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anatomy

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Aim and Scope

Anatomy, an international journal of experimental and clinical anatomy, is a peer-reviewed journal published three times a year with an objective to publish manuscripts with high scientific quality from all areas of anatomy. The journal offers a forum for anatomical investigations involving gross, histologic, developmental, neurological, radiological and clinical anatomy, and anatomy teaching methods and techniques. The journal is open to original papers covering a link between gross anatomy and areas related with clinical anatomy such as experimental and functional anatomy, neuroanatomy, comparative anatomy, modern imaging techniques, molecular biology, cell biology, embryology, morphological studies of veterinary discipline, and teaching anatomy. The journal is currently indexing and abstracting in TUBITAK ULAKBIM Turkish Medical Index, Proquest, EBSCO Host, Index Copernicus and Google Scholar.

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- ***Terminology Zone*** category is a platform for the articles which discuss some terminological controversies or opinions.

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During the preparation of the manuscripts, uniform requirements of the International Committee of Medical Journal Editors, a part of which is stated below, are valid (*see* ICMJE. Uniform requirements for manuscripts submitted to biomedical journals. Updated content is available at www.icmje.org). The manuscript should be typed double-spaced on one side of a 21×29.7 cm (A4) blank sheet of paper. At the top, bottom and right and left sides of the pages a space of 2.5 cm should be left and all the pages should be numbered except for the title page.

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Title page

In all manuscripts the title of the manuscript should be written at the top and the full names and surnames and titles of the authors beneath. These should be followed with the affiliation of the author. Manuscripts with long titles are better accompanied underneath by a short version (maximum 80 characters) to be published as running head. In the title page the correspondence address and telephone, fax and e-mail should be written. At the bottom of this page, if present, funding sources supporting the work should be written with full names of all funding organizations and grant numbers. It should also be indicated in a separate line if the study has already been presented in a congress or likewise scientific meeting. Other information such as name and affiliation are not to be indicated in pages other than the title page.

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Abstract should be written after the title in 100–250 words. In original articles and articles prepared in IMRAD format for Teaching Anatomy category the abstract should be structured under sections Objectives, Methods, Results and Conclusion. Following the abstract at least 3 keywords should be added in alphabetical order separated by semicolumns.

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Authors should provide direct references to original research sources. References should be numbered consecutively in square brackets, according to the order in which they are first mentioned in the manuscript. They should follow the standards detailed in the NLM's Citing Medicine, 2nd edition (Citing medicine: the NLM style guide for authors, editors, and publishers [Internet]. 2nd edition. Updated content is available at www.ncbi.nlm .nih.gov/books/NBK7256). The names of all contributing authors should be listed, and should be in the order they appear in the original reference. The author is responsible for the accuracy and completeness of references. When necessary, a copy of a referred article can be requested from the author. Journal names should be abbreviated as in *Index Medicus*. Examples of main reference types are shown below:

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  - *Journal article with indication article published electronically before print:* Sengul G, Fu Y, Yu Y, Paxinos G. Spinal cord projections to the cerebellum in the mouse. Brain Struct Funct Epub 2014 Jul 10. DOI 10.1007/s00429-014-0840-7.
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    - *Standard entire book:* Sengul G, Watson C, Tanaka I, Paxinos G. Atlas of the spinal cord of the rat, mouse, marmoset, rhesus and human. San Diego (CA): Academic Press Elsevier; 2013. 360 p.
    - *Book with organization as author:* Federative Committee of Anatomical Terminology (FCAT). Terminologia anatomica. Stuttgart: Thieme; 1998. 292 p.
    - *Citation to a book on the Internet:* Bergman RA, Afifi AK, Miyauchi R. Illustrated encyclopedia of human anatomic variation. Opus I: muscular system [Internet]. [Revised on March 24, 2015] Available from: http://www.anatomyatlases.org/AnatomicVariants/AnatomyHP.shtml
  - *Contribution to a book:*
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    - *Contributed section with editors:* Johnson D, Ellis H, Collins P, editors. Pectoral girdle and upper limb. In: Standring S, editor. Gray's anatomy: the anatomical basis of clinical practice. 29th ed. Edinburgh (Scotland): Elsevier Churchill Livingstone; 2005. p. 799–942.
  - *Chapter in a book:*
    - *Standard chapter in a book:* Doyle JR, Botte MJ. Surgical anatomy of the hand and upper extremity. Philadelphia (PA): Lippincott Williams and Wilkins; 2003. Chapter 10, Hand, Part 1, Palmar hand; p. 532–641.

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13–17 October 2021, Online, Turkey

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Invitation from the Congress President of the 22nd National Anatomy Congress

Anatomy 2021;15(Suppl 1):Siv

Dear Members of the Anatomy Family,

The 22nd National Anatomy Congress of the Turkish Anatomy and Clinical Anatomy Association will be held on October 13–17, 2021 with the contributions of Gazi University and Yüksek İhtisas University Medical Faculties Anatomy Departments.

The main theme of our congress has been determined as "Anatomy and Technology". If you submit your speech or speaker suggestions in connection with the main theme of the congress to our organizing committee until 14 June 2021, your suggestions will be evaluated by the scientific committee.

Detailed information about the congress is available at "www.anatomikongresi2021.gazi.edu.tr". The detailed scientific program will be announced soon.

Details of registration, submission rules and important dates can be found on our website. The deadline for submission has been set as August 15, 2021.

We will be happy to see you among us with the honor and pride of hosting the 22nd National Anatomy Congress, which will be held live (synchronously) online.

Rabet Gözil & Meltem Bahçelioğlu

Presidents of TSACA

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22nd National Anatomy Congress

13–17 October 2021, Online, Turkey

Program Schedule

13 October 2021, Wednesday

Precongress Courses

10.00–12.00	Stereological measurements Ali Celalettin Sinan Yürüker *Uşak University*
09.00–12.00	Digital photography in anatomy education and research Çağatay Barut / *Bahçeşehir University*
13.00–16.00	Measurement errors: how reliable do we measure? Çağatay Barut / *Bahçeşehir University*
09.00–16.00	Tissue: organ polymerization and transparency Esat Adıgüzel/ *Pamukkale University*
09.00–16.00	In ovo/ex ovo chicken embryo culture and experimental uses Ahmet Çevik Tufan / *Ankara Yıldırım Beyazıt University*
13.00–16.00	Literature search and academic reference editing programs İlhan Bahşi / *Gaziantep University*
09.00–12.00	Rapid vessel filling and facial dissection Selçuk Tunalı / *TOBB University of Economics and Technology*
16.30–16.35	**Anıtkabir Visit, Moment of Silence and Flag Ceremony**
16.35–16.45	**Opening speeches** Meltem Bahçelioğlu / *Co-Chair of the Congress, Gazi University* Rabet Gözil / *Co-Chair of the Congress, Yüksek İhtisas University*
16.45–16.50	**Opening speech** Piraye Kervancıoğlu/ *Turkish Society of Anatomy and Clinical Anatomy, President, Gaziantep University*
16.50–17.10	**Opening speeches** Musa Yıldız / *Rector of Gazi University* Mustafa Paç / *Rector of Yüksek İhtisas University*
17.10–18.00	**Invited Lecture** **Moderator:** Erdoğan Şendemir / *Bursa Uludağ University* Advances in technology: anatomists as agents of good practice and ethical awareness Beverley Kramer / *President of International Federation of Associations of Anatomists, Johannesburg*
18.00–19.00	**Invited Lecture** **Moderator:** Zühre Aslı İkiz / *Ege University* AQUAgraphs. Written with light on water: underwater photographs multivision show Alp Can / *Ankara University*

14 October 2021, Thursday

09.30–10.30	**Invited Lecture** **Moderator:** Rabet Gözil / *Co-chair of the Congress, Yüksek İhtisas University* Creating personalized treatment algorithms with three-dimensional software technology Figen Gökmen / *Ege University*
10.30–11.00	**Coffee Break**
11.00–12.00	**Invited Lecture** **Moderator:** Emel Ulupınar / *Eskişehir Osmangazi University* Unbiased and scalable technologies for the next-generation biomedical solutions Ali Ertürk / *Director, Institute of Tissue Engineering and Regenerative Medicine, Munich*
12.00–12.30	UltraMicroscope Blaze™ – Automated light sheet imaging of large, cleared samples Bernd Müller-Zülow / *Sales Manager Miltenyi Biotec*
12.30–13.00	Guided tour of the Museum of Anatolian Civilizations – Part 1 Murat Yıldırım / *Anatolian Civilizations Museum Assistant Director*
13.00–14.00	**Invited Lecture** **Moderator:** Çağatay Barut / *Bahçeşehir University* How our tears drain – functional and clinical anatomy of the lacrimal drainage system – a forgotten topic – presented with state of the art anatomical methods Friedrich Paulsen / *Friedrich Alexander University, Erlangen-Nürnberg*

