surgeries (23 yrs), though more tumors developed causing seizures (27 yrs) and the need for two gamma knife radiosurgeries (29 yrs; 31 yrs). The remaining meningiomas are currently stable (31 yrs). SIGNIFICANCE. While BMT therapy is credited for extending the patient's lifespan, the clinical narrative about his interconnected post-therapy comorbidities provides a comprehensive account of the potential medical challenges HS patients may incur. This case study may provide insights to clinicians, medical educators, and families about BMT therapy and its contribution to improving health, life expectancy, and quality of life for HS patients.

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Evaluation of the Effect of a Combined Enzymatic Treatment for Hyaluronic Acid Embolism.

INTRODUCTION. Vascular occlusion is a severe complication of hyaluronic acid fillers, potentially leading to necrosis or blindness. This risk is particularly high in areas such as the glabella, nasolabial fold, and nose, due to the abundant vascularization and arterial anastomoses in these regions. Hyaluronidase is the first-line treatment; however, some patients show little to no improvement. Given the collagen fibers-rich composition of arterial walls and perivascular tissues, as well as the varying layer arrangements across different facial areas, we aimed to evaluate a combined enzymatic treatment (hyaluronidase + collagenase) in a hyaluronic acid embolism model. METHODS. An IRB/IACUC-approved experimental study (AH22-00008) was conducted on six New Zealand rabbits. Hyaluronic acid embolism was induced in both femoral arteries, and two arterial segments per limb were ligated. Six segments per treatment group (saline, hyaluronidase [500U], hyaluronidase + collagenase [500U + 75U], and collagenase [75U]) were extracted and incubated for four hours. Macroscopic and histological evaluations (H&E, Alcian Blue, Masson's Trichrome, Orcein) were performed. Hyaluronic acid area in the lumen and tunica thickness were quantified. SUMMARY. Macroscopically, hyaluronic acid appeared less viscous in the hyaluronidase and hyaluronidase + collagenase groups than in the control. Although no significant differences were found in embolized area quantification, histology revealed more hyaluronic acid in the lumen of the control group than in the hyaluronidase-treated groups. No significant changes were observed in tunica intima and media thickness, but the tunica adventitia appeared disorganized and thinner. CONCLUSIONS. While no statistically significant differences were found, less hyaluronic acid remained in the arterial lumen of the hyaluronidase-treated groups. Further studies are needed to evaluate collagenase as an adjuvant to hyaluronidase for treating vascular occlusion due to hyaluronic acid fillers.

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Histopathology and Subtyping of a Multifocal Hepatocellular Carcinoma from a Human Cadaver.

INTRODUCTION. Hepatocellular carcinoma (HCC) tumors exhibit multiple heterogeneities and are occasionally multifocal (i.e., present as multiple tumors in the liver). Apart from conventional HCC, numerous HCC subtypes can be classified via histopathology and immunostaining. Few embalmed human cadaveric multifocal HCC tumors have been analyzed and subtyped despite their relative ease of access (compared to a living patient) and impactful learning outcomes for medical students studying cancer biology. The purpose of this study is to demonstrate the efficacy of performing histopathology to subtype multifocal HCC from a human cadaver. RESOURCES. A case of multifocal HCC was discovered during routine academic dissection of an adult human cadaver. A right parasagittal section of the liver was cleaned of extraneous tissue and photographed with scale. Five tissue samples (~5 mm3 each) were strategically collected from different HCC topographies, processed for histology, sectioned (5 µm), stained with hematoxylin and eosin (H&E), scanned for examination via digital light microscopy, and compared to subtype criteria in current literature. DESCRIPTION. Histopathology revealed typical and neoplastic segmented vessels, typical and neoplastic segments of tumor margin, and multiple tumor necrotic zones and boundaries. Other findings included multiple tumors containing conventional HCC, poorly differentiated cell grading, prominent extracellular fibrosis and lipid accumulation, and multiple necrotic cores with fibrous stroma. A particularly unique section of a solid grade fibrolamellar subtype with neutrophilic deposits was also identified. SIGNIFICANCE. Demonstrating the efficacy of histopathology for subtyping a multifocal HCC from a human cadaver validates its feasibility and provides an impactful method for medical students to learn cancer biology. Furthermore, the histopathology results may provide insights to oncologists and clinical anatomists when deliberating related cases.

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Enhancing Medical Education Through Cadaveric Dissection: A Unique Encounter with Breast Implants.

