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Speech Summaries

(SS-01 — SS-05)

SS-01

Medicine and snake symbol

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The symbol of medicine from ancient times to the present is known as the snake and the staff. The snake has been associated with health, medicine, wisdom, power and eternal life in many civilizations. In the mythologies and legends of ancient societies, the snake was considered a symbol of eternal life because it sheds its skin every year and rejuvenates itself. The snake and staff in the medical symbol contain many historical and ethical values. Snake figures appear in various shapes and forms as symbols of medicine, especially the snake staff carried in the hand of Asclepios, the God of Medicine and Health in mythology; one or two snakes wrapped around a staff, two snakes wrapped around a winged staff, a snake wrapped around a chalice or reaching towards the bowl, two snakes wrapped around each other, a branch and a snake. The purpose of this presentation is to reveal the historical origins of these symbols, which are similar to each other but different from each other in terms of both their historical origins and the meanings they represent, and to explain the meanings of the professional and ethical values they represent. We think that anatomy, which is the basis of medicine, is closely related to the values represented by the snake and staff, which are symbols of medicine.

Keywords: medicine symbol, medical profession values, History of medicine symbol.

SS-02

How can new technologies be effectively integrated into anatomy education?

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In order to enhance the quality of medical education and maximize student success, continuous curriculum changes are being made. However, increasing student numbers and the reduction of time allocated to anatomy education have created challenges in providing medical students with sufficient anatomical knowledge. This situation necessitates the restructuring and strengthening of anatomy education. In the past, anatomical wax models created by figures such as Clemente Susini (1754–1814) were the cornerstones of anatomy education. By the early 20th century, plastic anatomical models became widespread and are still used globally. However, these models lack functionality and fail to adequately convey deep anatomical structures. Today, innovative technologies such as virtual reality (VR), augmented reality (AR), computer-based 3D anatomical modeling, and artificial intelligence (AI) have begun to replace these older models and play a more effective role in modern anatomy education. At our university, VR-based neuroanatomy education has been provided

for the past two years using the '3D Brain Module.' Additionally, efforts are ongoing to develop bone-joint-muscle modules. However, the widespread use of these technologies requires infrastructure investments. The fact that VR applications can only be used by one person at a time presents challenges for large student groups, and some students may experience side effects such as dizziness, nausea, and balance issues. For these reasons, using new technologies in parallel with traditional anatomy education currently appears to be the most appropriate strategy. In today's anatomy education, the need for more original and digital anatomical models is greater than ever. It is crucial that these models be prepared by experts who are proficient both in anatomical knowledge and in modeling, following universal pedagogical principles. The production of these models using 3D printers, their painting with appropriate coloring techniques, and their functional enhancement will significantly improve the quality of anatomy education. Moreover, the continuous updating of these models with current technologies and ensuring continuity in education will be an important step forward. The integration of artificial intelligence into anatomy education is also increasing. By using generative AI and large language models, detailed and successful anatomical texts can be created, and assessment and evaluation processes can become more efficient. Personalized educational materials can be developed, offering content tailored to the individual learning pace of students. However, AI still has progress to make in creating satisfactory anatomical images and videos. Given the rapidly evolving nature of technology, these challenges are likely to be overcome in the near future. In conclusion, the integration of new technologies into anatomy education, when combined with traditional methods, represents a significant opportunity to enhance educational efficiency and student success. Monitoring students' interactions with technology closely and considering their feedback will contribute to the sustainable improvement of educational quality. Additionally, providing guidance and support to students in the use of technology will accelerate their adaptation to this process. The key to achieving success in medical education lies in integrating new technologies at the right time and in the right manner.

SS-03

Neuroanatomical approach to human-machine task sharing in advanced automation systems and artificial intelligence

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Objective: Technology has changed daily life by allowing the development of automation and artificial intelligence (AI). Automation can be used in almost all systems. The human-machine task sharing ranges from the most basic, where control is solely in the hands of humans, to the most advanced, where control is entirely in the hands of the machine. This study aims to apply a novel neuroanatomical perspective to the design and programming of advanced automation systems and AI.

Methods: This study is not only a literature review, the author's perspectives are also gleaned from her research on this issue.

Results: The nervous system's hierarchical structure, circuits, and ability to execute sensory, motor, and cognitive processes are excellent examples of human-machine task sharing. The nervous system also works with the principles of artificial neural networks, machine learning, and deep learning, and this knowledge provides a precedent for the development of software used in automation and AI.

Conclusion: Considering that there are 10–15 billion cells in the human brain and each cell has 1000–10,000 connections, even the most advanced AI cannot reach the human nervous system. On the contrary, studies on this subject will lead to the development of the human brain. This study is expected to provide a new viewpoint on automation and AI, both of which have existed or will emerge in the context of Industry 5.0. Thus, new programs or software can be created that allow humans to intervene with machines at any level of automation in terms of task cooperation.

Keywords: advanced automation systems, artificial intelligence, deep learning, machine learning, neuroanatomy

SS-04

Are we the last mohicans of traditional medical education & health care practice? Technology driven disruptive innovation is approaching in top gear

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Today's medical education and healthcare services screams for a major disruption almost universally. Most of the medical schools are still applying a medical curriculum designed on the realities of early 1900s, with two to three years of basic medical science education before clinical application begins, in a quite idealistic assumption that the students will efficiently hold every knowledge in their "intellectual inventory" to be used years later but unfortunately rendering a reteaching process as

common as teaching. The health care systems across the world, on the other hand, are struggling with accessibility, affordability, patient safety and quality of care problems, in an environment where the growth of health-care expenditure outpace the growth of the overall economy and eating up continuously increasing amounts of the national GDPs in most countries. Although the medical faculties, universities, policy makers seek for and implement some crucial sustaining innovations as well as making substantial investments on infrastructure, two fundamental questions still stand: *(1)* How do we design a contemporary and innovative medical curriculum capable of training better doctors with much less variability in a shorter time and *(2)* How do we make health care more accessible, affordable and safer for the public? One putative and provocative answer for these questions may be the "disruptive innovation theory" proposed primarily by Prof. Clayton M. Christensen of Harvard Business School, the author of bestseller book Innovator's Dilemma. The disruptive innovation theory tries to explain how complicated, expert dependant, expensive products and services (like the medical education and health care in our case) can be transformed into simpler, more affordable, more accessible ones, leaning on three major enablers in this transformation: a simplifying technology, a business model innovation and disruptive value network. Accumulating amount of evidence suggest that all three enablers are rapidly growing, and a technology driven disruptive innovation is approaching in top gear both in medical education and health care. Thus, in this presentation we will be discuss the recent developments on the three enablers of disruptive innovation and try to find out an honest answer to the question: "Are we the last Mohicans of traditional medical education & health-care practice?"

SS-05

The comprehensive influence of medical research on the practice of medicine

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In this presentation, the significance of research conducted during and after medical education will be examined, including original investigations from our original investigations. The necessity of research centers and the extensive implications of future studies will be addressed first. Additionally, the role of basic sciences in both broad societal impact and commercialization will be highlighted, with specific examples drawn from the field of anatomy. Furthermore, the relevance and effectiveness of these studies for our nation and academic institutions will be discussed, and the potential impact of our publications will be assessed using data from OECD countries. Finally, potential challenges associated with these endeavors will be evaluated.

Oral Presentations

(OP-001 — OP-126)

OP-001

Abstract no: 16738
Abstract group: Anatomy and Innovation / *The Relationship between Anatomy and Technology*

The power of simulation in medical education: an example of transformation in education at Bursa Uludağ University

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Objective: Today's developing technology is being used very effectively in the field of medical education, as it is in every field. The Center for Good Medical Practices and Simulation at Bursa Uludağ University is being used very effectively in technology-based education for pre- and post-graduation students. Based on this example, the aim is to examine and compare examples from around the world.

Methods: The published studies on medical and anatomical education have been examined and the technological facilities located in the centers where the studies are carried out and used for medical training have been evaluated.

Results: Study over the past 10 years has shown that advanced technology has been exploited in medical and anatomy education, especially in centers in the UK and Australia. Compared to global technological capabilities, the technological substructures and facilities at the simulation center within our institution have parallel features with the world.

Conclusion: The simulation center, which has been used very effectively in pre- and post-graduate education, has the capability to deal with examples in the world in terms of technological infrastructure and facilities. As a result, with its technological capabilities and innovative perspectives, medical education appears to be competitive with the world.

Keywords: anatomy, medical education, simulation

OP-002

Abstract no: 64819
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

The potential of AI-based chatbots in generating multiple-choice questions for medical education: an evaluation

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Objective: The study aims to evaluate the suitability of using AI-based chatbots (CBs) for generating multiple-choice questions (MCQs) in anatomy.

Methods: In this methodologically designed study, the first stage involved selecting four medical specialty examination (MSE) questions related to musculoskeletal radiology. Following this, 12 MCQs were generated using ChatGPT with two different prompts one prompt with Claude, creating four questions from each. The generated MCQs, along with the original exam questions, were compiled into four forms, each containing four questions from different generation techniques. These forms were evaluated using five-point Likert scales assessing the clarity, clinical relevance, presence of a single correct answer, adequacy of the information provided, and the logical coherence of the distractors.

Results: Each form was evaluated by two medical doctors, totaly eight experts. The clarity, clinical relevance, presence of a correct answer, adequacy of information, logical coherence of the distractors, and total score were evaluated for each parameter, yielding the following scores: 4.5/4.38/4.38/4.25/4.25/21.75 for the MSE questions; 4.13/4.25/4.25/4.25/4.25/21.13 for the first ChatGPT prompt; 4.13/4.25/4.25/4.25/4.25/21.13 for the second ChatGPT prompt; and 4.13/4.25/4.13/4.13/4.38/21 for Claude. No significant differences were found across all evaluation parameters for the MCQs ($p>0.005$).

Conclusion: CBs can produce questions of comparable quality to those written by humans. AI tools offer a fast and effective means of generating the necessary questions for medical education. Given the heavy teaching workload and the importance of asking different questions for quality assessment each time, the use of CBs can significantly ease the burden on medical educators.

Keywords: artificial intelligence, medical education, chatbot, multiple-choice questions, question generation

OP-003

Abstract no: 78051
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

Discrimination and difficulty indices of ChatGPT-generated multiple-choice questions in anatomy

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Objective: This study aims to evaluate the psychometric properties (item discrimination and difficulty indices) of ChatGPT-generated anatomy multiple-choice questions (MCQs).

Methods: In this psychometric study conducted at a medical school, six out of 14 MCQs used in the endocrine and urogenital system block anatomy exam were generated by ChatGPT-4. After a review, revision, and translation process carried out by experts, the questions were answered by 372 second-year medical students in the Turkish-language track and 130 in the English-language track. Item (MCQ) analysis was performed to calculate item discrimination (point-biserial correlation) and difficulty (proportion of test-takers who answered the item correctly) indices. The acceptable range for item discrimination is 0.20–0.70. The difficulty between 0.20–0.80 is considered moderate, while values above 0.80 are considered easy and below 0.20 are considered difficult. The analysis was performed using Jamovi, an R-based open-source software.

Results: The item discrimination indices for ChatGPT-generated questions ranged from 0.29 to 0.44 for the English version and 0.31 to 0.54 for the Turkish version. Item difficulty indices varied from 0.41 to 0.86 in English and 0.45 to 0.89 in Turkish. All items demonstrated acceptable discrimination levels, with most showing moderate difficulty.

Conclusion: This study reveals that ChatGPT-generated anatomy MCQs exhibit psychometric properties similar to human-written questions. These findings suggest that AI-assisted question generation processes may play a potential role in anatomy education.

Keywords: artificial intelligence, chatgpt, multiple-choice question, anatomy, medical education

OP-004

Abstract no: 37330
Abstract group: Anatomy and Innovation / *The Relationship between Anatomy and Technology*

Evaluating ChatGPT-4.o's diagnostic accuracy in anatomical landmarks using image-based conversations

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Objective: ChatGPT is an artificial intelligence (AI) chatbot. It includes advanced features such as voice interaction and video-based conversations. This feature of the model has potential in radiographic anatomy applications. It is intended to measure ChatGPT's performance in identifying anatomical marks.

Methods: The performance of the image-based speech feature of the model in identifying anatomical signs in radiographic images was evaluated. 18 radiographic images were used. An anatomist, with a dental radiologist, evaluated. The images were presented to ChatGPT with clues with and without information about the location, internal structure, environmental structure, and neighboring structures. It was scored on a rubric basis and analyzed using SPSS; statistical significance was determined as 0.05<p.

Results: The rate of correct preliminary diagnosis without any clue increased to 28.6% and to 67.9% with at least one clue. The average prompt score for the structures was determined as 9.3. While most cue types did not significantly affect diagnostic accuracy, the inclusion of internal structure details was found to be statistically significant (p<0.05). Important is the misidentification of adjacent anatomical structures. Like mixing the feeder ducts with the roots of the mandibular molar.

Conclusion: The potential of the model to assist in the detection of anatomical signs is emphasized, especially when certain clues are given. There are difficulties and limitations in distinguishing close structures, The features of the model seem promising for clinical practice. Future improvements in training data diversity and contextual understanding are required to further improve accuracy.

Keywords: chat gpt, anatomical landmark, anatomical structure, radiological measurement, artificial intelligence

OP-005

Abstract no: 14707
Abstract group: Anatomy and Innovation / *The Relationship between Anatomy and Technology*

The general attitude of medical and dental faculty students toward artificial intelligence and determining their level of AI literacy

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Objective: This research investigates the attitudes of first-year students at Pamukkale University's faculties of medicine and dentistry toward artificial intelligence (AI) and assesses their levels of AI literacy.

Methods: The descriptive study involved 215 first-year students, with 140 from the Faculty of Medicine and 75 from the Faculty

of Dentistry. Data were collected using the Artificial Intelligence Literacy Scale and the General Attitude Scale Toward Artificial Intelligence between June and August 2024. Descriptive statistical analyses were employed for data evaluation.

Results: Among the respondents, 36.3% (n=78) were male and 63.7% (n=137) were female. In terms of academic discipline, 34.9% (n=75) studied dentistry while 65.1% (n=140) studied medicine. Regarding AI knowledge, 40% (n=86) reported having knowledge of AI, 51.2% (n=110) had partial knowledge, and 8.8% (n=19) declared no knowledge. For AI's application in healthcare, 23.3% (n=50) indicated knowledge, 50.2% had partial knowledge, and 26.5% (n=57) reported no knowledge. Notably, 60.5% (n=130) of students had used an AI-related application. The average scores on the attitude scale revealed positive attitudes at 42.83±0.59 and negative attitudes at 24.57±0.40, while AI literacy scored an average of 47.50±0.37.

Conclusion: The findings show that while students possess a general understanding of AI, their specific knowledge regarding AI in healthcare is limited. Despite the usage of AI applications, students demonstrate a low overall attitude and literacy level towards AI. Integrating AI-related content and training into the curriculum is recommended to improve knowledge and attitudes.

Keywords: artificial intelligence, literacy, health, medicine, dentistry

OP-006

Abstract no: 26662
Abstract group: Anatomy and Innovation / *The Relationship between Anatomy and Technology*

Obesity prediction using machine learning algorithms based on individuals' morphological features

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Objective: This study aimed to predict obesity using various machine learning models based on individuals' morphological features.

Methods: The models used in this study include Logistic Regression, Support Vector Machines (SVM), Decision Tree, Random Forest, and K-Nearest Neighbors (KNN). The dataset consists of features such as height, weight, waist circumference, and body fat percentage. Preprocessing steps like missing data imputation and standardization were applied.

Results: Model performances were evaluated using metrics such as accuracy, precision, recall, and F1-score. The Random Forest model demonstrated the best performance with 91% accuracy, while the accuracy of the other models ranged between 85% and 90%. Logistic Regression and KNN performed lower, while Decision Tree showed good prediction accuracy but still fell behind Random Forest.

Conclusion: The confusion matrix revealed some misclassifications, particularly between normal and overweight classes. According to feature importance, "Waist Circumference" and "Body Weight" were the most influential variables in predicting obesity.

Keywords: obesity, machine learning algorithms, morphology

OP-007

Abstract no: 82120
Abstract group: Anatomy and Innovation / *The Relationship between Anatomy and Technology*

Evaluation of machine learning and generative artificial intelligence on anatomical drawing skill: a preliminary study

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Objective: Nowadays, artificial intelligence (AI) is frequently used to generate various illustrations. The ability of AI models to produce accurate and desired results is only possible with correct and understandable prompts. Correct prompt input is possible through machine learning and deep learning by inputting the correct instructions that the model will understand and respond appropriately and repeating them in various ways. Since the person who will draw anatomical illustrations should also have anatomical knowledge, there is an important need for guide illustrators in the field of machine learning. In this study, we aimed to test the AI's skills in drawing anatomical illustrations by entering anatomical commands to the AI.

Methods: With Sider.ai, an AI program, anatomical descriptions and prompts were entered to transform text into images. With each new prompt input, the image materials generated by the AI were evaluated.

Results: With the first prompt, the drawings were quite different from the real anatomical structures. As the prompts were refined and morphological features were added, the drawings improved and the errors decreased. As similar prompts were refined and repeated each time, it was seen that the image obtained was partially closer to reality. It was seen that the

model can produce accurate and realistic responses with well-designed prompt inputs.

Conclusion: Although AI for anatomical illustrations does not seem to be at a sufficient level yet, we predict that it will make very successful drawings in the near future with machine learning and deep learning.

Keywords: artificial intelligence, machine learning, deep learning, anatomy, illustration

OP-008

Abstract no: 28239
Abstract group: Anatomy and Innovation / *Digital Anatomy and Virtual Reality in Anatomy*

Evaluation of virtual reality headset fit based on cranial morphometry

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Objective: The aim of this study is to evaluate the morphometric compatibility of virtual reality headsets, considering gender differences.

Methods: In this study, cranial CT images from 14 males and 15 females were used. Bone and soft tissue models were segmented from cranial CT images using the 3D Slicer program and then transferred to Adobe Medium. The models were positioned according to the front-rear grip points of the headset, and lens aliagnments were adjusted accordingly. Modified holes on the headset were used to guide the cranial models. Additionally, the alignment of the headset axis with the Frankfurt horizontal plane was evaluated.

Results: The average AP bone distance was 170.66 mm in males and 164.33 mm in females. The average AP skin distance was 185.34 mm in males and 175.79 mm in females. The anterior transverse bone distance measured 138.48 mm in males and 128.97 mm in females, while the anterior transverse skin distance was 151.79 mm in males and 142.02 mm in females. The posterior transverse bone distance was 142.03 mm in males and 126.23 mm in females, with posterior transverse skin distances of 153.38 mm in males and 138.03 mm in females. The interpupillary distance averaged 65.25 mm in males and 62.54 mm in females. The angle of the headset relative to the Frankfurt horizontal plane was 22.47 degrees in males and 24.86 degrees in females.

Conclusion: The findings suggest that considering gender-based morphometric differences in the design of virtual reality headsets can enhance comfort.

Keywords: virtual reality, cranial morphometry, headset fit, gender differences, 3D modeling

OP-009

Abstract no: 26302
Abstract group: Anatomy and Innovation / *Digital Anatomy and Virtual Reality in Anatomy*

The physical and psychological effects of virtual reality training

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Objective: In the world of technology, virtual reality (VR) has become a disruptive tool that can change the way we live. By examining the effects of VR technology on physical fitness, cognitive abilities, and psychological resilience, this study aimed to discover how VR technology can influence and improve overall health.

Methods: Participants were divided into two groups: a VR group (32 individuals) and a control group (33 individuals). The control group completed one hour of physical activity twice a week for six weeks, including activities such as wand, codman, squats, and tandem walking. The VR group played racket, climbing, skiing, and cycling games using Oculus Quest 2 VR goggles. Measurements included the Depression-Anxiety-Stress-21 scale, motivation to participate in physical activities, repeated joint position test, stellar excursion balance test, and ruler drop test performed before and after training.

Results: The VR group showed a 15% improvement on the ruler drop test and a significant transition from high to low risk on anxiety, depression, and stress parameters, while the control group showed no change.

Conclusion: This study shows that it is possible to improve balance, reaction time, and psychological functioning in healthy young people through VR training games, and that this may improve motivation for physical activity.

Keywords: balance, depression, reaction, virtual reality

OP-010

Abstract no: 70440
Abstract group: Other

The art of getting citation: essential tips for academics

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Objective: Publishing an academic article in a reputable journal effectively shares research findings with the academic community. It allows researchers to share discoveries with experts and expand the knowledge base. However, high citation of the article in other studies is a stronger indicator of the research's significance and impact. This shows that other experts find the work valuable and use it in their own research.

Methods: In this presentation, we explained key points to consider for receiving high citations with examples. We emphasized title selection, correct author names, and key points to consider in content.

Results: In the competitive academic publishing world, researchers must follow strategies to stand out and receive more citations. Firstly, selecting an interesting and unique topic is crucial. Additionally, attention should be paid to technical details: writing a suitable and clear title, correctly listing authors and affiliations, and providing a clear, data-rich abstract. These steps make the article easier to find and read, leading to more citations. Using accurate and sufficient keywords enhances online visibility and increases citation chances. Incorporating high-quality figures and the latest references enriches the article and boosts credibility. Researchers' active presence in social academic networks and sharing their work also significantly increases citation numbers.

Conclusion: Adhering to these principles can greatly enhance the visibility, readability, and impact of researchers' articles. These efforts increase citations and expand knowledge, making the article an important resource for academics.

Keywords: academic publishing, citation strategies, article visibility, article writing, social academic networks

OP-011

Abstract no: 13952
Abstract group: Other

Validity and reliability analysis of the Turkish version of the Fazio Laterality Inventory

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Objective: The Edinburgh Handedness Inventory (EHI) is the most widely used tool for determining handedness. However, due to its potentially outdated items, modern alternatives like the Fazio Laterality Inventory (FLI) have emerged. This study aimed to evaluate the reliability and validity of the FLI in Turkish and explore its applicability in Türkiye.

Methods: The FLI was translated into Turkish following the Beaton procedure. Both the Turkish versions of the EHI and FLI were administered to 255 university students aged 18–34 years using the parallel forms method. After three weeks, the tests were repeated for test-retest method. Handedness was determined by calculating the laterality quotient (LQ) for EHI and the laterality index (LI) for FLI, classifying participants as right-handed, left-handed, or ambidextrous.

Results: According to the parallel forms method, it was observed that the FLI and EHI forms were parallel in the first and second applications (p=0.690 and 0.566). According to the test-retest method, it was determined that LI1, LI2 and LQ1, LQ2 values were highly correlated (r>0.80). The reliability coefficient was 0.902 for the FLI and 0.947 for EHI. The content validity of the FLI was 0.846 for the first administration and 0.800 for the second. Approximately 90% agreement was found between the FLI and EHI in the grouping of participants.

Conclusion: The data obtained in our study show that the Turkish version of the FLI is a valid and reliable method. So we suggest that the FLI can be used to determine hand preference in future studies.

Keywords: fazio laterality inventory, laterality, validity, reliability, edinburgh handedness inventory

OP-012

Abstract no: 54681
Abstract group: Lifelong Anatomy / *Physical Anthropology and Paleoanthropology*

Evaluation of measurement reliability in digital morphometric measurements in relation to professional experience and technology habits

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Objective: The quality of morphometric data hinges on 'validity' and 'reliability.' Validity measures how accurately a tool assesses its intended target, while reliability reflects the consistency of repeated measurements of the same entity. This study explores the relationship between the reliability of digital morphometric measurements and the measurer's professional experience and technology usage habits.

Methods: Twenty-one medical students (inexperienced group) and 18 experienced anatomists were selected. Participants completed a survey on demographics, experience, and technology habits, followed by training on ImageJ, a tool for digital morphometric measurements. They were then tasked with measuring 7 parameters (5 linear, 2 angular) on photographs of 10 individuals, with measurements repeated at different times. Reliability was assessed using TEM, rTEM, and R values. Data analysis included Chi-square tests for categorical variables and Mann-Whitney U tests for continuous variables, conducted using SPSS 22.

Results: No significant differences were observed between groups in terms of gender distribution and hand preference ($p>0.05$), though differences in age and technology habits were noted ($p<0.05$). The experienced group demonstrated more active use of ImageJ ($p<0.05$). Post-training evaluations showed no significant differences in measurement durations or reliability between groups ($p>0.05$).

Conclusion: This study concludes that with proper training, digital morphometric measurements using ImageJ can achieve acceptable reliability, independent of the measurer's professional experience, highlighting the importance of adequate training in digital measurement techniques.

Keywords: measurement reliability, professional experience, image analysis, morphometry

OP-013

Abstract no: 52841
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of bony orbital morphometry and volume with 3-dimensional computed tomography

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Objective: Examining the data regarding the bony orbit according to race, gender, and age is important in diagnosis and treatment of orbital pathologies. This study aimed to evaluate the changes in bony orbital morphometry and volume according to age, gender, and symmetry in the Turkish population.

Methods: Craniofacial computed tomography (CT) images of 150 Turkish adults (75 males, 75 females) without an orbital pathology were included in the study. Participants were divided into 3 age subgroups; 20–39, 40–59, and ≥60 years. Morphometric and volumetric measurements were made using 3DSlicer and Syngo programs.

Results: Individual bony orbital volume (BOV) did not show any significant difference between the two sides, while the orbital height and width were significantly different ($p<0.05$). Orbital and bizygomatic widths were significantly higher in males than in females ($p<0.05$). The mean BOV of both orbits was significantly higher in the ≥60 age group than in the 20–39 group ($p<0.05$). The mean BOV was found to be higher in males than in females in all age groups. ($p<0.001$). In linear regression analysis, it was observed that the direct positive effect of age on BOV was significant only in women (right side: $r=0.0266$, $p=0.021$; left side: $r=0.253$, $p=0.029$).

Conclusion: According to these results, morphometric and volumetric measurements of bony orbit in the Turkish population show significant differences according to age and gender. We believe that asymmetry in orbital height and width is crucial in orbital reconstruction surgeries.

Keywords: orbital volume, orbital symmetry, orbital reconstruction

OP-014

Abstract no: 70523
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Examination of the anatomical features of the zygomaticofacial foramen in children with 3D reconstruction images

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Objective: Anatomical features and variations of zygomaticofacial foramen (ZFF), fixation applications after pediatric zygomatic fractures, Le Fort osteotomies, orbital surgeries, and local anesthetic injection applied to malar region are particularly important for preventing injuries to zygomaticofacial nerve passing through ZFF. This study aimed to examine morphometric and morphological features of ZFF in pediatric population.

Methods: Ethical approval was obtained from Gaziantep University Clinical Research Ethics Committee (2024/177). Cone beam computed tomography (CBCT) images of 119 children who presented to Department of Oral and Maxillofacial

Radiology at Gaziantep University Faculty of Dentistry for various reasons were retrospectively examined using Radiant DICOM Viewer. Presence, number, localization, and distance of ZFF to specific anatomical landmarks were measured. Statistical analyses were performed using SPSS 22.0, and p-value of <0.05 was considered statistically significant.

Results: CBCT images of 119 children (boy: 65, girl: 54; mean age: 13.14±3.24 years) were examined. 106 (44.54%) sides had no foramen (Type 0), 91 (38.24%) had one foramen (Type 1), 35 (14.70%) had two foramina (Type 2), and 6 (2.52%) had three foramina (Type 3). Mean distance ZFF to orbit and temporozygomatic suture was greater in boys than in girls (p=0.006, p=0.009, respectively). Mean distance ZFF to frontozygomatic suture was greater in girls (p=0.032). It was also determined that distance ZFF to zygomaticomaxillary suture and lowest point of zygomatic bone increased significantly with age in both genders (p=0.007, r=0.237; p=0.018, r=0.207, respectively).

Conclusion: It was observed that ZFF was frequently absent in children. In cases where ZFF was present, distances to specific anatomical landmarks varied between different gender and age groups. These findings are believed to be useful in preventing complications that may arise from surgeries and injections in children.

Keywords: cone beam computed tomography, zygomaticofacial foramen, zygomatic bone, pediatric zygomatic bone fractures, zygomaticomaxillary fractures

OP-015

Abstract no: 71330
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Critical analysis of human cadaveric mitral valve complex anatomy with respect to valve repair surgery

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Objective: This study aims to document the morphological data required to optimize the intervention to be applied in patients with mitral valve dysfunction undergoing surgical intervention and to develop unique device designs to assist surgical treatment strategies.

Methods: Age, gender, height, weight, heart weight, heart size, mitral valve annulus, mitral valve leaflets, subvalvular apparatus and anatomical adjacent structures were evaluated on 120 fresh cadaveric hearts.

Results: Annular circumference of the mitral valve was 8.8±1.6 cm on average, mitral valve area was 5.9±1.2 cm^2 on average, aortico-mitral junction angle was 163.4±3.4 degrees on average, aortico-mitral junction distance was average 3.7±0.5 mm, Non-Planarity Angle (NPA) average was 135.7±8.4 degrees, AHCWR was 0.28±0.04 in women and 0.28±0.06 in men. APCWR was found to be 0.94±0.1 in women and 0.95±0.1 in men. Tenting average was measured as 11.4±1.0 mm, tenting area was measured as average 166.8±38.7 mm^2.

Conclusion: Based on the data from our study, we believe that restoring the anterior-posterior annulus ratio to 3/5 and maintaining AHCWR and APCWR ratios are essential for good valve coaptation. A thorough understanding of normal anatomy as well as possible variations of the papillary muscles is essential for the early diagnosis of many cardiac anomalies and can assist surgeons in a variety of corrective heart surgeries.

Keywords: mitral valve, cadaveric analysis, morphology, mitral valve repair, mitral apparatus, Turkish population, anatomy

OP-016

Abstract no: 72614
Abstract group: Anatomy and Innovation / *Digital Anatomy and Virtual Reality in Anatomy*

A rare case of congenital cardiac malformation: 3D imaging of the abnormal origin of the right coronary artery

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Objective: Coronary artery anomalies (CAAs) are one of the anomalies that are usually detected incidentally during coronary angiography. The abnormal origin of the right coroner artery (RCA) from the left coronary sinus of valsalva accounts for 0.02% to 0.2% of all abnormal coronary artery origins. We aimed to examine the tomography images of this rare case and to provide a better understanding by performing 3D modeling.

Case: A 39-year-old female patient was admitted to the cardiology clinic with complaints of chest pain that had been going on for 6 months and getting tired easily when exercising, going up and down stairs, and walking. Clinical examination and coronary computer tomography (CT) scans were performed, and it was determined that RCA originated from the left coronary sinus of valsalva. The right coronary artery follows an interatrial course between the aorta and the pulmonary artery, and it is thought

that there is 70–90% stenosis in the right coronary artery. In addition, subcapsular lesions of 30×20 mm and 15×15 mm in size were observed in the sliced liver, showing contrast enhancement in the arterial phase.