Session 1 Hall A

14.00–15.00	**Oral Presentations (O-01–O-05)** **Moderator:** İ. Nadir Gülekon / *Gazi University* **O-01:** Investigation of the relationship between the posterior horn of the medial meniscus and lateral meniscus and the posterior tibial slope: a direct X-ray and MRI study İskender Yılmaz, Sevda Lafcı Fahrioğlu, Özüm Tunçyürek, Sezgin İlgi **O-02:** Gaziantep University Faculty of Medicine Department of Anatomy publication rates of graduate theses: 14 years of experience İlhan Bahşi, Piraye Kervancıoğlu, Mustafa Orhan, Ömer Faruk Cihan **O-03:** Evaluation of epiglottic cartilage morphometry with magnetic resonance imaging Esma Derinöz, Alper Vatansever, Bahar Yanık Keyik, Emrah Özcan, İlter Kuş **O-04:** Anatomical features of the anterior clinoid process on cone-beam computed tomography images Saliha Seda Adanır, Esma Sude Ceylan, Orhan Beger, İlhan Bahşi, Mustafa Orhan, Eda Didem Yalçın, Piraye Kervancıoğlu **O-05:** A survey study to establish the ideal anatomy education model: EOGU Faculty of Medicine example Abdullah Ortadeveci, Merve Nur Ermez, Öz Semih, Hilmi Özden

Session 1 Hall B

14.00–15.00	**Oral Presentations (O-06–O-10)** **Moderators:** Halil İbrahim AÇAR / *Ankara University* & Barış Özgür Dönmez / *Pamukkale Universtiy* **O-06:** Pulmonary veins and left atrium morphology: multislice computed tomography study Beyza Karaarslan, Duygu Akın Saygın, İsmihan İlknur Uysal, Necdet Poyraz **O-07:** Geometric morphometric analysis of anterior branches of external carotid artery and bifurcatio carotidis by three-dimensional CT angiography İsmet Demirtaş, Behçet Ayyıldız, Ahmet Taha Demirbaş, Sevilay Ayyıldız, Feyza Sönmez Topçu, Koral Çağlar Kuş, Mustafa Ayberk Kurt **O-08:** Evaluation of the volume of amygdaloid body, hippocampus, insula and temporal lobe in Alzheimer's disease and other types of dementias Gamze Ansen, B. Ufuk Şakul, Ayşenur Cila **O-09:** Association of cervical segment types of internal carotid artery with gender, age and aneurysm Yiğit Çevik **O-10:** Dorsal branch of anterior interosseous artery: a preliminary study Buse Naz Çandır, Latif Sağlam, Gkionoul Nteli Chatzioglou, Özcan Gayretli, Adnan Öztürk

15.00–15.30	**Coffee Break in the Main Hall**
Hall D	
15.00–15.30	**Poster Presentation Discussions**
Session 2 Hall A	
15.30–16.30	**Oral Presentations (O-11–O-15)** **Moderators:** İbrahim Tekdemir / *Ankara University* & Erdinç Tunç / *Maltepe University* **O-11:** Investigation into the extraorbital branches of the ophthalmic artery by superselective angiography method Hilal Akdemir Aktaş, Kadriye Mine Ergun, İlkan Tatar, Anıl Arat, Kadir Mutlu Hayran **O-12:** Age-related evaluation of anatomical reference values and lung volumes of bifurcatio tracheae İlknur Sarı, Doğan Zümrüt1, Baykan Ali Haydar **O-13:** Investigation of anogenital distance and anal position index in fetuses Hakan Taşkınlar, Özlem Elvan, Caner İsbir, İsa Kıllı, Ali Naycı **O-14:** Identification of variations in the distribution of nerves at the site of surgical intervention for hallux valgus Fatih Çiçek, Turan Koç, Zeliha Kurtoğlu Olgunus **O-15:** Morphometric evaluation of the photoluminescent region of the ilium Helin Yücedağ, Bahattin Paslı, Burcu Erçakmak Güneş
Session 2 Hall B	
15.30–16.30	**Oral Presentations (O-16–O-21)** **Moderators:** Muzaffer Sindel / *Akdeniz University* & İlhan Otağ / *Maltepe University* **O-16:** Evaluation of morphometric differences between different gray matter structures according to subtypes of the disease on brain magnetic resonance images of patients with obsessive compulsive disorder Dilek Derin, Tuncay Varol **O-17:** Neuroanatomical correlation of speech and voice disorders in Parkinson's disease: analysis of MRI findings Kadriye Betül Pençe, Lütfü Hanoğlu, Alper Atasever **O-18:** Evaluation of cerebrum asymmetry in Parkinson's disease Nuriye Öz, S. Sibel Özkaynak, Kamil Karaali, Nigar Keleş-Çelik **O-19:** Morphometric classification of ventriculus tertius anatomy in pediatric age group Sefa Işıklar, Senem Özdemir **O-20:** Anatomy of proximal ulnar angulations and its clinical significance Latif Sağlam, Gkionoul Nteli Chatzioglou, Buse Naz Çandır, Osman Coşkun, Özcan Gayretli **O-21:** 3D virtual anatomy atlas application İsmail Kapurtu, Nadire Ünver Doğan
16.30–17.00	**Coffee Break**
17.00–18.00	**Invited Lecture** **Moderator:** Engin Çalgüner / *Girne University* Use of technology in anatomy Behice Durgun / *Çukurova University*

15 October 2021, Friday

	World Anatomy Day and body donation panel **Moderator:** Esat Adıgüzel / *Pamukkale University*
09.00–10.30	Muzaffer Şeker, Salih Murat Akkın, Erdoğan Şendemir
10.30–11.00	Guided Ankara Rahmi M. Koç museum tour Özgür Ceren Can / *Ankara M. Rahmi Koç Museum, Museum Manager*
11.00–12.00	**Invited Lecture** **Moderator:** İ. Can Pelin / *Başkent University* Surgical anatomy and visual fiction Levent EFE / *Medical Illustration Studios, Melbourne, Australia*

12.00–12.15	The role of complete anatomy in anatomy teaching during the pandemic Olivia Murray / *Edinburgh University, Edinburgh*
12.15–12.45	Guided tour of the museum of anatolian civilizations – Part 2 Murat Yıldırım / *Anatolian Civilizations Museum Assistant Director*
12.45–13.00	**Coffee Break**
13.00–13.45	**Invited Lecture** **Moderator:** Pınar Göker / *Çukurova University* A magnificent genius: LEONARDO Erdinç Tunç / *Maltepe University*

Session 3 Hall A

13.45–14.45	**Oral Presentations (O-22–O-26)** **Moderators:** Ufuk Şakul / *İstanbul Medipol University* & Ahmet Kalaycıoğlu / *Biruni University*
	O-22: Determination of relationship of scapula morphometry and gender by computed tomography Mehmet Ülkir, Mine Farımaz, Gökçe Kağan Ataç, Yalçın Kırıcı, Ergun Karaağaoğlu, Mustafa Aldur
	O-23: Flipped classroom model in anatomy education during Covid-19 pandemic Nurullah Yücel, Papatya Keleş, Pınar Baştürk, Emir Muvaffak, M. Edib Mokresh
	O-24: A new model in medical education: smart model training set Güneş Bolatlı, Fatih Taş, Zafer Bolatlı
	O-25: The importance of supports during the production of 3-D anatomical printings and models Ayşe Erkaya, Eda Sağıroğlu, Mustafa Fevzi Sargon, Hasan Ozan
	O-26: The importance of using three dimensional tangible materials in anatomy education Esma Derinöz, Emrah Özcan

Session 3 Hall B

13.45–14.45	**Oral Presentations (O-27–O-31)** **Moderators:** Selçuk Tunalı / *TOBB University of Economics and Technology* & Seher Yılmaz / *Biruni University*
	O-27: Creating 3D models and animations to make learning easier – more permanent In embryology lectures and supporting education with new 3D technologies – preparing 3D original embryological models Duygu Dayanır, Özen Akarca Dizakar, Tuncay V. Peker
	O-28: The effect of the flipped classroom on medical students' success and perception in anatomy course İbrahim Cüneyit, Esat Adıgüzel, Cüneyt Orhan Kara, Serhat Süral
	O-29: The effect of different education methods on the success of anatomy education in medical faculty students Mazhar Özkan, Ali Zeybek, Meltem Alpay
	O-30: Three-dimensional (3D) modeling in anatomy: past, present and future Mine Farımaz, M. Mustafa Aldur, Yalçın Kırıcı
	O-31: Anatomic brush strikes in painting: during the Renaissance and Baroque period Ayşe İmge Uslu
14.45–15.15	**Coffee Break in the Main Hall**