INTRODUCTION. The integration of cadaveric dissection in medical education has traditionally been valued for providing a tangible understanding of human anatomy and its clinical application. One meaningful experience that deepened learning was when medical students came across a submuscular bilateral breast implant during cadaveric dissection, the first seen in four to five years between 125 dissected cadavers. This study aims to investigate how exposure to cadaveric dissection, particularly in the context of observing breast implants, influences the inquisitiveness of first-year medical students and enhances their overall educational experience. RESOURCES. This study utilized manual-guided dissection of the thorax and an extensive literature review of breast surgical techniques with peer-reviewed surgical journals to create detailed schematics of various reconstruction techniques. DESCRIPTION. This experiential learning approach with breast implants not only reinforces anatomical education but also promotes a deeper understanding of the use of breast implants, encouraging students to explore beyond the curriculum. This study prompted further investigation of indications for implants (enhancing breast size, asymmetry correction, post-mastectomy), types of implants (silicone gel, saline, and fat grafts), and types of surgical approaches (submuscular, subglandular, and tissue expansion). SIGNIFICANCE. This early encounter of breast implants among first-year medical students, underscores the importance of dissection-based anatomy learning especially in the early stages of the medical curriculum. It could be used as a valuable resource for clinical integrated labs in systems courses well before entering clerkships. Additionally, these educational encounters promote self directed learning and may inspire students to pursue surgical specialties by bridging the preclinical and clinical gap in the integrated curriculum.

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Enhancing Medical Students' Learning in Anatomy: The Effect of Short Videos on Cognitive Load.

INTRODUCTION. Anatomy is widely regarded as one of the most challenging subjects for medical students due to its high intrinsic cognitive load, which refers to the mental effort required to learn complex topics. Educational dissection videos have become a common tool in medical education, demonstrating the potential to reduce cognitive load. Previous studies have demonstrated that dissection videos incorporating time-lapse features, written annotations, and/or narration were well received by students and enhanced their understanding. However, one challenge in dissection videos is video length, as longer videos have been suggested to negatively impact student engagement. This study aims to assess the impact of short dissection videos (<1 min), each focusing on a single structure. METHODS. Medical students performed a comprehensive prosection of two male anatomical donors. Videos were filmed each covering an essential anatomical structure required for the first-year Anatomy course. These videos were edited, annotated, and integrated into the in-house dissection manual for use during dissection lab sessions. The videos were primarily utilized by 129 first-year medical students and usage data was analyzed. SUMMARY. Our findings indicate that 106 students (82%) watched the short videos during the anatomical foundation courses. The total viewing time amounted to 150 hours. The number of views per body region/time spent to view shows; Back (17/23), Upper Limb (38/26), Thorax (88/28), Abdomen (227/29), Pelvis & Perineum (137/28), and Lower Limb (77/10). These data suggest that the Abdomen, Pelvis & Perineum were the most frequently viewed regions, emphasizing the significance of structure identification and spatial orientation in mastering anatomical concepts. CONCLUSIONS. The short videos were utilized by most students and could serve as an effective tool for simplifying the learning of anatomical structures, potentially reducing students' cognitive load.

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CT Image Segmentation Software Projects Increases Biomedical Engineering Student Engagement.

INTRODUCTION. Medical imaging is a cornerstone of modern medicine. CT scans, with their high-resolution, three-dimensional data, can offer detailed insights into patient anatomy, making them valuable not only for diagnosis but also as a teaching resource. CT image segmentation software, such as 3D Slicer, allows for the identification of anatomical structures, which can facilitate research and medical education. Recent reports indicate that segmentation software has been incorporated into undergraduate biomedical engineering courses. Hands-on experience with medical imaging educational materials resulted in a greater overall student understanding of anatomical structures, student satisfaction, and application of engineering topics. METHODS. In this study, 21 biomedical engineering graduate students utilized 3D Slicer software to analyze 20 anatomical donor CTs in the medical school. They were instructed to make a 3D model of the aorta and take measurements from their model including vessel radius and radius of the curvature. Students then used these measurements to determine Reynold's number for each donor. They completed surveys about segmentation software ease of use, cognitive load, and anxiety related to using the software. SUMMARY. Most students reported that the project was interesting and liked how it connected to engineering and physiological concepts. Students found the software to be straightforward, which was consistent with low cognitive load. However, manual segmentation was needed for some CTs, and those students found that to be a challenge. CONCLUSIONS. CT segmentation projects appear to be an engaging way to emphasize connections between anatomy and engineering content in biomedical engineering graduate student courses. Future directions include more student cohorts, different organ analysis, as well as interprofessional education between biomedical engineers and pre-clinical medical students.

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Intraflap Anastomoses of Deep Inferior Epigastric Perforator Flaps.

INTRODUCTION. Intraflap anastomoses significantly influence surgical outcomes in deep inferior epigastric perforator (DIEP) flap reconstructions. This study describes anatomical variations and surgical implications of these vascular connections through two illustrative cases. RESOURCES. Clinical documentation, intraoperative imaging, post-operative anatomical drawings by a professional, and operative notes from two patients undergoing DIEP flap reconstruction at Fox Chase Cancer Center were utilized, along with a scoping review of relevant literature. DESCRIPTION. Both cases demonstrated notable intraflap anastomoses, including variability in vessel branching patterns and perforator distribution. These anatomical nuances require meticulous intraoperative dissection and careful vessel selection and surgical planning to maintain flap perfusion and viability. SIGNIFICANCE. Awareness of intraflap anastomoses and relevant anatomy is crucial for optimizing microsurgical planning and execution. Enhanced understanding of these vascular structures may improve surgical outcomes and reduce complications in DIEP flap reconstructions.