Conclusion: The patient is a rare case with anomalous RCA origin from the left sinus of Valsalva and probably persistent asymptomatic tachycardia. 3D rendering of the clinical CT image will help clinicians understand both the course of the RCA and how the RCA is compressed between the aorta and the pulmonary artery.

Keywords: coronary artery anomalies, right coroner artery, computer tomography, 3D modeling

OP-017

Abstract no: 58311

Abstract group: Experimental Research and Neuroscience / *Microscopic Anatomy*

Comparative investigation of the effects of quercetin and resveratrol on experimental cardiomyopathy induced by doxorubicin in rats

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Objective: Dilated cardiomyopathy is the most common of all cardiomyopathies. Currently, there is no effective treatment for cardiomyopathy. This situation has led many researchers to use other agents. The most important of these are resveratrol, a polyphenolic compound, and quercetin, a flavonoid. In this study, the effects of quercetin and resveratrol on preventing heart damage were investigated in cardiomyopathy model induced by doxorubicin administration.

Methods: 46 female Wistar Albino rats were divided into 5 groups, 6 animals in the control group and 10 animals in the other groups. The control group (Group A) was given 1 mg/kg physiological saline twice a week. A cardiomyopathy model was created by giving 1 mg/kg doxorubicin twice a week to all groups except the control group. The doxorubicin group (Group B) was untreated. Quercetin (20 mg/kg, everyday) to group C, resveratrol (50 mg/kg, everyday) to Group D, and quercetin (20 mg/kg, everyday), resveratrol (50 mg/kg) to Group E. The resulting changes were monitored using histochemical, immunohistochemical, echocardiographic and biochemical parameters.

Results: Cardiac morphology and function were impaired in the doxorubicin group. In the groups treated with only quercetin or only resveratrol cardiac morphology and function were preserved compared to the doxorubicin group. The results obtained in these two groups are similar to each other. However, in the group treated with quercetin+resveratol, cardiac morphology and function were closest to the control group.

Conclusion: There is no study in the literature on the effectiveness of quercetin and resveratrol together in doxorubicin-induced dilated cardiomyopathy. More randomized controlled studies are needed regarding the combined use of quercetin and resveratrol.

Keywords: dilated cardiomyopathy, doxorubicine, quercetin, resveratrol

OP-018

Abstract no: 74223

Abstract group: Anatomy and Innovation / *Tissue Engineering*

The effect of biocellulose graft and vascular endothelial growth factor on angiogenesis in experimental sciatic nerve injury

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Objective: Autograft application is the gold standard in the treatment of peripheral nerve damage, but alternative graft materials are needed. This study examines the effects of biocellulose (BC) graft and vascular endothelial growth factor (VEGF) impregnated in biocellulose graft on peripheral nerve repair.

Methods: Biocellulose derived from Gluconacetobacter xylinus cell culture was impregnated with 0.2 µm/ml VEGF and formed into conduits. Unilateral 8mm sciatic nerve defect was created in Wistar rats (n=18). Rats were divided into three groups as autograft (n=6), BS graft (n=6) and VEGF-BS graft (n=6). Gait analysis, electromyography (EMG) measurements were performed at the end of the 8th week. Sciatic nerve tissues were taken for histological analysis. Myelinated axon numbers and vascular struc-

tures were examined in sections stained with toluidine blue under a light microscope.

Results: According to the sciatic function index obtained from gait analysis and the EMG measurements, at the end of the 8th week, both graft groups obtained similar results to the autograft group. Analyses of myelinated axon counts, axon diameters, and myelin sheath thicknesses revealed similar results between the autograft and VEGF-BC graft groups. Examining the quantity of vessels and their diameters, the VEGF-BC graft group showed a significantly higher number of vessels than the other groups ($p<0.0001$).

Conclusion: In the treatment of peripheral nerve injury, the application of VEGF-BC graft gave functional and histologically similar healing results to autograft. The positive effect of VEGF application on nerve regeneration was also observed by increasing the formation of new vessels.

Keywords: peripheral nerve injury, sciatic nerve, VEGF, biocellulose, angiogenesis

OP-019

Abstract no: 49693
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Pneumatization of the nasolacrimal duct: the impact of anatomical and demographic factors

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Objective: Obstruction in the ductus nasolacrimalis (DNL) is influenced by anatomical variations, which may vary based on age, sex, race. Clinically determining the anatomical details of the DNL can be challenging, but radiographic studies enhance our understanding of this structure. This study aims to investigate DNL aeration, provide normative data, assess aeration location using nasolacrimal imaging.

Methods: This retrospective study analyzed CT images of 59 patients, examining the presence and level of DNL pneumatization. DICOM images were modeled in 3D with 3D Slicer for volumetric analysis.

Results: The study included 28 women, 31 men. The average DNL volume was 199.93±75.64 mm^3 on the right, 183.16±68.64 mm^3 on the left in females, while in males, it was 247.17±89.58 mm^3 on the right, 242.71±109.98 mm^3 on the left. Significant gender differences were observed in DNL volumes ($p=0.016$ and $p=0.010$, respectively). The average pneumatized volume was 86.57 mm^3 in females and 110.01 mm^3 in males ($p=0.012$). Pneumatization occurred on the right in 46 cases, left in 31, and bilaterally in 18 cases. Pneumatized regions were above the inferior nasal meatus in 5 cases, below in 24, and both above and below in 50 cases. A significant difference in pneumatization volume was found between sides ($p<0.001$), with smaller volumes in the lower regions ($p<0.001$).

Conclusion: This study reveals significant differences in DNL aeration related to age, gender, and racial factors, showing volumetric changes in pneumatization at different DNL levels. These findings contribute to the clinical understanding of the nasolacrimal canal and its anatomical variations.

Keywords: nasolacrimal duct, pneumatization, aeration

OP-020

Abstract no: 71065
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Study of the sinonasal anatomical variations in patients with migraine and chronic rhinosinusitis

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Objective: The presence of nasal symptoms accompanying headaches in migraine can lead to confusion with chronic rhinosinusitis (CRS). The aim of this study is to evaluate migraine and CRS patients with a control group and to examine differences in sinonasal anatomical variations among them.

Methods: The study included 50 migraine, 50 CRS, and 100 control cases aged between 18 and 71 years who underwent Paranasal Computed Tomography (CT) at Istanbul Medipol University Mega Hospital Radiology Department between 2013 and 2019. Cases with inappropriate CT imaging, major trauma findings or malignancy or undergone surgical operations were excluded from study. CT images were evaluated for septal deviation (SD), septal spur (SS), paradoxical curvature, concha bullosa (CB), agger nasi-supraorbital-sphenoethmoidal-

infraorbital air cells, and uncinate process pneumatization. Differences in sinonasal variations among migraine, CRS, and control groups were analyzed using Kruskal-Wallis test, and differences within pairs of groups were analyzed using Mann-Whitney U test.

Results: A significant difference was observed between groups regarding of SD and CB ($p<0.05$). SD was found in 46%, 64%, and 38% of the migraine, CRS, and control groups, respectively; CB was found in 49%, 35%, and 34.5% of these groups, respectively. No statistically significant difference was observed in existing of sinonasal variations between migraine and CRS groups ($p>0.05$).

Conclusion: Among anatomical variations, CB showed a statistically significant difference in migraine group and presence of SD and SS showed a significant difference in CRS group when compared to control group ($p<0.05$). These two anatomical variations should be considered as they may influence headache and correspond to symptoms.

Keywords: migraine, chronic rhinosinusitis, sinonasal variations

OP-021

Abstract no: 45908
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of the relationship between nasal septal deviastion and facial asymmetry in healthy individuals using computed tomography

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Objective: Anthropometric facial features are associated with the nasolacrimal drainage system. It has been reported that degree of septum deviation is related to size of fossa sacci lacrimalis and that individuals with cleft lip/palate deformity have facial asymmetry. However, relationship between facial asymmetry and septum deviation in healthy individuals has not been examined. In this study, we aimed to determine whether there is a relationship between facial asymmetry and deviated septum in individuals without any maxillofacial deformity.

Methods: The degree of nasal septum was measured on 70 CT images of individuals who presented with headache but didnot have any maxillofacial deformity. For facial asymmetry, the distance from the zygomaticofrontal suture to the crista galli, anterior nasal spine and infraorbital foramen and orbital width and depth were measured. Statistically, $p<0.05$ was considered statistically significant.

Results: Right orbit width was 3.35±0.16 and left orbit width was 3.31±0.23 cm. The distance from zygomaticofrontal suture to crista galli was 4.75±0.2 cm on right side and 4.7±0.21 cm on left side ($p>0.05$). Distances from zygomaticofrontal suture to spina nasalis anterior were 6.78±0.33 cm on right and 6.58±0.31 cm on left.

Conclusion: In conclusion, although this study focused on individuals without maxillofacial deformities and did not find any significant facial asymmetry associated with septal deviation in this cohort, the current literature suggests that nasal septum deviation may indeed affect facial asymmetry, especially in individuals with certain conditions or anatomical variations. The relationship between facial asymmetry and morphological changes in intranasal structures is important in predicting maxillofacial deformities.

Keywords: nasal septal deviation, orbit, CT

OP-022

Abstract no: 57985
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of the anatomy and anatomical variations of nasopalatine canal: a retrospective CT and MRI analysis

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Objective: CT and MRI are advanced imaging modalities used to determine the morphology and variations of the nasopalatinal canal (NC). The NC includes the nasopapatitinal nerves and vessels, and the dental processes located in the upper jaw are an important structure. Knowing the structure can prevent complications. Cysts, tumors and inflammations here can affect both diagnostic and therapeutic outcomes.

Methods: In this study, NC of 83 patients was evaluated. Sagittal sections, CT and NC dimensions, axial MRI sections and morphology were measured. Descriptive analyses were performed and the differences between the sexes in the canal diameter and the relationship between the canal diameter and age were statistically evaluated.

Results: Images of 83 patients were examined. The mean age was 55.7 years (SD=20.2), and 40 females and 43 males participated in the study. The lower mean diameter was 3.02±1.4 mm, and the upper mean diameter was 6.77±2.3 mm. Type O

canal was the most common, seen in 49% of cases. A significant difference was found between age and inferior opening diameter (p=0.023). There was no significant difference between gender and superior and inferior opening diameter, and between age and superior opening diameter (p>0.05).

Conclusion: There is significant variation in morphology and the O-type channel has a marked prevalence. In clinical practice, the importance of understanding individual anatomical differences is emphasized. More studies are needed to investigate the effects of variations on pathological conditions and their impact on surgical outcomes.

Keywords: nasopalatin canal, incisive foramen, dental implant, maxillar cyst, computed tomography, magnetic resonance imaging

OP-023

Abstract no: 55970
Abstract group: Clinical Anatomy / *Anatomical Variations*

Evaluation of sinus septi nasi, crista galli and other minor pneumatizations

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Objective: Variations in the paranasal sinuses and their associated pneumatizations are critically important for surgical procedures in the nasal and nasal cavity regions. A literature search revealed no systematic review addressing sinus septi nasi, crista galli, and other minor pneumatizations. This study aimed to review articles covering sinus septi nasi, crista galli, and other minor pneumatizations, standardizing their mean occurrence rates and distribution by gender, age, and origin. The study also aimed to assess the height, length, and width of sinus septi nasi and crista galli pneumatizations to define measurement ranges.

Methods: Studies on these pneumatizations reviewed 35 articles from 1991–2021, using specific inclusion and exclusion criteria. We analyzed the incidence of sinus septi nasi, crista galli, and other minor pneumatizations with SPSS 25.0. Descriptive statistics included counts and percentages for categorical variables, and mean, standard deviation, minimum, and maximum for continuous variables. Data normality was assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests, and correlation analysis was performed with the Spearman test.

Results: Concha nasalis media pneumatization has the highest incidence at 47%, while processus uncinatus pneumatization has the lowest at 5% (p<0.05). No significant gender difference was found (p>0.05), and there were no significant differences in the dimensions of sinus septi nasi and crista galli pneumatizations (p>0.05).

Conclusion: This study compared the incidences of sinus septi nasi, crista galli, and other minor pneumatizations, identifying the mean incidences and the highest and lowest rates. Consequently, the incidences and their distribution by gender, age, and origin were standardized.

Keywords: sinus septi nasi, crista galli, pneumatization, nasal cavity

OP-024

Abstract no: 74400
Abstract group: Other

The association between nasal and neck morphometry and sleep quality

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Objective: In the literature, lifestyle and habits, as well as various anthropometric characteristics have been examined as factors affecting sleep quality. The aim of this study was to investigate the effects of nasal and neck morphometry on sleep quality.

Methods: Ninety volunteers (22 men and 68 women) participated in this study. Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS) were administered to the participants. In addition, the anthropometric data of the participants were calculated by using the ImageJ program on digital images. Anthropometric data included nasofrontal angle, nasal tip angle, nasal tilt angle, nasolabial angle, nasal index, nasal bridge index, nasal tip projection index, neck height (anterior), neck width, and neck circumference. The relationship between the obtained data and both PSQI/ESS scores was calculated.

Results: Significant correlations were found between the PSQI and ESS scores, nasal tip angles and nasolabial angles. The relationship between the PSQI and ESS was weak and positive (r=0.390, p=0.000). In addition, there was a weak negative correlation between PSQI and the nasal tip angle (r=-0.225, p=0.033) and nasolabial angle (r=-0.321, p=0.002). No significant relationships were observed for the other data.

Conclusion: Neck morphometry has no effect on sleep quality. Considering that the nose is the most surgically operated area on the face, the effect of these operations on sleep quality should also be considered.

Keywords: neck morphometry, nasal morphometry, sleep quality

OP-025

Abstract no: 64515
Abstract group: Experimental Research and Neuroscience / *Comparative Anatomy*

Morphometric evaluation of kidney tissue in cisplatin-induced rats

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Objective: Cisplatin is an antineoplastic drug effective against various cancers, including bladder, lung,cervical cancers. Despite its widespread use in chemotherapy, it is associated with significant complications such as hepatotoxicity, cardiotoxicity, neurotoxicity,nephrotoxicity.Cisplatin induces nephrotoxicity through mechanisms such as mitochondrial dysfunction, inflammation, direct cytotoxicity to tubular epithelial cells, and oxidative stress. While studies on cisplatin-induced nephrotoxicity are available, there is a lack of research evaluating kidney morphology. This study aims to investigate cisplatin nephrotoxicity morphometrically in rats.

Methods: Sixteen male Wistar albino rats, consisting of 8 control and 8 cisplatin-treated rats,were included in the study.The cisplatin group received 10 mg/kg intraperitoneal cisplatin injections,while the control group received no treatment.Euthanasia was performed under anesthesia by exsanguination.The right kidneys were excised and their photographs were taken from a distance of 15 cm using the same device with a ruler for size reference.Morphometric measurements were analyzed using the Image J software.A total of sixteen parameters were measured, including inter-polar length, width at renal hilum, thickness, upper, lower halves' width, thickness, surface area, renal hilum height, width, angle, renal sinus surface area, as well as pre- and post-experiment rat weights, right kidney weights, and volumes.

Results: The renal hilum length in the cisplatin group was 0.46±0.05 cm, compared to 0.40±0.06 cm in the control group, with a statistically significant difference (p=0.042). No statistically significant differences were found in other parameters (p>0.05).

Conclusion: The study demonstrates that cisplatin use increases the renal hilum length. As the first study evaluating renal morphometry in this context, it contributes valuable information to the literature and may guide clinicians in assessing complications during treatment.

Keywords: cisplatin, kidney, morphometry, rat

OP-026

Abstract no: 21190
Abstract group: Experimental Research and Neuroscience / *Microscopic Anatomy*

Exploring the impact of nanoplastics on rat testicular tissues

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Objective: Nanoplastics (NPs), formed by the degradation of plastic materials, are ubiquitous substances with potential negative effects on various ecosystems and organisms. NPs can be taken into the body through digestion and respiration and can accumulate in many organs. This article investigates the accumulation of NPs in testicular tissue and its potential effects on male reproductive health.

Methods: Our study was performed on the control group, 25 mg/kg NPs and 50 mg/kg NPs groups. Five male rats in each group were given fluorescent nanoplastic materials by gavage for 1 month. In our study, adverse effects on testicular function were investigated by analyzing nanoplastic particle accumulation in testicular tissue by histopathological evaluation, affecting spermatogenesis, induction of oxidative stress by biochemical evaluation and testicular inflammation by genetic evaluation.

Results: Nanoplastic particle accumulations were detected in testicular tissue. Histopathological evaluation revealed that spermatogenesis was negatively affected, and cellular deterioration was detected. Comparison between groups was performed by one-way ANOVA test. Antioxidant enzyme levels were deteriorated. Toll-like receptor (TLR) genes were evaluated and inflammation in TLR7 was found to be statistically significant ($p<0.05$).

Conclusion: In conclusion, we found that continuous intake of nanoplastic substances, especially through ingestion, can cause accumulation in testicular tissue and impair testicular function in humans. Accordingly, we think that nanoplastics may affect spermatogenesis and predispose to infertility. It suggests that nanoplastic accumulation in the testes may cause potential long-term consequences such as impaired fertility, increased risk of testicular cancer and transgenerational effects.

Keywords: nanoplastics, fluorescent, infertility, testis, rat

OP-027

Abstract no: 42213
Abstract group: Experimental Research and Neuroscience / *Microscopic Anatomy*

Histopathological effects of carbamazepine carbon dot functionalised silver and MOF nanoparticles on the brain in male rats with epilepsy

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Objective: Epilepsy is a neurological disorder caused by abnormal electrical activity in the brain. In this study, the histopathological effects of carbamazepine (CBZ) functionalized carbon dots (CDs) used in the treatment of epilepsy on the brain were investigated. The effects of carbamazepine silver and MOF-coated carbon dots (CBZ-CDs) on brain tissue of male rats were evaluated.

Methods: An experimental study was performed on male Wistar Albin rats divided into ten groups. Grp78 and TNF-α were immunohistochemically analysed in the tissues.

Results: The localisation and partial expression level of Grp78 expression in the cerebral cortex were evaluated between the groups. Grp78 expression was detected in both neurons and glial cells. At the cellular level, cytoplasmic staining was observed. TNF-α expression was observed in all cells of the cortex. It was observed that the staining was cytoplasmic in both neurons and glial cells. When the distribution of TNF-α between cortex layers was examined, it was observed that the expression was homogeneous in all groups and there was no specific localisation to a particular cortex layer.

Conclusion: In conclusion, the synergistic combination of carbamazepine with CD-AgNPs and MOFs shows great promise for the management of epilepsy and associated neurodegeneration.

Keywords: epilepsy, carbamazepine, nanoparticle

OP-028

Abstract no: 75971
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

The effects of duloxetine on central nervous system damage in rats with experimentally induced diabetes

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Objective: The aim is to investigate Duloxetine's (DLX) effects on central nervous system damage from Diabetes Mellitus (DM).

Methods: Thirty-two male and female Sprague-Dawley rats were divided into four groups: Control, DM, DM+DLX and DLX+DM. Diabetes was induced with 50 mg/kg streptozotocin. The control received DLX solvent, while the DM+DLX and DLX+DM were given 30 mg/kg DLX by gavage for 21 days. Subsequently, the Morris Water Maze test was conducted, brain tissue was stained using hematoxylin-eosin and levels of TAS-TOS, MDA and NF-kB were measured. This study was supported by the Inonu University BAP Unit (TDK-2024-3451) and the YÖK 100/2000 Doctoral Scholarship Program.

Results: In the prefrontal cortex and hippocampus, TAS decreased in the DM compared to the control, while it increased in the DM+DLX and DLX+DM. In the hippocampus, MDA and TOS levels increased in the DM compared to the control, while they decreased in the DM+DLX and DLX+DM. In the DM, NF-kB levels increased compared to the control, while they decreased in the DM+DLX and DLX+DM. The control showed normal histology, while the

DM had mononuclear cell infiltration, hemorrhage, edema, vascular congestion, and neuron degeneration. Treatment groups showed reduced brain injury compared to the DM. There was significant increase in the time to find platform in the DM compared to both the control and DM+DLX and DLX+DM.

Conclusion: Duloxetine has protective and therapeutic effects against oxidative damage in the central nervous system due to diabetes. Longer treatment may be needed to fully demonstrate its effects on cognitive impairments.

Keywords: duloxetine1, diabetes mellitus2, hippocampus3

OP-029

Abstract no: 50342
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

The effectiveness of the storytelling method on medicine faculty students: an example lecture for terminal branches of brachial plexus

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Objective: Stories are an education tool and teaching strategy, which makes lectures more memorable. This study aimed to determine the efficiency of the storytelling technique on an example anatomy lecture for terminal branches of brachial plexus.

Methods: The class (n=90 students) was divided into two groups as Group 1 (n=47 storytelling group) and Group 2 (n=43 direct instruction group). Three stories related to terminal branches of brachial plexus were told to Group 1 in advance. Group 2 were lectured with the same subject by the instructor by using the theoretical direct instruction method as usual. Both groups underwent an examination including 20 questions after the instructions. Moreover, the feedback of the storytelling group (Group 1) was evaluated using an agreement scale.

Results: The mean age was 19.85±0.96 years. The results of the achievement test showed a significant difference between the groups. The storytelling group is higher than the results of the direct instruction group ($p<0.05$). More than 85% of the students strongly or completely agree that storytelling is a good teaching method, helpful to explain the anatomy topics, helpful for understanding the subject, listening to the lesson described by storytelling technique is more effective than reading the book and this method accelerates the anatomy learning process.

Conclusion: It can be said that the students in the storytelling group were satisfied with the anatomy lecture in many aspects. Our study suggests that storytelling could be a supplementary method in anatomy education.

Keywords: Anatomy education, teaching strategies, storytelling, brachial plexus, median nerve, radial nerve, ulnar nerve

OP-030

Abstract no: 81107
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

Student opinions about online education and teaching method of radiological anatomy course

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Objective: Studies evaluating the effect of providing radiological anatomy education with distance education activities on students were rare. In this study, we will present the feedback from students regarding the online education and teaching method of the radiological anatomy course.

Methods: This study was conducted with Bursa Uludağ University Health Services Vocational School students. We invited volunteers from Medical Imaging Techniques Program students who attended online radiologic anatomy courses (ORAC) to participate in the study. For this research, we prepared an online survey of 5-point Likert-type responses. The percentage of positive answers in the survey consists of "strongly agree" and "agree", and the percentage of negative answers consists of "disagree" and "strongly disagree". SPSS28.0 was used for statistical analysis.

Results: One hundred one students (74.3% female; mean age 21.47±2.61) participated in this study. 68% of the volunteers who participated in the study stated that ORAC was effective in their learning. 76.2% of the participants stated that they evaluated radiological anatomy better on a personal computer and/or tablet screen. 80.2% of the volunteers reported that ORAC video recordings effectively taught radiological anatomy, and 77.2% reported that they evaluated the questions

more easily in online exam. 90.1% of the students stated that teaching an anatomical region by showing all cross-sectional images in order, and 84% stated that teaching with radiological images in different projections was more effective in their learning.

Conclusion: This study has shown positive aspects of ORAC compared to face-to-face courses and the importance of using digital tools in education.

Keywords: radiological anatomy, online education, distance education, teaching method

OP-031

Abstract no: 10323
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

Expectations of coaching education students regarding the anatomy course: a questionnaire study

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Objective: The aim of this study was to determine the expectations of first-year students of the Department of Coaching Education from anatomy course. It was also aimed to analyze the contribution of course content and teaching methods to students' career goals.

Methods: First-year students from the Cukurova University, Faculty of Sport Sciences, Department of Coaching Education were included in the study. The study was conducted after 2-hours of "Introduction to Anatomy" lectures. Participants filled out the questionnaire created in Google Forms, accessible via a QR code. The questionnaire consisted of items to understand expectations of students regarding the anatomy course and its influence on their careers. Data were analyzed using SPSS 20.0 software.

Results: The mean age of 51 students (20 females, 31 males) was 20.06±1.74 years (female: 19.10±0.22; male: 20.68±0.33). It was reported by 94.1% of students that anatomy course was important, and 74.5% stated the course was essential in their career goals. According to 88.3% of students, anatomical knowledge could help prevent injuries in athletes. The need for additional educational materials indicated by 84% of students. Additionally, 86.5% supported the use of interactive learning methods, and 66.6% stated that topics on the nervous, digestive, urinary, endocrine, and reproductive systems should also be added to anatomy curriculum.

Conclusion: The results showed that anatomy course has a critical importance for students in coaching education. Improving content and methods to meet modern requirements and student expectations can help students achieve their career goals.

Keywords: anatomy, coaching education, sport sciences, student expectations

OP-032

Abstract no: 59924
Abstract group: Anatomy Education and Terminology / *Anatomy Terminology*

Cisternae perimesencephalicae: same region, different descriptions

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Objective: Cisternae subarachnoideae are important structures for neurosurgery and radiology, where cerebrospinal fluid circulates, and are also in the field of interest in anatomy. In this study, similarities and disparities in anatomy and clinical sources were investigated in terms of definitions and synonymous uses of perimesencephalic cisterns.

Methods: Manuscripts and books containing the term "subarachnoid cistern" were searched using search engines. 26 anatomy and 24 clinical sources in English were evaluated. The terms used to describe the subarachnoid area around the mesencephalon and the smaller parts of the perimesencephalic cisterns formed by trabecular in each source were evaluated. Categorical variables presented as frequency and percentage were evaluated with the Chi-square test.

Results: A total of 14 cistern names were encountered around perimesencephalic area. There was a statistically significant difference in the use of the terms "intercrural cistern," "cistern of the great cerebral vein," "superior cistern," and "crural cistern" between preclinical and clinical sciences ($p<0.05$). There was a statistically significant difference between the use of the terms "intercrural cistern", "superior cistern" and "crural cistern" among anatomy, neurosurgery, radiology and neurology sources ($p<0.05$).

Conclusion: The differences in perimesencephalic cistern nomenclature between anatomy and clinical sources likely arise from the trabecular structure between pia and arachnoid mater, which impacts neurosurgical clinical practice but not the others.This leads to a terminological difference between

anatomy and clinical branches which needs to be fixed to prevent possible confusions. Thus, an agreement between the basic and clinical sciences considering clinical definitions is crucial.

Keywords: subarachnoid cistern, arachnoid trabecules, definition, terminology, perimesencephalic cisterns

OP-033

Abstract no: 40227
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

Investigation of the effect of model video activity on medical faculty students' anatomy education

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Objective: Many educational tools can be used for students to learn anatomy in the most effective way and to support anatomy education. This study is a randomized controlled trial in a pretest-posttest design with experimental and control groups on effect of model video activity on anatomy education of medical students.

Methods: This study was conducted with 95 students studying in first year of Giresun University Faculty of Medicine. Students were divided into experimental (n=46) and control groups (n=49) by randomization method. Data were collected using 'Students Descriptive Characteristics Form', 'Anatomy theoretical questions test related to topics of Facial Muscles, Muscles and Triangles of Anterior-Side of Neck (Test 1), Muscles of Forearm Anterior Region-Forearm Posterior Region and Hand Muscles (Test 2)' and 'Anatomy Model Video Activity Feedback Form'. Students in the experimental group watched a total of 7 model videos related to the topics. Control group wasn't given any application, only traditional education method was used.

Results: It was determined that there was no significant difference between Test 1 pretest-posttest scores of students in the experimental and control groups. There was a statistically significant difference between Test 2 pretest-posttest scores of students in the experimental group (p=0.000). There was a statistically significant difference between Test 2 pretest-posttest scores of students in the control group (p=0.000).

Conclusion: It is recommended to be used in anatomy education by providing students with opportunity to watch anatomy model videos at the frequency, place and time they want in addition to theoretical course, supporting anatomy education.

Keywords: anatomy, education, medical students, learning

OP-034

Abstract no: 11905
Abstract group: Anatomy and Innovation / *The Relationship between Anatomy and Technology*

Opinions of medical students on 3D anatomy education: a preliminary assessment

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Objective: Anatomy is by nature a three-dimensional subject, and learning the three-dimensional relationships of structures is extremely important. Research indicates that 3D digital programs can significantly enhance current teaching methods in medicine and anatomy. Additionally, their accessibility anytime and anywhere is known to boost student' motivation and academic performance. This study aims to evaluate medical students' opinions on 3D anatomy education.

Methods: In the 2023–2024 academic year, first-year medical students at Kocaeli University were taught facial mimic muscles using the Primal Picture 3D program. After the 3D anatomy training, 56 students (67.9% female, 32% male) completed a 23-question 'Google Form" survey.

Results: The average age of participants was 19 (±1.024). Most questions focused on the motivational impact of the 3D anatomy education. 94.6% of students were highly satisfied and requested its use in other courses. 50% felt that 3D anatomy education provided clearer and more understandable information. 96.3% found the training engaging and enjoyable, while 40% believed it could enhance their exam performance. The percentage of students who wished to benefit from 3D anatomy programs combined with cadaver training was 72.7%. However, 35.2% reported potential eye strain, and 6.6% found it distracting.

Conclusion: Medical students expressed that they find 3D anatomy program useful and reported that it is a good source of motivation. Although these programs cannot replace cadaver training, integrating them into curricula could be highly valuable. They may also help in remote education and institutions with limited cadaver availability.

Keywords: anatomy, 3D anatomy, interactive education, motivation

OP-035

Abstract no: 0000

Abstract group: Anatomy and Innovation / *Anatomy and Technology Relationship*

Evaluation of fine motor skills through suturing performance in medical students

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Objective: This study aimed to evaluate fine motor skills in individuals with different hand preferences using a suturing task.

Methods: A survey via Google Forms gathered participants' sociodemographic data, self-reported hand preferences, prior suturing training, and digital device usage habits. Out of 224 volunteers, 43 participants (25 right-handed, 18 left-handed) who had no previous suturing training and no history of upper extremity trauma or surgery were selected for the study's second phase. Hand preference was further assessed using the Edinburgh Handedness Inventory. An experienced surgeon provided structured suturing training for each hand. After this subjective training assessment, objective evaluation was conducted using the FingerTap software to measure finger-tapping speed. Data were analyzed with SPSS 25 software. The Mann-Whitney U test was used for independent group comparisons, and the Wilcoxon Signed Ranks test was used for paired group comparisons.