Hall D

14.45–15.15	**Poster Presentation Discussions**

Session 4 Hall A

15.15–16.15	**Oral Presentations (O-32–O-36)** **Moderators:** İlkan Tatar / *Hacettepe University* & Neslihan Boyan / *Çukurova University*
	O-32: Extensor digitorum brevis muscle mimicking dorsal wrist mass: a case report Okan Aslantürk, Davut Özbağ
	O-33: Following the traces of anatomy in UCEP-2020 Zeliha Kurtoğlu Olgunus

O-34: A pair of lower extremities containing multivariation: a cadaver study
Betül Digilli, Ahmet Safa Gökşan, İsmihan İlknur Uysal

O-35: Anatomical posture analysis anywhere and anytime with the posture screen mobile application
Arife Gizem Kılıç, Hale Öktem

O-36: 3D restoration and digital prototyping of 13th century late Byzantine era skulls
Hüseyin Uzabacı, İlker Mustafa Kafa

Coffee Break

16.30–17.30 **Invited Lecture**
Moderator: Nihal Apaydın / *Ankara University*
Anatomy from aesthetic perspective
Deniz Demiryürek / *Hacettepe University*

16 October 2021, Saturday

09.30–10.30 **Invited Lecture**
Moderator: Nadire Ünver Doğan / *Selçuk University*
Technological advances in neuroanatomy research
Emel Ulupınar / *Eskişehir Osmangazi University*

10.30–11.00 **Coffee Break**

Session 5 Hall A

11.00–12.00 **Oral Presentations (O-37–O-41)**
Moderators: Özkan Oğuz / *Çukurova University* & Alper Vatansever / *Balıkesir University*

O-37: Evaluating the topographical relationship of anatomical structures in the regio frontalis, revealing the importance of these relationships
Okan Derin, Yelda Pınar

O-38: Examining the anatomical relation between trachea and brachiocephalic trunk using 3D modeling and manifacturing
Sinem Nur İplikci, Hale Öktem

O-39: Evaluation of neurocranium fractures in individuals applying to the hospital due to trauma on computed tomography images
Hilal Irmak Sapmaz, Fatma Aktaş

O-40: Morphometric evaluation of the pedicles of cervical, thoracic and lumbar vertebrae in Turkish population and it's importance in vertebroplasty and kyphoplasty
Shanzeda Khan, Zehra Çelik, Ceren Günenç Beşer

O-41: Gender estimation using machine learning algorithms on computed tomography images of the 1st, 11th and 12th thoracic vertebrae
Beyza Yılmaz, Serkan Öner, Zülal Öner, Muhammed Kamil Turan

Session 5 Hall B

11.00–12.00 **Oral Presentations (O-42–O-46)**
Moderators: Ahmet Kalaycıoğlu / *Biruni University* & Soner Albay / *Süleyman Demirel University*

O-42: Investigation of the teratogenic effects of letrozole on fetal bone development
Abdülkadir Bilir, Emre Atay, Fatma Fırat, Ayşe Ertekin, Erhan Bozkurt

O-43: Articulatio temporomandibularis and artificial intelligence
Ebru Yolaçan, Nimet Ebrar Demircan, Nurcan Erçıktı, Necdet Kocabıyık, Bülent Yalçın

O-44: A study on gender determination with machine learning algorithms by making anthropometric measurements of the first cervical vertebra
Menşure Şahin, Muhammed Kamil Turan, Zülal Öner, Serkan Öner

O-45: Therapeutic effects of transcranial direct current stimulation on neuroinflammation in an experimental model of acute epilepsy
Güven Akçay, Betül Çiçek, Narin Derin, Serkan Yıldırım, İsmail Polat

O-46: Gender and age estimation with machine usage algorithms with parameters obtained from computed tomography images of maxillary first molar and canine teeth
Deniz Şenol, Yusuf Seçgin, Şuayip Burak Duman, Şeyma Toy, Zülal Öner

12.00–12.30	Guide erimtan archeology and art museum tour Selma Ünal / *Art Historian-Collection Manager*
12.30–13.00	**Lunch Break**

Session 6 Hall A

13.00–14.00	**Oral Presentations (O-47–O-51)** **Moderators:** Ayla Kürkçüoğlu / *Kırıkkale University* & Hale Öktem / *Atılım University* **O-47:** Does transauricular vagal stimulation affect intestinal inflammation in an experimental colitis model? Ece Alim, Saadet Özen Akarca Dizakar, Kerem Atalar, Ayşe Soylu, Meltem Bahçelioğlu **O-48:** Comparative analysis of normalized volume data of primary sensory cortex on magnetic resonance images of Parkinson's patients with the control group Berna Doğan, Mert Nahir **O-49:** Investigation of structural variations of patella Ece Buru, Zehra Özbulut, Erkan Konyar, Rabet Gözil **O-50:** The effect of smartphone addiction on hand functions and grip strength Özgenur Koçak, Rabet Gözil, Hakkı Yeşilyurt, Merve Sevgi İnce, İlkem Güzel **O-51:** Effects of high-heeled shoes on myofascia Merve Sevgi İnce, Rabet Gözil, Hakkı Yeşilyurt, İlkem Güzel, Özgenur Koçak, Emel Sönmezer

Hall D

14.00–14.30	**Poster Presentation Discussions**
14.00–14.30	**Coffee Break in the Main Hall**
14.30–15.30	**Invited Lecture** **Moderator:** İlhan Bahşi / *Gaziantep University* Autonomous robotic inner ear access for cochlear implantation Vedat Topsakal / *Vrije Universiteit Brussels, Brussels, Belgium*
15.30–16.30	**Technological advances in anatomy education panel** **Moderator:** Tuncay Veysel Peker / *Gazi Universtiy* Tuncay Veysel Peker, İlkan Tatar, Selçuk Tunalı
	Coffee Break
17.00–18.00	**Invited Lecture** **Moderator:** Meltem Bahçelioğlu / *Co-chair of the Congress, Gazi University* New anatomy at brain's borders Jonathan Kipnis / *Department of Neuroscience, Center for Brain Immunology and Glia, University of Virginia, Charlottesville, VA, USA*

17 October 2021, Sunday

9.30–10.30	**Invited Lecture** **Moderator:** Ayhan Cömert / *Ankara University* Scientific research planning and project writing Ahmet Çevik Tufan / *Ankara Yıldırım Beyazıt University*
10.30–11.30	**Invited Lecture** **Moderator:** Piraye Kervancıoğlu / *Turkish Society of Anatomy and Clinical Anatomy, President, Gaziantep University* In vitro models in nervous system research: new technologies Gülgün Şengül / *Ege University*
	Presentation of Awards Organizing committee
	Closing Speeches Meltem Bahçelioğlu / *Co-chair of the Congress, Gazi University* Rabet Gözil / *Co-chair of the Congress, Yüksek İhtisas University* Piraye Kervancıoğlu / *Turkish Society of Anatomy and Clinical Anatomy, President, Gaziantep University*

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Invited Lectures

(I-1 — I-14)

I-1

Advances in technology: anatomists as agents of good practice and ethical awareness

Beverley Kramer

President of International Federation of Associations of Anatomists, Johannesburg, South Africa

I-2

AQUAgraphs. Written with light on water

Alp Can

Department of Histology and Embryology, Faculty of Medicine, Ankara University, Ankara, Turkey

I-3

Creating personalized treatment algorithms with three-dimensional software technology

Figen Gökmen

Department of Anatomy, Digital Imaging and Modelling Laboratory, School of Medicine, Ege University, Izmir, Turkey

I-4

Unbiased and scalable technologies for the next-generation biomedical solutions

Ali Ertürk

Director, Institute of Tissue Engineering and Regenerative Medicine, Munich, Germany

I-5

How our tears drain – functional and clinical anatomy of the lacrimal drainage system – a forgotten topic – presented with state of the art anatomical methods

Friedrich Paulsen

Department of Anatomy, Faculty of Medicine, Friedrich Alexander University, Erlangen-Nuernberg, Germany

I-6

Use of technology in anatomy

Behice Durgun

Department of Anatomy, School of Medicine, Çukurova University, Adana, Turkey

I-7

Surgical anatomy and visual fiction

Levent Efe

Medical Illustration Studios, Melbourne, Australia

I-8

A magnificent genius: LEONARDO

Erdinç Tunç

Department of Anatomy, School of Medicine, Maltepe University, Istanbul, Turkey

I-9

Anatomy from aesthetic perspective

Deniz Demiryürek

Department of Anatomy, School of Medicine, Hacettepe University, Ankara, Turkey

I-10

Technological advances in neuroanatomy research

Emel Ulupınar

Department of Interdisciplinary Neuroscience, Health Sciences Institute, Eskişehir Osmangazi University, Eskişehir, Turkey

I-11

Autonomous robotic inner ear access for cochlear implantation

Vedat Topsakal

Vrije Universiteit Brussels, Brussels, Belgium

I-12

New anatomy at brain's borders

Jonathan Kipnis

Department of Neuroscience, Center for Brain Immunology and Glia, University of Virginia, Charlottesville, VA, USA