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Expanding the Anatomy Curriculum: Integrating Surgery, Technology, and the Medical Humanities.

INTRODUCTION. The anatomy block remains a foundational component of medical education, yet it holds untapped potential to serve as an academic platform for early clinical exposure, technological innovation, and the medical humanities. We posit that the traditional anatomy course can be expanded to promote a more integrated understanding of medicine through clinical application, technological engagement, humanistic reflection, and exposure to the history of medicine. This project identifies four key areas to re-envision and revitalize anatomy education. RESOURCES. We conducted a systematic review of the literature, examined curricular models and requirements across U.S. medical schools, and incorporated expert insights from program directors, master surgeons, and medical educators. DESCRIPTION. We propose four enhancements to the anatomy curriculum with specific examples: 1) integration of an introductory surgery module, including suturing, mock surgical experiences on cadavers, and meetings with surgeons; 2) incorporation of adjunct technologies such as 3D printing and virtual modeling to reinforce spatial anatomy and improve technological literacy; 3) inclusion of medical humanities– literature, narrative medicine, and reflective writing–to explore the emotional, ethical, and humanistic dimensions of medicine; and 4) embedding the history of anatomy within the broader agenda of increased exposure to the history of medicine to foster professional identity, critical thinking about medical epistemology, and the evolution of anatomical knowledge and education. SIGNIFICANCE. The framework we put forth reimagines anatomy as a more dynamic platform for early professional identity formation, clinical understanding, and intellectual curiosity. We propose a revitalized anatomy curriculum that better prepares students for the art and science of medicine while fostering deeper intellectual engagement and curiosity.

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Revisiting Calot's Arteries: Underrecognized Cystic Artery Branches.

INTRODUCTION. Accurate identification of the cystic artery and its branches is essential for preventing iatrogenic injury during cholecystectomy. Descriptions of surgical anatomy focus on a identifying a cystic artery and the cystic duct, referred to as the "critical view." Small arterial branches arising from the cystic artery to the cystic duct were first illustrated by Calot and later described, yet they remain frequently overlooked in modern anatomical and surgical literature. The purpose of this project is to visualize and characterize these branches using robotic laparoscopy and imaging. RESOURCES. Intraoperative still photographs were obtained during elective robot-assisted cholecystectomies performed with the da Vinci Intuitive Xi system at an academic center. Images were selected based on optimal exposure of Calot's triangle and detail of relevant vasculature. DESCRIPTION. Imaging enabled consistent visualization of small arterial branches arising from the cystic artery and traveling toward the cystic duct. Such branches were not uncommon and pose potential risk during dissection. Representative annotated images were compiled to document these findings. SIGNIFICANCE. The small arterial branches off the cystic artery are under-described in the literature, yet they may represent a significant source of bleeding during cholecystectomies. Their presence supports the use of thermal energy rather than blunt dissection in this region to minimize risk. Not only do the "Calot arteries" warrant further anatomical and clinical investigation, but they also deserve greater recognition in surgical education and standard cholecystectomy protocols.

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Anatomical Variations of Anterior Cruciate Ligament: A Cadaveric Study on Sex and Age Differences.

INTRODUCTION. The anterior cruciate ligament (ACL) plays a fundamental role in maintaining the stability of the knee joint, specifically in limiting anterior translation and rotational movement of the tibia relative to the femur. Previous studies have reported morphological differences in the ACL based on sex and age, which have implications for injury susceptibility, surgical reconstruction, and rehabilitation protocols. This study aims to investigate the anatomical variations of the ACL across different sexes and age groups within the South Georgia Region. This study will aid in refining surgical approaches, rehabilitation strategies, and preventive measures for ACL injuries. METHODS. This cadaveric study involves a methodical dissection of knee joints to examine various parameters of the ACL, including length, width, fiber orientation, and overall structural integrity. Photographic documentation will complement morphological observations. Specimens will be categorized based on sex and age group to assess anatomical variation. Additionally, a literature review will be conducted to compare our findings with documented variations and their clinical relevance. A comparative analysis will establish a visual representation of the collected data. SUMMARY. Preliminary observations indicate that the ACL exhibits notable differences in morphology between males and females and across different age groups. Factors such as ligament thickness, fiber density, and insertional footprint size vary and may contribute to differences in ACL injury risk and response to surgical interventions. CONCLUSIONS. Recognizing ACL anatomical variations is essential for enhancing diagnostic accuracy, surgical precision, and patient outcomes in orthopedics and sports medicine. This study reinforces the importance of human variability in clinical decision-making, contributing to a more evidence-based approach to ACL management.

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Exploring Perceptions of Body Fat in Medical Education: Insights from the Anatomy Lab.