Results: There was no significant difference in the subjective performance assessments between right- and left-handed participants ($p>0.05$). In the right-hand single-finger tapping test, right-handed participants performed significantly faster than left-handed ones ($p<0.05$). No significant differences were found between right- and left-handed participants in the left-hand single-finger test or the two-finger tapping tests for both hands ($p>0.05$). Right-handed individuals showed a significantly faster right-hand tapping speed compared to their left hand ($p<0.05$), while left-handed individuals exhibited no significant differences between hands ($p>0.05$).

Conclusion: The study suggests that left-handed individuals adapt well to functioning in a predominantly right-handed world.

Keywords: fine motor skill, Edinburgh Handedness Inventory, finger tapping test, hand preference, suturing training

OP-036

Abstract no: 30299

Abstract group: Anatomy and Innovation / *3D Printing in Anatomy*

Creating plastic models of lower extremity bones

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Objective: It aims to use the models of the lower extremity bones, which are used for anatomy education in medical faculties, as course material by forming bebones plastic materials, and thus to create these materials obtained from abroad with domestic opportunities.

Methods: It is thought that if the bones that make up the lower extremities are produced by plastic with domestic opportunities, a large number of course materials can be obtained at affordable prices by local facilities.

Results: It aims to ensure that the students of the faculty of medicine, faculty of dentistry, faculty of pharmacy, and faculties of health sciences who take anatomy courses can access the course materials produced outside the laboratory and inside the laboratory. Considering the everyday difficulty of accessing imported bone materials, it will be ensured that both students and physicians working in surgical units will have access to all educational materials produced locally.

Conclusion: Bones found in our department's laboratory will be used in the project. Whole bones will be selected and prepared for casting. As the first step, silicone molds will be obtained from these bones. Then, plastic models will be obtained with the plastic material poured into the molds. The products will be finalized by correcting, polishing, leveling, and assembly processes on the models created.

Keywords: bones, models, molding, lower extremity

OP-037

Abstract no: 43477

Abstract group: Anatomy Education and Terminology / *Anatomy Terminology*

The opinions of medical and dentistry students on Latin terminology

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Objective: In our country, in health related faculties, anatomy education is at the forefront in the first years of education. The content of the anatomy course is based on Latin terminology. In this process, they develop prejudices in terms of understanding and using Latin terminology correctly. Our study was designed to determine the challenges students face in health faculties that frequently use Latin terminology.

Methods: Our study was conducted on students of Necmettin Erbakan University, Faculty of Medicine (n=236) and Dentistry (n=178). A 40-question survey was applied about Latin terminology. The obtained datas were evaluated both descriptively and quantitatively.

Results: To the question "Did you have any difficulties when you first encountered Latin terms?" 79.67% (n=188) of medical students answered yes, 18.64% (n=44) no, 16.95% (n=4) undecided. These percentages were determined as 90.45%, 8.99%, and 0.56% for dentistry students, respectively. 62.80% (n=260) of all students stated that the Latin terms caused difficulties in understanding the subject. 67.39% (n=279) of the students emphasized that the duration of their terminology education varied between 2 and 10 hours. When students were asked about Latin words whose Turkish equivalents they did not know, they stated that they found their meanings by asking others (%4.11, n=17), looking them up on the internet (%12.56, n=52), trying to guess them (%83.33, n=345).

Conclusion: Regardless of semester and faculty, students had difficulties when they first encountered Latin terminology and these were a significant barrier to understanding the subject, terminology training time was insufficient.

Keywords: terminology, anatomy education, students' opinions

OP-038

Abstract no: 43571
Abstract group: Experimental Research and Neuroscience / *Microscopic Anatomy*

Comparative analysis of chitosan and ultrasound on tendon healing

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Objective: This study aimed to investigate the time-dependent effects of chitosan and therapeutic ultrasound on the healing of Achilles tendon injuries and to determine the most effective treatment method by comparing tendon healing across different groups at various time intervals.

Methods: Adult male Wistar albino rats were divided into five groups. Group I (Control, n =8) received no intervention. Group II (Injured, n=8) underwent surgical transection of the right Achilles tendon at the midline and repair using the Kessler method. Group III (Chitosan, n=8) received application of chitosan solution following Kessler repair. Group IV (Ultrasound, n=8) underwent therapeutic ultrasound treatment after Kessler repair. Group V (Ultrasound + Chitosan, n=8) received both chitosan solution and therapeutic ultrasound after Kessler repair. The original tissue images were converted to RGB images, and the amount of collagen fibers was accurately and efficiently measured using ImageJ/Fiji software.

Results: Collagen fibers in the ultrasound and chitosan groups exhibited morphology most similar to the control group at the 6-week mark. The collagen fibers in these groups were more regular, more abundant, and surrounded by a much smoother extracellular matrix compared to the injury group.

Conclusion: Among all treatment groups, the collagen fibers in the ultrasound + chitosan group were observed to be closest to the control group morphology at the 6-week mark. The therapeutic ultrasound and chitosan methods were found to be effective in promoting tendon healing and improving collagen structure.

Keywords: tendon healing, chitosan, ultrasound

OP-039

Abstract no: 31319
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Morphometric analysis and anatomic variations of the atlas vertebra

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Objective: Atlas is the first cervical vertebra (C1) that establishes the vital connection between the skull and the vertebral and shows the most variation. In our study, it was aimed to take morphometric measurements on the atlas, to reveal the asym-

metry of the measurements taken and to determine the anatomical variations.

Methods: A total of 61 atlases were included in our study from the bone collection of the Anatomy Department of the Faculty of Medicine of KTO Karatay and Necmettin Erbakan University. The photographs of the atlases measurements were taken with the Image J digital program. The morphometric measurement parameters and anatomical variations determined on the atlas were examined.

Results: Posterior arch defect was 95.1% (58) normal, 3.3% (2) fusion in the midline and 1 unilateral cleft was detected. Anterior-posterior diameter of foramen vertebra was found as 14.57±3.44 mm and transverse diameter was found as 21.45±2.52 mm. Sulcus atlantis vertebrale width was found as 1.02±0.30 mm on the right side and 1±0.22 mm on the left side and the difference between the sides was not found to be statistically significant. Facies articularis superior was mostly seen as kidney-shaped on the right and left sides while the most variability was found on the left side. Type of foramen transversum, it was mostly normal (right 55.7%; left 62.3%), 23% retrotransvers groove on the right side and the second most common variation on the left side (18% retrotransvers foramen).

Conclusion: In surgical operations performed in the neck. It can guide the surgical approaches to be performed in this region.

Keywords: atlas, variation, vertebral foramen

OP-040

Abstract no: 66899
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

The role of the mastoid foramen in neurosurgery: evaluation of connection with the groove for sigmoid sinus on dry bones

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Objective: We aimed to investigate the variations of the mastoid foramen (MF) on dry human bones, which varies in number, localization and size.

Methods: A total of 74 (148 bilateral) skulls of unknown sex were included. The number, localization and size of the MF in the occipitomastoid and parietomastoid grooves, the temporal and occipital bones were evaluated. Also, the connection of the MF with the groove for sigmoid sinus was analysed and the morphometric distances were measured.

Results: No MF was found in 22 of 148 bilateral skulls, totalling 370 MFs. The localization of the largest foramen of the MF in each skull was examined. Accordingly; 69 were found in temporal bone, 34 in occipitomastoid groove, 17 in occipital bone, 3 in parietomastoid groove and 1 in ossa suturalia. The MF was connected to the internal part of the cranium in 64 of 126 skulls through the MF. 57 of these connections were found posterior to the groove for sigmoid sinus, 4 in the centre of the groove and 3 in the occipital bone. The average distance between the internal and external MF was 10.58+1.68 mm.

Conclusion: The anatomical variability of the mastoid emissary veins within the MF plays an important role in neurosurgery. In presigmoid and retrosigmoid approaches to the cranium, inadequate identification of the mastoid process and surrounding vascular structures may cause serious bleeding risks. Therefore, detailed understanding of the anatomical variations of the MF and the vascular structures within it is of great importance to prevent potential complications in neuroanatomical surgical applications.

Keywords: mastoid foramen, neurosurgery, sigmoid sinus, temporal bone

OP-041

Abstract no: 62294
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Examination of sulcus sinus durales located in os occipitale

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Objective: Sinus sagittalis superior, sinus transversus, sinus sigmoideus and sinus occipitalis are important anatomical structures located in the fossa cranii posterior. The anatomical course of these dural sinuses, their relationships with each other and typing of their intersection points are importance in reducing surgical complications. In our study, in order to investigate the anatomy of sulcus sinus durales on os occipitale and the junction patterns on eminentia cruciformis were examined.

Methods: 30 basis cranii and 206 os occipitale without any deformity in the bone archive of Ege University Department of

Anatomy, were used. High-resolution photographs were taken to examine the diameters, courses and confluence patterns of sulcus sinus sagittalis superior, sulcus sinus transversus, sulcus sinus sigmoideus and sulcus sinus occipitalis. Measurements were conducted using Image J software. Data were evaluated using IBM SPSS Statistics Standard Concurrent User V 25(IBM Corp., Armonk, New York, USA) statistical package program. Descriptive statistics are given as number of units (n), percentage (%). Single group chi-square test was used for categorical variables.

Results: In our study, the confluence patterns of sulcus sinus durales in eminentia cruciformis were examined in four groups. There were 99 (41.9%) Type 1, 34 (14.4%) Type 2, 84 (35.6%) Type 3 and 19 (8.1%) Type 4 cases. It was observed that the distribution between the groups showed a significant difference (χ^2= 75.424, p<0.001).

Conclusion: Different confluence patterns of sinus durales have clinical and surgical significance. Although there are certain confluence patterns, differences can also be seen from person to person.

Keywords: dural sinus, posterior cranial fossa, occipitale bone

OP-042

Abstract no: 29266
Abstract group: Clinical Anatomy / *Anatomical Variations*

The morphology and morphometry of palmar creases: a preliminary study on medical and dental students

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Objective: Palmar creases and fingerprints, which develop during the 7th–17th weeks of embryonic life, show the attachment points of the skin to the underlying tissue. Palmar creases and fingerprint types are not only diagnostic criteria for genetic diseases and anomalies of the intrauterine period but are also effective in revealing anthropological characteristics of populations. Our study aimed to examine palmar creases in morphological and morphometric.

Methods: The study was conducted on students from Necmettin Erbakan University, Faculty of Medicine (n=93) and Faculty of Dentistry (n=94). Morphometric measurements and morphological evaluations were performed by transferring students' hand photographs to MicroDicom Viewer software. The proximal (PTC), distal (DTC) and radial longitudinal (RLC) crease lengths and distances between these creases were measured. Variations of the major creases were examined. Symmetry status of hands was evaluated.

Results: The mean PTC, DTC, RLC in the left hands of the students were determined as 72.40±11.90 mm, 65.43±8.70 mm, 75.02±20.10 mm, respectively. In the right hand, these were determined as 69.02±10.47 mm, 62.78±9.01 mm, 73.61±18.44 mm Simian-type variations were seen at a rate of 0.26% (n=1), Sydney-type were seen at a rate of 0.80%, and Suwon-type was not observed at all. In addition, 84% of 157 students had asymmetry in the palmar crease.

Conclusion: We believe that the data obtained from our study will provide an important data set for our population and that the scope of the study should be further expanded to increase the reliability of our results.

Keywords: Palmar creases, antropology, flexion creases, Simian crease, Sydney crease, Suwon crease

OP-043

Abstract no: 47388
Abstract group: Other

2nd (index) and 4th (ring) finger ratio: comparative analysis between professional volleyball players and medical students

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Objective: The ratio of the length of the 2nd finger (2D) to the length of the 4th finger (4D) of the hand is called the finger ratio (2D:4D). 2D:4D has been used in health, behavioral and sports sciences as a putative indicator of prenatal testosterone exposure. We aimed to compare the 2D:4D of men who are successful in sports and men who are successful in academics to investigate whether 2D:4D can be a marker for talent screening in occupational selection.

Methods: In our study, 32 male players of a professional volleyball team and 39 male students of a medical school were compared. The 2nd and 4th finger lengths of both hands were

measured with digital calipers; 2D:4D was calculated. The dominant hands of the subjects were recorded. The data obtained were evaluated in SPSS (v26.0) program. P<0.05 was considered statistically significant.

Results: Intra-group comparison of right hand 2D:4D and left hand 2D:4D in student and volleyball player groups is statistically similar (p:0.225; p:0.922). Inter-group comparison of right hand 2D:4D and left hand 2D:4D is similar (p:0.388; p:0.939). The inter-group comparison of right hand 2D:4D minus left hand 2D:4D difference (ΔDr-l) is similar (p:0.525). Right hand 2D:4D, left hand 2D:4D and ΔDr-l are statistically similar for right hand dominant hand (p:0.525; p:0.766; p:0.454). Right hand 2D:4D, left hand 2D:4D and ΔDr-l are statistically similar for left dominant hand (p:0.474; p:0.952; p:0.078).

Conclusion: we suggest that the study be developed with more centers and participants.

Keywords: 2d:4d, volleyball players, medical students

OP-044

Abstract no: 85573
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Diagnostic trial of Alzheimer's disease based on the morphometry of callosal commissure by the use of machine learning algorithms

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Objective: The aim of this study was to investigate the predictability of Alzheimer's diagnosis from corpus callosum (CC) morphometry using machine learning algorithms (MLA).

Methods: The study was conducted on MRI of 2 groups, Alzheimer's patients and healthy individuals. The variables of CC evaluated on images are; genu thickness (G), body thickness (B), splenium thickness (S), anterior-posterior diameter (APD), maximum height (MH), genu-frontal pole (GFP), splenium-occipital pole (SOP), genu angle (GA), splenium angle (SA), angle of genu-anterior commissure (AGAC), anterior callosal angle (ACA), posterior callosal angle (PCA), rostral body-genu (RBG), isthmus-splenium (IS), hemisphere length (HL), vertex-temporal lobe (VTL), the most anterior point of the CC-commissura anterior (CCCA) and anterior point of the CC-fornix (CCF). Decision Tree (DT) and Random Forest (RF) were used as MLA.

Results: In the DT and RF algorithms, the pre, rec, F1, and accuracy values were found to be 0.89, 0.86, 0.86, and 0.86, respectively, based on the analysis. According to Shap analysis, it is revealed that G variable provides the most important contribution in the prediction of the algorithms. As a result of statistical analysis, variables with significant differences between the two groups were determined as G, B, S, GFP, DSO, ACA, RBG, IS and HL.

Conclusion: The study demonstrates that the DT and RF from the MLA can effectively classify Alzheimer's disease with high accuracy, even when using a limited number of sample groups. It was determined that, in contrast to the healthy group, those with Alzheimer's disease had different CC morphometry.

Keywords: Alzheimer, morphometry, corpus callosum, machine learning, magnetic resonance imaging

OP-045

Abstract no: 15715
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Morphometric analysis cerebrospinal fluid and thalamic volume in Alzheimer's disease using MRICloud

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Objective: The main objective of this study was to evaluate volume ratio of the cerebrospinal fluid (CSF) and thalamus to the adjacent brain structures between patients with Alzheimer Disease's (AD) and healthy controls (HC) and to evaluate these ratios from a neuroanatomical and neurological perspective.

Methods: A group of patients (n:24) diagnosed with mild AD and a control group (n:16) (23 women, 17 men, mean age: 72.3±7.7) were included in the study. MRICloud analyses were conducted on 3D MR images to measure the volumes of CSF, amygdala, thalamus, hypothalamus, mamaillary body, diencephalon, telencephalon, mesencephalon, metencephalon and myelencephalon.

Results: CSF/TotAmyg, CSF/TotThalm, CSF/TotHypo, and CSF/TotMama and Myelen/TotThalm, Metenc/TotThalm

values were significantly higher in the AD group than in the HC group ($p<0.05$). TelenL/ThalmL, TelenR/ThalmR, DiencL/ ThalmL, DiencR/ThalmR values did not differ significantly between AD group and HC group.

Conclusion: For automatic segmentation, MRICloud is the most suitable tool that provides results close to manual segmentation while significantly saving researchers' time and computational resources. Increased CSF volumes serve as a critical biomarker for the diagnosis of AD. The larger ratio of CSF volumes to other brain structures in Alzheimer's patients indicates a decrease in the volumes of these structures and an increase in CSF volume accordingly. Since brainstem structures are more resistant to Alzheimer's disease, atrophy of the thalamus is more pronounced in Alzheimer's patients compared to brainstem structures, resulting in increased Metenc/TotThalm and Myelenc/TotThalm ratios.

Keywords: MRICloud, Alzheimer's disease, cerebrospinal fluid, magnetic resonance imaging, thalamus

OP-046

Abstract no: 33429
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Examination of corticostriatal and thalamocortical pathways in patients with Parkinson's disease using tractography

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Objective: Parkinson's disease (PD) is characterized by motor problems and nigrostriatal pathway dysfunction due to dopaminergic deficits. While primarily an extrapyramidal disorder, abnormalities in corticostriatal (CS) and thalamocortical (TC) pathways, which affect motor and sensory functions, may also play a role in PD symptomatology. Recent research suggests that TC pathway anomalies may contribute to motor, cognitive, and neuropsychiatric disturbances. This study aims to investigate abnormalities in CS and TC pathways in PD patients.

Methods: Between January and August 2024, we retrospectively analyzed 32 PD patients (aged 18–65) and 32 age- and sex-matched healthy controls who visited the movement disorders center at Ankara Etlik City Hospital. Degenerations in CS and TC pathways were assessed using 3 Tesla 3D tractography images analyzed with Volbrain. Intergroup comparisons were performed using SPSS-22.

Results: Connection loss in CS and TC pathways was 50.2% and 62.1% in the PD group, respectively, compared to 44.4% and 59.3% in the control group. Bilateral anterior CS pathway connection loss was significantly more pronounced in PD patients ($p<0.05$). Notably, in women, connection loss was higher on the right side for the CS pathway (73.4%) and for the TC pathway (88.6%) compared to men (64.8%) ($p<0.05$).

Conclusion: Our results indicate greater degeneration in CS pathways in PD patients compared to controls. Evaluating temporal changes and potential clinical correlates in these pathways could significantly contribute to understanding disease pathogenesis.

Keywords: Parkinson's disease, tractography, connectivity impairment, corticostriatal, thalamocortical pathways

OP-047

Abstract no: 72379
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Analysis of ventricles and periventricular area in Parkinson's patients with using VolBrain: a retrospective study

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Objective: Parkinson's disease (PD) is characterized by cortical and subcortical atrophy and increased ventricular volumes from the early stages. Additionally, there is a higher risk of ischemic stroke and asymptomatic periventricular lesions in PD patients. This study aims to compare periventricular and deep white matter lesion types, lesion burden, and ventricular volumes in PD patients versus healthy individuals to enhance clinical understanding and practice.

Methods: We analyzed brain MRI scans of 25 healthy individuals and 25 PD patients, aged 18–65, from Ankara Etlik City Hospital between April 1–30, 2024. Using 1mm thick T1-weighted images at 3 Tesla, we compared ventricular volumes and lesion burdens using Volbrain.

Results: The study found that the left lateral ventricle (healthy: 8.27±3.778 cm³; PD: 13.62±4.187 cm³) and third ventricle (healthy: 0.86±0.691 cm³; PD: 1.60±0.659 cm³) volumes were significantly larger in PD patients ($p<0.05$). Gender differences revealed that the lower part of the lateral ventricle was larger in males compared to healthy controls ($p<0.05$). Deep white matter lesion burden was also higher in male PD patients compared to females ($p<0.05$). Periventricular lesion burden in PD patients was 0.80±1.705 cm³, with no significant difference in white matter lesion burden compared to controls.

Conclusion: This study highlights increased ventricular volumes and periventricular lesion burden in PD patients compared to healthy controls. These findings offer valuable insights that may inform future research and clinical strategies for managing movement disorders effectively.

Keywords: Parkinson, ventricle, white matter, lesion, volbrain

OP-048

Abstract no: 34698
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Time-dependent analysis of calbindin and calretinin levels in 6-OHDA induced Parkinsonian rat models

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Objective: Parkinson's disease is the second most common progressive disease characterized by losing dopaminergic neurons in substantia nigra. İncrement in intracellular calcium levels and a decrease in the expression of calbindin and calretinin may increase the dopaminergic system's vulnerability to neurotoxicity. This study focused on the time-dependent change in the level of expression of calbindin and calretinin in blood and brain of Parkinsonian rats.

Methods: The control group (n=10) and 6-hydroxydopamine-induced group (n=10) rats were divided into two groups to observe the early and late periods of the disease. The lesion was assessed behaviorally using the apomorphine rotation test and through immunohistochemistry. The enzyme-linked immunosorbent assay measured the blood levels of calbindin and calretinin in the second, fifth, and tenth weeks following the lesion. The western blot procedure was applied to measure the level of the proteins in the brain in the fifth and tenth weeks. The results were analyzed by using the Graph Pad Prism (ANOVA).

Results: In the fifth and tenth weeks, the amount of calbindin in brain revealed a significant decrease in the lesioned groups compared to the control groups ($p=0.0018$; $p=0.03$). The level of calbindin in the blood did not show any significant difference, but the level of calretinin in the blood in the fifth week was significantly lower than in the tenth week ($p=0.014$). Amount of calretinin in the brain was also lower in the lesioned group, but this was insignificant.

Conclusion: This result showed that the calcium-binding proteins may be biomarkers for the early period of Parkinson's disease.

Keywords: Parkinson's disease, calbindin, calretinin

OP-049

Abstract no: 56577
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

The effect of chronic monosodium glutamate consumption on hippocampal dendrite morphology in Wistar and genetic absence epileptic rats

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Objective: Monosodium glutamate (MSG) is an industrial sweetener frequently used in food production and cooking. Experimental studies have shown that the administration of MSG may cause glutamate toxicity and facilitate epilepsy. This study aimed to investigate the effect of oral administration of MSG on hippocampal dendrite morphology in Wistar and genetic absence epileptic rats.

Methods: The rats were divided into four groups: the Wistar control group, orally administered with NaCl (1.0 g/L) for 2 months (n=7), the GAERS (Genetic Absence Epilepsy Rat from Strasbourg) control group, orally administered with NaCl (1.0

g/L) for 2 months (n=7), the Wistar MSG group, orally administered with MSG (1.0 g/L) for 2 months (n=7) , and the GAERS MSG group, orally administered with MSG (1.0 g/L) for 2 months (n=7). Rats were sacrificed, and brain tissues were stained using FD Rapid GolgiStain Kit. Pyramidal neurons in the CA1 region of the hippocampus were examined using a light microscope and Neurolucida 360 software. Dendritic arborization, total dendrite length, dendritic spine density, and dendritic spine types were analyzed.

Results: Statistically, according to the administration of MSG, the total dendrite length increased in both strains. Furthermore, the density of mushroom-type dendritic spines decreased, and the density of thin-type dendritic spines increased in both strains.

Conclusion: Long-term consumption of MSG led to changes in the morphological features of dendrites and dendritic spines in hippocampus. These alterations could be related to some glutamate induced excitotoxic effects on the remodeling of dendrites.

Keywords: monosodium glutamate, Wistar, GAERS, dendrite, dendritic spine

OP-050

Abstract no: 32865

Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Examining the efficacy of new generational tissue clearing methods on mouse brains subjected to long-term fixation

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Objective: Tissue clearing methods are revolutionizing neuroscience by providing new insights and visualization opportunities. This study aimed to test the efficacy of new generational rapid tissue clearing methods on brain tissues that have been in fixative for several years.

Methods: We used fixed brain tissues remained from the study approved by the Mersin University Animal Experiments Local Ethics Committee (2011/21). We used remaining consumables obtained from the grants issued as 2015-TP2-1120, 2021-1-TP2-4269 and 118C299, supported by Mersin University Scientific Research Projects Unit and TUBITAK. We used 3-month-old female mouse brain hemispheres stored in 4% paraformaldehyde for 48 hours and then in 1% paraformaldehyde for 12–13 years. We obtained 1mm thick slices with a tissue slicer. We imaged the slices under a stereo microscope before and after FOCMS and MACS clearing, applying each method for 45 minutes per slice following published protocols. Selected slices underwent 5-hydroxymethylcytosine immunofluorescence or lipophilic DiI labeling. We then captured 3D images of the brain slices under a confocal microscope before and after clearing.

Results: We qualitatively detected that both clearing methods substantially clear 1mm brain slices. Comparing brain slices before and after clearing showed that both methods preserved fluorescence and enabled deeper Z-axis scanning.

Conclusion: Our findings provide an essential insight that new generational rapid tissue clearing methods can be used to conduct research by improving the quality of various neurohistological methods on thick slices taken from the long years of anatomical archives.

Keywords: tissue clearing, neuroscience, florescence imaging, confocal microscopy

OP-051

Abstract no: 65670

Abstract group: Anatomy Techniques and Cadaver Management / *Cadaver and Infection Risks*

Evaluation of microbial cadaver contamination with Staphylococcus warneri, a member of human microbiota

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Objective: Superficial microbial growth observed in various parts of the cadaver stored in the formalin tank in the dissection laboratory of Marmara University Anatomy Department. Identification of the cadaver contaminant and determination of its formaldehyde susceptibility were aimed.

Methods: Swab samples taken from the cadaver were inoculated on %5 sheep blood agar and thioglycolate broth. There was no growth on blood agar at the end of three-day, anaerobic growth pattern was observed on thioglycolate broth on 48th hour. Subculture was performed on blood and chocolate agars then incubated in anaerobic and aerobic conditions, respectively. Identification of isolates was performed using MALDI-TOF MS. To detect the antimicrobial activity, a known-to-be susceptible isolate Staphylococcus aureus ATCC 29213 and a freshly

prepared tank solution were used as controls. Isolates were exposed to tank solution and freshly prepared solution to compare their susceptibility.

Results: Gram-stained microscopy revealed gram positive cocci. Both bacteria isolated from blood and chocolate media were identified as Staphylococcus warneri using MALDI-TOF MS. It is observed that the tank content and the freshly prepared solution were effective against S.warneri which isolated as cadaver contaminant and detected as susceptible to both solutions.

Conclusion: The cadaver contamination risk should be considered even after a successful embalming process. Air disinfection/filtration systems should be controlled regularly in dissection rooms. The human microbiota should not be ignored as potential sources of contamination for cadavers. In terms of consistency, inoculating microbiological cadaver samples into a thioglycolate medium may help in isolating potential contaminants.

Keywords: Staphylococcus warneri, cadaver, formalin, anatomy

OP-052

Abstract no: 88567
Abstract group: Anatomy Techniques and Cadaver Management / *Cadaver Embalming Techniques*

Cadaver storage practices and laboratory infrastructure in medical schools in Türkiye: an evaluation

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Objective: This study assesses the awareness of anatomy professionals in Türkiye regarding cadaver storage methods, laboratory conditions, and their health implications.

Methods: The study included 71 participants from 37 institutions. Data were collected using an online questionnaire, assessing knowledge of cadaver preservation methods, storage conditions, laboratory infrastructure, protective equipment use, and views on health effects.

Results: Regarding storage methods of fixed cadavers, 58% of participants knew they could be stored both in the mortuary/cold room and the pool, 41% only in the pool, and 1% only in the cold room. In practice, 57% stored cadavers in pools, 34% used both methods, and 9% only in the cold room. Although 90% of laboratories had ventilation systems, 81% of respondents reported them as inadequate. Additionally, 77% indicated their institutions did not provide training on the health effects of chemicals. The most common equipment used during dissections were surgical gloves (83.1%) and traditional lab coats (50.7%), with institutions providing 64.8% and 38.0% respectively. Equipment provision to students was lower, with only 12.7% of surgical gloves and 7.0% of lab coats supplied. Additionally, 39.4% reported no safety equipment was provided to students.

Conclusion: These findings indicate serious deficiencies in cadaver preservation methods and laboratory infrastructure concerning health safety. Institutions must improve occupational safety equipment provision, particularly for students.

Keywords: cadaver preservation, laboratory infrastructure, anatomy education, occupational safety, Türkiye

OP-053

Abstract no: 81846
Abstract group: Other

A discussion on issues of representativeness in anatomical studies

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Objective: Since examining an entire population is not feasible in terms of time and cost, scientific studies are typically conducted on a sample that represents the characteristics of the population. Representativeness of target population is one of the conditions for making accurate generalizations about a larger-population with a smaller-sample size. We observe many anatomy journals make errors regarding issues of representativeness and "population". In this study, we aimed to raise awareness, examine the status of international publications from Türkiye.

Methods: Searches were conducted in WOS and PubMed databases using combinations of the keywords "Turkish", "Anatolian," "Turkish population," "Anatolian population," "Turks," and "anatomy." 425 studies were evaluated by two anatomists based on use appropriately in titles and texts. Study type, publication year, indexing status, and power analysis pres-

ence were recorded. The appropriate use of keywords was assessed based on the year of publication, indexing, and quartile.

Results: It was found that a sample size calculation was performed in 9 studies. The inappropriate use of keywords in titles/texts was determined to 74.8%. This rate was lower in journals in SCI-E compared to others. There was statistically significant difference in this rate according to the quartiles of journals in SCI-E. The inappropriate usage rate was higher in studies published in before 2010 compared to those published after 2010.

Conclusion: Some issues related to sample representativeness in anatomical studies in our country have been identified in this study. By increasing awareness of this issue, scientific quality of studies can be improved.

Keywords: population, representativeness, sample

OP-054

Abstract no: 89090
Abstract group: Anatomy Techniques and Cadaver Management / *Cadaver Embalming Techniques*

Embalming process performed on an autopsied case in the Anatomy Department of Ege University Faculty of Medicine

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Objective: The purpose of embalming the cadaver was to eliminate infectious agents, prevent the decomposition of organs and tissues, minimize toxic effects on individuals performing dissections on the cadaver, and ensure the long-term use of anatomical structures.

Case: An autopsy was performed on August 13, 2024, on an 84-year-old male cadaver who had expired due to a non-infectious disease (Forensic Case). Following the autopsy, the embalming procedure was carried out by our team. The cadaver did not exhibit any previous surgical scars, wounds, scar tissue, or interventional procedures. No distinguishing features such as tattoos, limb loss, or congenital malformations were observed. The fixation solution prepared for the cadaver was administered via intravascular injection through the bilateral subclavian arteries and bilateral common iliac arteries. During the embalming process, potential leakage risks were attempted to be prevented using clamps.

Conclusion: Due to insufficient perfusion in the lower extremities during the embalming process, injections were performed. After the embalming procedure, the abdomen, which was opened during the autopsy, was closed with stitches. The cadaver was then placed in a pool after the embalming process was completed.