I-13

Scientific research planning and project writing

Ahmet Çevik Tufan

Department of Anatomy, School of Medicine, Ankara Yıldırım Beyazıt University, Ankara, Turkey

I-14

In vitro models in nervous system research: new technologies

Gülgün Şengül

Department of Anatomy, School of Medicine, Ege University, Izmir, Turkey

Panels

(PL-1 — PL-2)

PL-1

World Anatomy Day and body donation panel

Muzaffer Şeker[1], Salih Murat Akkın[2], Erdoğan Şendemir[3]

[1]President of the Turkish Academy of Sciences; Necmettin Erbakan University, Konya, Turkey; [2]Department of Anatomy, School of Medicine, SANKO University, Gaziantep, Turkey; [3]Department of Anatomy, Faculty of Medicine, Bursa Uludağ University, Bursa, Turkey

PL-2

Technological advances in anatomy education panel

Tuncay Veysel Peker[1], İlkan Tatar[2], Selçuk Tunalı[3]

[1]Department of Anatomy, Faculty of Medicine, Gazi University, Ankara, Turkey; [2]Department of Anatomy, Faculty of Medicine, Hacettepe University, Gaziantep, Turkey; [3]Department of Anatomy, Faculty of Medicine, TOBB University of Economics and Technology, Ankara, Turkey

Oral Presentations

(O-01 — O-51)

O-01

Dorsal branch of anterior interosseous artery: a preliminary study

İskender Yılmaz, Sevda Lafcı Fahrioğlu, Özüm Tunçyürek, Sezgin İlgi

Department of Anatomy, Faculty of Medicine, Near East University, Nicosia, TRNC

Objective: We aimed to evaluate posterior horn of the medial and lateral meniscus on the tibial slope in individuals without any knee pathology and correlation of these measurements with the individual's body mass index.

Methods: The radiological archive was scanned for knee MR images in from January 2021 to April 2021. Only the MR images of patients aged between 18–80 years were used. Thirty-two MR images were evaluated in coronal, sagittal and axial sections by Osirix Lite. The program tools were utilized to evaluate all measures of the bone and meniscal slope. Slope measures for both the bony tibial posterior slope and meniscus slope were performed using previously described methods. The relationship between all these results and body mass index was also evaluated.

Results: Thirteen (40%) of the 32 healthy individuals were female and 17 (60%) were male. The tibial slopes obtained from the 25%, 50% and 75% sagittal sections of the medial compartment. They were measured as (mean±SD); 1.75°±3.18, 2.24°±2.93 and 1.36°±3.22, respectively. Tibial slopes obtained from 25%, 50% and 75% sagittal sections of the lateral compartment. They were measured as (mean±SD) 2.53°±2.82, 2.78°±2.56, 2.62°±2.61., respectively. Meniscus slopes of 25% and 50% sagittal sections of the medial compartment, measured as (mean±SD); 27.31°±1.41, 27.7°±1.63 and 1.36°±3.22, meniscus slopes obtained from 25% and 50% sagittal sections of the lateral compartment. It was measured as (mean±SD) 28.08°±1.88, 28.72°±1.54, respectively.

Conclusion: A significant correlation was found between the medial and lateral meniscus slopes in the 25% section and the total combined slopes in the same section. No significant correlation was observed between measurement values and BMI.

Keywords: meniscus, tibial slope, meniscus slope, knee anatomy

O-02

Publishing rates of graduate theses of Gaziantep University Faculty of Medicine, Department of Anatomy: our 14 years of experience

İlhan Bahşi, Piraye Kervancıoğlu, Mustafa Orhan, Ömer Faruk Cihan

Department of Anatomy, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey

Objective: In this study, it is aimed to give information about the publication rates of the theses of the master's, doctoral and medical specialization education students as articles from Gaziantep University Medical Faculty Department of Anatomy.

Methods: Students enrolled in the graduate programs of Gaziantep University Faculty of Medicine, Department of Anatomy between 2008–2021 were determined. After that, descriptive analyzes were made regarding the active continuation of the education of these students, their dismissal due to any reason, and their graduation. In addition, the publications produced from graduate theses and the indexes of the journals in which they were published were determined.

Results: Between 2008–2021, 52 students registered for master's degree, 18 for doctorate and 5 for medical specialization education. It was determined that 42.31% (n=22) of the students enrolled in the master's degree were dismissed, 19.23% (n=10) were continuing their education and 38.46% (n=20) were graduated. These values were 55.56% (n=10), 27.78% (n=5) and 16.67% (3), respectively, in the doctoral program. It was observed that 60% (n=3) of the students who started their medical specialization education were dismissed and 40% (n: 2) were continuing their education. It was observed that 73.91% (n=17) of the graduates of all graduate programs published 22 articles from their theses. It was determined that 68.18% (n=15) of these articles were published in SCI-E and 31.82% (n=7) E-SCI indexed journals. It was determined that 83.33% (n=5) of the theses that did not published as an articles belonged to students who graduated in the last two years.

Conclusion: It is thought that the reason for the dismissal of 50.67% (n=38) graduate students may be that they cannot attend the courses at the desired level during the education period or that the students are academically inadequate. On the other hand, it is thought that the reason for the high rate of

publication of theses may be that students who can complete their education are more prone to academic processes and their desire to write articles is higher.

Keywords: graduate theses, master's program, doctoral program, medical specialization education

O-03

Evaluation of epiglottic cartilage morphometry using magnetic resonance imaging

Esma Derinöz[1], Alper Vatansever[1], Bahar Yanık Keyik[2], Emrah Özcan[1], İlter Kuş[1]

[1]Department of Anatomy, Faculty of Medicine, Balıkesir University, Balıkesir, Turkey; [2]Department of Radiology, Faculty of Medicine, Balıkesir University, Balıkesir, Turkey

Objective: Epiglottic cartilage is an important larynx cartilage encountered in endotracheal intubation and should be considered while advancing the endotracheal tube. The aim of this study; To guide clinicians in order to prevent possible epiglottic cartilage injuries in clinical applications by revealing the detailed morphometry of the epiglottic cartilage.

Methods: In this study, magnetic resonance images of 132 individuals, 79 women and 53 men, aged 20 and over, who applied to the Department of Radiology at Balıkesir University Faculty of Medicine, were retrospectively analyzed. MRI series of male and female individuals were obtained from the archive of Balıkesir University Medical Faculty Radiology Clinic. Obtained images were imported to Radiant DICOM Viewer 64-bit computer software and evaluated quantitatively. The distance of epiglottic cartilage with neighboring anatomical formations, the angle between thyroid cartilage and stalk of epiglottis facing visceral region, and the lengths of the fixed and free parts of epiglottic cartilage were examined morphometrically. Statistical analysis of the data evaluated in the study was performed using SPSS version 25 software.

Results: According to the results of the statistical analysis of the evaluated parameters, the measured length values tended to be higher in men than in women, while the angle between the thyroid cartilage and stalk of epiglottis towards visceral region tended to be higher in women than in men. The distance from the apex of the epiglottic cartilage to the tongue root, the length of the free part of epiglottic cartilage and length of larynx showed significant correlations with age. According to the data examined, the distance between reference points determined as larynx length was determined as 2.45 cm on average.

Conclusion: In conclusion, in the light of these data, clinicians will be able to evaluate the distance from the apex of the epiglottic cartilage to the root of the tongue by measuring the larynx length with palpation before endotracheal intubation. Thus, it is thought that possible epiglottic cartilage injuries can be prevented by predicting difficult intubation.

Keywords: epiglottic cartilage, endotracheal intubation, larynx, morphometry, MRI

O-04

Anatomical features of the anterior clinoid process on cone-beam computed tomography images

Saliha Seda Adanır[1], Esma Sude Ceylan[2], Orhan Beger[1], İlhan Bahşi[1], Mustafa Orhan[1], Eda Didem Yalçın[3], Piraye Kervancıoğlu[1]

[1]Department of Anatomy, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey; [2]Faculty of Medicine, Gaziantep University, Gaziantep, Turkey; [3]Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Dokuz Eylül University, Turkey

Objective: Anatomical features and variations of the anterior clinoid process (ACP) are important in the treatment of pathological lesions in the sellar region in order to reduce morbidity and mortality rates. In this study, we aimed to examine the morphometric and morphological properties of ACP.

Methods: This study was approved by Gaziantep University Clinical Research Ethics Committee (decision no:2021/75). Cone-beam computed tomography images of 400 adults (mean age: 36.49±15.91, 200 males, 200 females) in Gaziantep University Faculty of Dentistry, Department of Oral and Maxillofacial Radiology were analyzed retrospectively with the Planmeca Romexis Viewer program. ACP dimensions, the incidence and degree of its pneumatization were determined. Pneumatization rate was classified as Type I with up to half, Type II with more than half, and Type III with complete pneumatization. Statistical analyzes were made with SPSS for Windows version 22.0 package program and $p<0.05$ was considered statistically significant. The Student's t test was used to compare the normally distributed variables in two independent groups, and the Mann-Whitney U test was used to compare the non-normally distributed variables.