INTRODUCTION. Anatomy lab is typically many medical students' first exposure to cadaveric dissection, yet little research has explored how attitudes toward adiposity evolve throughout this experience. Numerous research has been conducted on the proper instruction of anatomy education in relation to course structure and student learning methods, yet a paucity of information remains for adiposity perceptions in this setting. This study aimed to investigate how opinions on weight change over the first year at Kansas City University (KCU), analyzing data collected before dissection, after the first dissection (musculoskeletal) block, and following final cadaveric dissections. METHODS. An optional survey was administered to students in the classes of 2027 and 2028, approved by the KCU IRB (#2073772). The survey gathered demographic data and responses about students' attitudes toward adiposity, using a 5-point Likert scale (1 = complete disagreement, 3 = neutral, 5 = complete agreement) and categorical responses of 'positive,' 'negative,' or 'neutral.' The data were analyzed for trends, with a focus on gender differences and self-perceptions of weight. SUMMARY. Results show that after the MSK block, no student reported positive thoughts about dissecting an overweight donor. Additionally, 50% of students in both classes and dissection sections expressed negative thoughts about their own weight, with fewer than 10% reporting positive reflections on their weight post-MSK. Gender-based trends were consistent across both cohorts. CONCLUSIONS. These findings enhance our understanding of the evolving nature of adiposity perceptions in the anatomy lab and underscore the importance of addressing body image issues and weight bias in medical education. By recognizing the impact of these perceptions, medical schools can create more supportive environments that foster empathy and reduce bias during clinical training.

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Identification of an Aberrant Right Hepatic Artery with Unique Origin.

INTRODUCTION. Awareness of the occurrence of anatomical variations is important in the medical community. This case study documents a vascular anatomical variant found during routine dissection of a body as part of a medical gross anatomy course. RESOURCES. The donor body of an 85-year-old Caucasian male who died of an acute Myocardial Infarction was provided by an academic anatomy lab. Standard dissection tools were utilized in a routine upper abdominal cavity dissection involving complete dissection of the portal triad and subsequent removal of the entire liver. Pins, a ruler, and a camera were used to stage and document the abdominal cavity, liver, gallbladder and associated vasculature of the cadaver. Additional schematic diagrams are presented to further illustrate this anatomical variant. DESCRIPTION. The discovery of an aberrant right hepatic artery (6mm in diameter) was visualized which branched directly from the superior mesenteric artery to then enter the right lobe of the liver. The cystic artery arose directly from this aberrant right hepatic artery. This anomalous artery was found concurrently with a common hepatic artery that transitioned into the proper hepatic artery (3 mm in diameter) at the gastroduodenal artery, which then singularly entered the left lobe of the liver. SIGNIFICANCE. Considering the frequent occurrence of surgical procedures involving the upper abdomen, awareness of the occurrence of variations in hepatic vasculature is important to prevent surgical complications and when considering staging and treatment of pancreatic, duodenal, hepatic or gallbladder conditions such as pancreatic cancer, cholecystectomies, or liver transplants.

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A Unique Variation in the First Part of the Axillary Artery: A Cadaver Case Report.

INTRODUCTION. The axillary artery is the main source of blood supply to the upper limb region. It continues from the subclavian artery and is divided into three parts. The first part lies between the pectoralis minor and the clavicle and gives off one branch the supreme thoracic artery. The second part, located posterior to the pectoralis minor, gives two branches: the thoracoacromial trunk and the lateral thoracic artery. The third part extends lateral from the lateral border of the pectoralis minor to the lower border of the teres major and gives off three branches: the subscapular, anterior circumflex humeral and posterior humeral circumflex arteries. METHODS. The axilla of a male adult cadaver, fixed in a formalin-phenol-alcohol solution at the SGU Gross Anatomy Lab was dissected for use by medical students. With the cadaver in the supine position, an incision was made along the anterior axillary fold, and the skin and subcutaneous tissue were reflected. The pectoralis major and pectoralis minor muscles were also reflected to expose deeper structures. The anatomy of the brachial plexus and axillary artery was recorded with high-resolution images captured using a Nikon D3000 digital camera. SUMMARY. The dissection revealed a variation of the first part of the axillary artery. An aberrant branch from the first part of the axillary artery bilaterally supplying the subscapularis muscle in both the left and right axilla. CONCLUSIONS. This variation is important since surgical procedures involving the axilla, such as mastectomy procedures with axillary node clearance may impair branches arising from the first part of the axillary artery. In this case muscles such as the subscapularis which typically receives its blood supply from the third part of the axillary artery, may be affected causing iatrogenic injuries.

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K-Drone Anatomy as a New Paradigm in Spatial Precision of Robotic and Endoscopic Surgeries.