Keywords: autopsy, embalming, cadaver

OP-055

Abstract no: 53441
Abstract group: Clinical Anatomy / *Anatomical Variations*

Investigation of the presence and distribution of dural septum in the jugular foramen: an autopsy study

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Objective: This study aimed to describe the frequency of dural septum types in the jugular foramen and to classify them according to age and gender.

Methods: In our study, the skull base photographs of a total of 352 autopsy cases performed between March 2021 and March 2024 by Tokat Forensic Medicine Branch Directorate were examined retrospectively. Cases with unclear images were excluded. A total of 197 cases, 147 males and 50 females were included in the study.

Results: Four types of dural septum were identified. Type I (36.0% right; 35.5% left), where the dural septum is behind the glossopharyngeus and in front of the vagus and accessorius; type II (30.5% right; 29.4% left) without septum; Type III (8.6% right; 9.6% left) septum was observed behind the glossopharyngeus and vagus, and in front of the accessorius; and type IV (24.9% right; 25.4% left)) septum separating each nerve from each other. The most common septum type was found to be type I in men (40.5%) and type II in women (46%). According to age groups, type II was most frequently observed under the age of 18 (76%), type I between the ages of 18–65 (43.8%), and type IV over the age of 65 (48.55%). A weak positive correlation was observed between the number of dural septums and age ($p<0.001$, $r=0.348$).

Conclusion: We believe that our data will be useful for forensic medicine and neurosurgery applications related to the skull base and will also contribute to the literature.

Keywords: accessory nerve, glossopharyngeal nerve, posterior cranial fossa, vagus nerve, variation

OP-056

Abstract no: 49027

Abstract group: Anatomy and Innovation / *Relationship between Anatomy and Technology*

Use of a deep learning model for automatic pterygopalatine fossa segmentation on head computed tomography images

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Objective: Segmentation of organs or structures to create 3-dimensional models is a useful technique for the diagnosis and treatment of diseases. The study aims to develop a deep learning model based on nnU-Net v2 for automatic segmentation of the pterygopalatine fossa (PPF) on head computed tomography (CT) images and evaluate this model performance.

Methods: The PPF was segmented on 45 CT images using 3D-Slicer software program. The dataset was divided into 2 parts: 41 CT scans were used to train the model, and 4 CT scans were used to test the model. Model training was performed using the nnU-Net v2 deep learning model with a learning rate of 0.00001 for 1000 epochs. The model performance to automatically segment PPF was evaluated with several parameters including accuracy, sensitivity, precision, Dice score, 95% Hausdorff distance, Intersection over Union and area under curve (AUC) values.

Results: For the right PPF, the model had accuracy of 0.99, sensitivity of 0.63, precision of 0.62, Dice score of 0.62, 95% Hausdorff distance of 9.77, Intersection over union of 0.53 and AUC of 0.81. For the left PPF, the model had accuracy of 0.99, sensitivity of 0.68, precision of 0.64, Dice score of 0.65, 95% Hausdorff distance of 8.80, Intersection over union of 0.52 and AUC of 0.84.

Conclusion: In present study, the nnU-Net v2 based model was shown to segment PPF automatically and accurately in CT images. Successful deep learning models have a potential to help clinicians in clinical practice to segment structures quickly and reliably.

Keywords: 3D-Slicer, pterygopalatine fossa, automatic segmentation, deep learning, computed tomography

OP-057

Abstract no: 24785

Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Morphometric classification of the lunate bone and assessment of its relationship with Kienböck's disease

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Objective: The morphometric significance of the lunate bone,one of the key stones of the wrist bones, has increased in importance. Kienböck's disease, which is rare in this region, presents a great diagnostic challenge due to its unclear etiology. The aim of our study is to classify the lunate bone according to its morphometric characteristics and to evaluate the relationship between lunate types and Kienböck's disease.

Methods: This study was conducted on 384 adult individuals who presented with wrist pain at Başkent University Adana Dr. Turgut Noyan Practice and Research Center between 2000 and 2023 and had available AP (anteroposterior) radiographic images. According to the lunate classification proposed by Viegas et al; Type1 Lunate: Single distal articular facet for the capitate Type2 Lunate: Additional medial distal articular facet for the hamate.In addition to our classification morphometric measurements of the lunate and hamate bones were also taken.The data of the study were analyzed using the SPSS25.0 program.

Results: As a result of the radiological evaluation of the wrists of the 384 participants in our study according to Viegas's classification, 201 individuals had type1 lunate and 183 individuals had type 2 lunate. Among the 384 individuals included in the study, 52 were diagnosed with Kienböck's disease. The distribution of type 1 and type 2 lunates was similar in patients diagnosed with Kienböck's disease. In our study; the average length of the lunatebone was 1.08±26 cm, its width was 1.57±22 cm, the average length of the hamate bone was 1.8±28 cm, and its width was 1.58±18 cm. The width measurement of the lunate was significantly lower in patients with Kienböck's disease (p=0.007). However, hamate width and length, and lunate length measurements were statistically similar across groups.

Conclusion: Knowledge about the morphological characteristics of the lunate bone, which plays a major role in wrist diseases, will guide the treatment and diagnosis process,and we believe that thedata obtained in our study will be beneficial for orthopedics and physical therapy.

Keywords: Kienböck disease, lunate bone, radiography

OP-058

Abstract no: 81399
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of talocrural joint morphometry using radiographic measurements

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Objective: The talocrural joint, constitutes the kinetic link of ground contact, which is the basis of gait and many other daily activities. The knowledge of comprehensive morphologic and morphometric characteristics of this region, where injuries are frequently seen, is extremely important in diagnosis and treatment. The aim of this study is to determine the morphometric characteristics of the talocrural joint in healthy adults by age and gender.

Methods: This study was carried out retrospectively on the radiographic images of 315 (141 males, 174 females) healthy adults applied to Adana Dr. Turgut Noyan Application and Research Center between 2013 and 2023. The mediolateral diameter of the tibia (TML), the mediolateral diameter of the fibula (FML), the surface area of trochlea of the talus (TTA), the angle between the edges of the talus and the edges of the calcaneus (SIGMA), the distance between innermost points of the talocrural joint (ATI), the distance between outermost points of the talocrural joint (ATD), the angle between medial malleolus and talus (DELTA), the angle between lateral malleolus and talus (ALFA), the sagittal length of the trochlea of the talus (TSU) were measured. The data of this study were analyzed with SPSS25.0 software.

Results: In this study, the mean values for males and females were; FML1, 89±0.23 mm, 1.72±0.17 mm; TML 5.63±0.36 mm, 4.87±0.30 mm; ATI 3.40±0.35 mm, 2.97±0.32 mm; ATD 6.79±0.47 mm, 6.02±0.35 mm; TSU 3.84±0.30 mm, 3.41±0.29 mm; DELTA 16.61±2.34 mm, 16.79±1.99°; ALFA 36.57±2.91°, 36.3±3.06°; SIGMA 88.94±4.77°, 89.67±4.04°; TTA5, 79±0.76 cm, 4.98±0.69 cm^2; respectively. Statistically significant differences were observed between genders in terms of FML, TML, ATI, ATD, TSU and TTA measurements and between age groups in terms of TML, FML, DELTA and TTA measurements.

Conclusion: We believe that data obtained in our study will contribute literature, guide clinicians, help with the success of operations as well as prosthesis manufacturers.

Keywords: morphometry, radiography, talocrural joint

OP-059

Abstract no: 66902
Abstract group: Clinical Anatomy / *Anatomical Variations*

Anatomical variations in the points of origin of scalene muscles

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Objective: Like other anatomical regions, scalene muscles exhibit various anatomical variations. The musculus scalenus anterior muscle may originate from C2 and/or may not include C6. This study was conducted to identify variations observed in the origin sites. This anatomical variant may lead to a symptomatic picture indicative of thoracic outlet syndrome.

Methods: In the Anatomy Department of Ege University Faculty of Medicine, the levels of the vertebrae cervicalis where the m. scalenus anterior and m. scalenus medius, which form the interscalene triangle on both right and left sides in a total of 40 sides of 20 cadavers fixed with 10% formalin, were determined. Palpation technique was used to identify the processus transversus and the first costal rib. The variable origins of the muscles were reported.

Results: In our study, the percentage of origin levels for m. scalenus anterior were as follows: C3–C6 (n=16, 80%), C3–C7 (n=0, 0%), C4–C5 (n=0, 0%), C4–C6 (n=4, 20%), C5–C6 (n=0, 0%). For m. scalenus medius, the variable percentages of the levels from which it originated were reported as follows: C1–C6 (n=0, 0%), C1–C7 (n=0, 0%), C2–C6 (n=6, 30%), C2–C7 (n=14, 70%).

Conclusion: Morphologically, the lateral vertebral muscles exhibit variations in the levels from which the muscles originate. In our study, these variable origin levels of the muscles were grouped and a "Typing" was created. The origin and insertion points of the musculus scalenus anterior and musculus scalenus medius muscles were evaluated and recorded. Typing was divided into 4 groups as Type 1, Type 2, Type 3, and Type 4.

Keywords: anterior scalene muscle, middle scalene muscle, cervical vertebrae

OP-060

Abstract no: 86374
Abstract group: Life-Long Anatomy / *Embryology and Developmental Anatomy*

Development of masseter muscle in fetal period

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Objective: We examined the morphometric and histological development of the masseter muscle in inuteromort human fetuses and observe relationship with neighboring structures.

Methods: From the fetus collection belonging to the Anatomy Department of Izmir Kâtip Çelebi University, masseter muscles of 21 inuteromort fetuses (F:8, M:13) without external anomalies, aged between 13–40 weeks, were dissected bilaterally. Masseter and surrounding structures were photographed and measurements were made digitally using the ImageJ. Parenchyma-stroma ratio, representative fiber number in 900 μm² and muscle fiber diameter were measured using the stereological method from histological samples and the results were compared.

Results: Morphometric datas increase with gestational age. The parenchyma-stroma ratio, the number of representative fibers and the muscle fiber diameter increased throughout fetal development. It was observed that the parenchyma-stroma ratio increased in favor of parenchyma throughout the fetal period. The shape of the masseter and the course of the parotid duct above masseter did not show statistically significant differences according to gestational age. Although the area covered by the gland above masseter shows an increasing trend with gestational age.

Conclusion: Morphometric and microscopic data regarding the increase in masseter during intrauterine development are compatible with biological reality. We believe that our study is a pioneer for new studies in the intrauterine period and will be useful in studies in the fields of obstetrics, pernatology and forensic medicine for the early detection of clinical conditions such as agenesis and anomaly/pathology in the structures in the facial in the fetal period.

Keywords: masseter muscle, fetal period, human fetus, stereology, parenchyma stroma ratio

OP-061

Abstract no: 38536
Abstract group: Other

The evaluation of the relationship between gonial angle and chewing side preference

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Objective: The gonial angle, formed between the mandible's corpus and ramus, generally narrows postnatally with age but widens with tooth loss later in life. The masticatory muscles development affects this angle. Individuals often show a preference for one side of the mouth during chewing. This study explored how chewing side preference affect gonial angle.

Methods: 150 students completed a Google Forms questionnaire on their personal information and dental habits. An experienced dentist performed the comprehensive dental examinations. Chewing tests were conducted and anatomical landmarks (temporomandibular joint, gonion, and ramus) were marked. The photographs were taken from the front, right, and left sides in the Frankfort horizontal plane. Gonial angles were measured using the ImageJ software. Categorical variables were evaluated using the Chi-Square test, and continuous variables were assessed with student t test with SPSS 22.0.

Results: Among the 77 male and 73 female participants, 56.7% preferred right-sided chewing and 43.3% preferred left-sided chewing. Chewing preference did not vary significantly according to sex ($p>0.05$). The right gonial angle was narrower for right-sided chewers than for left-sided chewers, but this difference was not significant ($p>0.05$). The left gonial angle was significantly narrower in left-side chewers than in right-side chewers ($p<0.05$).

Conclusion: The gonial angle on the preferred side was narrower. This condition may be related to the muscle contraction forces on the preferred side and may influence the degree of facial asymmetry.

Keywords: gonial angle, chewing side preference, chewing test

OP-062

Abstract no: 68872
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

A look at mandibular asymmetry with three-dimensional reconstruction: mylohyoid ridge

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Objective: Natural asymmetry, which is frequently observed in mandible, may cause differences in size, shape or position right and left of mandible. The mylohyoid ridge is used as a landmark for surgical interventions made in this region, as it is a structure that can be viewed both radiologically and palpated. Our study aims to evaluate three-dimensional mandibular morphometry and mylohyoid ridge.

Methods: 50 cone beam computed tomography (CBCT) mandibular images were retrospectively included in this study. Three-dimensional reconstruction of CBCT images was performed with 3D Slicer and Ansys programs.

Results: In both genders, corpus length and height, the distance of the mylohyoid ridge to lower edge of mandible on the left side, and the mandibular angle on right side were larger ($p<0.05$). In men, the distance of the mylohyoid ridge to upper edge of the mandible and the mylohyoid ridge-mandibular angle were larger on left side ($p<0.05$). In both genders, there was a positivie correlation for both sides on parameters of the distance of the mylohyoid ridge to upper an lower edges (female: $r=0.422$, $r=0.626$; male: $r=0.676$, $r=0.750$ $p<0.05$, respectively).

Conclusion: It was found that the distance of the mylohyoid ridge from lower edge to upper edge of the mandible and also mandibular angle had mandibular asymmetry in both genders. It is thought that these parameters may guide clinicians in the evaluation of mandibular asymmetry and several surgical interventions.

Keywords: 3D Slicer, Ansys, mandible, mylohyoid ridge

OP-063

Abstract no: 13899
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Investigation of the relationship between the position of lingula mandibulae and the course of the inferior alveolar nerve in the Turkish population by cone-beam computed tomography

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Objective: To reduce nerve damage and other complications in operations such as sagittal split ramus osteotomy (SSRO), intraoral vertical ramus osteotomy (IVRO), and anesthesia of the inferior alveolar nerve knowing the position of the mandibular lingula and the course of the inferior alveolar nerve is important. This study aimed to determine the position of the mandibular lingula and the course of the inferior alveolar nerve in the Turkish population using cone beam computed tomography.

Methods: Cone beam computed tomography (CBCT) images of 110 patients, 55 female and 55 male, over 18 years of age, who met the inclusion criteria were obtained retrospectively. Measurements were made by marking anatomical reference points determined on 3D image models obtained with Cybermed On Demand 3D software. The obtained data were evaluated statistically.

Results: The distance between lingula mandibulae and mandibular notch was 13.17±2.94 mm on right side and 13.81±3.46 mm on left side on average; the distance between lingula mandibulae and anterior edge was 12.12±2.58 mm on right side and 13.47±2.4 mm on left side on average; the distance between lingula mandibulae and posterior edge was 15.73±2.22 mm on right side and 15.83±1.99 mm on left side on average; The lingula height was found to be 5.41±0.93 mm on right side and 5.57±1.1 mm on left side.

Conclusion: The values obtained with these measurements will help determine the safe zone for SSRO and minimize the risk of damaging the lingula mandibulae and inferior alveolar nerve during procedures to be performed in this region.

Keywords: cone beam computed tomography, inferior alveolar nerve, lingula mandibulae

OP-064

Abstract no: 14029
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

A preliminary study on evaluation and clinical significance of variations in the supratrochlear foramen at distal humerus

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Objective: The supratrochlear foramen, which is located between the two epicondyles and separates the olecranon from the coronoid fossa, varies from person to person. It can be seen as an opaque, semi-transparent septum or foramen. Both morphological and prevalence differences can be seen. In this study, we planned to show the frequency of variations in this anatomical structure, the shape and form of variations through computerized tomography imaging (axial, coronal, sagittal sections and 3D modeling images).

Methods: CT images of 174 unilateral elbow joints was examined. The transverse and longitudinal diameters of the supratrochlear foramen and its distance to the lateral and medial epi-

condyle were measured. The morphological shape of this variational structure (oval, round, triangular, etc.) and whether it is septate or opaque was evaluated from 3D images. Measurements and 3D reconstruction of the images were obtained using the Horos 4.0.0 software.

Results: The mean transverse and longitudinal diameters of the supratrochlear foramen 5.67±1.48 mm and 4.99±1.65 mm respectively, its distance to the lateral and medial epicondyle were measured as 23.75±3.33 and 24.3±4.26. The most common morphological shape is oval.

Conclusion: The conclusions we planned to gain from this study are to draw attention to anatomical variations in the evaluation of fracture reduction during surgical treatment in patients with distal humerus fractures or to prevent erroneous evaluations that may lead to interpretation as pathological lesions or cysts in the anatomy of the region.

Keywords: supratrochlear foramen, elbow fracture, distal humerus, radiologic anatomy, 3D anatomy

OP-065

Abstract no: 65688
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal Anatomy*

Morphological variability of extensor grooves on the radial styloid process

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Objective: This study aimed to obtain anatomical data for the local blockade treatment of de Quervain's disease by examining and classifying the characteristics of the extensor groove located in the first extensor compartment on the radial styloid process.

Methods: A total of 103 dry radius samples obtained from adult Turkish cadavers were systematically analyzed. The morphological features of the extensor grooves on the processus styloideus radii were visually examined, and a digital caliper was used to measure the parameters of variation and correlation.

Results: The classification of the extensor grooves revealed that Type 1 was found in 29.12% of cases, Type 2 in 36.89%, and Type 3 in 33.98%. The mean shortest transverse distance between the distal point of the palmar edge of the extensor groove and the tip of the radial styloid process was 15 mm on the left side and 15.3 mm on the right side. The mean shortest vertical distance between the distal point of the palmar edge of the extensor groove and the distal point of the dorsal edge of the extensor groove was found to be 6.6 mm on the left side and 6.85 mm on the right side.

Conclusion: It is possible to consider the bony prominence that divides the groove into two sub-regions and the shape of the bony boundaries of these regions as useful reference points for steroid injections. We believe that, in addition to its contribution to the anatomical literature, our study may also serve as a guide for clinicians.

Keywords: radial styloid process, de Quervain's disease, radius

OP-066

Abstract no: 77894
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

The effect of age and gender on cerebellum morphometry: a voxel-based morphometry study

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Objective: The cerebellum, primarily known for its role in coordinating motor functions, is also considered to contribute to various other mechanisms, including cognitive processes. In this study, our aim is to examine the volumes, cortical thicknesses, and gray matter volumes of the cerebellar lobules in healthy individuals using voxel-based morphometry.

Methods: In our study, the radiological images of the participants were obtained from an open-access database. Voxel-based morphometry measurements were performed on T1-weighted MPRAGE cranial magnetic resonance images of healthy 51 males and 11 females. For these measurements, the cloud-based VolBrain CERES system was used.

Results: As expected, higher values were found in males compared to females in terms of the volumetric measurements and cortical thickness of the cerebellum ($p<0.05$). However, the mean volume of lobule IX was observed to be higher in females. A negative correlation was identified between morphometric parameters and age in several regions of the cerebellum. In the Crus I, a negative correlation with age was detected on both the right and left sides in both gender groups ($p<0.05$).

Conclusion: In our study, the CERES system, which performs automated segmentation with advanced artificial intelligence and machine learning technologies was utilized. Although males exhibited higher values in many cerebellar regions, the mean vol-

ume of lobule IX was found to be higher in females. The negative correlation identified between the participants' ages and the measurements was considered consistent with neuronal pruning.

Keywords: cerebellum, voxel-based morphometry, magnetic resonance imaging

OP-067

Abstract no: 68606
Abstract group: Clinical Anatomy / *Anatomical Variations*

Coexistence of a large vertebral artery fenestration involving the distal segments and bilateral duplication of the superior cerebellar artery: a case report

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Objective: The aim of our study is to report a case of a large fenestrated vertebral artery (FVA) and bilateral duplication of the superior cerebellar artery (SCA) incidentally diagnosed using Computed Tomography Angiography (CTA) and Digital Subtraction Angiography (DSA).

Case: A 63-year-old female patient presenting to the neurology clinic with complaints of dizziness and balance disorder. CTA and DSA revealed a large FVA involving the V3 and V4 segments. Additionally, we observed bilateral duplicated SCAs originating from the distal basilar artery.

Conclusion: This case report describes an unusual case of VA fenestration involving both extracranial and intracranial segments, along with bilateral duplication of the SCAs. While rare, these findings highlight the importance of recognizing such vascular anomalies, which could be relevant for planning surgical or endovascular procedures in the posterior circulation.

Keywords: fenestration, vertebral artery, duplication, superior cerebellar artery, Digital Subtraction Angiography

OP-068

Abstract no: 46502
Abstract group: Clinical Anatomy / *Anatomical Variations*

A rare anatomical variation of the transverse facial artery: a case report

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Objective: In this study, a rare anatomical variation of the transverse facial artery observed during routine cadaver dissection is presented. The artery displayed an unusual course and branching pattern. Anastomoses were observed in the branches of this artery, which primarily supplies the parotid gland, masseter, and surrounding skin tissue. The aim of the study is to evaluate this variation topographically and discuss its potential clinical implications. Such variations hold significant clinical importance, particularly in facial and reconstructive surgeries.

Case: During a routine facial dissection performed on a fixed cephalus for educational purposes, the origin, course, and branching of the isolated transverse facial artery were examined topographically. During the dissection and tracing of the artery, in addition to the known branches supplying the masseter and the parotid gland, a branch ascending upwards was observed. Upon tracing this branch, it was found to ascend vertically toward the zygomatic arch and, when the surrounding structures were removed, it was seen to give off branches to the upper and lower parts of the zygomatic arch. It was determined that these observed branches did not conform to the normal pattern of the artery.

Conclusion: This study identified a rare anatomical variation of the transverse facial artery, with no previous reports of such a variation found in the literature. Understanding the topographic anatomy of the artery and its branches is crucial in minimizing complications during surgical interventions in the facial region, reconstructive surgery, aesthetic facial lifts, and dermal injections.

Keywords: transverse facial artery, facial surgery, variation

OP-069

Abstract no: 31960
Abstract group: Clinical Anatomy / *Anatomical Variations*

Bilateral accessory parotid glands: implications for surgical planning and diagnostic evaluations revisited

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Objective: This study examined the anatomical features of accessory parotid glands (APGs) using cadaveric dissection and morphometric analyses.

Methods: During cadaveric dissection, the bilateral accessory APGs were identified. Measurements (mm) of length, diame-

ter, thickness, and distances to surgical landmarks were taken for both the accessory and main PGs using digital calipers and ImageJ software. Measurements included the shortest distances between the zygomatic arch, external auditory meatus, gonion, and vermilion border of the upper lip to the APG for morphometric assessments.

Results: On the left side APG measured 26.22 in diameter, 23.08 in length, and 2.24 in thickness. On the right side, it was 14.96 in diameter, 6.36 in length, and 2.11 in thickness. The mean distance from the main PG was 40.58 on the left and 17.34 on the right. The distance from the APG to the orifice was 37.16 on the right and 33.23 on the left side. On the left side, the APG intersects the midpoint of the buccal branch of the facial nerve, with the upper buccal branch passing directly above and adhering to the gland, whereas the other branch runs within the adipose tissue beneath it.

Conclusion: In this case, the bilateral presence and symmetrical arrangement of the APGs, along with their proximity to the main PG, highlight the complexity of their anatomy. Additionally, the proximity of the buccal and zygomatic branches of the facial nerve to the APG should be considered during preoperative evaluation.

Keywords: parotid gland, accessory parotid gland, cadaver, anatomic variation, parotid duct

OP-070

Abstract no: 84894
Abstract group: Clinical Anatomy / *Anatomical Variations*

Pseudotumor deltoideus: a rare case

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Objective: Pseudotumor deltoideus, initially described by Morgan et al., represents a rare condition with numerous variants. It exhibits abnormal, bening tumor tissue like ossification in the proximal aspect of the humerus bone and the insertion site of the deltoid muscle, akin to an anomalous tumorous tissue of benign etiology.

Case: In this study, the findings of anterior, posterior, and lateral shoulder radiographs and sagittal T2-weighted magnetic resonance images of a 64-year-old male with chronic shoulder pain in the deltoid muscle and swelling in the tuberosity deltoideus region are presented. It was observed that there was an increase in cortical thickness accompanied by an intracortical radiolucent lesion in the tuberositas deltoideus region of the os humeri on the left side, which formed a structure similar to tumor tissue.

Conclusion: Although the cause of pseudotumor deltoideus is not yet known exactly, clinical and radiological imaging evaluation is very important to avoid confusion with infection and malignancy. Moreover, radiographic findings such as irregular cortical ossification and intracortical lucency in the tuberositas deltoideus region in a patient presenting with shoulder pain should suggest the possibility of pseudotumor deltoideus for diagnosis. Awareness of pseudotumor deltoideus will assist clinicians in the differential diagnosis and in determining the treatment protocol, thereby avoiding unnecessary biopsy and surgical interventions.

Keywords: pseudotumor deltoideus, cortical irregularity, musculus deltoideus, radiolucent

OP-071

Abstract no: 90047
Abstract group: Clinical Anatomy / *Anatomical Variations*

Bilateral atypical origin of the pectoralis minor muscle: a case report

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Objective: In the existing literature, various insertion variations and classifications for the Pectoralis Minor (PMi) muscle have been reported. However, there is limited information regarding the origin variations of the PMi muscles.

Case: During the routine dissection of an adult male cadaver, bilateral variations were detected in the origins of the PMi muscles. Morphometric measurements of the PMi muscle were taken using ImageJ software. Unlike the typical origins, it was observed that the PMi muscles originated from the superolateral edges of the 4th to 6th ribs and terminated anterosuperior to the coracoid process. On the right side, the PMi muscle exhibited a bifid structure, consisting of medial and lateral fibers. The length of the right medial fiber before merging was 5.67±0.04 cm, while the length of the right lateral fiber was 6.68±0.05 cm. The distance between the

two fibers was measured as 0.43 cm, with a length of 3.33±0.02 cm. The length of the muscle fibers extending to the 6th rib was found to be 2.63±0.01 cm and their diameter was 0.46 cm.

Conclusion: Variations in the pectoralis minor muscle may result from developmental abnormalities. These variations may be asymptomatic but can be contribute to functional shoulder syndromes such as shoulder impingement or rotator cuff dysfunction. Therefore, it is essential to consider such variations during surgery.

Keywords: pectoralis minor, muscle variation, origin patterns, types, anatomic variations

OP-072

Abstract no: 15294
Abstract group: Clinical Anatomy / *Anatomical Variations*

Unilateral two headed extensor digitorum longus muscle and its clinical significance: case report

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Objective: This case describes an atypical variation of the extensor digitorum longus (EDL) muscle.

Case: During routine cadaver dissection, an atypical EDL muscle with two muscle bellies and two variant tendons was observed in the right leg of an 87-year-old male cadaver. The second muscle belly originated 2 cm below the first muscle belly. First and second tendons split into two more slips after passing through the same tunnel below the extensor retinaculum. The first tendon was divided into two tendon slips attached to the extensor expansion of the second and third toes, whereas the second tendon was divided into two tendon slips attached to the extensor expansion of the fourth and fifth toes on the dorsum of the foot. Morphometric measurements of the EDL were taken using ImageJ software. The width of the muscle belly at the midline was 1.10±0.06 cm for the tendons of the 2nd and 3rd toes, while it was 1.39±0.04 cm for the tendons of the 4th and 5th toes.

Conclusion: Developmental variations of the EDL muscle can be asymptomatic. Such a variation of the EDL may lead to entrapment beneath the extensor retinaculum, potentially restricting dorsiflexion of the talocrural joint. This restriction can also affect walking. Therefore, attention to this variation is crucial for surgical planning and radiological interpretation.

Keywords: extensor digitorum longus, muscle variation, anatomical variations

OP-073

Abstract no: 87497
Abstract group: Clinical Anatomy / *Anatomical Variations*

Different anatomical variations of the muscle extensor carpi radialis tendons: case reports

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Objective: These case reports aim to determine the variations and locations of the MECRL and MECRB tendons that were incidentally detected during radiological imaging of two patients presenting with wrist pain and that were associated with the patients' symptoms. It also emphasizes that anatomists and clinicians should recognize such variations.

Case: In the first case, a 42-year-old male patient who applied to the hospital with a complaint of pain in his left wrist, had his wrist MRI scan requested due to suspicion of carpal tunnel syndrome. A mild minimal effusion was observed in the articulatio (art.) radioulnaris distalis, art. radiocarpalis, art. caprometacarpalis of the 1st finger, and around the MECRL and MECRB tendons. A variation was found adjacent to the MECRL tendon. A tendon compatible with the M. extensor carpi radialis accessorius tendon was observed. In the second case, a 38-year-old male patient who applied to the hospital with complaints of extension limitation in the second finger of the right hand and pain in the right wrist underwent a right wrist MRI. The art. radiocarpalis and art. midcarpalis spaces and surfaces were normal, and effusion was detected. The MECRB tendon thickness had increased. It was ending in the normal localization, but it was noticed that the patient did not have a MECRL tendon.

Conclusion: Increasing awareness of possible variations in the tendons of the musculus extensor radialis is of particular interest to anatomists, orthopedists, radiologists and hand surgeons in order to achieve a more successful treatment.

Keywords: musculus extensor carpi radialis longus, musculus extensor carpi radialis brevis, musculus extensor carpi radialis accessorius, anatomical variation

OP-074

Abstract no: 73331
Abstract group: Clinical Anatomy / *Anatomical Variations*

Sacrotuberous ligament originates from gluteus maximus

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Objective: The sacrotuberous ligament (STL) extends as a wide band, originates from the posterior inferior iliac spine, sacrum and coccyx, and narrows towards the ischial tuberosity. It expands and attaches to the ischial tuberosity. STL forms the border of the greater sciatic foramen and lesser sciatic foramen. In this case report, gluteus maximus originated STL which has not been described in the literature before, defined.

Case: The study was performed on a 10% formalin fixed cadaver in Ege University Department of Anatomy. The anomalous STL was studied in detail and the specimen was photographed. Photographes were taken using millimetric scale. Photogrammet-ric measurements were made with the Image J program. Measurements were made using digital calipers in places where photogrammetric measurement was not possible. The width of the insertion point at ischial tuberosity was measured as 20.49 mm and the thickness of the STL was measured as 6.94 mm at its thickest part.

Conclusion: The variation we have mentioned above could have an importance to the understanding of the relationship between the pudendal nerve and the sacrotuberous ligament and their relevance to pudendal nerve entrapment syndrome. The anatomical knowledge of this variation of STL may be helpful for clinicians and surgeons dealing with neurovascular compression syndromes.