Results: The mean length, width and angle of ACP were measured as 10.55±2.42 mm, 5.46±1.31 mm and 42.56±14.68°, respectively. Pneumatization was detected in 169 (21.13%) sides. Type I was determined in 71 (8.87%) sides, Type II in 56 (7%) sides, and Type III in 42 (5.26%) sides. All parameters were found to be statistically greater in males than females ($p<0.05$). In addition, all measurements of ACP with pneumatization were found to be statistically larger than ACP without pneumatization ($p<0.05$).

Conclusion: ACP dimension changes depending on gender and pneumatization. Therefore, it is important to determine ACP size and pneumatization during preoperative evaluation,

especially in order to prevent complications during anterior clinoidectomy procedure.

Keywords: anterior clinoidectomy, cone-beam computed tomography, pneumatization, anterior clinoid process

O-05

A survey study to establish the ideal anatomy education model: EOGU Faculty of Medicine example

Abdullah Ortadeveci[1], Merve Nur Ermez[1], Semih Öz[2], Hilmi Özden[1]

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Objective: Anatomy is one of the most fundamental disciplines in medicine. In the anatomy education which has some difficulties on both the teacher and student side, some serious changes keep taking place with the help of technologic developments. While the Covid-19 pandemic has forced universities to switch to distance education to reduce virus transmission, it has created an opportunity to research the effects of distance education methods and students' views on this subject more comprehensively. The aim of this study is to investigate students' opinions on traditional anatomy education, asynchronous and synchronous anatomy education that were implemented in Eskişehir Osmangazi University (ESOGU) Medical Faculty.

Methods: The questionnaire used in this research was applied to the second-grade students in the ESOGU Faculty of Medicine in the 2020–2021 academic year and 168 out of 290 completed the survey. The survey begins with an explanation about the study and a consent question. The second part is about demographic characteristics of the students. Following 15 items are in matrix system, every single item needs to be evaluated and ranked as 1,2,3 "1 – the most compatible", "2 - compatible" "3 - the least compatible" between three education methods. In the last part of the questionnaire, there are questions about which method should be used in ideal anatomy theoretical and practical education and an open-ended non-obligatory question. This survey was prepared in Google Forms and sent to the participants via internet, and the results were also obtained from Google Forms.

Results: For "This education model makes the student more active" expression, 55.3% of our students chose traditional education for the first place, only 9,5% of them chose synchronous education for the first place. The most efficient model regarding to time management is traditional education according to 41% of our students and asynchronous education according to 38.6%. The preferred type of education for the course materials is traditional education with 37.5%, asynchronous education with 37.5% and synchronous education with 25%. The most effective approach for self-motivation is traditional education for 54.1% of the participants, asynchronous education for 32.7%. 53% of the participants think that ideal theoretical anatomy education should be performed face to face and ideal practical anatomy education should be performed face to face according to 95.8% of the students.

Conclusion: According to the study the most preferred method is traditional anatomy education. Asynchronous education needs further evaluation in terms of its advantages.

Keywords: asynchronous education-1, synchronous education-2, medical education-3, anatomy education-4; medical students-5

O-06

Pulmonary veins and left atrium morphology: a multislice computed tomography study

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Objective: Pulmonary veins are at risk during atrial fibrillation treatment and thoracic surgery. In this study, pulmonary veins and left atrium morphology and the relationship between these structures in multislice computed tomography (MDCT) was investigated in order to increase the treatment success of invasive methods and contribute to reducing complications.

Methods: The study is based on a retrospective analysis of 203 chest MDCT images. The study population contained 80 females and 123 males, mean age was 54. Classification was performed on two-dimensional images in the PACS system and three-dimensional images in the Syngo workstation, respectively. Pulmonary veins drainage types were determined based on the Marom classification. Left atrium types were defined by drawing the borders of the left atrial cavity.

Results: Single (R1, 4.3%), two (R2, 78.4%), three (R3, 16.8%) and four (R4, 0.5%) pulmonary ostia on the right side were observed. Single (L1, 16.4%), two (L2, 80.2%) and three (L3, 3.4%) pulmonary ostia on the left side were detected. Two more types have been added to the R3 group described by Marom: R3d, the lateral and medial segment right middle lobe veins form the right middle vein at a distance of less than 1 cm from the ostium (2%); R3e, the upper segment right lower lobe vein joins the right lower vein less than 1 cm from the ostium (0.5%). It was determined that the left atrium was 76% oval type. The most common drainage types were R2a (39%) and L2a (44.5%) in oval type atria, and R3a (17%) and L2a (37.5%) were most common in rectangular type atria. In addition, the right top pulmonary vein was found in two cases.

Conclusion: Pulmonary veins mapping is performed before radiofrequency ablation and thoracic surgery by imaging methods. The results of this study, where more venous drainage variation is observed on the right side, will contribute to the relevant clinical areas.

Keywords: pulmonary veins, left atrium, multislice computed tomography.

O-07

Geometric morphometric analysis of anterior branches of external carotid artery and carotid bifurcation by three-dimensional CT angiography

İsmet Demirtaş[1], Behçet Ayyıldız[1], Ahmet Taha Demirbaş[1,2], Sevilay Ayyıldız[1], Feyza Sönmez Topçu[3], Koral Çağlar Kuş[1], Mustafa Ayberk Kurt[1]

[1]Department of Anatomy, Faculty of Medicine, İstinye University, Istanbul, Turkey; [2]Institute of Health Sciences, Clinical Anatomy Doctorate Program, Istanbul Medipol University, Istanbul, Turkey; [3]Department of Radiology, Faculty of Medicine, İstinye University, Istanbul, Turkey

Objective: Knowledge of the radiologic and clinical anatomy of the neck region, which has exhaustive and variant features, is useful in diagnosis and treatment due to the important anatomic structures it contains, including vascularization. The aim of our study was to determine the variations of the anterior branches of the external carotid artery (ECA) and investigate the morphometric and geometric features of the anterior branches of the ECA and carotid bifurcation (CB).

Methods: 563 ECAs (284 right, 279 left) were included from 288 patients; 119 were female (41%) and 169 were male (59%) in the study. The anterior branch variants of the ECA were observed in 8 different subgroups. 3D Slicer software program was used to analyze the CTA images.

Results: The most common variations were type Ia 42.3% (n=120) on the right and type IIa 40.9% (n=114) on the left. When looking at the vertebral levels, CB was detected at C3–C4 level in 32.5% of patients (n=183), STA was at C4 level in 25.9% of patients (n=146), LA was at C3 level in 50.1% (n=282) of patients, and FA was at C2 level in 37.3% of patients. The mean CB angle in all cases was 59.93°±16.04. In the anterior branches of the ECA in cases belonging to the Type I group, the widest angle belonged to FA (R=116.88± 27.04°, L=110.32°±25.94), then belonged to LA (R=99.78°± 26.93, L=100.49±26.48°) and the narrowest angle belonged to STA (R=84.39°±23.56, L=84.68±22.80).

Conclusion: A new classification of the variations of the anterior branches of the ECA was made on the basis of the CTA images to gain more practicality in surgical procedures. This study revealed for the first time the angular and level relationship between CB and ECA anterior branches.

Keywords: external carotid artery, carotid bifurcation, computed tomography angiography, artery geometry, branching pattern

O-08

Evaluation of the volume of amygdaloid body, hippocampus, insula and temporal lobe in Alzheimer's disease and other types of dementias

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Dementia and Alzheimer's disease are progressive neurodegenerative diseases that are frequently seen in the elderly population, their reasons are not fully understood and have no cure. In this study, it was aimed to determine the atrophy pattern of hippocampal sub-regions and some limbic structures in order to detect the brain regions especially affected in these diseases. For this purpose, 61 individuals were divided into 3 groups as Alzheimer (18), dementia (16), healthy control (27) and volumetric evaluation was made with MRICloud and VolBrain on T1-weighted MRIs. In control group, volumes of middle temporal gyrus, total hippocampus, right and left CA1, left CA2–3 and CA4–DG segments were significantly higher than Alzheimer's group ($p<0.05$). In control and dementia group, total cerebral volumes were higher than Alzheimer's group ($p<0.05$). In both control and dementia groups, right subiculum, right and left SRLM volumes were significantly higher than Alzheimer's group ($p<0.05$). In volumes of insula, amygdaloid body and white and gray matter volumes of posterior cingulate gyrus, there was no significant difference within three groups ($p>0.05$). In dementia group, white matter volumes of right rostral and dorsal anterior cingulate gyrus were significantly higher than Alzheimer's group; in control group, left white and the right gray matter volumes of subgenual anterior cingulate gyrus were higher than Alzheimer's group ($p<0.05$). White and gray volumes of total cingulate gyrus and subcallosal anterior cingulate gyrus did not differ within three groups ($p>0.05$). It has been concluded that evaluating the hippocampal segments and volumes of subdivision of anterior cingulate gyrus in dementia and Alzheimer's disease will help determine the stages of the diseases and the functional relations between these regions and diseases.