INTRODUCTION. The human body's intricate structure demands advanced anatomical representation. The K-drone, an innovative eleven-faced polyhedron, revolutionizes anatomical models with its spatial approach, offering a groundbreaking perspective on human anatomy. RESOURCES. The K-drone model leverages interdisciplinary collaboration's state-of-the-art 3D imaging and geometric analysis to integrate static anatomical data with dynamic biological processes. This synergy enhances our understanding of anatomical structures in real-time, a critical advantage in both academic and clinical settings. DESCRIPTION. K-Drone anatomy provides a detailed anatomical map adept at capturing the complexities of biological forms across multiple dimensions. This precision is crucial for biomechanics, robotic surgery, endoscopic surgery, and therapeutic modeling applications. The model's design significantly enhances surgical accuracy and operational safety. Its modularity and adaptability make it ideal for simulating various surgical scenarios, improving outcomes through pre-operative planning and real-time guidance. Essential for medical education (3D visualization), the model facilitates the development of personalized medical treatments tailored to individual anatomical specifics. Additionally, it elevates surgical precision and deepens biomechanical understanding, promoting advanced stereoscopic visualization and spatial recognition of anatomical structures. The K-drone's capabilities extend beyond traditional medical applications. It is instrumental in developing virtual and augmented reality platforms for medical training, enabling students and professionals to explore complex anatomical details in a highly interactive environment. This technology enhances learning outcomes and accelerates the training process, making it more efficient and comprehensive. SIGNIFICANCE. By bridging theoretical knowledge with practical application, the K-drone model is a cornerstone for the next generation of medical innovations, transforming how clinicians, educators, and researchers understand and interact with human anatomy.

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Evaluating Tissue Integrity of Embalmed Cadavers with Histopathologic Techniques.

INTRODUCTION. Cadavers play a vital role in medical education and allow students to research clinical pathologies/variations through case reports. These research projects could be supplemented by histological analysis; however, evaluation of tissue integrity in embalmed cadavers remains understudied. RESOURCES. Nine tissues from three embalmed cadavers were selected for histological analysis: skin, brain/spinal cord, lung, heart, neurovasculature, skeletal muscle, tendon, kidney, and small intestine (jejunum). Samples were fixed in 10% NBF, processed, paraffin-embedded, sectioned at 5-µm, and stained with H&E. Three subject matter experts (professors teaching histology) evaluated tissue quality on a scale of 1-3 (1=poor, 2=acceptable, 3=good). DESCRIPTION. Average quality scores were as follows: skin (3), brain (2.89), spinal cord (2.83), lung (1.89), heart (2.67), neurovasculature (2.33), skeletal muscle (2.33), tendon (2.44), kidney (2.33), and small intestine – jejunum (1.5). Skin exhibited excellent preservation, with clear epidermal layers, dermis, sweat glands, and hair follicles. Brain and spinal cord retained distinct neuronal structure in gray and white matter. Lung tissue was poorly preserved with collapsed alveoli. Neurovasculature displayed well-defined nerve bundles and arterial/venous tunics. Heart samples showed intact myocardium, endocardium, and vasculature. Kidney samples preserved glomeruli and renal tubules in the cortex. Tendon and skeletal muscle exhibited artificial separation but retained structural integrity. Jejunal mucosal villi were poorly preserved, though submucosa and muscularis externa remained intact. SIGNIFICANCE. Embalmed cadaveric tissue is reliably preserved in several types, particularly skin, brain, spinal cord, and heart. These tissues would be ideal for use in medical student education/research projects, which could enhance student learning through exposure to histopathologic techniques and unique clinical pathologies.

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Ultrasonographic and Histological Analysis of the Frontalis Muscle Fascia.

INTRODUCTION. The frontalis muscle, located in the forehead region, has been traditionally described as lacking deep fascia, with the superficial musculoaponeurotic system (SMAS) playing a structural role. However, recent studies suggest the presence of a distinct fascial layer surrounding the frontalis muscle, termed the suprafrontalis and subfrontalis fascia. This study aims to characterize these fascial structures using ultrasonography and histological analysis and to explore their potential clinical significance. METHODS. This study was approved by the Institutional Review Board of Yonsei University College of Dentistry (Approval No. 2-2024-0006) and conducted in accordance with the Declaration of Helsinki. A total of 42 participants (12 males, 30 females) underwent ultrasonographic examination using an 18 MHz linear transducer (Sonimage HS1, KONICA MINOLTA, Tokyo, Japan). The mean age of the participants was 34±12.51 years, with a mean weight of 57.8±10.94 kg and a height of 161.3±7.52 cm. Standardized imaging points (F6 and F8) were determined based on previous anatomical studies. Additionally, cadaveric dissection and EXAKT histological staining (hematoxylin and eosin) were performed to analyze the fascial structures. SUMMARY. Ultrasonographic analysis revealed the presence of suprafrontalis and subfrontalis fascia at both F6 and F8 points. The suprafrontalis fascia was located at an average depth of 3.49 mm at F6 and 3.24 mm at F8, while the subfrontalis fascia was positioned below at 0.29±0.13 mm and 0.31±0.16 mm, respectively. Histological examination confirmed the presence of distinct fascia layers above and below the muscle, characterized by darker staining and laterally aligned cell nuclei resembling simple squamous epithelial cells. CONCLUSIONS. This study provides ultrasonographic and histological evidence supporting the existence of distinct fascial layers surrounding the frontalis muscle. These findings challenge conventional anatomical understanding and may have implications for clinical procedures involving the forehead, such as aesthetic and reconstructive surgeries. Further research is needed to investigate the functional significance of these fascial structures.