Keywords: sacrotuberous ligament, pudendal nerve, gluteus maximus

OP-075

Abstract no: 85152
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Extracranial pathways, distribution, and features of human brain lymphatics

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Objective: The extracranial pathways for waste, macromolecules, and immune cells from the brain to lymph nodes remain incompletely understood. This study aims to elucidate the role of dural sinuses, cranial nerves, and meningeal arteries in the extracranial transport of brain lymphatic vessels (LVs).

Methods: We examined samples from six autopsies and three cadavers using immunohistochemistry for lymphatic and vascular endothelial markers (podoplanin and CD31), and western blotting.

Results: Staining revealed LVs accompanying the dorsal and basal dural sinuses. LVs along the dorsal sinuses were larger in diameter compared to those along the basal sinuses. However, the number of LVs was greater along the basal sinuses. LVs were also observed along the olfactory bulb; optic, oculomotor, trigeminal, facial, glossopharyngeal, vagus, and accessory nerves. No LVs were found along the trochlear, abducens, vestibulocochlear, and hypoglossal nerves. LVs were present in the endoneurium of motor cranial nerves and all three layers of sensory cranial nerves. The largest diameter LVs were in the epineurium, while the smallest were in the endoneurium. LVs were also observed along the main trunk of the middle meningeal artery (MMA) and its branches, anterior (AMA) and posterior meningeal artery (PMA). LVs along the main trunk of the MMA were larger than those along its branches, with LVs accompanying the PMA being larger than those of the AMA.

Conclusion: This study showed the existence of a rich extracranial network accompanying the dural sinuses, some cranial nerves, and meningeal arteries for the lymphatic drainage of the human brain.

Keywords: human brain, lymphatic vessel, dural sinus, cranial nerve, meningeal artery

OP-076

Abstract no: 47369
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Investigation of the collasal angle and the width of the temporal horns of the lateral ventricles in patients with normal pressure hydrocephalus

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Objective: Normal pressure hydrocephalus is a treatable disease that can be seen in later ages and can cause gait distur-

bance, dementia and incontinence in patients. Although MRI findings are used in diagnosis, they can be ignored. Our aim is to determine the changes in the collasal angle and the width of the temporal horns of the lateral ventricles in NPH patients.

Methods: In our study, MRI images of 269 patients, 133 female and 136 male, were used. The patients were divided into two groups as male and female and three groups as mild hydrocephalus, advanced hydrocephalus and healthy according to the Evansindex. In each group, the collasal angle and the width of the temporal horns of the lateral ventricles were measured and statistical analysis was performed.

Results: The collasal angle did not show a statistically significant difference between men and women, but it decreased in patients with hydrocephalus and showed a statistically significant difference ($p<0.005$). The width of the temporal horns of the lateral ventricles was wider in men and showed a statistically significant difference between the sexes ($p<0.05$). In patients with hydrocephalus, the width of the temporal horns of the lateral ventricles increased and a significant difference was detected ($p<0.005$).

Conclusion: The collasal angle and the width of the temporal horns of the lateral ventricles vary in patients with hydrocephalus. While the collasal angle is prominent in determining the disease, the width of the temporal horns of the lateral ventricles may be useful in determining the degree of the disease.

Keywords: hydrocephalus, morphometry, magnetic resonance imaging

OP-077

Abstract no: 61211
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Hippocampal volume assessment in West syndrome

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Objective: West syndrome is a rare type of epilepsy that emerges during infancy. This syndrome typically occurs within the first year of life and is characterized by recurrent seizures known as infantile spasms. It is believed that the seizures and hypsarrhythmia observed in West syndrome may be associated with abnormal electrical activity occurring in the hippocampus.

Methods: Our study included 24 children with West syndrome and 24 children with febrile convulsions aged 0 to 4 years. To examine the role of structural and functional abnormalities in the hippocampus region, volume, FA and MD values of the hippocampus were obtained using VolBrain HIPS-multispectral pipeline and MRICloud.

Results: In our study, significant decreases were found in the right and left volumes of various structures of the hippocampus (CA1, CA2–CA3, CA4–DG, SR–SL–SM, subiculum). In addition, an increase in right and left MD values of the hippocampus, a decrease in right and left FA values of the cingulum and an increase in MD values were observed.

Conclusion: As a result of the study, significant neuroanatomical changes were observed in the hippocampus structures of children with West syndrome. These advanced imaging analysis techniques show that there are microstructural changes in the hippocampus volumes and hippocampus subregions of the brains of patients with West syndrome. The neurological effects of West syndrome and the significant structural changes found in the hippocampus and related brain structures may shed light on future research.

Keywords: West syndrome, febrile convulsion, volbrain, diffusion sensor imaging

OP-078

Abstract no: 59966
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

The relationship between inflammation and central nervous system in multiple sclerosis

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Objective: Multiple sclerosis is an autoimmune demyelination disease that is seen especially in the young population and has a progressive course, causing motor, sensory and cognitive deficits. In the literature, the pathogenesis of MS disease and the interconnection between the immune and central nervous

system in the disease have not been fully revealed. Recent studies indicate that gray matter damage, as well as white matter lesions, are frequently seen in MS patients.

Methods: In order to contribute to this uncertainty in the literature, in our study, resting-state fMRI findings of relapsing-remitting type MS patients in the attack (5) and stable (14) periods were compared.

Results: MS patients in the attack group showed increased functional connections in various gray matter structures such as the left fusiform, posterior cingulate, orbitofrontal and right occipital cortices, left supramarginal and middle temporal gyrus, thalamus and precuneous, compared to patients in the stable period. In the patients at the stable period, increased activation was found in the lateral part of left occipital cortex.

Conclusion: As a result, patients in the inflammatory phase have increased activation in different gray matter regions compared to those not in the attack phase. This situation suggests that these brain structures develop compensatory new functional connections to minimize new clinical damage that may occur during this period. Considering the well- known and different functions of the activated regions, this situation in the inflammatory period suggests that these regions may also be associated with immune responses.

Keywords: relapsing-remmitting MS, immune system, resting-stae fMRI, gray matter, white matter

OP-079

Abstract no: 89451
Abstract group: Clinical Anatomy /
Biomechanics and Musculoskeletal System Anatomy

Re-evaluation of the symptoms of Hirayama disease through anatomical perspective

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Objective: Hirayama disease is a rare disease of the anterior horn motor neuron caused by compression of the cervical spinal cord when the neck is flexed. Cervical myelopathy may accompany the disease. It is characterized by symmetrical or asymmetrical muscle weakness and atrophy of muscles innervated by lower cervical and upper thoracic motor neurons.

Case: We recorded two male cases of Hirayama disease between the ages of 15 and 21 based on magnetic resonance imaging (MRI) features obtained from the cervical neutral state and from the flexion position which appeared in the right upper extremity. Loss of strength and atrophy in the right upper extremities was existent in clinical findings of these patients. When MRI was taken in the flexion position, there were dilated veins as hypointense signal void on T2 weighted series in posterior epidural area. The contrast enhancement was seen on these veins. It was observed that the posterior dura was displaced anteriorly and the anterior subarachnoid space was narrow. In cases which show clinical findings such as atrophy and loss of strength, having normal MRI results obtained in the neutral position makes it difficult to diagnose Hirayama Disease.

Conclusion: In case of a suspicion of Hirayama disease the diagnosis can be made more easily by MRI taken in the flexion position. These case reports aim to bring Hirayama disease to mind and optimize the management of affected individuals.

Keywords: cervical myelopathy, Hirayama, Juvenile spinal muscular atrophy, Monomelic amyotrophy, cervical MRI

OP-080

Abstract no: 88085
Abstract group: Clinical Anatomy /
Macroscopic and Surgical Anatomy

Distribution of the branches of anterior choroidal artery in the uncus

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Objective: We aimed to investigate the anatomical variations of the branches of anterior choroideal artery (AchA) reaching the uncus, which is a complex region in surgical interventions.

Methods: Sixty-two cases brought autopsy were included in the study. 124 hemispheres were examined and the AchA branches reaching the uncus were analysed in detail. The number of these branches and the origin points were recorded. The distance of uncal branches to the origin of AchA was evaluated as ratio. So, the distance between the origin of uncal branch and the origin and length of AchA and were measured.

Results: 594 branches originating from AchA were detected in 120/124 brain hemispheres. 130 of these branches (22%)

reached the uncus. In 7 hemispheres with only one branch, no branch reaching the uncus was observed. In 7/11 hemispheres with two branches, 7 uncal branches were found. Also, 14, 21, 22, 14, 14, 11, 14, 14, 4, and 2 hemispheres were recorded, which had 3 to 10 branches originating from AchA, respectively. Branches in these hemispheres were observed to reach the uncus with frequency 10/14, 12/21, 15/22, 10/14, 8/11, 9/14, 4/4 and 2/2, respectively. The distance of uncal branches to the origin of AchA was as mean 13.48+7.31 mm. The calculated ratio shown that the uncal branches originated approximately at the midpoint of AchA.

Conclusion: The frequency and origin of AchA branches reaching the uncus provide important guidelines for surgical interventions. We believe that this study will contribute to the reduction of surgical risks by better understanding the complex anatomy of the AchA and provide a critical reference point in education and practice.

Keywords: anterior choroidal artery, uncus, variation, brain

OP-081

Abstract no: 43728
Abstract group: Other

Superficial branch of the radial nerve in adult cadavers; course and branching pattern

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Objective: It's crucial to have a thorough understanding of the anatomy and topography of the-superficial-branch-of-the-radial-nerve (SBRN), one-of-the-two terminal branches of the-radial-nerve, to avoid complications during surgeries in this area. This study aims to investigate the course of SBRN and its branches and their relationship with adjacent structures.

Methods: The study was conducted on 20 upper extremities (5-male, 6-female) fixed with formaldehyde, ethanol and glycerol solution in the laboratory of Istanbul-University-Cerrahpaşa, Cerrahpaşa-Faculty-of-Medicine, Department-of-Anatomy. The distances between the points where SBRN surfaces and branches to the fixed bony landmarks were measured and recorded. Subsequently, the measurements were evaluated using statistical methods.

Results: All extremities used in our study were included in the Type-1-group according to the classification defined by İkiz and Üçerler. The level where SBRN separated from the-radial-nerve was distal to the-biepicondylar-line in 13 cases (65%) and proximal to this line in 7 cases (35%). In all cases, SBRN became superficial approximately 7.37 cm proximal to the-radial-styloid-process (RSP), then progressed distally in the superficial fascia and divided into medial-lateral branches at an average of 4.20 cm proximal to the-RSP. The lateral branch (SBRN-3) reached the lateral aspect of the thumb, while the medial branch bifurcated to innervate the first dorsal web (SBRN-2) and extend distally to the middle phalanges of the index and middle finger (SBRN-1).

Conclusion: Our results aligns with literature data and we didn't encounter rare variations. When cadavers are grouped by gender; the ratio of the distance of the point where SBRN becomes superficial to RSP to the forearm length was significantly higher in men (0.33±0.03) than in women (0.29±0.09) ($p<0.05$).

Keywords: anatomy, cadaver, superficial branch of the radial nerve, branching pattern

OP-082

Abstract no: 11816
Abstract group: Clinical Anatomy / *Anatomical Variations*

Relationship between internal jugular vein and common carotid artery in central venous catheterization procedures: an ultrasonographic study

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Objective: The internal jugular vein is frequently preferred in central venous catheterization procedures. In order to increase the success rate and reduce the complication rate during the procedure, the anatomical position of the vein must be identified. The common carotid artery is used as a reference point in the cannulation procedure. Therefore, this study aims to determine the changes in the position of the internal jugular vein relative to the common carotid artery using ultrasonography.

Methods: The study was conducted with 106 patients between the ages of 20–30. All measurements were made by a radiologist and an anatomist on ultrasonographic images taken at the C5–C7 vertebral level. In order to define the location of the internal jugular vein in the images obtained, 3 different posi-

tions of the vein were evaluated in relation to the common carotid artery: anterior, anterolateral and lateral.

Results: This study includes 42 female and 64 male individuals. After the measurements, it was determined that the internal jugular vein was in the normal position at a rate of 81.1%, anterior to the common carotid artery at a rate of 7.1% and lateral to the common carotid artery at a rate of 11.8%. It was determined that it was located anteriorly at a rate of 3.8% on the left side.

Conclusion: It is important to know the relationship between the internal jugular vein and the common carotid artery to prevent serious complications such as airway obstruction with hematoma and common carotid artery perforation during central venous catheterization.

Keywords: central venous catheter, common carotid artery, ultrasonography, internal jugular vein

OP-083

Abstract no: 39323
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Preparation of a special training box for endoscopic stomach procedures

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Objective: The implementation of the endoscopy procedure is difficult for both of physicians and patients. In order to improve endoscopy skills of physicians, a training model was created by embalming the stomach taken from a pig with Modified Larson Solution (MLS).

Methods: Pig stomachs with their tunica serosa intact, esophagus and duodenum preserved were gotten from the Ege University Laboratory Animal Application and Research Center. The stomach lumen was cleaned with distilled water without damaging tunica mucosa. For embalming, the lumens of stomachs were filled with MLS and the embalmed stomachs were placed in a box full of MLS. The esophagus was connected to an entrance hole created wide enough to pass the endoscopy device.

Results: This model was developed for the endoscopic gastric mucosa resection course at the Ege University Departmant of Gastroenterology. It has enabled physicians to gain experience in mucosal resection even if they have previously performed endoscopy. The macroscopic and microscopic similarity of the pig stomach to the human's has provided effective training. Physicians had no previous experience performing endoscopy gained experience. A post-course survey was sent to physicians via Google forms, regardless of whether they had endoscopy experience or not. Thus, statistical analyses were performed.

Conclusion: The main disadvantages of models similar to the education model created are the difficulty of access and the high cost in our country. In our model, the advantages are the long-term preservation of the embalmed tissue, its reusability, its similarity to the human stomach and its high cost-effectiveness ratio.

Keywords: training box, modified larsen solution, mucosal resection, endoscopy

OP-084

Abstract no: 12847
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Investigation of the effects of the angle between the common and internal carotid arteries and vessel diameters on acute ischemic stroke

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Objective: Our study aimed to examine the diameters of the common carotid artery (CCA) and internal carotid artery (ICA) vessels and the angles formed between them in patients with ischemic stroke.

Methods: The study included 66 healthy individuals (mean age 56.62±17.25) and head and neck angiography (CTA) images of 62 ischemic stroke patients (mean age 64.79±14.43). The CCA and ICA diameters were measured from the CTA images of 128 individuals. In addition, the angles formed between these vessels were evaluated. Radiological images were analyzed using Horos software. The effects of the measured values on ischemic stroke were evaluated using logistic regression analyses.

Results: Univariate analysis results showed that reduction in right and left ICA angles as well as left ICA diameter increased the risk of ischemic stroke ($p<0.05$). Multivariate analysis results including data from both right and left arteries showed that ischemic stroke risk may increase as right ICA angle, left central angle and left wall angle narrow ($p<0.05$). In addition, reduction in left ICA diameter was also seen to increase ischemic stroke risk ($p<0.05$).

Conclusion: It shows that the diameters of internal carotid artery and common carotid artery as well as the narrowing of the angle formed between them may have an effect on ischemic stroke. Our study shows that examining all vessels involved in blood supply of the brain together may be important in terms of ischemic stroke risks.

Keywords: computed tomography ımaging, logistic regression analysis, carotid artery morphology, vessel diameter effect

OP-085

Abstract no: 71253
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Investigation of foramen rotundum and foramen ovale morphometric in trigeminal neuralgia patients

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Objective: This study aimed to investigate the morphometric structure of the foramen ovale (FO) and foramen rotundum (FR) through Computerized Tomography (CT) images of individuals diagnosed with trigeminal neuralgia (TN) without any vascular compression.

Methods: The study was approved by the Tokat Gaziosmanpaşa University Clinical Research Ethics Committee on March 2, 2023, with approval number 83116987-143. Thirty-four patients (16 males, 18 females) diagnosed with Trigeminal Neuralgia (TN) at the Clinic of Neurology, Tokat Gaziosmanpaşa University Faculty of Medicine, and 34 individuals (15 males, 19 females) selected as the control group (CG) were retrospectively analyzed. CT images of all participants were obtained in the coronal, sagittal, and transverse planes using the Horos software. Plane adjustments were applied to these images, referred to as modified planes, for morphometric measurements.

Results: There was no significant difference in the mean length and width measurements of the FO between individuals with TN and the CG on the side with nerve involvement ($p>0.05$). The mean length and width measurements of the FR on the affected side in the trigeminal neuralgia group (TNG) were significantly smaller when compared to the CG ($p<0.001$). It was found that increasing a ge significantly affected nerve involvement on the right side ($p=0.005$).

Conclusion: We believe that knowledge of the morphology of FO and FR would contribute to clinicians in the diagnostic and interventional treatment approaches of TN.

Keywords: computed tomography, foramen ovale, foramen rotundum, trigeminal neuralgia

OP-086

Abstract no: 84259
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Anatomical considerations: the relationship between the vertebral artery and transverse foramina at cervical vertebrae 1 to 6 in patients with vertigo

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Objective: In this study, we aimed to investigate the relationship between the size of the vertebral artery (VA) and that of the transverse foramina (TF) at the C1–C6 level in patients suffering from vertigo thought to be related to vertebrobasilar insufficiency.

Methods: In this study, two groups were compared in terms of cervical CT: 22 adult patients with vertigo; and a control group consisting of 23 healthy adult. Measurement of VA and TF were performed bilaterally at C1–C6. The Mann Whitney U Test, Wilcoxon and Spearman's Correlation Tests were employed for comparisons.

Results: İn cases group, at C6 the right VA area, sagittal and transverse diameter were larger than in the control group at the level of statistical significance. At C1, the area of the right TF in the cases group was significantly higher than in the control group. At C1–C5, the values obtained for vertebral artery area were positively correlated with the values for the ipsilateral TF. Where dimensions of the TF were found to be decreased, vertebral artery areas were also observed to have decreased at C1–C5. At some levels $p<0.05$ was found.

Conclusion: We concluded that a decrease in diameter of or TF may cause a decrease in the cross-sectional area of VA on the ipsilateral side. Since it is only the left VA which is dominant for cerebral blood flow (CBF), any compensatory increase in right VA area cannot offset decreased CBF. Decreased BF on the left side may play a role in the development of vertigo.

Keywords: vertebral artery, transvers foramina, vertigo

OP-087

Abstract no: 84259
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

The course of the hypoglossal nerve in the neck region and its importance for surgical interventions

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Objective: We aimed to examine the course of the hypoglossal nerve and its relationship with anatomical reference structures in neck region.

Methods: Bilateral neck dissections were performed on 10 adult formaldehyde fixed cadavers at Anatomy Laboratory of Dokuz Eylül University, Faculty of Medicine. Measurements were taken with a digital caliper. The data were analyzed using the SPSS 24 program. A p-value of <0.05 was considered statistically significant.

Results: Distances between the points that the hypoglossal nerve crosses the internal / external carotid arteries and carotid bifurcation were 28.22±7.72 mm and 11.32±4.67 mm, respectively, on 19 sides. Distances between the point that hypoglossal nerve crosses the external carotid artery and the tragus was 76.21±9.76 mm, the mastoid process was 52.35±8.66 mm, and the angle of mandible was 24.02±4.38 mm. Distance between the point where the superior root of ansa cervicalis separates from the hypoglossal nerve and the tragus, the mastoid proces and the angle of mandible were 66.45±7.49 mm, 39.6±14.92 mm and 17.55±4.82 mm, respectively. Length of horizontal part of the hypoglossal nerve was 36.33±5.55 mm. The hypoglossal nerve was found to run below digastric muscle in 95%, occipital artery in 73.7%, and lingual artery in 58% of cases. No statistically significant differences were found between right and left sides.

Conclusion: Differences were presented in the course of hypoglossal nerve and its neighboring anatomical structures in neck region. Knowledge about the detailed anatomy of the structures has utmost importance for preventing nerve damage during surgical procedures in neck region.

Keywords: hypoglossal nerve, anatomy, neck disection, cadaver

OP-088

Abstract no: 32272
Abstract group: Anatomy and Innovation /
The Relationship between Anatomy and Technology

A new learning method in practical anatomy classes: virtual reality

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Objective: With the advancement of technology, anatomy education offers students new perspectives beyond traditional methods to learn the 3D structure of the body. Virtual reality (VR) allows students to dissect and examine structures in a virtual environment. Although it has disadvantages such as high cost, the necessity for both instructors' and students' technical knowledge, and inability to provide tactile sensation that comes with studying on physical cadavers, VR also has advantages such as providing independence of time, space and solving limitations of finding cadavers. In this study, it is aimed to compare learning anatomy by using VR glasses and learning anatomy with models.

Methods: The study involved 44 students at the Faculty of Medicine of Atılım University. After studying bones and joints of the pelvis through models and VR glasses, students were given a mental rotation survey, an anatomy quiz, and a survey comparing VR and model-based learning.

Results: The average success rate of the quiz administered after studying with VR glasses was 63.6%; and it was 65% after studying on the model. The correct response rate for mental rotation questions ranged from a maximum of 36.4% to a minimum of 20.5%. The survey results indicated that most students found VR more favorable than model-based learning in terms of understanding anatomical structures more easily, seeing details better, and evaluating them from different aspects.

Conclusion: In conclusion, it is thought that the use of VR glasses as an additional tool in anatomy education could be a valuable learning method for students.

Keywords: anatomy education, virtual reality, 3D anatomy

OP-089

Abstract no: 78737
Abstract group: Anatomy and Innovation /
Digital Anatomy and Virtual Reality in Anatomy

A survey study on the use of virtual dissection table in human anatomy education: perception of physiotherapy and rehabilitation students

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Objective: New opportunities for teaching and learning have been made possible by the incorporation of technology into the study of anatomy. This study aims to evaluate the efficacy of virtual dissection tools as an instructional component by obtaining the opinions of students regarding the application of the virtual dissection table (VDT) as an additional tool for cadaver dissection in anatomy education.

Methods: A survey-based study was conducted among 146 students. In addition to traditional anatomy training, students utilized a VDT as a supplementary learning tool. Students were surveyed via Google Forms using a 12-item questionnaire. The survey was carried out using a 5-point Likert scale, and responses from all 146 students were analyzed. Statistical analysis was performed using SPSS statistical software.

Results: The majority of participants (87%) expressed satisfaction with the integration of VDT into the anatomy curriculum. Furthermore, the superiority of VDT in facilitating enhanced visualization of anatomical structures was also strongly confirmed (87.7%). Approximately 81% of students agreed that VDT has the capacity to increase their interest in their chosen profession. Moreover, 59.6% of students stated that they would prefer SDM over traditional cadaveric dissection methods. Additionally, nearly 81% of students indicated that the use of SDM had a positive impact on their overall learning and classroom experience.

Conclusion: In conclusion, the addition of VDT as a supplementary resource to anatomy education was strongly supported by students. Based on these results, incorporating VDT into anatomy education may improve learning outcomes and student engagement in health sciences.

Keywords: virtual dissection table, anatomy education, digitalization in education

OP-090

Abstract no: 26051
Abstract group: Other

Display of anatomical models with a three-dimensional (3D) holographic fan

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Objective: The initial three-dimensional (3D) reconstruction applications in our country began in the late 1990s at the Department of Anatomy, Faculty of Medicine, Hacettepe University, with pioneering studies conducted nearly a century after similar studies abroad. The first examples of these efforts can be found in the presentations at the 5th National Anatomy Congress held in Antalya in 1999.

Results: Until the mid-2000s, numerous oral and written presentations and publications on reconstruction were made nationally and internationally, with the technical infrastructure being reinforced as much as possible. Courses and articles were organized and prepared to generate interest in the subject and encourage its study by different centers.

Conclusion: After approximately a quarter of a century, the decreased cost and increased accessibility of the technology seem to facilitate the sharing of produced images for educational and therapeutic purposes in anatomy more easily.

Keywords: anatomy, model, 3D, reconstruction

OP-091

Abstract no: 26458
Abstract group: Life-Long Anatomy / *Physical Anthropology and Paleoanthropology*

Revisiting auricle asymmetry in relation to ear lobe attachment status

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Objective: Ears, which are key features of the face, are often asymmetrical. This study aims to elucidate the ear structure in relation to earlobe attachment status.

Methods: 325 individuals (202 males, 123 females) were included in this retrospective study. Measurements were taken from standardized photographs of 100 men and 70 women, whose earlobe attachment types had been assessed. The measurements, taken using the ImageJ program, included earlobe width (EW), earlobe length (EL), the angle of earlobe length (ELA), ear length (AL), the distance between attachment points (attL), and angle between these distances (AA-attA). Categorical variables were analyzed with the chi-square test, while continuous variables were evaluated using one-way ANOVA with SPSS 22.

Results: EW and AL of the left ear were greater than those of the right ear, while ELA was narrower. These differences were statistically significant ($p<0.05$). The right earlobe was 68.3% free, 18.8% semi-attached, and 12.9% attached, while the left earlobe was 70.5% free, 17.8% semi-attached, and 11.7% attached. Significant differences were found in the bilateral EW, attA, and attL parameters among the groups with free, attached, and semi-attached lobulus auricula; in the right ear for EL; and in the left ear for the AA and ELA parameters ($p<0.05$).

Conclusion: The study showed that earlobe attachment status affects the asymmetry of the ear's structure. These findings are crucial for designing hearing aids and ear prostheses, forensic medicine procedures, and surgical interventions related to the ear.

Keywords: external ear, morphometric, earlobe attachment

OP-092

Abstract no: 81292
Abstract group: Life-Long Anatomy / *Physical Anthropology and Paleoanthropology*

Morphometric measurements of tuberculum auriculare (Darwin's tubercle) in terms of biological sex

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Objective: Darwin's tubercle (tuberculum auriculare), refers to a atavistic thickening found on the helix of the outer ear at the junction of the upper and middle thirds. There is limited information about its anatomy and evolutionary significance. In this study, we evaluated the presence of Darwin's tubercle and the characteristics of the observed features were measured.

Methods: Both sides of individuals were photographed from three different angles accompanied by a scale. The shape of the auricle and helix was assessed. The auricle were categorized as oval, rectangular, triangular, round, and the helix were categorized as concave, flat, normal, wide. In individuals with Darwin's tubercle, the types of nodosity, enlargement, and projection of Darwin's tubercle were measured using ImageJ software in terms of position, length, and thickness. Then analyzed using independent sample t and chi-square test in SPSS software.

Results: The auricle structure was most commonly oval, followed by rectangular, in both sexes. For the helix structure, the most common category was normal, followed by wide in females and concave in males. There is no significant difference between sexes in terms of Darwin's tubercle presence ($p>0.05$). In both sexes enlargement was the most common type. Paired-combination Darwin's tubercles were identified and measured.

Conclusion: This study highlights the prevalence of Darwin's tubercle in an Anatolian population sample. It indicates that Darwin's tubercle is not significant in sex determination. This study provided previously unpublished numerical data on the mophology of Darwin's tubercle, including paired combinations.

Keywords: helix, auricle, variation, Darwin's tubercle, sexual dimorphism.

OP-093

Abstract no: 62515
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Examination of the relationship between cochlear anatomy and postoperative electrode insertion depth in cochlear implantation surgery

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Objective: Cochlear implants (CI) are currently state-of-the-art rehabilitation for patients with severe sensorineural hearing loss. The variable anatomy of the cochlea is of critical importance for cochlear implantation. Better auditory performances are reported in patients in whom electrode arrays are placed with high accuracy. It is aimed to examine the relationship between the cochlear dimensions and postoperative electrode insertion depth degree in patients underwent CI surgery.

Methods: Approval was obtained from Medical Ethics Committee UZ Brussel Hospital (Number:1432022000187). Preoperative and postoperative computed tomography (CT) images of patients who underwent CI surgery were included in the study. For analyses, CT images were transferred to dedicated software (OTOPLAN ® Cascination GMHB Bern Switzerland). Cochlear sizes and orientation angles were calculated in preoperative CT images. Electrode insertion depth degrees were calculated using postoperative CT images. SPSS 22.0 was used for statistical analysis, and $p<0.05$ was accepted as statistically significant.

Results: CT images of 33 patients (male:12, female:21, mean age:53.06±27.24) were examined. Mean cochlear length (CL), cochlear width (CW), cochlear height (CH), cochlear duct lenght (CDL), and basal turn length (BTL) were 9.69±0.98 mm, 6.90±0.72 mm, 3.36±0.48 mm, 37.00±3.53 mm, and 23.52±2.36 mm respectively. The mean basal turn angle (BTA) and cochlea apical angle (CAA) were 58.30±6.20° and 30.12±4.89°. There was a significant negative correlation between BTL and CL and electrode insertion depth degree ($p=0.038$, $r=-0.363$). In addition, a significant positive correlation was found between BTA and electrode insertion depth degree ($p=0.024$, $r=0.392$).

Conclusion: Cochlea dimensions and orientations significantly affect the degree of electrode insertion depth. Preoperative assessment of cochlear anatomy may help predict appropriate

electrode selection and postoperative electrode placement depth.

Keywords: cochlear anatomy, cochlear implant, computed tomography, sensorineural hearing loss

OP-094

Abstract no: 16340
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Examination of the styloid process with cone beam computed tomography images

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Objective: Aim of this study was to investigate the morphometric features of styloid process (SP) on cone beam computed tomography images (CBCT).

Methods: CBCT images taken by PlanmecaProMax device belonging 100 individuals between ages of 18–74 between years of 2015–2018 examined with RadiAnt program. Ethical approval was obtained before study. Measurements were made sagittal and coronal planes images PS morphometry was evident. Sagittal length (SU) of PS; between lower middle point of meatus acusticus externus (MAE) and the lowest point of PS, sagittal angle (SA); between the lower middle point of MAE and the long axis of PS, coronal length (KU); between the lower point of MAE and the lowest point of PS coronal plane, and coronal angle (KA);between long axis of PS and the axis passing under MAE. Analyses were performed with SPSS 28.0.

Results: A total 100 individuals (41.31±15.45 years, male: 50, female: 50) right and left side images were analyzed. Participants included in study, statistically significant differences were found between genders SU, SA, KU, KA measurements. SU, SA, KU, KA measurement values were found to lower women than men. 77 individuals (38.5%) with SU over 30 mm and 74 individuals (37%) with KU over 30 mm were found. A positive statistical relationship was found between age and SU and KU, low level statistical relationship was found between age and SA.

Conclusion: PS gets longer, it can create symptomatic or asymptomatic clinical conditions. It may be important know about PS with increased length, especially because it causes some symptoms in association with Eagle syndrome.