Keywords: Alzheimer's disease, cingulate gyrus, dementia, hippocampus, MRICloud

O-09

Relationship of cervical segment types of internal carotid artery with gender, age and aneurysm

Yiğit Çevik

Department of Anatomy, Faculty of Medicine, Çukurova University, Adana, Turkey

Objective: Aim of this study is to evaltuate differences in classes of servical segment of internal carotid artery between genders, age groups and subjects with and without intracerebral aneurysms.

Methods: After acquiring ethics committee approval for the study, Digital Subtraction Angiography (DSA) of 130 patients with intracerebral aneurysms and 75 healty subjects were obtained. 3D models of internal carotid arteries were modeled using segmentaition method. C1 segment of internal carotid arteries of each patient was classified into categories in accordance with prior literature. Cervical types except the straight type were regarded as morphological variations. Distribution of segment types between patient and control groups, genders and age groups were analyzed using chi-square test.

Results: Data analysis did not show stastically significant difference between aneurysm patients and control group in terms of servical segment types. Tortuose type was more common in both classes. Although statistically insignificant ($p>0.05$) morphological variations were found to be more frequent in women (80%) compared to men (68.6%). In regards to age groups, straight type was the common type in earlier decades (3rd decade: 85.7%) decreasing with increment of age devolving to tortuose type which dominate later decades (8th decade: 78.6%) ($p=0.028$).

Conclusion: Decrease in elasticity, increase in rigidity and tendency to curling with progression of age in arteries are already suggested. Results of our studies show that intracranial arteries are inclined to curl as systemic arteries with progressing age. Occurrence of morphological variations in the cervical segment of internal carotid artery are found to be more frequent in women and elderly patients. Since intracranial aneurysms are also more frequent in women and elderly patients as well, it could be taken into consideration that mechanisms underlying both pathologies could be interrelated.

Keywords: internal caortid artery, cervical segment, aneurism, DSA

O-10

Dorsal branch of anterior interosseous artery: a preliminary study

Buse Naz Çandır, Latif Sağlam, Gkionoul Nteli Chatzioglou, Özcan Gayretli, Adnan Öztürk

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Objective: The anterior interosseous artery (AIA) is a branch of the common interosseous artery and courses distally on the anterior surface of the interosseous membrane of forearm (IMF). Deep in the pronator quadratus, it pierces the IMF and reaches the dorsal aspect of the forearm, and giving its dorsal branch. The dorsal branch of the anterior interosseous artery (AIAd) passes superficially or deeply to the extensor retinaculum and gives the 2,3 intercompartmental supraretinacular arteries (2,3 ICSRA) and the fourth and fifth extensor compartment arteries (ECA) that supply the wrist bones. In addition, an anastomotic branch originating from the AIAd turns backward and anastomoses with the posterior interosseous artery (PIA). Studies in this area are very limited. Therefore, it was aimed to reveal the morphometric and morphological features of AIAd.

Methods: In 16 upper limbs, AIAd was followed from where it pierced the IMF to the extensor retinaculum. The diameters of the AIAd, 2,3 ICSRA, fourth and fifth ECA, and the anastomotic branch and the distances of these branches to the head of ulna were measured. The branching morphology of AIAd was also recorded. Ethical approval was obtained.

Results: The diameters of AIAd, 2,3 ICSRA, fourth and fifth ECA, and anastomotic branch were 1.9±0.2 mm, 1.2±0.1 mm, 1.02±0.1 mm, 1.09±0.3 mm, 1.11±0.2 mm respectively. The distances of the same branches to the head of ulna were measured as 64.4±10.5 mm, 45.9±13.7 mm, 23±5.45 mm, 21.3±6.58 mm, 31.8±15.5 mm respectively. The branching morphology of AIAd was recorded as 5 types.

Conclusion: Knowing the anatomy of these arteries can guide the planning of pedicled vascularized bone grafts in the treatment of distal end fractures of the radius and ulna, carpal bone fractures or avascular necrosis of these bones. This study is a preliminary examination and the findings will be expanded with further dissections.

Keywords: dorsal branch of anterior interosseous artery, 2,3 intercompartmental supraretinacular artery, fourth extensor compartment artery, fifth extensor compartment artery

O-11

Investigation into the extraorbital branches of the ophthalmic artery by superselective angiography method

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Objective: The ophthalmic artery has a complex branching pattern and its branches supply blood to the intra and extraorbital structures. The extraorbital branches of the ophthalmic artery are the lacrimal, supraorbital, anterior-posterior ethmoidal, supratrochlear and dorsal nasal arteries. The aim of the present study was to evaluate the morphometry of the extraor-

bital branches of the ophthalmic artery on superselective angiography images of retinoblastoma patients.

Methods: 126 ophthalmic artery superselective angiographies performed on children with retinoblastoma were evaluated. The origin and diameter of the extraorbital branches of the ophthalmic artery were examined according to age group and sex.

Results: All lacrimal, supraorbital, supratrochlear and dorsal nasal arteries arose from the main trunk of the ophthalmic artery. In 22 patients, the anterior and posterior ethmoidal arteries arose together as a common trunk. In remaining patients, ethmoidal arteries originated from the main trunk of the ophthalmic artery. The mean diameter of lacrimal, supraorbital, supratrochlear and dorsal nasal arteries were 0.35, 0.22, 0.25 and 0.23 mm, respectively. The mean diameter of anterior and posterior ethmoidal arteries were found to be 0.29 and 0.24 mm, respectively. Only the diameter of the dorsal nasal artery showed a significant correlation with age. The supratrochlear artery was found higher in boys than girls, while other diameters were nearly the same in both sexes.

Conclusion: Present study will make a great contribution to the pediatric literature about the extraorbital branches of the ophthalmic artery. A better knowledge of these branches can help surgeons and interventional radiologists to avoid possible severe complications during embolization, cosmetic procedures, endonasal and orbital surgeries.

Keywords: ophthalmic artery, lacrimal artery; morphometry, superselective angiography

O-12

Age-related evaluation of anatomical reference values and lung volumes of tracheal bifurcation

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Objective: By determining the anatomical points of the bifurcatio tracheae in normal living things, it shows that the covering materials will reflect the life. To come to visit today, as in the world. It can also be used to assist vehicle use.

Methods: The thesis is a retrospective study, consisting of 100 male patients aged 20–60 years, who were recorded as healthy and recorded with the Toshiba Aquilion 64 System from the records of the patients who were registered to the Radiology Department of Adıyaman University Training and Research Hospital between January 1, 2015 and January 1, 2019. The files of 100 female patients were scanned. In these 200 patients, the angle of the bifurcatio tracheae was measured with the 1.1.7 version Horos application and its posterior projection was examined and its alignment on the spine was determined. At the same time, lung volumes were calculated in these patients. Statistical analyzes were performed with the statistical package program in SPSS version 25.0 (IBM Inc., Chicago, IL, United States).

Results: A significant difference was observed in the comparison of bifurcatio tracheae angle based on gender ($p<0.001$). It was found that right and left lung volume measurements were different in men and women, and this difference was statistically significant ($p<0.001$). Bifurcatio tracheae posterior projections differ according to the thoracal segments based on gender; this difference was found to be statistically insignificant ($p>0.05$). Considering the bifurcatio tracheae angle according to age category, it was 71 degrees between the ages of 20–29 and 71 degrees between the ages of 30–39. After the age of 40, it is 70 until the age of 50, while it is 71 degrees between the ages of 50–60. These differences were found to be insignificant ($p>0.05$). When the right and left lung volumes were compared according to age, no significant results were found ($p>0.05$).

Conclusion: The data of this study can be a guide as the first study showing that bifurcatio tracheae angle measurements, which constitute the separation point of the trachea, can be used in gender discrimination. More comprehensive studies are needed to make the same claim in age-based measurements.

Keywords: bifurcatio tracheae angle, bifurcatio tracheae posterior projection, lung volume, CT, horos application

O-13

Investigation of anogenital distance and anal position index in fetuses

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Objective: Anogenital distance (AGD) is a marker that can be used for sex determination as well as the effect of fetal androgen activity on genital structures in animals and humans. Anal position index (API), another morphometric parameter of the same region, is reported to be associated with constipation and intestinal motility problems. The aim of this study was to determine the API and AGD, which can be considered as clinical indicators, in normal fetuses.