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A Cadaveric Case Report of a Rare Atrial Septal Lipoma.

INTRODUCTION. Primary cardiac tumors (PCTs) are rare and include myxomas, papillary fibroelastomas, rhabdomyomas, and lipomas. Lipomatous hypertrophy of the atrial septum (LHAS) is a benign condition associated with aging and obesity that is marked by fat accumulation in the interatrial septum and is caused by hyperplasia of adipose cells. In contrast, lipomas are characterized as soft masses of fat that are encapsulated by thin, fibrous tissue. True cardiac lipomas are rare and can present a diagnostic dilemma. Cardiac lipomas are generally asymptomatic but may present with angina, dyspnea, or syncope. Less frequently, they can cause arrhythmias, valve dysfunction, or emboli. Diagnosis generally requires cardiac MRI or alternate imaging modality. RESOURCES. During the pedagogic dissection assignment of the interior of the heart of a a 74-year-old female caucasian cadaveric donor a true atrial septal lipoma with a sessile base protruding into the right atrium was discovered . A detailed examination of the interior and exterior and vasculature of the heart was performed, and photographs were taken. Tissue samples were obtained from the mass for histopathological examination. DESCRIPTION. The tumor measured 0.5 × 1.0 cm, and on the cut surface, it appeared yellow and encapsulated. Histopathological examination of the lipomatous mass revealed extensive nodular thickening of the interatrial septum from the accumulation of mature adipose tissue reaching the resection surface. It is possible that the lipoma may have had a space-occupying effect, which would have increased the volume within the right atrium and had an adverse effect on tricuspid valve function. This is consistent with the dilated and thin-walled appearance of the right atrium. SIGNIFICANCE. This report contributes to the limited literature on this type of benign, primary cardiac tumor and provides a clear illustration and clinical relevance to showcase the pathology and its possible clinical consequences.

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Minimizing Vascular Injury in Palatal Graft Harvesting: A Quantitative Cadaveric Study.

INTRODUCTION. In periodontal plastic surgery, the palatal mucosa is a common donor site for soft tissue grafts. During graft harvesting, it is important to avoid injury to the greater palatine artery (GPA). While Reiser et al. measured the distance between the cementoenamel junction (CEJ) and the GPA, they did not assess depth of the GPA in the palatal mucosa, a key factor in surgical planning. Therefore, this study aimed to provide essential data that may improve the safety of palatal graft harvesting in clinical practice. METHODS. Coronal sections were obtained from formalin-fixed cadaver palates. Clinically relevant reference points were identified for chairside application in a dental setting. In each cadaver, the distances between these reference points and the GPA were measured using a coordinate system. In addition, Masson's trichrome staining was performed to analyze the GPA and surrounding tissues histologically. SUMMARY. In coronal sections, the main trunk of the GPA was located closer to the bone than to the surface of the oral mucosa in most cases. The thickness of the mucosa covering the main trunk of GPA was greater than 40% of the total palatal depth in the shortest or perpendicular distances measured. In the sections with well-developed palatine glands, the main trunk of the GPA was located closer to the bone compared to sections where adipose tissue was more prevalent in the mucosa. CONCLUSIONS. In this study, we clarified the depth of the GPA within the palatal mucosa without relying on CEJ position or assuming a uniform palatal shape. This study provided useful quantitative data to help minimize the risk of vascular injury during periodontal plastic surgery, improving graft harvesting safety.

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Anatomical Variations in M1 Segment of Middle Cerebral Artery and Its Branches: A Cadaveric Study.

INTRODUCTION. The sphenoidal (M1) segment of the middle cerebral artery (MCA), extending from the termination of the internal carotid artery (ICA) to its bifurcation, is a key site for intracranial aneurysms. Establishing the anatomy of M1 with its early cortical branches (ECBs) and lenticulostriate arteries (LSAs) is critical for neurosurgical planning, as inadvertent injury to these structures during aneurysm dissection or occlusion can lead to severe neurological sequelae. This study aims to characterize the variations in morphology of M1 to enhance cerebrovascular understanding. METHODS. The lateral fissures of 60 embalmed cadavers were dissected to examine the MCA in situ (n=115). The length of main trunk (MT) was measured from ICA termination to its bi/trifurcation or first cortical branch in cases of single trunks. It was marked externally on a nylon thread placed over the artery and quantified using a vernier caliper for precise measurement. LSAs piercing anterior perforated substance (APS) were visualized by carefully lifting the MT, counted with hand lens, and categorized based on their origin from the MT, ECBs, bifurcation, or post-bifurcation segments. The termination pattern was also noted. SUMMARY. This study identified ECBs in 79 cases (68.7%), with LSAs originating from 35.8% of ECBs. The mean MT length was 18.3mm, and the mean LSA number was 9.7 ranging from 3 to 17. LSAs were located at the MT (90.4%), termination point (39.1%), and post-bi/trifurcation (59.1%) of M1. CONCLUSIONS. The findings of this study suggest that the ECBs, termination points, and post-bifurcation segments can be important landmarks for locating and isolating LSAs to better avoid ischemic complications during surgical procedures involving the M1 segment. The length of MT can help facilitate neurosurgical planning in cases of M1 bi/trifurcation aneurysms. These findings provide further anatomical understanding and can inform the development of more precise surgical practices.