Keywords: "styloid process", "cone beam computed tomography", "Eagle syndrome"

OP-095

Abstract no: 65728
Abstract group: Clinical Anatomy / *Anatomical Variations*

Temporal bone reference points in surgical and otological approaches: morphometric and morphological evaluation of anatomical formations

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Objective: The aim of this study was to evaluate the morphometric and morphological characteristics of the anatomical structures in the temporal bone and to evaluate important reference points for surgical approaches. The data obtained were aimed to guide clinical applications for otological or temporomandibular approaches.

Methods: A total of 94 unilateral skulls were analysed. The morphometric relationship of the mastoid process with the supraarticular, suprameatal, supramastoid crests and suprameatal spine was analysed. In addition, the morphometric evaluation between the mastoid notch and asterion and the porus acusticus externus was performed.

Results: The length of the mastoid process was 31.7+3.14 mm. The distances between the mastoid notch and the upper and lower border of porus acusticus externus were 32.94+2.17 mm and 27.55+3.32 mm, respectively, and the distances between the asterion and the upper and lower border of the porus acusticus externus were 48.70+2.36 mm and 46.47+4.03 mm, respectively. Supraarticularis, suprameatalis and supramastoid crests were palpable and their lengths were measured in 94/94, 94/94, 66/94 hemicraniums. Suprameatal spine was found in 12/94 hemicraniums.

Conclusion: Morphometric and morphological evaluation of the anatomical structures on the temporal bone are critical reference points for surgical approaches. These structures can be used as important clinical landmarks for safe and effective operations, especially in otological, brain and temporomandibular surgeries.

Keywords: otology, temporal bone, mastoid process, asterion, porus acusticus externus

OP-096

Abstract no: 32274
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Morphometric features of the great auricular nerve

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Objective: The great auricular nerve (GAN) courses over the sternocleidomastoid muscle (SCM), innervating the skin over the parotid gland, the lower part of the auricle, and the mastoid process. Our goal was to assert the morphometric features of GAN.

Methods: After ethical approval was obtained, the neck regions of 26 cadavers (15 males, 11 females) in the Department of Anatomy, Istanbul Faculty of Medicine were dissected bilaterally. Distances of GAN according to certain anatomical landmarks were measured with a digital caliper, and the number of branches (also on the SCM) was calculated. The SPSS 21.0 program was utilized for statistical analysis.

Results: The mean perpendicular distances of the origin point of GAN behind SCM to the vertical and transverse lines passing over the external occipital protuberance (EOP) were 72.79±14.52 mm and 97.48±13.65 mm, respectively. Similarly, the mean perpendicular distances of the point where GAN crossed the anterior border of SCM to the vertical and transverse lines passing over EOP were 90.35±17.73 mm and 68.75±15.13 mm, respectively. The perpendicular distance of the point where GAN crossed the anterior border of SCM to the vertical line passing over EOP was statistically significant between genders ($p<0.05$). The mean branching distance of GAN was 23.53±13.85 mm. The number of branches and the number of branches on the SCM of GAN was a median of 2.

Conclusion: The morphometric data we obtained may be useful in preventing GAN injury during rhytidectomies and parotidectomies and in easily estimating the location of the nerve during invasive procedures.

Keywords: great auricular nerve, morphometry, external occipital protuberance, sternocleidomastoid muscle

OP-097

Abstract no: 23893
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Defining a palpable bone landmark to locate the transverse facial artery

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Objective: The study aims to define the location of the transverse facial artery origin point on the lateral face and its relation to bone landmarks, the zygomatic arch, and the condyle of the mandible.

Methods: An observational cadaveric study was performed with 20 hemifaces of 10 embalmed cadavers at the Ankara University School of Medicine Department of Anatomy. The study procedures include the intra-arterial filling of the external carotid artery with latex and subcutaneous dissection of the mid-lateral face.

Results: A total of 10 cadavers 6 were male, and 4 were female; the mean age of death was 76.1 years. The 20 hemifaces had transverse facial arteries with a mean diameter of 1.78 mm, and all the arteries originated from the superficial transverse artery. The origin point of the transverse facial arteries was under a 26.55 mm vertical distance of the upper margin of the zygomatic arch and a 16.99 mm vertical distance of the palpable tip of the mandibular condyle.

Conclusion: On the lateral aspect of the face, both the upper margin of the zygomatic arch and the palpable tip of the mandibular condyle are available and useful palpable bony landmarks.

Keywords: transverse facial artery, mandibular condyle, zygomatic arch, anatomical landmark, face anatomy

OP-098

Abstract no: 44278
Abstract group: Clinical Anatomy / *Anatomical Variations*

Morphological evaluation and clinical significance of the liver in human cadavers

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Objective: Understanding normal and variant liver anatomy is crucial for radiological evaluation and surgical procedures. This study aims to classify cadaver livers according to Netter, describe detected structures, emphasize the clinical and surgical significance of these variations.

Methods: Thirty cadaver livers from Altinbas, Cerrahpasa, Istanbul Medical Faculties were examined. Liver types were classified according to Netter, fissure for ligamentum teres variations were identified using the Cawich classification.

Results: Fifteen livers (50%) had a morphologically normal appearance. According to the Netter classification, one of the remaining fifteen livers matched type 1 (3.3%), five matched type 3 (16.5%), two matched type 5 (6.6%), and seven matched type 6 (23.3%). According to the Cawich classification of fissure for ligamentum teres variations, eleven were type I normal (36.6%), seven had fibrous band variation type II (23.3%), two had parenchymal extension type III (6.6%), ten had fissure for ligamentum teres closing and bridging pons hepatis type IV (33.3%). Pons hepatis variations were categorized into open (length<2 cm) and closed types (length>2cm). Open type was found in two livers (6.7%), closed type in eight livers (26.7%). The average length was 16.7±4 mm for open type, 39±11.7 mm for closed type. Additionally, an accessory fissure was observed in twenty-seven livers (89.9%) and an accessory lobe in seven livers (23.3%).

Conclusion: In minimally invasive liver procedures and transplantation, anatomical differences must be considered in surgical planning and treatment. Additionally, understanding these variations helps radiologists avoid misinterpretation and ensures accurate diagnosis.

Keywords: pons hepatis, fissure for ligamentum teres, liver classifications

OP-099

Abstract no: 43385
Abstract group: Clinical Anatomy / *Anatomical Variations*

Hepatic artery origin variations as an anatomical pitfall in transarterial therapies: a preliminary study

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Objective: Transarteriel chemoembolization (TACE) and transarteriel radioembolization (TARE) are increasingly used tecniques in the last decades. Recognizing hepatic artery variations is essential for optimizing transarterial therapies This study aims to describe the anatomical variations of the hepatic artery observed during transarterial therapies.

Methods: The patients who underwent TACE or TARE at our institution from January to August 2024 were retrospectively evaluated. The data was collected from procedural 2D digital subtraction angiographic (DSA) images and prevalence of each anatomical variation was analyzed.

Results: A total of 54 patients [28 males (51.8%) and 26 (48.2%) females], comprising 11 (20.4%) TACE and 43 (79.6%) TARE were included. Anatomic variation in the origin of the common hepatic artery (CHA) was identified in only 1 patient (1.9%), where it originated from the superior mesenteric artery(SMA). In 16 patients (29.6%), the right hepatic artery (RHA) and/or the left hepatic artery (LHA) had different courses. The prevalence of RHA arising from the abdominal aorta was 1.9% and from the SMA was 14.8%. Prevalence of LHA arising from the celiac trunk was 9.2% and from the left gastric artery was 5.5%.

Conclusion: Variations of hepatic artery can complicate catheter navigation and drug delivery, potentially extends procedural time and reduces therapy efficacy. Disruptions in the distribution of chemotherapeutic agents may lead to suboptimal tumor control and increased risk of non-target embolization. In the present study we revealed self experience on anatomical variations of hepatic artery. Presentation of local data from centres in which transarteriel therapies are commonly used contributes to literature and progress of diagnostic and treatment tecniques.

Keywords: common hepatic artery, variation, interventional radiology, angiography

OP-100

Abstract no: 77018
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Assessing the relationship between liver and spleen volumes in patients with liver cirrhosis using the Cavalieri principle on cross-sectional images

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Objective: In the early stages of liver cirrhosis, hepatomegaly is observed, whereas in the later stages, enlargement of the spleen is observed due to shrinkage of the liver and increased pressure in the portal circulation. This study aimed to examine liver and spleen volumes and their proportional relationship to each other in healthy controls (HC) and patients with liver cirrhosis (LC) using computed tomography (CT) images.

Methods: CT images of 52 LC (26 females, 26 males) and 52 HC (26 females, 26 males) aged 18 to 85 years were used in our study. Liver and spleen volumes and the spleen/liver+spleen volume ratio were calculated on the images using the Cavalieri principle using ImageJ software. Volumes and ratios were compared according to disease classes in LC.

Results: Liver volume was larger in LC (1488.9±502.3 cm^3) than in HC (1321.8±277.1 cm^3) ($p<0.038$). Spleen volume was larger in LC (676.8±347.02 cm^3) than in HC (249.37±101.16 cm^3) ($p<0.001$). Spleen volume ratio was higher in LC (30.75±12.22%) than in HC (15.68±5.09%) ($p<0.001$). Liver volumes were 1670.7 cm^3, 1357.4 cm^3, and 1087.3 cm^3, and spleen volume ratios were 26.71%, 33.49%, and 40.26% in classes A, B, and C of LC, respectively. As the cirrhosis class progressed, liver volume decreased ($p=0.010$), and the spleen volume ratio increased ($p=0.020$).

Conclusion: Liver and spleen volume and spleen volume ratio were larger in LC than in HC. As the LC class progressed, liver volume decreased, and spleen volume ratio increased. Our findings suggest that the spleen volume ratio can be used to evaluate classes of liver cirrhosis.

Keywords: cirrhosis, spleen, liver, Cavalieri principle, computed tomography

OP-101

Abstract no: 63535
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

CT examination of liver circulation variations in situs inversus cases and review of "dexter/sinister" in vessels names for these cases

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Objective: It was aimed to investigate the branching and diameter variations of the liver vessels in situs inversus and to review the side-specific vessel nomenclature for these cases.

Methods: In the MEU Medical Faculty, Radiology inventory, 14 situs inversus cases (between 2012–2024), the origin variations of the common hepatic artery and its branches, and the branching variations of the portal vein in the abdominal CT sections were compared with literature for normal cases. Vessel diameters on different sides were evaluated by independent t-test.

Results: According to Michel's classification, arterial variations were found in 9 cases (69%) as type 1 (normal), in 2 (15%) as type 3 (right hepatic artery, originates from superior mesenteric artery), in 1 (7.6%) as type 9 (common hepatic artery, originates from superior mesenteric artery) and in 1 (7.6%) as type 10 (common hepatic artery, originates from left gastric artery). Types 1 and 3 were similar to the literature, while types 9 and 10 were different. For portal vein, according to Atri's classification, 9 (64.2%) cases were normal, 2 were type 1a (14.2%), 2 were type 1c (14.2%) and 1 was type 2 (7.1%), and normal and type 1a were similar to literature. Right/left comparison of artery and vein lumen diameters were similar ($p>0.05$).

Conclusion: Situs inversus cases were similar to the normal. The vessels' diameter data, which are critical for donors or recipients in liver transplantation, contribute to the limited literature. For these cases, a solution to the confusion regarding the use of "dexter/sinister" in vessel names was proposed.

Keywords: situs inversus, liver, right hepatic artery, left hepatic artery, portal vein

OP-102

Abstract no: 26351
Abstract group: Experimental Research and Neuroscience / *Translational Research in Anatomy*

Effect of dexpanthenol on alamandin and maresin-1 levels in liver tissue and serum of rats experimentally exposed to formaldehyde

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Objective: In this study, the effect of dexpanthenol on alamandin and maresin-1 levels in the serum of rats treated with experimental formaldehyde was investigated.

Methods: 28 Sprague-Dawley male rats were used in the study. Alamandin and maresin-1 levels Sunred Biological Technology Co. Ltd. Rat alamandin and maresin-1 ELISA kit obtained from

(Shanghai, CHINA) was used and the ELISA method was studied in accordance with the study procedures specified in the manufacturer's catalog (catalog number maresin: 201-11-6774, alamandin: 201-12-5722). SPSS 22 package program was used for data analysis. This study was supported by Scientific and Technological Research Council of Turkey (TUBITAK) under the Grant Numbers 1919B012219565-1919B012219556.

Results: Both liver and serum alamandin and maresin-1 levels were close to each other in the control and dexpanthenol groups (p>0.05). The levels of alamandin and maresin-1 in the formaldehyde group (alamandin, serum: 49.88±2.11 pg/ml, liver: 54.60± 2.92 pg/ml; maresin-1, serum: 0.72±0.20 ng/ml, liver: 0.67±0.05 ng/ml) to control group (alamandin, serum: 63.23±1.18 pg/ml, liver: 65.65±2.83 pg/ml; maresin-1, serum: 1.34±0.12 ng/ml, liver: 1.24±0.07 ng/ml) were significantly decreased (p<0.05). In the formaldehyde + dexpanthenol group (alamandin, serum: 59.54±1.05 pg/ml, liver: 59.73±0.74; maresin-1, serum: 1.11± 0.05 ng/ml, liver: 1.09±0.07) alamandin and maresin-1 levels increased compared to the formaldehyde group, but this increase was not significant (p>0.05).

Conclusion: In this study, it was found that formaldehyde exposure significantly reduced alamandin and maresin-1 levels in serum, and dexpanthenol supplementation increased this decrease caused by formaldehyde, but this increase was not significant.

Keywords: formaldehyde exposure, alamandin, maresin-1, dexpanthenol

OP-103

Abstract no: 43855
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Radiological investigation of mesh tension configuration during pelvic organ prolapse surgery

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Objective: Surgery is a common and effective treatment for pelvic organ prolapse (POP), but it carries risks such as bleeding, wound infection, dyspareunia, constipation, recurrence, pain, and de novo stress urinary incontinence (SUI). It is believed that considering the synchronous physiological movement of the apical vagina with the pelvis when placing the mesh during POP surgery could reduce mesh erosion, retraction, and postoperative complications. This study aimed to investigate the standardization of mesh tension radiologically.

Methods: This retrospective study analyzed MR-defecography images of 110 female patients. The study examined the angular and spatial movements of the apical vagina, the anorectal angle (ARA), and total vaginal length across four phases of defecation (rest, squeeze, strain, and defecation). The total displacement rate was also calculated.

Results: Comparing the beginning and end stages of defecation, it was found that the angle between the apical vagina and the linea pubococcygea decreased by an average of 17.76° towards the end of defecation. The apical vagina moved posteriorly by an average of 21.7 mm from the postero-superior point of the symphysis pubis. Additionally, the anorectal angle (ARA) increased by an average of 9.05°, and total vaginal length decreased by an average of 16.74 mm during the defecation phase.

Conclusion: The study aimed to document the movement of pelvic organs during defecation to ensure pelvic floor support is maintained during reconstructive surgery and to provide clinical anatomical insights to enhance the surgical approach.

Keywords: defecography, pelvic organ prolapse, rectum, sacrocolpopexy, vagina

OP-104

Abstract no: 85135
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Morphometric analysis of retroperitoneal organs in individuals with unilateral congenital renal agenesis and renal hypoplasia

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Objective: In this study, our aim is to determine the changing anatomy of the retroperitoneal organs in the patient groups with UCR and RH and to discuss the structural points to be considered during surgical dissection according to renal involvement.

Methods: The study was retrospectively applied to 18 patients with UCR and 30 patients with RH and 25 controls who applied to the Nephrology Clinic at Istanbul Kartal City Hospital

between January 2023 and June 2024. Morphometric measurements were obtained from Contrast CT data, and biochemical markers indicating renal functions were obtained from laboratory test results.

Results: In the healthy side kidney structure, compensatory hypertrophy was observed significantly in all kidney morphometry from the control group to the HP and UCR groups. It was observed that the bifurcation angle, the inferior vena cava anteroposterior diameter and the gromerular filtration rate (GFR) decreased from the control group to the agenesis group. Markers such as sodium and uric acid were significantly higher in the agenesis groups. The volume/cortex thickness ratio was significantly higher in the agenesis groups. According to the logistic regression results, the amount of uric acid in patients with HP and the volume/cortex thickness ratio in the healthy side of the kidney showed a moderate positive correlation. In individuals with agenesis, kidney volume showed a moderate positive correlation with GFR.

Conclusion: Cortex thickness was positively correlated with GFR and negatively correlated with creatine in both the UKRA and HP groups. Significant anatomical differences occur in retroperitoneal organs in individuals with UKRA and RH.

Keywords: agenesis, hypoplasia, retroperitoneal organs, cortex thickness, kidney volume

OP-105

Abstract no: 60020
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Could the connections of the tibialis posterior tendon to the plantar muscles have an effect on the severity of hallux valgus?

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Objective: Changes in tendon morphometry around first-row bones are associated with hallux valgus (HV) development. However, no study was found on relationship between HV development and connection status of tibialis posterior (TP) tendon with adductor hallucis (ADH) and flexor hallucis brevis (FHB) tendons. The study aims to reveal the relationship between these connections and HV.

Methods: The study included 24 formalin-fixed adult cadavers and amputee feet (10 female, 14 male). Attachment sites and connections of ADH, FHB, and TP were recorded. Angle values and subgroups (non, mild, and moderate-severe) were defined for the degree of HV. Feet were grouped according to tendon attachment status, and distribution of HV subgroups was statistically evaluated.

Results: Feet were divided into 3 groups (n=8 for each) as no connection between three muscles (Group I), connection between TP and FHB (Group II) and connection between TP and FHB and ADH (Group III). HV angle of Group III was larger than Groups I–II ($p<0.001$, $p=0.024$). While tendon connection was detected in only 20% of feet without HV, tendon connection was detected in 64% of mild HV and in all feet with moderate-severe HV. While HV incidence was 50% in cases without tendon connection, incidence of HV with tendon connection was 79%.

Conclusion: It was revealed that HV can occur in all feet with or without tendon attachment, but HV is more common in cases where TP is attached to FHB and ADH, and frequency of moderate-severe HV increases in cases where TP is attached to ADH.

Keywords: hallux valgus, foot, tibialis posterior, adductor hallucis, flexor hallucis brevis

OP-106

Abstract no: 21695
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Morphological and morphometric evaluation of adolescent idiopathic scoliosis based on pelvic axial rotation

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Objective: Although it has been documented that scoliosis is responsible for pelvic rotation, there is limited research on how the anatomical features of the pelvis are affected by pelvic axial rotation (PAR) in individuals with scoliosis. The aim of this study was to investigate the morphological and morphometric effects of pelvic axial rotation in patients with Adolescent Idiopathic

Scoliosis (AIS). PAR may affect the progression of spinal curvature in individuals with scoliosis. Therefore, a detailed analysis of scoliosis morphometry according to the direction of pelvic asymmetry and the direction of the major curvature is of critical importance in planning scoliosis treatment.

Methods: Radiographs of individuals diagnosed with AIS who presented at the Orthopedics and Traumatology Clinic of Gaziantep City Hospital were evaluated. The direction of pelvic axial rotation and the side of the major curvature were determined. Lenke and Risser classifications were performed, and Cobb angle and lower extremity length discrepancies were measured.

Results: Of 536 patients, 303 (132 males, 171 females) had right-directed PAR, and 215 (86 males, 129 females) had left-directed PAR. Significant sex differences were found in Cobb angle ($p=0.000$), but not in PAR direction, Lenke classification, or length discrepancy ($p>0.05$). Cobb angle differed significantly with Lenke classification, while PAR direction, Cobb angle, and length discrepancy differed with Risser classification ($p<0.05$).

Conclusion: The morphological and morphometric analysis of scoliosis based on PAR plays an important role in the clinical management of AIS patients. These findings may offer new perspectives on individualizing treatment strategies and preventing scoliosis progression.

Keywords: adolescent idiopathic scoliosis, pelvic axial rotation, morphology, morphometry

OP-107

Abstract no: 15589
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Examination of the biomechanical properties of certain back muscles in sedentary academics

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Objective: This study aimed to assess the biomechanical properties of certain back muscles in sedentary academics and provide preliminary data on conditions triggered by a sedentary lifestyle.

Methods: A total of 28 academics from Gaziantep İslam Bilim ve Teknoloji University and Gaziantep University Medical Faculties, with no history of sports activity, chronic diseases, or surgeries, were included. The tone, stiffness, and elasticity of the m. semispinalis capitis, m. trapezius, m. multifidus lumborum, and m. longissimus thoracis muscles were measured using the MyotonePRO device.

Results: No significant differences were found between right and left side measurements, although moderate correlations were noted. A significant difference in the elasticity of the right m. trapezius and left m. semispinalis capitis was observed in left-hand dominant participants.

Conclusion: These findings provide important preliminary data to understand the effects of a sedentary lifestyle on muscle biomechanics.

Keywords: sedentary lifestyle, MyotonPRO, tone, stiffness, elasticity

OP-108

Abstract no: 50459
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Quadro-iliac plane block in lumbar myofascial pain syndrome: from anatomy laboratory to clinic

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Objective: The quadratus lumborum (QL) muscle is distally attached to the inner surface of the iliac crest. Quadro-iliac plane block (QIPB) is performed by injecting local anesthetic between the iliac crest and QL. A cadaver study reported a widespread from T12 to crista iliaca including the lumbar plexus, iliohypogastric/ilioinguinal nerves, genitofemoral nerve, and retroperitoneum. There is no published case report of QIPB in chronic pain. We want to present our successful analgesic experiences with QIPB in a patient with lumbar myofascial pain syndrome.

Case: Consent was obtained from the patient for this case report. The patient, who had lumbar myofascial pain for the last 3 months and did not benefit from physical therapy sessions, underwent QIPB with 40 ml solution containing 0.25% bupivacaine + prednol twice at 2-week intervals. After the procedure, the patient's pain score decreased from 9 to 1 and the pain did not start again in the follow-ups. In the dermatome analysis, an involvement compatible with the cadaver study was observed. During this period, the patient was prescribed dexketoprofen 25 mg 2x1. In the outpatient clinic controls, the patient continued his daily activities without any problems. No other procedure was performed on the patient, whose pain did not recur in the follow-ups.

Conclusion: QIPB, a new technique, allows passage to both the anterior and posterior quadratus lumborum muscle. QIPB can be an effective method in the management of acute and chronic pain in the lumbosacral, lower abdominal, and hip regions.

Keywords: Chronic pain, Quadro-iliac plane block, Lumbar myofascial pain

OP-109

Abstract no: 68248
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Serratus posterior superior intercostal plane block (SPSIPB) in the management of analgesia after breast and thoracic surgery: from anatomy laboratory to clinic

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Objective: Serratus posterior superior intercostal plane block (SPSIB); is performed between the serratus posterior superior muscle and the intercostal muscles at the level of the second and third ribs in the fascial plane. SPSIB provides anteroposterior hemithoracic analgesia from C3 to T10 levels. In this case series, we would like to present our successful analgesic experiences with SPSIB in 4 patients who underwent thoracoscopic and breast surgery.

Case: Informed consent was obtained from the patients for this case report. SPSIB was performed with 30 ml of 0.25% bupivacaine according to the surgical side. 400 mg ibuprofen and 100 mg tramadol were administered intravenously to the patients 10 minutes before the end of surgery. Postoperative ibuprofen 400 mg 3x1 was ordered. If NRS was over 4, 0.5 mg/kg meperidine was planned to be administered. Dermatome was examined with a pinprick test at the 1st hour postoperatively. Patients completed the postoperative 24-hour period without pain and additional analgesics.

Conclusion: The SPS muscle has an unusual oblique route. It is a periscapular muscle and extends from the C7–T2/T3 spinous process to the 2nd–5th ribs. Due to its characteristics, deep injection of local anesthetics into SPS causes targeting of dorsal ramus and lateral cutaneous branches of intercostal nerves at these levels. SPSIB is safe and simple due to US guidance. SPSIB may be a good choice for postoperative analgesia management as part of multimodal analgesia after breast and thoracic surgery.

Keywords: breast surgery, postoperative analgesia, serratus posterior superior intercostal plane block, thoracic surgery

OP-110

Abstract no: 69665
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Investigation of the effect of intervertebral vacuum phenomenon on clinical and radiological outcomes in patients undergoing single-level transforaminal lumbar interbody fusion surgery

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Objective: Intervertebral vacuum phenomenon (IVF) is defined as an abnormal gas collection within the intervertebral discs or joint spaces. This study aims to investigate the effect of the presence of IVF, which indicates the severity of intervertebral degeneration, on postoperative clinical and radiological outcomes in patients who have undergone single-level transforaminal lumbar interbody fusion (TLIF) surgery.

Methods: Patients aged between 45 and 65 years, regardless of gender, who had undergone single-level TLIF surgery and had completed at least 2 years of follow-up, were selected from the hospital database. Twenty patients with IVF were selected as the IVF group, and 20 patients with similar characteristics but without IVF were selected as the control group. Spinal lumbopelvic parameters were measured from scoliosis anterior-posterior and lateral x-ray images obtained from the database. Clinical outcomes were evaluated using the Oswestry Disability Index (ODI) and Numeric Rating Scale (NRS) questionnaires.

Results: While there was no significant difference in radiological parameters between the groups, clinical parameters indicated that surgical outcomes were less successful in patients with degenerative disc disease accompanied by IVF compared to those without IVF.

Conclusion: This study suggests that the presence of IVF may negatively impact clinical outcomes following single-level TLIF surgery. However, due to the limited sample size, larger studies are needed to validate these findings.

Keywords: pain, physical fitness, intervertebral disc degeneration, intervertebral vacuum phenomenon, transforaminal lumbar interbody fusion

OP-111

Abstract no: 26306
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Comparison of morphometric characteristics of thoracic pedicles in Anatolian and British populations

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Objective: The objective was to analyse the morphometric characteristics of pediculus arcus vertebra (PAV) in Anatolian (AP) and British (BP) populations.

Methods: The study included unsexed, dry thoracic vertebrae from 14 Anatolian and 14 British specimens. Pedicle height (PH), pedicle width (PW), interpedicular distance (ID) and pedicle screw trajectory length (PSTL) were assessed utilising a digital caliper. The pedicle transverse angle (PTA) and pedicle sagittal angle (PSA) were assessed using a goniometer.

Results: There was no statistically significant difference between the populations in right and left PH, PW, PSTL and ID ($p>0.05$). Right and left PTA were found to be larger in the British population than in the Anatolian population (right PTA; AP: 8.86±1.55°, BP: 12.14±2.85°; $p=0.001$) (left PTA; AP: 8.21± 1.35°, BP: 11.14±2.27°; $p=0.001$). Right and left PSA were wider in the British population (right PSA; AP: 8.86±1.22°, BP: 11.36± 2.41°; $p=0.008$) (left PSA; AP: 8.64±1.22°, BP: 10.57±3.10°; $p= 0.048$). In the Anatolian population, as right PTA and PSA increased, left PTA and PSA also tended to increase (PTA; $r=0.92$; $p<0.001$) (PSA; $r=0.94$; $p<0.001$), whereas there was no statistically significant difference between right and left PTA and PSA in the British population ($p>0.05$).

Conclusion: Studies have shown that there may be significant differences in thoracic PAV dimensions and angles between different ethnic groups, and knowledge of these differences is important details to consider in surgical procedures and pedicle screw placement. We believe that our findings can guide clinicians in the surgical procedures to be performed in the thoracic region and also highlight the differences between races.

Keywords: dry bone, thoracic vertebrae, pediculus arcus vertebrae, morphometry, racial differences

OP-112

Abstract no: 62596
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Emergence sites of the superior cluneal nerves from the thoracolumbar fascia: implication for superior cluneal nerve treatments

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Objective: Superior cluneal nerves (SCN) are the cutaneous branches of the lumbar spinal nerves. Entrapment or dysfunction of SCN can cause pain in low back and buttock called "cluneal nerve syndrome". The treatment of the syndrome, involving the radiofrequency lesioning, local injections and surgical approach, requires the identification of emergence sites of the SCN to successfully manage the pain. This study aims to create a topographic map of the emergence sites of SCN using which can facilitate and increase the efficacy of the treatment.

Methods: Formalin-fixated 5 lumbo-sacral region of the cadavers were dissected meticulously using surgical microscope with ×2.5 magnification to reveal the SCN branches. The highest point of iliac crest and posterior superior iliac spine (PSIS) were used as landmarks and a reference line connecting them was drawn to create a topographic map of SCN emergence sites.

Results: All branches of SCN were emerging above the reference line. The thickest branch of SCN emerging below the iliac crest and above the reference line was passing through an osseus canal located 4.5 cm lateral and 4.8 cm superior to the PSIS.

Conclusion: Placing the ultrasound probe or fluoroscopy arm just above of the reference line to locate the emergence of SCN branches can facilitate the identification of the SCN branches and increase the efficacy of the treatment.

Keywords: superior clunial nerves, SCN, entrapment, location, treatment

OP-113

Abstract no: 24628
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Localizations of osteoarthritis in articulatio talocruralis and articulatio tarsi transversa in cadavers: comparison of radiological, morphological and histopathological aspects

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Objective: Osteoarthritis (OA) is the most common joint disease. In this study it was aimed to compare the general features of OA such as location, placement, severity and shape of the lesions in terms of radiological and morphological aspects and to determine their relationship with each other.

Methods: In our study, the antero-posterior and lateral radiographies of talocrural and transverse tarsal joints of 20 cadavers by age between 30 and 50 years were taken. The results obtained from the radiological examination were graded according to the Kellgren and Lawrence scale. For each of the identified regions, the presence of degenerative changes was noted. Then samples were taken from these regions were examined by microscopic methods. The cartilage degeneration changes, presence of fibrillations, density, depth, chondrocyte aggregation, and necrotic changes were evaluated.

Results: In the radiological examination OA was found 25% in the talocrural joint, 15% in the transverse tarsal joint. In the morphological examination OA was found 25% in the talocrural joint and 5% in the transverse tarsal joint. In the microscopic examination OA was found in 94.7% talocrural joint and in 100% transverse tarsal joint.

Conclusion: Although radiological and macroscopic OA was detected in approximately 1/3 of cadavers aged between 30 and 50 years, degeneration of varying degrees was detected in all joints examined in microscopic examination. This shows that an advanced age disease OA, starts at a very early age.

Keywords: osteoarthritis, articulatio talocruralis, articulatio tarsi transversa

OP-114

Abstract no: 71034
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of morphometric parameters associated with anterior talofibular ligament injury using magnetic resonance imaging

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Objective: Lateral ankle injuries are prevalent in general population, particularly among athletes. The anterior talofibular ligament (ATFL) is the most commonly injured structure in these cases, often resulting in complications such as instability. Precise diagnosis and treatment are essential for effectively management of the injury. The aim of this study is to characterize the morphology of ATFL to facilitate the diagnosis and treatment of ATFL -related injuries.