Methods: The study was performed on formaline fixed 59 fetuses (34 female and 25 male) found in the inventory of Mersin University Faculty of Medicine, Department of Anatomy. The mean gestational ages of female and male fetuses were 24.4±6.5 and 23.2 ±4.2 weeks, respectively. Fetuses with structural deformities in genital or other systems were excluded from the study. AGD was measured as the distance

between the center of the anus and the posterior fourchette in girls, and the distance between the center of the anus and the posterior raphe of scroti in boys. To determine API values, following formulas were used: API= distance between the posterior fourchette and center of the anus / distance between the posterior fourchette and coccyx in female fetuses. API= distance between the center of the anus and posterior raphe of scroti / distance between the posterior raphe of scroti and coccyx in male fetuses.

Results: AGD in male fetuses was 9.64±2.75 mm in the 2nd trimester and 17.26±5.55 mm in the 3rd trimester. In female fetuses, AGD was 5.60±1.60 mm in the 2nd trimester and 12.88±4.14 mm in the 3rd trimester. While the mean API value in female fetuses was 0.44±0.083, the mean API value in males was 0.55±0.067. API values of female fetuses were significantly lower than API values of male fetuses ($p<0.001$). When the distribution of API values of fetuses in the 2nd and 3rd trimesters was examined, no significant relationship was found between gestational age and API values ($p=0.499$).

Conclusion: With the data obtained from this study, the normal values of AGD and API, used to identify genital anomalies, fertility and intestinal motility problems, in fetuses were determined. It is thought that they should be included in prenatal follow-up protocols.

Keywords: fetus, anal position index, anogenital distance

O-14

Identification of variations in the distribution of nerves at the site of surgery to hallux valgus

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Objective: In surgical applications for hallux valgus pathology, which is common in society, post-op complications due to iatrogenic nerve damage are known to vary. The aim of the study was to identify variations in the course, distribution and connections of nerves reaching the site of hallux valgus surgery as an anatomical factor that may form the basis for this variety of complications.

Methods: In a study approved by the Ethics Board of Clinical Research of Mersin University (Project No: 2021-1-TP2-4313, 46 lower extremities (19 women, 27 men) fixed with 10% formalin in the inventory of The Anatomy Laboratory of Mersin University, cutaneous dorsalis medialis nerve and fibularis profundus nerve was dissected. The width of the nerves, the branching pattern, and the connections between the nerves were recorded. In addition, exit locations were recorded in three segments: proximal of the tarsometatarsale hallucis joint, between the tarsometatarsale hallucis joint and the metatarsophalangea hallucis joint, and distal of the metatarsophalangea hallucis joint decoupling of the branches directed to the hallux valgus surgical incision line. Data on these nerves were compared with the independent t test in patients grouped by hallux valgus angle.

Results: From the branches of the cutaneous dorsalis medialis nerve to the surgical incision site; In 65% of cases proximal of tarsometatarsale hallucis joint, in 52% of cases between tarsometatarsale hallucis joint and metatarsophalangea hallucis joint, in 4% of cases distal of metatarsophalangea hallucis joint. The number of these branches was 1–3 in 81% of women and 2–5 in 95% of men. While the widths of the main trunk and medial branch of cutaneous dorsalis medialis nerve were similar between the sexes, fibularis profundus nerve width was greater in males than females ($p<0.001$). In 57% of the cases (26 out of 46 months), the lateral branch of the cutaneous dorsalis medialis nerve was connected to the fibularis profundus nerve. While there was no difference between the groups in terms of the distance of the fibularis profundus nerve to the extensor hallucis longus muscle proximally, this nerve was closer to the tendon at the level of the metatarsophalangea hallucis joint in those with hallux valgus than in the normal ones ($p=0.016$). There was no difference between the groups in terms of the distance of the medial branch of the cutaneous dorsalis medialis nerve to the surgical incision line.

Conclusion: Our findings regarding variations in the pattern of distribution of nerves in the surgical incision line and cutaneous nerves whose location is affected in hallux valgus may explain the diversity in post-op nerve injury complications. Rise in the incidence of connection between the Fibularis profundus nerve and cutaneous dorsalis medialis nerve should be considered as a factor that may influence success in local anesthesia applications for foreleg surgery.

Keywords: cutaneous dorsalis medialis nerve, fibularis profundus nerve, hallux valgus, cadaver

O-15

Morphometric evaluation of the photoluminescent region of the ilium

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Objective: The complex osteology of the ilium is one of the major causes of complications during pelvic fixation, bone marrow aspiration, and bone graft harvesting procedures. The thickness of the iliac wing is of critical importance as it varies regionally. In previous studies, an irregularly shaped, thin, fragile monocortical region was described in the central region of the iliac wing. The iliac crest, which is used as the entry point in

bone marrow aspiration and bone graft procedures, and the osseous fixation pathways that provide sufficient bone thickness for screwing are located around this region. Having a knowledge of the borders and morphometric features of this region can help the surgeon to prevent iatrogenic perforations and related complications. The aim of this study is to determine the thickness, localization, and the relations of this region.

Methods: In this study 57 dry hip bones of undetermined age and gender were examined. Six hip bones with impaired cortical bone integrity were excluded. Photoluminescence technique was used to identify the irregularly shaped, thin, monocortical region in the iliac wing. The vertical and horizontal diameters of the photoluminescent region; the nearest distance of this region to the anterior and posterior superior iliac spines, and iliac crest were measured by photogrammetric method. Measurements were made by using the ImageJ software (National Institutes of Health). Descriptive statistical analyses were performed by using SPSS.

Results: Photoluminescent region mean diameter was 56.24±16.56 mm vertically and 59.92±24.83 mm horizontally.Mean distance from the anterior superior iliac spine to the anterior border line, posterior superior iliac spine to the posterior border line and iliac crest to the superior border line were measured 62.1±19.8 mm, 71.0±12.2 mm and 19.9±11.6 mm, respectively.

Conclusion: Iatrogenic perforations and damage to vascular-neurological structures can be observed in surgical procedures related to the ilium. Knowing the thickness and anatomical location of the fragile region of the iliac wing can help ensure safety and reduction of the complications in surgical procedures.

Keywords: ilium, Iliac wing, photoluminescent

O-16

Evaluation of morphometric differences between different gray matter structures according to subtypes of the disease on brain magnetic resonance images of patients with obsessive compulsive disorder

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Objective: It is aimed to better evaluate the different subtypes of patients with obsessive compulsive disorder (OCD), to make progress in the diagnosis and treatment of the disease, and to apply it in practice.

Methods: Patients who applied to Manisa Celal Bayar University Hafsa Sultan Hospital Psychiatry outpatient clinic and were diagnosed with OCD constituted the population of the study. The control group consisted of volunteers who did not have any psychiatric diagnosis and treatment and did not have a neuropsychiatric or endocrinology disease that would directly or indirectly impair central nervous system functions. A sample of 35 consecutive patients was formed by conducting a YKG-5 diagnostic interview. Routine scales used in the diagnosis of OCD were applied to the sample and control groups and MRI was performed. Then, MR image analysis was performed with MATLAB-based SPM8.

Results: As a result of the study, significant volumetric differences were found in different regions of the brain in patients with obsessive compulsive disorder compared to healthy individuals, and also between patients according to gender and subtypes of the disease.

Conclusion: In comparison of patient and control group; Gray matter enlargement was found in the right lobus occipitalis and gyrus lingualis (BA18), right gyrus frontalis inferior (BA47), right caput nuclei caudati, and right gyrus frontalis inferior (BA45). Comparison of male patients and controls, gray matter volume reduction in the left, frontalis superior (BA9) and right gyrus fusiformis (BA20); an increase was found in the right gyrus frontalis superior (BA11). Compared to controls, female OCD patients showed increased volume in the left cuneus (BA17), gyrus rectus (BA11) and putamen gray matter, and decreased premotor cortex. Compared to women, male patients found decreased white matter in the right gyrus frontalis medialis, right and left gyrus frontalis superior, right and left gyrus frontalis medius, increased white matter in the left cuneus, and decreased in the left insula and right gyrus temporalis superior. An increase in the right BA7 and left insula BA13 gray matter, a decrease in the right and left gyrus temporalis medialis and left gyrus temporalis superior in the white matter, and a decrease in the right and left culmen of the cerebellum were observed in the patients with soiling-cleansing symptoms. In patients with doubt-control symptoms, an increase in claustrum on the left, a decrease in BA37 on the right, and an increase in white matter in the parahippocampalis of the left gyrus were observed.

Keywords: obsessive-compulsive disorder, voxel-based morphometry, SPM, magnetic resonance imaging

O-17

Neuroanatomical correlation of speech and voice disorders in Parkinson's disease: analysis of MRI findings

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Objective: Parkinson's disease is a progressive neurodegenerative disorder of the central nervous system, which may also

present speech and voice disorders. In this study, acoustic sound analysis of mid-to-late stage Idiopathic Parkinson patients together with volumes of certain neuroanatomic structures in retrospective MRI data were analyzed and compared with data obtained from the control group. Correlation between sound analysis and MRI data were also evaluated.