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The Impact of Discovery of Anatomical Variations on Student Engagement and Learning.

INTRODUCTION. The considerable amount of information presented in pre-clinical years can cause students to employ rote memorization as a study tactic. This is detrimental to the foundational knowledge base crucial to future clinicians. Pathological and congenital anomalies spark student interest and influence clinical learning and practice. Dissection-based anatomy courses provide opportunities to observe, investigate, and reflect on the impact of these anomalies. RESOURCES. During a full-body dissection anatomy course, three student teams discovered significant and rare anomalies: 1) a donor with a right vertebral artery ascending to C4, 2) a donor with a left vertebral artery originating from the aortic arch and ascending to C4, bilateral parietal osteodystrophy, and an intramuscular myxoma, and 3) a donor with 11 arterial aneurysms from the abdominal aorta to the popliteal fossa. A brief survey was administered to instructional faculty regarding their experience. DESCRIPTION. Students investigated these anomalies and presented their findings at an intramural conference. Course evaluations and faculty surveys indicated that students: 1) were intrinsically motivated to expand their understanding in areas such as anatomy, histology, and embryology, as well as in the awareness and impact of the variations on patient health, 2) displayed a more comprehensive and insightful understanding, and better retention of foundational knowledge, 3) felt better prepared and informed for their future clinical careers. Moreover, students have expressed interest in further investigation and presentation of their findings. SIGNIFICANCE. Students presented with an opportunity to discover and investigate anomalies via dissection were highly invested in their learning. The opportunity also expanded their knowledge and readiness as future clinicians. Finally, the dissemination of the knowledge gathered by these students will contribute directly to the current clinical knowledge base.

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Enhancing Anatomy Education: Insights from First-Year Medical Students on Teaching and Assessment.

INTRODUCTION. Anatomy is a foundational subject in medical education, and its effective teaching and assessment methods significantly impact student learning outcomes. With evolving pedagogical approaches, it is crucial to understand student perceptions regarding various teaching methodologies and evaluation strategies in first-year MBBS anatomy education. This study aims to analyse student perceptions on different instructional techniques and assessment methods to identify areas for improvement and innovation in anatomy education. METHODS. A cross-sectional study was conducted among 175 first-year MBBS students in 2023-2024 in our department of anatomy, utilizing a structured questionnaire to gather insights on their perceptions with various teaching methods, including cadaveric dissection, lectures, small-group discussions, problem-based learning (PBL), team-based learning (TBL), digital tools and interactive sessions. Additionally, student perceptions on various assessment methods including objective structured practical examinations (OSPE) were collected. SUMMARY. The 130 completely filled forms were only considered for statistical analysis. Important findings indicate that a hybrid teaching model and cadaveric dissection remained a highly valued method by the students. Interactive small-group teaching methods like TBL and problem-based learning were preferred by the students as highly engaging and effective. Majority of the students preferred extra-curricular teaching methods like body painting and histology rangoli also to reduce the stress of anatomy learning. CONCLUSIONS. This study highlights the medical students' preference of an integrated approach that blends traditional cadaveric dissection including black-board teaching and modern teaching techniques with interactive small group teaching methods and OSPE for effective anatomy education. This study also confirms the medical students' preference of extracurricular teaching methods also in anatomy education.

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Objective Structured Practical Exam (OSPE) in Anatomy.

INTRODUCTION. The Accreditation Council for Graduate Medical Education (ACGME) and numerous publications on medical education highlight that key competencies developed by medical students include content knowledge, structural identification, learner engagement, learner-centeredness, collaborative learning, problem-solving, interpretation, and effective communication skills. The Anatomy Lab has long served as an important context for students to build this knowledge during their pre-clerkship years. Nothing enhances anatomy learning quite like patient cases do. RESOURCES. Prosected plastinated donor body specimens, cross-sectional anatomy resources, and radiologic images. DESCRIPTION. Clinical cases involving patients reinforce the understanding of gross anatomy through relevant radiologic images. Case-based learning becomes an outcome-oriented and enriching experience when CT, MRI, ultrasound, and radiograph images are integrated with gross anatomy. In this framework, imaging serves as a powerful reinforcement tool. We introduce radiologic imaging early in the curriculum to complement anatomy learning and assessment. Clinical cases incorporated here emphasize the significance of gross anatomy in clinical decision-making. The student experience with topographic anatomy seamlessly integrates basic and clinical sciences. Anatomy lab examinations are Objective Structured Practical Exams (OSPE). In this paper, we present six examples of OSPE stations and share our experiences with the anatomy faculty at the AACA meeting. SIGNIFICANCE. Student engagement in our model of anatomy lab is remarkable; we get valuable feedback and a high rating in student evaluation of the course.