Methods: This retrospective study included a total of 96 MRI images, comprising 48 ATFL injury cases and 48 normal cases aged 18–65 years. Magnetic resonance imaging (MRI) was used to measure the morphometric parameters of the ATFL, including length, thickness and width, as well as indirect diagnostic findings such as the ATFL-posterior talofibular ligament (PTFL) angle, axial malleolar index (AMI), intermalleolar index (IMI) and malleolar talar index (MTI). Parameters with a normal distribution were analyzed using Independent Samples t-test, whereas those not following a normal distribution were evaluated with Mann-Whitney U test.

Results: ATFL length, thickness, ATFL-PTFL angle, AMI indicating medial rotation of the talus and MTI values showed statistically significant difference between the two groups ($p<0.05$). ATFL width and IMI values, indicating fibula position with reference to the medial malleolus, did not show a significant difference between the two groups ($p>0.05$).

Conclusion: The study assessed ATFL morphometric parameters along with those previously identified as indirect diagnostic indicators of ATFL injury and instability. These findings

are suggested to assist surgeons in achieving a high level of anatomical restoration during surgical treatment.

Keywords: anterior talofibular ligament, morphometric, radiological

OP-115

Abstract no: 27284
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Morphologic typing and morphometric anatomy of the talus

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Objective: The subtalar joint plays a role in transferring body weight via the talus to the medial and lateral parts of the longitudinal arch of the foot. Morphological differences in the talus or calcaneus's articular surfaces may affect the subtalar joint's range of motion and lead to various clinical conditions. This study aims to evaluate the morphological and morphometric features of the articular surfaces participating in the joint formed by the talus and calcaneus.

Methods: In this study, 50 right and 50 left talus of unknown age and gender were evaluated. The anteroposterior length of the talus, transverse width, and length, width and depth of sulcus tali were measured. In addition to morphometric measurements, articular surfaces on talus were classified and the areas of these articular surfaces were calculated.

Results: The talus measured 51.5±4.02 mm in anterior-posterior length and 39.4±3.32 mm in transverse breadth. The average length and width of the sulcus tali were found to be 21.36±3.19 mm and 5.65±1.69 mm, respectively. The right sulcus tali's mean length was higher than the left sulcus tali's mean length. The most prevalent form of taluses, categorized based on their articular surfaces, was the one in which the anterior and middle calcaneus facet were combined into one unit.

Conclusion: Knowing the morphology and types of the articular surfaces of the talus will guide the surgical treatment planning of pes planus or subtalar joint arthritis.

Keywords: talus, subtalar joint, calcaneus, morphometry

OP-116

Abstract no: 31181
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

A radiologic-morphometric approach to the diagnosis of trochlear dysplasia and the clinical significance of facies patellaris

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Objective: The most important pathoanatomical risk factor of patellofemoral instability (PFI) is trochlear dysplasia (TD). TD is a variational condition in which condylus femoris develop abnormally. Presence and type of TD are important in deciding on treatment method. We aimed to reveal presence and type of TD in magnetic resonance imaging (MRI) and dry bones.

Methods: Bilateral knee MRIs of 147 patients (age: 20–65, F: 80, M: 67) were retrospectively examined. Trochlear sulcus angle (TSA) and presence of TD were evaluated in T1 axial sections and 33 (R: 15, L: 18) anatomically intact and complete adult human dry femora of uncertain age and gender. Femur length (FL), facies patellaris (FP) length, width and sulcus depth of bones were also measured.

Results: 17/147 patients (11.56%) (F: 10, M: 7) had TD (R: 8, L: 8, bilateral: 1). TD was observed in 18/294 knees (6.12%) (type A: 90%, type B: 4%, type C: 2%, type D: 4%). Mean sulcus angle was 130° in those without TD. Mean FL: 40.6 cm, TSA: 132°, FP length: 30.2 cm, width: 45.3 cm, and sulcus depth: 53.7 cm. Type A dysplasia was observed in 2 bones and type B dysplasia was observed in 1 bone. There was a statistically significant correlation between FL and FP length, width and sulcus depth ($p<0.05$, $p<0.001$ and $p<0.001$ respectively), but there was no relationship between dysplasia and FL.

Conclusion: Prevalence of TD, the most common cause of PFI, was found to be 11% in both MRIs and dry bones. Evaluation of presence and type of TD in patients with PFI will guide treatment decisions.

Keywords: patellofemoral instability, patella, trochlear sulcus, femoral sulcus angle

OP-117

Abstract no: 17404
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Research of the morphological effects of injection treatments in common knee joint pathologies

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Objective: This study aims to evaluate the morphometric effect of applications such as medical ozone or platelet rich plasma (prp) applied into the joint in knee osteoarthritis or meniscus tear pathologies.

Methods: In this anatomical and radiological study, carried out in a training and research hospital, pre- and post-procedure radiological images of patients who received applications such as medical ozone injection or prp, especially for knee osteoarthritis and meniscus tears, are examined and measurements are made.

Results: Especially in Magnetic Resonance Images, the use of medial and lateral joint distance, retropatellar cartilage thickness, medial joint cartilage thickness, lateral joint cartilage thickness, chondromalacia grade, suprapatellar bursa fluid amount, joint space fluid amount has the potential to provide the most data about anatomical changes. has been determined.

Conclusion: This study shows that injection treatments applied in knee joint pathologies should not only provide proven results such as relieving pain and providing joint range of motion, but also morphometric changes should be observed. Similar to VAS (Visual Pain Scale) and WOMAC (Western Ontario and McMaster Universities Arthritis Index) scores, it constitutes an important step towards this need by revealing the necessity of measuring and evaluating anatomical changes.

Keywords: knee joint pathologies, anatomy, morphometry, medical ozone therapy, prp

OP-118

Abstract no: 10807
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Is malleolus lateralis morphometry related to peroneus brevis tendon morphometry and peroneal groove formation?

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Objective: Positional variations of peroneal muscle (PB), variable shape of peroneal grooves, and peroneus quartus muscle may be the etiology of peroneal tendon rupture and subluxation. However, relationship between lateral malleolus (LM), peroneal grooves and PB tendon morphometry has not been elucidated. This study investigated whether morphometry of LM affects the formation of peroneal grooves and PM tendon morphometry.

Methods: Twenty-five formalin-fixed cadaver and amputee feet (12 female, 13 male) were included in this study. Height and width of LM, height and depth of the peroneal groove, length, width, and thickness of PB regarding the position of LM were recorded. All parameters were analyzed in terms of sexes and sides.

Results: No statistically significant difference between LM, grooves, and PB morphometry regarding sexes and sides existed. While there was no relationship between LM and PB tendon morphometries in ML's proximal, there was a strong positive correlation between tendon length and LM morphometry in distal. Increasing LM height changed the PB tendon thickness. A strong positive correlation existed between tendon thickness and length in LM's proximal. The length of the grooves increased as the height of LM increased but did not affect the depth.

Conclusion: The LM morphometry is thought to be related to the formation of grooves and PB morphometry, especially after the distal end. Future studies can investigate this subject in more detail by considering radiological or gross measurements in patients with subluxation or tendon rupture.

Keywords: lateral malleolus, peroneus brevis, cadaver

OP-119

Abstract no: 49021
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Evaluation of width measurements at the point where the common peroneal nerve divides into the superficial peroneal nerve and deep peroneal nerve: cadaveric study

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Objective: The anatomy of the common peroneal nerve and its branches is vital in lateral knee trauma and surgeries. Additionally, nerve thickness measurements are crucial when using them as grafts and in nerve transfers, serving as a reference for axon count and thickness. This study aims to measure the thickness of the common peroneal nerve and its branches at the bifurcation point, considering side differences and evaluating these measurements proportionally.

Methods: Lower extremity dissection was performed on 20 lower limbs from 10 adult cadavers fixed with 10% formaldehyde. The thickness of all three nerves was measured at the bifur-

cation of the common peroneal nerve into the superficial and deep peroneal nerves. Measurements from both sides were evaluated and their thickness ratios assessed.

Results: No statistically significant difference was found in the thickness of the common peroneal, superficial, and deep peroneal nerves between the right and left sides (p=0.241, p=0.169, p=0.445). On average, the superficial peroneal nerve was 0.4±0.06 times, and the deep peroneal nerve was 0.73±0.14 times the thickness of the common peroneal nerve. Additionally, the deep peroneal nerve was 1.84±0.35 times thicker than the superficial peroneal nerve.

Conclusion: The common peroneal nerve and its branches are crucial for sensory and motor innervation of the leg and foot. We believe the data from this study will guide surgical approaches to the distal common peroneal, superficial peroneal, and deep peroneal nerves, particularly when used as grafts or in nerve blocks.

Keywords: cadaver, dissection, common peroneal nerve

OP-120

Abstract no: 55265
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Relationship between saphenous nerve and femoral artery

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Objective: One of the most important complications after knee surgery is chronic pain, which reduces patient compliance. Different methods, including nerve block, are tried for postoperative pain management. In nerve blocks performed under USG guidance, nerve blocks are tried according to different landmarks. In the adductorius canal for the saphaneus nerve, the most frequently injured structures are the femoral artery and vein in the blocks before and after. In our study, we examined the relationship of the saphaneus nerve with the femoral artery and vein at different levels.

Methods: Our study was conducted on 5 formalin-fixed cadavers (10 sides). In our study, measurements such as the level of separation of the saphaneus nerve from the femoral nerve according to the inguinal ligament, the distance to the artery at the canal entrance, the distance to the artery at the canal exit, and the level of exit from the canal were made.

Results: Our measurements were as follows, respectively. Separation level average 89.30±17.61 mm, artery distance at the canal entrance was 15.50±4.25 mm, canal exit level was 75.02± 6.21 mm and artery distance at the exit level was 18.46±3.63 mm.

Conclusion: As a result, since the nerve is in close relation with the artery, after the artery is detected in the interventions around the canal, the nerve should be searched within a range of approximately 1.5 to 2 cm. The fact that the landmarks we used can also be used in practical applications shows the power of the study.

Keywords: saphaneus nerve, saphaneus block, adductor canal, knee pain

OP-121

Abstract no: 69170
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Anatomical features of the tracheoesophageal groove and its relationship with the recurrent laryngeal nerve

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Objective: The tracheoesophageal groove (TEG) is a groove formed by the merging of the trachea and esophagus, providing a protective area for the recurrent laryngeal nerve (RLN) as it ascends towards the larynx. It is also an important anatomical landmark for identifying the nerve. This groove is routinely evaluated in thyroid surgeries. In our study, we aimed to investigate the relationship between the TEG and the recurrent laryngeal nerve in cadavers.

Methods: Twenty human cadavers, fixed with 10% formalin and without any deformities in the neck region, from the cadaver archive of the Department of Anatomy at Ege University Faculty of Medicine, were used. The anatomy of the TEG and its relationship with the RLN were examined, and high-resolution photographs were taken progressively during dissections. Measurements were conducted using the Image J program.

Results: In our study, the distance between the RLN and the TEG ranged from a maximum of 6.0 mm to a minimum of 1.18 mm. When examining the position of the RLN relative to the TEG, it was found anterior to the TEG in 47.5% of cases, posterior in 10.0%, and within the groove in 42.5% of cases.

Conclusion: Our study found that the relationship between the TEG and the RLN is consistent with the literature.

Keywords: thyroid gland, thyroid surgery, recurrent laryngeal nerve, anatomy

OP-122

Abstract no: 86031
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of the trachea and bronchi in follow-up CT scans of COVID-19 patients using 3-dimensional reconstruction method

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Objective: This study aims to evaluate changes in the trachea and bronchi using 3-dimensional reconstruction images obtained from the initial and follow-up computed tomography (CT) scans of COVID-19 patients.

Methods: Fifty female and 50 male COVID-19 patients older than the age of 18 were included in our study. The initial and follow-up CT images of COVID-19 patients were graded as none (grade 0), mild (grade 1), moderate (grade 2), and severe (grade 3) according to the total lung severity score. The patients were divided into progression and regression groups according to the increase/decrease of grade between the initial and follow-up CTs. Sequential, serial CT images in DICOM format were transferred to Mimics software, and 3-dimensional reconstruction of the trachea and bronchi was performed. Cross-sectional area, circumference, and diameter measurements were made on the obtained 3-dimensional model.

Results: It was found that the proportion of males was higher in the progression group and the proportion of females was higher in the regression group. The mean cross-sectional area, circumference, and diameter measurements of the right upper lobar bronchus, intermediate bronchus, middle lobar bronchus, and left lower lobar bronchus decreased in the follow-up CTs of the progression group. This decrease wasn't statistically significant. In the follow-up CTs of the regression group, the left upper lobar bronchus and left lower lobar bronchus measurements increased but weren't statistically significant.

Conclusion: When the onset of the disease and the follow-up period were compared, no statistically significant changes occurred in the trachea, main bronchus, and lobar bronchus of COVID-19 patients.

Keywords: COVID-19, trachea, bronchus, follow-up CT, 3-dimensional reconstruction

OP-123

Abstract no: 56738
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of internal carotid artery tortuosity index and carotid bifurcation level by 3-dimensional computed tomography angiography

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Objective: The aim of this study was to investigate the relationship between the tortuosity index (TI) of the cervical part of the internal carotid artery (ICA) and the level of carotid bifurcation (CB) relative to the vertebra.

Methods: We included 74 participants (40 males, 34 females) and were divided into 3 groups according to mild, moderate, and severe stenosis. TI was measured by the ratio of the curved length to the straight length of the part of the ICA between the skull base and CB using computed tomography angiography (CTA) images.

Results: On both sides, the CB level was lower in the severe stenosis group compared to the mild ($p<0.05$). The straight and curved lengths and TI of both sides did not show any significant difference between the groups ($p>0.05$). However, as the straight and curved lengths of the ICA increased, the CB level was found to be lower on both sides ($p<0.001$). However, as the TI increased on the left, BC was localized higher ($p<0.001$). In the gender analysis, the straight and curved lengths of the ICA were significantly higher in men than in women, while the BC level was lower. No significant difference was found between the right and left sides in the measurements of the participants ($p>0.05$).

Conclusion: These results show that as the TI of the left ICA increases, the CB is located higher. We think that the risk of endarterectomy surgery complications may be higher in patients with this case.

Keywords: atherosclerosis, internal carotid artery, carotid bifurcation, tortuosity index, computed tomography angiography

OP-124

Abstract no: 68719
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Evaluation of the common carotid artery and its first branches by computed tomography

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Objective: This study aimed to evaluate the diameter, area measurements and bifurcation level of the common carotid artery and its first branches.

Methods: The common carotid artery, external carotid artery, and internal carotid artery on both sides of the patient will be evaluated retrospectively from archived images from the Ankara Etlik City Hospital Radiology Clinic. The vascular structure of 80 individuals (40 female, 40 male) without stenosis, vasculitis, trauma or pathology was evaluated. Using Contrast Cervical Computed Tomography (CT) with a slice thickness of 1 mm or less on the patient images, the diameter and area measurements of the common carotid artery and its first branches and the level of bifurcation will be made. The measurements will be analyzed using the free, open-source software program 3D Slicer.

Results: The diameter and area values of the right common carotid artery were statistically higher than the left side ($p<0.05$). The measurement results of the common carotid artery, external carotid artery and internal carotid artery were statistically higher in males than in females. The bifurcation level of the common carotid artery was mainly at the C4 vertebral level. It was seen that 8 of the 15 people whose right side corresponded to the C3 vertebral level were also at the C3 position on the left side.

Conclusion: We believe that knowing the morphometry and location of the common carotid artery and its first branches will contribute to the planned surgical procedures.

Keywords: common carotid artery, computed tomography, external carotid artery, internal carotid artery, morphometry

OP-125

Abstract no: 85519
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Investigation of hippocampal subfield volumes in migraine without aura: a brain segmentation study

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Objective: This study aims to compare hippocampal and subfield volumes between patients with migraine without aura and healthy individuals and to examine the correlations between these volumetric measurements and clinical outcomes such as pain frequency and duration.

Methods: This cross-sectional study included 125 migraine patients (63 females, 62 males) and 125 control group participants (64 females, 61 males). Volumetric analysis of the brain was performed using volBrain, an open-access MRI brain volume measurement system. The segmentation of hippocampal subfields was conducted using the Winterburn atlas. T1-weighted images were processed using the HIPS pipeline.

Results: In migraine patients, compared to the control group, the right hippocampal volume (migraine: 2.351±0.298 cm^3; control: 2.262±0.354 cm^3), left hippocampal volume (migraine: 2.279± 0.285 cm^3; control: 2.198±0.353 cm^3), and total hippocampal volume (migraine: 4.63±0.555 cm^3; control: 4.451±0.69 cm^3) were found to be larger ($p<0.05$). Additionally, the volumes of the CA4-DG, SR-SL-SM, and subiculum in the right hemisphere were higher in the migraine group compared to the control group ($p<0.05$). In the left hemisphere, the CA4-DG and subiculum volumes were also larger in migraine patients ($p<0.05$). When evaluated by gender, male migraine patients had larger volumes of the right hippocampus, CA4-DG, SR-SL-SM, and subiculum compared to healthy males ($p<0.05$). Furthermore, the left subiculum volume was larger in both male and female migraine patients compared to the control group ($p<0.05$).

Conclusion: In migraine patients, significant volume increases were observed in certain hippocampal regions, particularly in the right hemisphere and the subiculum. These structural differences were more pronounced in male patients, suggesting a potential link between hippocampal changes and migraine.

Keywords: CA4-DG, SR-SL-SM, intracranial volume, asymmetry, subiculum

OP-126

Abstract no: 64538
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Investigation of the changes in morphological features of the left brachiocephalic vein based on the branching pattern of the aortic arch

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Objective: This study investigates the variability between the linear and actual lengths of the left brachiocephalic vein

(LBCV), which is often used in central venous catheterization, based on supra-aortic artery branching patterns.

Methods: We examined computed tomography angiography images of 36 individuals with no vascular issues, assessed by an interventional radiologist, using 3D Slicer software. Participants were classified by aortic arch branching patterns: Type 1 (classic branching pattern), Type 2/A (left common carotid artery and brachiocephalic trunk share a common origin), Type 2/B (left common carotid artery originates from the brachiocephalic trunk), and Type 3 (left vertebral artery branches directly from the aortic arch). Linear and actual lengths of the LBCV were measured from its origin to termination.

Results: No significant difference was found between groups in linear and actual lengths, but the linear length was notably greater in males (p=0.0268). While differences between linear and actual lengths were not statistically significant across groups, a larger difference was observed in Type 2 and Type 3 groups.

Conclusion: The increased actual length of the LBCV in individuals with a bovine-type aortic arch suggests a greater curvature, which could pose risks during surgical procedures. Aortic arch patterns should be considered when planning central venous catheter placements. Given the non-significant differences in Type 2/A and Type 2/B groups, further research with larger samples or involving catheterized individuals is needed to ensure surgical safety.

Keywords: aortic arch, left brachiocephalic vein, 3D Slicer, catheter

Poster Presentations

(PP-01 — PP-28)

PP-01

Abstract no: 88743
Abstract group: Anatomy and Innovation / *3D Printing in Anatomy*

Creating plastic models of upper extremity bones

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Objective: This study aimed to shape models of upper extremity bones used in anatomy education in medical faculties using plastic materials as course materials. Thus, materials procured at high costs were produced under laboratory conditions.

Methods: It is thought that if the bones that make up the upper extremity are produced from plastic, many coarse materials can be obtained at affordable prices. It is aimed to ensure that medical faculty students taking anatomy courses have access to course materials produced outside the laboratory and the laboratory.

Results: Bone sets found in our department's laboratory were used in this study. Bone sets were selected and prepared for casting. First, silicone molds were obtained from bones. Subsequently, the plastic models obtained with the plastic material were cast into molds. The products were finalized by correcting, polishing, leveling, and assembling the created models.

Conclusion: Considering the difficulties in accessing bone materials, it is planned that both students and physicians working in surgical units have access to domestically produced educational materials.

Keywords: bones, models, molding, upper extremity

PP-02

Abstract no: 30462
Abstract group: Anatomy and Innovation / *3D Printing in Anatomy*

Anatomical modelling using 3D pen: student workshop experience at Istanbul Health and Technology University

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Objective: This study aimed to evaluate effective and cost-efficient anatomical models for students using 3D pens and to investigate students' skills in using 3D pens.

Methods: The study evaluated the 'Anatomy Drawing' workshop activity held on NEXTMED Student Congress organised by the students of Istanbul Health and Technology University Faculty of Medicine on 25/05/24. A total of 17 students participated in the event, one of whom was a dentistry student and 16 were medical students. The participants were asked to model different variations of gallbladder and ducts within 1 hour. At the end of workshop, participants were asked to evaluate the activity on a voluntary basis.

Results: As a result of the evaluation of the workshop activity of students who participated in the workshop, 100% of the students stated that it was an interactive activity, the design process was fast and the design phase was practical, while 88% of the students stated that it was useful in understanding the bile ducts and reinforced their knowledge. 82% of the students reported that it was a useful model for education and the design stage was easy.

Conclusion: It was seen that modelling activity using a 3D pen can be an effective, relatively inexpensive and alternative educational method for anatomy education that increases student-instructor interaction. It was also found that various workshops could be organised using similar methods. This technique or similar techniques can be a potential educational tool not only in medical education but also in health sciences education.

Keywords: 3D, modelling, workshop, anatomy, gallbladder

PP-03

Abstract no: 71795
Abstract group: Anatomy and Innovation / *3D Printing in Anatomy*

Step-by-step modelling of the gallbladder and its ducts using a 3D pen

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Objective: This study aimed to demonstrate step-by-step modelling of the gallbladder and its ducts using a 3D-pen, which is effective and cost-efficient for students.

Methods: A 3D-pen, adapter, 2 metres of green filament, silicone finger protector and a two-dimensional printed printout of

the anatomical structures to be drawn were used for modelling the gallbladder and ducts with a 3D-pen.

Results: Modelling of the gallbladder and its ducts was performed in four stages. In the first stage, a two-dimensional drawing of the gallbladder was made. Then, the inside of the model was filled with paper and the circumference was drawn using a 3D-pen. In this stage, the neck, body and fundus of the gallbladder were constructed. In the second stage, the right and left hepatic ducts and the common hepatic duct were drawn with the 3D-pen and these structures were combined. In third stage, the common hepatic duct was drawn and combined with the other components using 3D-pen. In the last stage, a floor was drawn with a 3D-pen to fix the model and the prepared model was fixed to that. A total of 2 metres of filament was used and process was completed in 30 minutes.

Conclusion: Modelling of the gallbladder and its ducts in a four-step process has shown to be an effective method that can be easily performed with cheap and simple materials. This model can be used as a valuable training tool, especially for medical education and surgical simulations, by facilitating a three-dimensional understanding of the anatomical structure.

Keywords: 3D, pen, modelling, gallbladder, filament

PP-04

Abstract no: 88909
Abstract group: Anatomy and Innovation / *3D Printing in Anatomy*

Ergonomic and personalised assistive pen holder with 3D printing

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Objective: The objective of this study is to develop a specialized assistive pen holder for individuals with impaired hand function. The primary goal of this apparatus is to improve pen grip comfort, promote correct posture during writing, and prevent rapid hand muscle fatigue through ergonomic design.

Methods: A key feature of our approach is the individualized design of the assistive apparatus. Since each person's pencil grip varies, the apparatus must be tailored accordingly. Particularly in cases of incomplete finger joint flexion, grip forms differ significantly. To capture the pen grip shape in deformed hands, we first created palm mold while the subject held pen. This mold was then 3D laser-scanned and converted into digital model. Based on the digital 3D grip image, our designer crafted a channel for the pen within the apparatus. Finally, we produced the finished product using 3D printer and biodegradable polylactic acid (PLA).

Results: Our personalized PLA pencil grip apparatus was successfully fabricated via 3D printing. Compared to a standard pen grip, our design enlarges the stress-bearing area on the medial regions of the first and second fingers, thereby reducing stress. We meticulously considered hand anatomy, including flexion angles of interphalangeal joints, wrist movements, and palm structures.

Conclusion: The production of a personalised pencil grip with 3D printing will provide a certain convenience and comfort in the lives of people with different hand deformations. Anatomical precision is an important factor that increases the success of this apparatus.

Keywords: ergonomics, personal assistive device, additive manufacturing, 3D printing

PP-05

Abstract no: 79899
Abstract group: Experimental Research and Neuroscience / *Cellular and Molecular Anatomy*

Investigation of the effects of myrtenal in rats with experimental renal ischaemia/reperfusion injury; histological findings

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Objective: Acute kidney injury (AKI) is a heterogeneous syndrome that causes a wide range of functional changes in the kidneys, leading to high mortality in intensive care units and vascular surgical operations. Investigations have shown that myrtenal (Myrt) is known to have positive effects on various organ damages. This study aimed to investigate the effects of Myrt on renal I/R injury histologically.

Methods: Forty male Sprague-Dawley rats (n=10) were used in the study. The sham group (Group 1) clamping wasn't performed, while Group 2 was subjected to 45 minutes of ischemia and 24 hours of reperfusion. In groups 3 and 4, Myrt was administered intraperitoneally at two different doses (40–80 mg/kg) for 9 days, followed by 45 minutes of ischemia and 24 hours of reperfusion. At the end of the experiment, the animals were decapitated and kidney tissues were collected for histological analyses. The kidney cell damage levels and caspase-3 reactivity were examined histologically.

Results: Histological analysis showed that Myrt significantly reduced renal tissue damage and caspase-3 immunoreactivity ($p<0.05$).

Conclusion: In conclusion, Myrt has a protective effect against ischaemia-reperfusion injury.

Keywords: kidney, ischaemia/reperfusion, oxidative stress, myrtenal, histology

PP-06

Abstract no: 20629
Abstract group: Clinical Anatomy / *Anatomical Variations*

Pelvic ectopic kidney: a case report

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Objective: Kidneys normally start to develop in the pelvis and migrate to their normal anatomical position in the upper abdomen. Ectopic kidney is described as abnormal localization of kidney due to a developmental anomaly and it occurs as a result of a halt in migration of kidneys to their normal locations during embryonal period. The pelvic kidney represents the most common form of congenital renal ectopia. 1/2100-3000 rate of ectopic pelvic kidney has been observed in autopsy series. An ectopic kidney may be asymptomatic and may function normally even though it is not in a usual position. In the present report, we aimed to present a case with ectopic pelvic kidney.

Case: An ectopic pelvic kidney was found incidentally in a 58 year-old male patient during the abdominopelvic CT.

Conclusion: In women with renal ectopia 20–66% have abnormalities of either the uterus, vagina or both. In men, associated genital abnormalities are seen in 10–20% of patients. The most common signs and symptoms related to an ectopic kidney that lead to diagnosis include urinary-tract infections, abdominal pain or a lump that can be felt in the abdomen. Ectopic positions also pose further hazards to interventional radiological and laparoscopic procedures and emergency operations such as cesarean section. Treatment options depend upon the presence of symptoms or complications. No treatment for an ectopic kidney is required if urinary function is normal and no obstruction to the urine flow is present. In case of extensive renal damage, nephrectomy is indicated.

Keywords: pelvic ectopic kidney, computed tomography, pelvic mass

PP-07

Abstract no: 30800
Abstract group: Clinical Anatomy / *Anatomical Variations*

Bilateral extensor digitorum brevis manus: a case report

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Objective: Extensor digitorum brevis manus (EDBM) is a rare variant muscle on the dorsum of the hand. We aimed to present a case of bilateral EDBM that is previously not reported.

Case: We found bilateral EDBM on the dorsum of both hands in a 76-year-old female cadaver. On the dorsum of the right hand, the EDBM originated as a biceps shape with two different tendons from the posterior surface of the distal end of radius, passing through the fourth compartment of the retinaculum extensorum (RE) and inserted into ulnar side of the dorsal aponeurosis of the third digit. The muscle had a total length of 5.8 cm and was 1.0 cm in width. In the left hand, the EDBM originated from the posterior surface of the distal end of radius and the muscle belly was overlying within the fourth compartment of the RE. On the dorsal hand it separated into two heads. The lateral head inserted into the tendon of the EI. The medial head inserted by a tendon into the dorsal aponeurosis of the third finger. The lateral and medial heads were 4.6 and 6.0 cm in length and 0.8 and 1.3 cm in width, respectively.

Conclusion: The incidence of EDBM in cadaver hands has been reported in 0.2–4.9%. However, no case of EDBM with coexisting bilateral asymmetry has been reported. We would like to highlight the significance of considering muscle variations like the ones in the presented case in order to prevent potential complications in hand surgery.

Keywords: extensor compartment; extensor digitorum brevis manus; the fourth compartment syndrome; variation.

PP-08

Abstract no: 23182
Abstract group: Other

Comparison of eponyms in Terminologia Anatomica with surgical clinical textbooks

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Eponyms are medical terms that are named after a researcher or clinician involved in discovery of the structure or phenomenon referring their name. Eponyms refer not only to the diseases but also to a wide range of categories including tests, surgical procedures and anatomical structures rather than persons. It is believed that there are over 8000 medical eponyms. In this study I estimate and evaluate the prevalence of eponyms of anatomical structures in two reference textbooks of General Surgery and Gynecology compared to the Terminologia Anatomica. In this study I evaluated Sabiston Textbook of Surgery - The biological basis of modern surgical practice - Elsevier (2021), Williams Gynecology 4e (2020) and Terminologia Anatomica 2nd ed (2019) for the eponyms. The continued use of eponyms was seen as an important issue for discussion on the history and ethics of anatomy. Especially the post-graduate residences should be aware of the origin of eponyms and increase their perceptions on the use of eponyms in anatomical writing.

Keywords: eponym, Terminologia Anatomica, human anatomy

PP-09

Abstract no: 39813
Abstract group: Anatomy Techniques and Cadaver Management / *Anatomy and Law*

Forensic osteology

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Objective: Human forensic osteology is the application of knowledge of human skeleton in the field of forensic medicine to assist the administration of medico-legal cases. The first and scientific information is identification of body and cause of death if a dead body is found unattended. In this situation forensic anthropologists, forensic pathologists and anatomists are consulted by the authorities to help them about the dead person.

Methods: Identification can be done by studying autopsy or examination of the remaining bones. Forensic anthropologists or pathologists try to identify sex, age, race and cause of death by examining dead body and usually the bones as part of forensic osteology.