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Distal Internal Carotid Artery Changes in Persons with and without Chronic Inflammatory Conditions.

INTRODUCTION. This preliminary study aimed to analyze sections of distal internal carotid artery for presence of perivascular adipose tissue (PVAT), subintimal thickening (SIT), calcification, vasa vasorum (VV), and inflammatory cells in persons with and without chronic inflammatory conditions (ie. hypertension, diabetes mellitus). METHODS. Embalmed cadavers were utilized through Kansas City University's student dissection program. Deidentified data such as race, sex, age, and medical history were reviewed. The control group included 10 donors without history of chronic inflammatory conditions, and the experimental group included 10 donors with relevant histories. Donor brains were removed through routine dissection and stored in 10% neutral buffered formalin. Bilateral internal carotid artery samples were collected just proximal to bifurcation into anterior and middle cerebral arteries. Sample sizes varied due to differences in the brain removal process. The collected samples underwent hematoxylin and eosin (H&E) staining. SUMMARY. No PVAT was discovered in either group. Instances of SIT and calcification were prevalent in the experimental group, but present in both. VV and inflammatory cells were present in both groups. CONCLUSIONS. A deeper understanding of intracranial blood vessel composition provides insight into damage caused by metabolic processes. PVAT location and endocrine action is a newer area of research; a larger sample size should be studied to confirm absence of PVAT. Increased SIT and calcification in the experimental group affirms current data on vessel damage due to metabolic disease. VV and inflammatory cells, thought to be rare and associated with cardiovascular disease, were seen across both groups. Most in the control group died of cancer, which is not a known association. Future studies will examine intracranial blood vessels and their relationships with metabolic disease and cancers.

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Carotid Bulb Aneurysm: Anatomical Significance and Clinical Implications.

INTRODUCTION. Aneurysms of the extracranial carotid artery (ECAA) are rare, with those affecting the carotid bulb being even less common. As a major artery in the body, carotid artery aneurysms can lead to severe complications such as rupture, thrombosis, and embolism culminating in a thrombotic or a hemorrhagic stroke. During a routine anatomical dissection, we identified an aneurysm involving the carotid bulb and the proximal segment of the internal carotid artery in an elderly male cadaver. This report provides an overview of the aneurysm and discusses its potential clinical implications. RESOURCES. The aneurysm was noticed in a 96-year-old male donor cadaver during a routine dissection performed by medical students. The donor was obtained through a non-profit body donation program. DESCRIPTION. A unilateral aneurysm was identified in the left carotid bulb, extending into the proximal segment of the left internal carotid artery. Significant thinning of the arterial wall was observed on the lateral side of the carotid bulb. The aneurysm measured 4 cm in length and 2.5 cm in width. The carotid bulb was dissected to study its anatomical relationships and nerve supply, with findings documented and photographed. SIGNIFICANCE. The carotid bulb is a crucial anatomical structure at the origin of the internal and external carotid arteries. It contains baroreceptors and chemoreceptors that regulate blood pressure, heart rate, and respiratory rate through the carotid sinus reflex. Aneurysms in this region pose a significant risk due to their potential for both neurological and systemic complications. This case is particularly intriguing for medical students, as it highlights how the location of a pathology can contribute to widespread pathophysiological effects.

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Developing an Interactive Osteology Course for Medical Students.

INTRODUCTION. Traditional osteology instruction in medical education often faces time constraints, limiting the depth of individual bone coverage in the curriculum. To address this challenge, an interactive osteology course was developed to enhance first-year medical students' understanding of skeletal anatomy through a self-paced, engaging learning experience. Feedback was collected from students to evaluate the effectiveness of the course. This abstract discusses our experiences working with the e-learning platform and presents insights from students' feedback regarding the course. RESOURCES. The course integrates multiple educational resources, including teaching videos, interactive quizzes, and links to 3D virtual bone models. These resources were compiled and organized within an e-learning platform and made accessible via the institution's learning management system (LMS). DESCRIPTION. The osteology course consists of nine sections, each dedicated to a specific part of a limb. Each section includes instructional videos explaining anatomical structures, interactive quizzes that allow students to label bone features using a drag-and-drop interface, and 3D bone models that students can manipulate to explore anatomical details. This structure enables students to engage with osteology in a dynamic and hands-on manner. SIGNIFICANCE. By leveraging interactive learning tools, this course provides medical students with a flexible and comprehensive approach to osteology. The integration of visual, interactive, and self-assessment elements enhances knowledge retention and spatial understanding of bones, ultimately improving anatomical competence. Student feedback highlights the benefits and challenges of this approach, offering valuable insights for future enhancements. This model can serve as a framework for other anatomy courses seeking to optimize learning through digital and interactive methodologies.

Notes:

Thank You

for attending the 42nd Annual Meeting

of the American Association of Clinical Anatomists in Bellevue, Washington.

We look forward to seeing you next year.

The 2026 Annual Meeting will be held in Rochester, Minnesota from June 13-16, 2026 at Mayo Clinic.

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