Results: There are various parameters for identification of human dead bodies: Sex, Age, race, stature, teeth, hair, fingerprint, footprint, scar marks, other anthropological factors. First four of these parameters are directly linked to forensic osteology, because bones and also teeth resist putrefaction.

Conclusion: In this review I want to summarize the tasks that can be determined by examining the bones by athropologists and anatomists for forensic medicinal cases.

Keywords: forensic osteology, forensic anthropology, human skeleton

PP-10

Abstract no: 12569
Abstract group: Clinical Anatomy / *Anatomical Variations*

Unreported variations in the proximal and distal parts of the anterior choroideal artery

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Objective: We aimed to investigate the morphological variations of the anterior choroidal artery (AchA), which is at risk in the treatment of diseases such as aneurysm, cerebral infarction, Moyamoya disease and brain tumour.

Methods: The brains of a total of 62 cases who were brought to the Forensic Medicine Institute Morgue Specialisation Department of the Ministry of Justice of the Republic of Turkey for autopsy were analysed. The arachnoidea mater on the inferior surface of the brains was carefully dissected to reveal the vascular structures.

Results: Morphological variations of the AchA in the procximal and distal parts were found in 6 hemispheres (2 right, 4 left) of the 62 cadavers examined in our study. These variations were in the form of fenestrations (4 cases) and handle-loop (2 cases) arising from the junction of AchA with posterior communicating artery, internal carotid artery and middle cerebral artery. In fenestrated variations, single fenestration was detected in 3 cases and double fenestration was detected in 1 case. In addition, handle-loop variations of AchA were observed around the AchA itself in 1 case and between the AchA and middle cerebral artery in the other case.

Conclusion: The findings suggest that morphological variations of the AchA are of critical importance in surgical approaches. In particular, it is emphasised that variations such as fenestrations and handle-loop may play an important role in reducing potential complications in surgical interventions in this region.

Keywords: aneurysm, anterior choroidal artery, fenestration, variation, internal carotid artery

PP-11

Abstract no: 49456
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Radiological evaluation of the variations of the origin of the vertebral artery and its level of entry into the transverse foramen

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Objective: The vertebral artery (VA), generally originating from the subclavian artery, plays a critical role in vascularizing the cervical part of the spinal cord, meninges, and dura mater in the posterior cranial fossa. Variations in the origin of the VA and entry-level into the transverse foramen (TF) are important for surgery of the aortic arch and lower neck region. The aim of this study is to investigate the variations of the origin of the VA and its level of entry into the transverse foramen using computed tomography (CT) angiographic images.

Methods: CT angiographic images of 100 patients (62 males, 38 females) were evaluated for variations in the origin of the VA and its level of entry into the TF. The obtained data was statistically analyzed using SPSS version 25.0.

Results: The majority of the VAs arose from the subclavian artery (196, 98%) while the 4 left VA originated from the aortic arch (2%). The majority of the VAs entered the sixth TF (188, 94%) while 10 VA entered the fifth TF (5%), and 2 VA entered the fourth TF (1%). VAs that arise from the aortic arch entered the fifth or fourth TF.

Conclusion: Variations in the origin of the VA were observed only on the left VAs. VAs that arose from the aortic arch entered TF with different levels except from the sixth TF. Recognition and detailed reporting of VA variations is important in interpreting CT angiography to prevent complications during surgery of the aortic arch or lower neck.

Keywords: aortic arch, variation, CT angiography, transverse foramen, vertebral artery

PP-12

Abstract no: 88247
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Cortical thickness analysis of brain lobes using VolBrain in epilepsy patients: a preliminary study

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Objective: The aim of this study is to retrospectively examine the cortical changes in the frontal, parietal, occipital, insular, and limbic lobes on MRI of epilepsy patients using VolBrain.

Methods: The study included 50 individuals diagnosed with epilepsy and 50 controls, aged 18–60. High-resolution T1-weighted 3D images of these individuals were used for cortical thickness measurements of brain lobes. Data analyses were performed using "VolBrain [https://www.volbrain.net/]-vol2Brain", an online system for automatic segmentation. Cortical thicknesses of the brain lobes were compared between individuals diagnosed with epilepsy and healthy controls.

Results: The mean cortical thickness of the frontal lobe was 2.47±0.37 mm in epilepsy patients and 2.42±0.27 mm in healthy controls. The temporal lobe thickness was 3.17±0.43 mm in epilepsy patients and 3.25±0.21 mm in healthy controls. The parietal lobe thickness was 1.93±0.36 mm in epilepsy patients and 1.94±0.24 mm in healthy controls. The occipital lobe thickness was 2.24±0.35 mm in epilepsy patients and 2.27±0.23 mm in healthy controls. The limbic lobe thickness was 3.29±0.50 mm in epilepsy patients and 3.35±0.24 mm in healthy controls. The insular lobe thickness was 2.92±0.52 mm in epilepsy patients and 3.00±0.29 mm in healthy controls. No statistically significant differences were found between the groups ($p>0.05$).

Conclusion: Preliminary results indicate reduction in cortical thickness in the brain lobes of epilepsy patients compared to healthy controls; however, these differences were not statistically significant ($p>0.05$). In the continuation of the study, more detailed examination of the brain lobes will be conducted, along with comprehensive comparison between the two groups.

Keywords: epilepsy, VolBrain, MRI

PP-13

Abstract no: 36902
Abstract group: Experimental Research and Neuroscience / *Neuroanatomy and Neuroscience*

Nucleus accumbens connections with cerebellum and brainstem in the rat and human subjects

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Objective: Nucleus accumbens (NAc) is a key brain region mediating behavior, including reward and satisfaction. The pres-

ent study aims to show the rat's less-known NAc brainstem and cerebellar connections using a retrograde (fluoro-gold- FG) tracer. Further, seeks to show these connections in healthy human adults using 3-tesla diffusion tensor imaging (DTI) tractography.

Methods: FG pressure injection was made into the core (n=6) and shell (n=6) regions of the right NAc of Wistar albino rats. Labeled cells were documented using the Rat Brain Atlas. The DTIs were obtained from the Human Connectome Project (HCP) database and used in tractography.

Results: After FG injections, bilateral labeled cells were observed at the trigeminal nucleus, and ipsilateral labeled cells at the ventral tegmental area, prerubral field, and dentate nucleus of the cerebellum. The DTI data showed that the right NAc was connected to the brainstem and cerebellar structures however left NAc had no or weak connections. The right NAc was connected to the right median raphe, right parabrachial, and right pontis oralis nucleus. The left NAc was bilaterally connected to the dentate nucleus. However, no connections were observed between the left NAc and right dentate nucleus.

Conclusion: The brainstem and cerebellum may contribute to the modulation of many functions of the NAc including reward and satisfaction behaviors. The NAc, a brain region involved in various disorders, is being studied for potential therapeutic devices or agents. Understanding its brainstem and cerebellar connections is crucial due to its extensive interest.

Keywords: nucleus accumbens, cerebellum, brainstem, tractography, fluoro-gold tracer, DTI

PP-14

Abstract no: 21902
Abstract group: Life-Long Anatomy / *Forensic Anatomy*

Right and left discrimination using machine learning from 2D photographs of femur and humerus bones: a pilot study

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Objective: In forensic science and bone anatomy studies, it is important to distinguish right and left in bones that are two in number, such as femur and humerus. In this study, a machine learning model that can distinguish right and left from photographs of femur and humerus bones was developed and tested. It is aimed to develop and increase the use of machine learning models by integrating new technologies into anatomy education and forensic sciences.

Methods: In this pilot study, a total of 1600 photographs of the femur and humerus bones were used. The photographs were taken from the anterior and posterior positions. The prepared photographs were divided into two 80% training and 20% test data. Using a ResNet50V2 based deep learning model, the performance of the model was increased with data augmentation techniques. During the training of the model, the Adam optimization algorithm and class weights were used, and various callbacks were applied to increase the accuracy of the model.

Results: After the training of the Machine Learning model, 100% accuracy was achieved in the right-left distinction of the femur and humerus bones. During the training, the F1-score and precision and recall values were obtained as 100%. It is seen that machine learning methods can be used successfully in anatomy education.

Conclusion: Bu çalışma, femur ve humerus kemiklerinin sağ-sol ayrımını yüksek doğrulukla gerçekleştiren bir makine öğrenme modelinin başarılı bir şekilde geliştirildiğini göstermektedir. Bu sonuçlar, tıbbi görüntü sınıflandırmasında derin öğrenme yöntemlerinin etkili kullanımını ve anatomi eğitiminde teknolojinin artan rolünü vurgulamaktadır.

Keywords: forensic sciences, anatomy, osteology, forensic anthropology, anthropology

PP-15

Abstract no: 57224
Abstract group: Other

Morphometric analysis of the femur and estimation of the articular surface area of the condylus femoris using stereological methods

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Objective: This study aims to perform morphometric analysis of femur, estimate condylus femoris articular surface area using stereology, identify sex differences, and examine relationship between joint surface area and morphometric parameters in the proximal and distal femur.

Methods: Present study examined 180 femurs: 80 right (40 female, 40 male) and 100 left (50 female, 50 male). Twenty morphometric measurements, including femur length and body circumference, were taken, with 8 each for the proximal and distal ends. Condylus femoris joint surface area was stere-

ologically estimated using point-sampled area method. Pearson Correlation analyzed relationships between parameters, while gender differences were assessed with an independent t-test. Discriminant function analysis determined the classification accuracy for gender, and ROC analysis identified the best morphometric values for gender differentiation.

Results: Statistically significant differences were found between genders in all measurements except for femoral anteversion angle and femoral neck anterior length ($p<0.05$). There was a correlation between the condyle's joint surface area and femur length, body circumference, femoral head diameter, and the lengths of the medial and lateral condyles. According to Discriminant Function Analysis, 68.9% of females, 74.4% of males, and 71.6% of all bones were correctly classified. ROC Analysis identified the condyle's joint surface area as having the highest sensitivity and specificity for distinguishing between genders.

Conclusion: Knowing femur morphometrics is crucial in forensic medicine, orthopedics, and anthropology. Understanding condylus femoris joint surface area will guide in designing and applying hip and knee prosthetics.

Keywords: femur, condylus femoris, articular surface area, morphometry, stereology.

PP-16

Abstract no: 45837
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Patella and patellar ligament morphology in comparison with anterior cruciate ligament measurements for bone-patellar tendon-bone grafts during anterior cruciate ligament reconstruction

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Objective: Bone-patellar tendon-bone (BPTB) could be the autograft for anterior cruciate ligament reconstruction (ACLR) in athletes, with excellent long-term results, and low recurrence rates. Knowing the average length and width of the patellar tendon will help us identify issues like patella baja or thin patellar ligament preoperatively. The purpose of the present study is to show the measurements of the patella and patellar ligament in comparison with the anterior cruciate ligament (ACL) with the intention of surgical usage.

Methods: %30 formalin-fixed cadaveric knee specimens were dissected. The patellar ligament's length, thickness, width (on the proximal-distal end and median part), ACL length, thickness, midpoint width and the patella height and width were measured.

Results: Patellar ligament length was 55.47 mm, patella height was 52.93 mm, patella width was 50.03 mm, patellar ligament thickness was 3.44 mm, the patellar ligament width was 21.93 mm, ACL length was 35.60 mm, ACL width was 8.56 mm, ACL thickness was 3.05 mm on the distal end in mean. There are significant correlations between the patellar ligament width and patellar ligament length ($p=0.013$); between the patella width and patellar ligament width at the distal end ($p=0.043$); between the ACL length and patellar ligament length ($p<0.01$).

Conclusion: The patella and patellar ligament morphology are significant, especially for specific operations such as bone-tendon-bone grafts and reconstructions of those structures. According to present study, the patellar ligament is a suitable choice for ACL reconstruction and patellar dimensions can be useful for the prediction of ligament sizes.

Keywords: patellar tendon, bone-patellar tendon-bone graft, anterior cruciate ligament

PP-17

Abstract no: 78759
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

Investigation of the anatomical features of the fibularis longus and fibularis brevis in human fetuses

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Objective: Fibularis longus (FL) and fibularis brevis (FB) are foot's main dorsiflexor and evertor in the leg's lateral compartment. Due to developmental factors, variations of these muscles and tendons have been reported to be common. The present study aimed to investigate the anatomical characteristics of FL and FB in human fetuses.

Methods: Twenty sides of 10 fetuses (mean age: 26.30±2.90 weeks; 6 boys, 4 girls) located in the archives of the Department of Anatomy, Faculty of Medicine, Gaziantep University were dissected. Dissection and measurements were made using a surgical microscope (CarlZeissMeditecAG, OpmiPicaModelS100, Germany) at x4 magnification and photographed. Length, width and area of muscles and tendons were measured. Descriptive sta-

tistics were made using the SPSS 22 and the study was conducted in accordance with Declaration of Helsinki.

Results: The mean FL length, width and area were 36.25±6.82 mm, 5.59±1.35 mm, and 163.68±58.35 mm². The mean FB length, width and area were 27.65±4.29 mm, 5.59±1.16 mm, 128.75±42.91 mm². The mean FL and FB tendons lengths were 27.73±6.25 mm and 22.88±5.49 mm, respectively. In all cases, FL's origin was head of fibula and insertion was base of 5th metatarsal bone. FB started from lateral 2/3 of fibula and ended at base of 5th metatarsal bone.

Conclusion: The present study is a preliminary study carried out to determine anatomical features and variations of fibular muscles in human fetuses. In terms of their roles in pes cavus etiopathogenesis, their use as muscle flaps and botulinum toxin injection applications in spasticity, it is planned to increase the number of fetuses in the study and to examine the entry points of the nerve into the muscle.

Keywords: disection, fetus, fibularis longus, fibularis brevis

PP-18

Abstract no: 30534
Abstract group: Clinical Anatomy / *Anatomical Variations*

Course of the superficial fibular nerve between the layers of the crural fascia

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Objective: In the leg, where unexplained pain is frequently seen during exercise, there is insufficient literature on the structural relationship between the superficial fibula nerve (SFN) and fascia cruris (FC). This study aimed to define the variations in the course of the SFN and its branches between the layers of the CF.

Methods: 20 cadaver legs fixed with 10% formalin were opened. The piercing point level of the SFN at the superficial layer of CF, its location relative to the septum and the branching pattern were defined.

Results: SFN was exiting as a main trunk in 14 legs, as two terminal branches in 4 legs, and as three branches in 2 legs, the exit pattern showed bilaterality. In 1 case, SFN was divided into two during its course between the layers of CF, and these two branches pierced the superficial layer after coursing a certain distance between the layers. In 1 cadaver, bilaterally, the SFN was split into two, then each branch was entered between the layers, and after coursing a certain distance both of them was piercing the superficial layer separately.

Conclusion: Our findings contribute to the lack of literature on the course of SFN between the layers of FC. It was suggested that the unexplained pain of varying frequency in the anterior leg region of those who are new to exercise may be related to traumatization of SFN or its branches that course between the layers of FC due to asynchronous force transmission in different layers.

Keywords: superficial fibular nerve, crural fascia, anterior intermuscular septum of leg, anterior compartment of leg

PP-19

Abstract no: 69928
Abstract group: Clinical Anatomy / *Radiological and Cross-Sectional Anatomy*

Examination of demographic and clinical characteristics of patients diagnosed with coccydynia and anatomical and morphometric parameters of the coccyx

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Objective: To evaluate sacrococcygeal anatomy and morphometry in patients with coccydynia by examining anteroposterior (AP), lateral coccyx X-ray images taken while standing and sitting.

Methods: A retrospective analysis of X-ray images of coccydynia patients referred to a single center (2022–2024) evaluated coccyx vertebrae count, sacrococcygeal and intercoccygeal joint fusion, lateralization on AP radiographs, mobility on dynamic X-rays. Measurements included coccyx, sacrum, and sacrococcygeal height, sacro-coccygeal (SCA) and inter-coccygeal angles (ICA). Coccyx typing was performed.

Results: Demographic data of 134 patients (115 women, 19 men) were analyzed. The average age was 46.7 years, height 162.9 cm, weight 74 kg, and BMI 27.8 kg/m². Average coccyx vertebrae count was 3.61 (3.56 in women, 4.33 in men). Average coccyx height was 46.53 mm in men, 5.07 mm in women; sacral height was 126.78 mm in men, 134.40 mm in women. Sacrococcygeal height was 173.77 mm in men, 161.83 mm in women; sacrococcygeal angle was 125.30° in men, 119.59° in women; intercoccygeal angle was 153.82° in women, 148.55° in men. The spicule rate was 33.33% in men, 29.55% in women, with no significant pain intensity difference (p=0.76). Type 1 coccyx was most common at 48.15%. In AP radiographs, 83.56% had a midline coccyx; 12.33% were left-deviated and 4.11%

right-deviated. Dynamic radiographs showed normal mobility in 45.88%, hypermobility in 21.18%, posterior luxation in 16.47%, hypomobility or anterior luxation in 8.24%.

Conclusion: This study highlights how gender and anatomical variations affect the coccyx and related structures, and their impact on clinical outcomes.

Keywords: coccydynia, coccyx types, sacrococcygeal anatomy

PP-20

Abstract no: 66405
Abstract group: Anatomy Education And Terminology / *Anatomy Education*

Determining the anxiety level of students who first encounter cadavers in anatomy education

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Objective: Cadaver dissection is of great importance in anatomy education and studies have shown that students who encounter cadavers for the first time are affected by them physically, socially and psychologically. The aim of this study is to determine the anxiety levels of students before and after their first encounter with a cadaver.

Methods: This study was conducted with the participation of 433 students taking anatomy courses at Kırıkkale University Faculty of Medicine, Faculty of Dentistry and Physiotherapy and Rehabilitation departments. State-Trait Anxiety Inventory (STAI) forms TX-1 and TX-2 questionnaires were applied to students who encountered cadavers for the first time before and after the study in order to assess their anxiety levels.

Results: According to the findings, the state anxiety scale scores applied to students before cadavers did not differ according to the gender of the students. The trait anxiety scale scores differed according to the gender of the students. It was determined that both state and trait anxiety scale scores differed according to the departments of the students. According to the results of the study, the median scale score of female students was calculated as 41 and male students as 40.5.

Conclusion: We think that before the first encounter with the cadaver, the anxiety levels of the students should be taken into consideration and studies should be planned in order to positively develop the success and adaptation process.

Keywords: cadaver, anxiety, worry

PP-21

Abstract no: 28261
Abstract group: Anatomy Techniques and Cadavar Management / *Body Donation*

Medical faculty students' opinions on cadaveric education

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Objective: To determine the effect of cadaver in the education of medical faculty students and for which anatomical systems it is more necessary.

Methods: The study was conducted with 195 students studying at Kocaeli University Faculty of Medicine. Google Form has been sent to the students. The questionnaire consists of 26 questions.

Results: 66.8% of the students are female, 32.7% are male and 0.5% do not want to specify. 62.1% of the students are in semester 1 and 37.9% are in semester 2. The mean age of the term 1 students participating in the study was 19.16 (±1.079) and 20.50 (±2.014) for term 2 students. 93.9% of the students reported that cadaveric education would provide a better clinical basis and at the same time 78.4% of the students reported that it would contribute to their hand and tool skills. 80.4% of the students reported that the cadaver was more effective on the musculoskeletal system, but 38.7% reported that it was insufficient on the nervous system. 46.1% of the students reported that a funeral ceremony should be held for the cadaver and 39.9% reported that it was not necessary.

Conclusion: It has been observed that training with cadavers is effective in medical education and is more effective on the musculoskeletal system but insufficient on the nervous system.

Keywords: anatomy, medical faculty, cadaver, anatomical systems

PP-22

Abstract no: 66186
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

How much anatomy should we teach? An approach trial with the modified Delphi method based on the anatomy curriculum of Vocational School of Health Services

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Objective: The content and duration of anatomy education is determined by general characteristics and needs of the group to be trained, among many other factors. Creating a consensus on this issue will increase student success, provide labor efficiency and standardize the curriculum.

Methods: Eight lecturers responsible for the anatomy course of vocational school of health services were included in the study. First, a questionnaire was created to evaluate the content of the anatomy education given to these schools and the participants were asked to mark the anatomical structures they wanted the students to know. Based on this questionnaire, 520 anatomical structures in the "upper extremity", which are aimed to be known by students in medical school anatomy education, were selected. In the second round, the results were shared with the participants and a face-to-face discussion was held. Finally, the same questionnaire was administered again.

Results: According to the results of the first survey, all participants agreed on 40 structures and 87% of the participants agreed on 76 structures. In the final evaluation, the number increased to 71 and 85 respectively. In addition, the number of structures agreed in the final evaluation upon by at least 5 participants was 101. Thus, the number of anatomical structures that should be taught to the relevant school, which all participants agreed on, was found to be 13.65% (71/520) of the medical faculty.

Conclusion: It is important for lecturers to reach a consensus on the content of anatomy courses in different schools in many respects.

Keywords: anatomy education, anatomy curriculum, Delphi method

PP-23

Abstract no: 55831
Abstract group: Anatomy Education and Terminology / *Anatomy Education*

Assessment of musculoskeletal anatomy questions prepared by large language models

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Objective: The aim of this study is to reveal performance of large language models (LLM) in preparing multiple-choice questions about musculoskeletal anatomy in Turkish.

Methods: The prompt was given to ChatGPT-4o, Claude 3.5 Sonnet and Gemini Pro 1.5 as "I am preparing questions for the anatomy exam. Act as a professor with 30 years of experience in field of anatomy. Your role is to prepare 50 multiple choice questions related to musculoskeletal anatomy for me, with a four options, only one of which is correct". The word count, Ateşman's readability index and readability level were calculated.

Results: Chat GPT-4o prepared the questions using a total of 885 words and 6081 characters, Ateşman's readability index was calculated as 94.9 and readability level was <4th Grade. Claude 3.5 Sonnet prepared questions using 1000 words, 7398 characters, Ateşman's readability index was 83.9, readability level was 5–6. Google Gemini 1.5 Pro prepared questions using 1015 words and 6692 characters, Ateşman's readability index was 100, and readability level was <4th Grade.

Conclusion: Our study is a rare study of critical importance in terms of comparing the performance of preparing multiple-choice anatomy questions with various LLM and has the potential to be a reference for further studies in the literature. It was detected that the most understandable questions in the musculoskeletal anatomy questions were prepared by Google Gemini 1.5 Pro, while the less understandable questions were prepared by Claude 3.5 Sonnet. This reveals effectiveness and quality differences of various artificial intelligence applications in question preparation processes.

Keywords: large language models, ateşman's readability index, musculoskeletal anatomy

PP-24

Abstract no: 31357
Abstract group: Anatomy Techniques and Cadaver Management / *Ethics and Anatomy*

Evaluation of dry bone studies regarding ethics committee approval

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Objective: There is no consensus on the necessity of obtaining ethics committee approval for dry bone studies. While some studies have obtained approval, others argue it is unnecessary. This study aims to evaluate the ethical approaches in dry bone research published internationally.

Methods: This study analyzed dry bone research published in randomly selected international journals across different quartiles. The presence or absence of ethics committee approval was assessed alongside journal publication guidelines. Dry bone studies published in nine English-language journals indexed in Web of Science SCI over the last ten years were included. Variables such as ethics approval, publication year, and country were ana-

lyzed. Categorical variables were presented as frequencies and percentages, and the Chi-square test was used for statistical analysis via SPSS 26.0.

Results: A total of 151 dry bone studies were identified. Ethics committee approval was reported in 43% of the studies, while 57% either deemed it unnecessary or followed only international ethical guidelines, with some not mentioning ethics approval. The presence of ethics approval was statistically significant concerning the country, continent, and year of publication ($p<0.05$). However, the relationship between ethics approval and the journal's name, quartile, or country of publication was not significant ($p>0.05$).

Conclusion: The results indicate variations in ethical approaches based on the country of publication, reflecting a lack of consensus on the necessity of ethics committee approval for dry bone studies internationally. This may be due to the absence of strict guidelines in the publication policies of the included journals.

Keywords: dry bone study, ethics committee approval, morphology journals

PP-25

Abstract no: 85453
Abstract group: Clinical Anatomy / *Biomechanics and Musculoskeletal System Anatomy*

Evaluation of the acromion morphometry and its implications on subacromial impingement syndrome: an anatomical study

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Objective: The acromion plays an important role in the stability of the shoulder joint. Subacromial impingement syndrome is a painful condition of the shoulder joint resulting from a structural narrowing of the subacromial space. This impingement syndrome may occur as a result of the shape and slope of the acromion. The aim of this study was to define the morphometric features of the acromion.

Methods: In the present study, 26 human dry scapulas (16 right, 10 left) were evaluated. The medial-lateral dimension, anterior-posterior dimension and superior-inferior thickness of the acromion were measured. The distances of the acromion to the coracoid process and glenoid cavity were recorded. In addition, the shape of the acromion was evaluated and acromion classification was performed.

Results: The shape of the acromions was evaluated and it was determined that 9 (34.6%) were Type 1, 13 (50%) were Type 2 and 4 (15.4%) were Type 3. The mean medial-lateral and anterior-posterior dimensions of the acromion were measured as 50.01±6.06 mm and 24.88±3.25 mm, respectively. The mean superior-inferior thickness of the acromion was found to be 7.25 ±1.36 mm. The mean distances of the acromion to the coracoid process and glenoid cavity were measured as 35.99±6.16 mm and 24.37±5.38 mm, respectively.

Conclusion: Knowledge of the acromion morphometry will assist orthopedists in evaluating the susceptibility to subacromial impingement syndrome and in surgical procedures performed around the shoulder joint.

Keywords: acromion, coracoid process, shoulder pain, subacromial impingement syndrome, morphometry

PP-26

Abstract no: 75599
Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

The morphometric assessment of the spinoglenoid notch: implications for surgical practice in suprascapular nerve entrapment neuropathy

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Objective: Suprascapular entrapment neuropathy accounts for 1–2% of chronic shoulder pain. Although this condition is often seen in the scapular notch, it can also occur in the spinoglenoid notch. Impingement of the nerve at the level of the spinoglenoid notch, due to compression of the inferior transverse scapular ligament or ganglion cyst, affects only the motor branches to the infraspinatus muscle. Although conservative management is the first choice, open surgery or arthroscopic decompression is used in refractory cases. The aim of this study was to define the location and morphometric characteristics of the spinoglenoid notch for the detection of the suprascapular nerve in surgical applications.

Methods: A total of 31 scapulae (20 right/11 left) were evaluated. To determine the location of spinoglenoid notch, the distances to the supraglenoid tubercle, infraglenoid tubercle and acromion were measured. Furthermore, the vertical and transverse dimensions of the spinoglenoid notch were measured.

Results: Mean distances of the spinoglenoid notch to the supraglenoid tubercle, infraglenoid tubercle and acromion were 28.43 ±3.56 mm, 25.93±2.96 mm and 34.78±3.05 mm, respectively. Mean transverse dimensions measured at the level of neck of scapula and glenoid cavity were 11.26±1.52 mm and 14.49±1.36

mm, while mean vertical dimension at the level of the glenoid cavity was 13.39±3.88 mm.

Conclusion: Suprascapular neuropathy is a frequently overlooked cause of posterior shoulder pain and weakness. Knowledge of the location and morphology of the spinoglenoid notch is crucial for nerve detection during interventional procedures.

Keywords: anatomy, suprascapular nerve, spinoglenoid notch, entrapment neuropathy, morphometry

PP-27

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Abstract group: Clinical Anatomy / *Macroscopic and Surgical Anatomy*

A morphological and morphometric study of the vermian fossa

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Objective: Vermian fossa is a shallow endocranial depression situated in the squamous part of the occipital bone. It has been reported that a detailed knowledge of the anatomy and variations of the vermian fossa is essential in the planning and execution of transventricular and supracerebellar infratentorial approaches in the surgical treatment of midline tumours located in the posterior cranial fossa. Objective of this study was to provide a detailed description of the morphological and morphometric characteristics of the vermian fossa.

Methods: In this study, a total of 46 dry bones, containing the occipital bone, were examined in the macroscopy laboratory of the our institution. The type of fossa (triangular, quadrangular, or atypical), length, and width were documented. In neurocraniums where the vermian fossa was not clearly visible, an examination was conducted to determine the presence and type of the fossa with the aid of a dental mirror. However, in order to maintain the reliability of the data, quantitative measurements were not taken. All measurements were made with a digital caliper.

Results: The vermian fossa was identified in 80.4% of the samples examined. Of these, 86.5% were triangular, 8.1% were quadrangular, and 5.4% were of an atypical morphology. The mean length and width were determined to be 15.83±4.67 mm and 16.43±3.67 mm, respectively.

Conclusion: A comprehensive anatomy of the vermian fossa may ve useful for surgical procedures and neuroradiologists. Furthermore, it can also be useful in examininig malformations and diseases that can cause changes in the morphology of the fossa.

Keywords: occipital bone, posterior cranial fossa, vermian fossa, median occipital fossa

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CT and MRI-based virtual 3D modeling for enhanced pelvic anatomy understanding in rectal cancer surgery

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Objective: This study aims to develop precise virtual 3D models of pelvic anatomy using CT and MRI imaging to enhance the quality of minimally invasive surgery for rectal cancer. By improving spatial understanding of critical pelvic structures, the study seeks to enhance surgical quality and reduce surgical complications.

Methods: *Participants:* All patients diagnosed with rectal cancer who consent to participate and 18 years old. *Imaging Protocol:* Thin-slice 1 mm axial images will be obtained using multidetector CT, along with high-resolution multiplanar MR images focused on the rectum. *Anatomical Structures of Interest:* Pelvic bones, muscles, internal and external iliac vessels and their branches, nerves, urogenital organs, rectum, and the location and invasion of the tumor. *Manual Identification:* A multidisciplinary team, including a colorectal surgeon, clinical anatomist, and pelvic radiologist, will manually identify and delineate each anatomical structure in the CT-MR images, with assistance from technical specialists. *3D Model Construction:* Identified structures will be used to create 3D virtual models, which will be reviewed by the multidisciplinary team to ensure accuracy and avoid distortion.

Results: *Application in Surgery:* Finalized 3D models will be used in preoperative planning to enhance surgical precision. *Postoperative Evaluation:* The impact of preoperative 3D assessments on the quality of total mesorectal excision (complete, near complete, incomplete) and the rate of postoperative complications (Clavien-Dindo classification) will be compared to existing literature and data.

Conclusion: A TÜBİTAK project application is planned, highlighting the importance of interdisciplinary collaboration and clinical anatomy in improving patient outcomes.

Keywords: rectum cancer, Virtual 3D imaging, pelvic anatomy