Methods: Study was carried on 17 healthy controls and 19 idiopathic Parkinson patients. Sound recordings collected from both groups were analyzed with Praat software for acoustic sound analysis. Volumetric morphometric assesments were carried with MRICloud software on T1-weighted MRI images.

Results: In Parkinson's patients, there was a significant difference in jitter, jitter absolute, shimmer and noise harmonic ratio parameters compared to the control group ($p<0.05$). Analyzis of MRI data showed significantly lower volumes of pars triangularis, pars opercularis, superior temporal gyrus, medial temporal gyrus, temporal sulcus, lateral fissure, cingulate gyrus, basal forebrain and substantia nigra, superior longitudinal fasciculus, extreme capsule bilaterally in patient group ($p<0.05$). In the patient group, mean pitch value was positively correlated with bilateral basal nuclei, right superior temporal gyrus, cingulate gyrus and left superior longitudinal fasciculus, sylvian sulcus volumes ($r=0.6–0.8$). Additionally, left sylvian sulcus volume was negatively correlated with mean pitch and positively correlated with jitter absolute value in patient group. In the control group, caudat nuclei volume was negatively correlated with jitter and positively correlated with noise harmonic ratio. Shimmer value and volumes of examined neuroanatomical structures did not show high correlation.

Conclusion: In conclusion, speech and voice disorders are accompanied with signs of atrophy in certain related neuroanatomic structures and correlations were observed among some.

Keywords: acustic voice analyze-1, voxel-based morphometry-2, Parkinson disease-3, speech and voice disorder-4, neuroanatomy-5

O-18

Evaluation of cerebrum asymmetry in Parkinson's disease

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Objective: Parkinson's disease (PD) is the second most common neurodegenerative disorder after Alzheimer's disease. Bradykinesia, tremor, rigidity, and postural instability are the cardinal signs of PH. Lateralization of motor symptoms and asymmetric neurodegeneration distinguish PD from other parkinsonism syndromes In this study, we aimed to evaluate gray and white matter asymmetry according to the side of symptom onset in patients with PD using an automatic segmentation method.

Methods: MR images of 17 patients with PH and 10 healthy subjects were included in the study. The PD group was divided into two groups as right (PD-right) and left (PD-left) according to the side of symptoms. Healthy subjects were included in the control group. Cortex cerebri, cerebral nuclei and white matter volumes of all groups were calculated with MRICloud service, which is an automatic segmentation method. Asymmetry was evaluated by comparing right and left side volumes.

Results: In the PH-left group, the mean volume of the cortex cerebri was greater on the left side, while the mean volume of the cerebral nuclei and white matter was greater on the right side. All mean volumes were found to be large on the right side in the PH-right group and control group. Asymmetry between right and left cerebral nuclei was statistically significant in all groups ($p<0.05$). Asymmetry was also detected between right and left white matter volumes in the PH-left group ($p<0.05$).

Conclusion: We think that automated segmentation methods can be used to evaluate asymmetry in PD in addition to clinical assessments. Further research with larger sample size is needed to elucidate the mechanisms underlying the asymmetry.

Keywords: Parkinson's disease, asymmetry, volume

O-19

Morphometric classification of ventriculus tertius anatomy in pediatric age group

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Objective: This study investigated age and sex differences by classifying Vt morphometrically in the sagittal plane in the pediatric population using anatomical structures that limit Vt.

Methods: Individuals were aged 0–18 years who underwent cranial MR imaging in Bursa Uludağ University Faculty of Medicine, Department of Radiology between 2012 and 2020 were retrospectively examined. 700 individuals (369 males, 331 females) who radiologically normal were included in the study. All linear measurements were made on the mid-sagittal image using the 3D Slicer (v.4.10.2) program. Corpus mamillare-commissura anterior distance was divided by chiasma opticum-commissura anterior distance and anterior part of Vt was evaluated in 3 different types. If ratio is below 0.9, it is classified as "Type A", between 0.9–1.1 as "Type B" and above 1.1 as "Type

C". Corpus mamillare-commissura posterior distance was divided by commissura anterior-commissura posterior distance and posterior part of Vt was classified into 2 different types. If the ratio is below 1, it is classified as "Type F", and if it is 1 and above, it is classified as "Type G".

Results: The anterior part of Vt was below 0.8 between 0–3 years old and below 0.9 between 4–9 years old, that was, it is in type A class. It was in the type B class with a rate of 0.9–1.1 between the ages of 10–18. The ratio of the rear of Vt was in the range of 0.91–0.98, that was, in the type F class. Type A:453, B:213, and C:34 were seen in the anterior part of Vt, and in F:607, G:93 individuals in the posterior part.

Conclusion: In this study, indices of Vt were reported in the pediatric population. We think that the differences in the shape and topology of Vt can be demonstrated in the pediatric population through the indexes in our study.

Keywords: ventriculus tertius, pediatrics, anatomical index, MRI

O-20

Anatomy of proximal ulnar angulations and its clinical significance

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Objective: Because of the unique architecture and shape of the proximal ulna, particular difficulties exist for fixation and restoration for its fractures. The present study aimed to evaluate the proximal ulnar angulations anatomy that contributes to its different architecture.

Methods: After ethical approval was obtained from the Clinical Research Ethical Committee of Istanbul Faculty of Medicine (Date: 25/06/2021, number: 13), a sample of 107 adult ulnae that have no records of their age and sex was studied. A digital caliper was used to measure the ulnar length (UL), point of varus angulation (PVA), and widths at the point of varus angulation. The proximal ulnar angulations (proximal ulna torsion angle (PUTA), varus angulation (VA), articular angle (AA), proximal ulna dorsal angulation (PUDA), olecranon–diaphysis angle (ODA)) were determined with a goniometer. SPSS 21.0 (IBM Corporation, Armonk, NY, USA) was used for statistical analysis. In addition to descriptive statistics, Student t tests were used for comparison between two sides. Pearson correlation was calculated to evaluate relationships for parametric values whereas, Spearman's correlation was used for non-parametric ones.

Results: The average UL was 261.17±43.06 mm, PVA was 82.27±10.65 mm, total width was 15.04±1.83 mm, posterior-interosseus width was 13.71±2.36 mm and posterior-anterior width was 15.15±1.92 mm. The mean PUTA, VA, AA, PUDA and ODA were found 27.10°±9.04°; 13.61°±3.17°; 26.12° ±3.99°; 7.57°±3.80° and 17.39°±5.32°, respectively. The VA was statistically significant differences between right and left ($p<0.05$). A significant correlation was found between AA and ODA ($p<0.001$).

Conclusion: The mean values of the angulations of proximal ulna can provide valuable data during surgery for the fixation of ulna. We believe that knowing these angulations may facilitate the intraoperative restoration of proximal ulna complex anatomy when dealing with comminuted or Monteggia fractures.

Keywords: ulna, proximal ulnar angulations, fracture

O-21

3D virtual anatomy atlas application

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Objective: The practice of anatomy is very important in basic medical education and another health education.

Methods: The fundamentals of the lesson must be learned permanently and effectively. Currently, this lesson is supported by atlases, models and cadaver training. However, there are serious inadequacies in the learning of the lesson due to the high cost of the models, the fact that they are only available in laboratories, and their low accessibility. Some of the current solutions are educational animations and videos. These materials, whose visuals are 2D, do not have the ability to view anatomical structures in depth and from different angles that the student desires in 3D.

Results: Recently developed virtual reality (VR) applications are somewhat of a solution, but installation and operating costs in VRs are uite expensive. It also requires space and additional equipment for the course. On the other hand, it is not local and national. For these reasons, we have developed an application with augmented reality (AR) technology, which provides unlimited access to information anywhere, is suitable for the "location independent" approach, that is, "information is everywhere at any time", has 3D and realistic visuals, can be used as an auxiliary lesson material in the lecture hall, and interactively work with fellow students. Basically, Unity, C# and Python libraries were used in our study. A group was formed under the guidance of our teammates and expert instructor for reliable information presentation. Hundreds of reliable academic information has been recorded.

Conclusion: In addition, the gamification technique contributed to the education process with motivation and pleasure.

Our study is an application that can meet an important need in anatomy education and is very open to development.

Keywords: 3D anatomy, anatomy atlas, virtual reality

O-22

Determination of relationship of scapula morphometry and gender by computed tomography

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Objective: The aim of this study is to reveal the effective parameters for gender determination by means of scapula in Turkish population.

Methods: In this study, morphometric measurements of scapula at computed tomography images of 60 male and 60 female were evaluated and their efficacy on gender determination were examined via stepwise logistic regression analysis. 10 parameters (scapular breath, maximum scapular length, supraspinous line length, infraspinous line length, trigonum superior border length, trigonum inferior border length, trigonum superior spinal length, trigonum inferior spinal length, medial angle, spinal axis angle) and 6 indexes (scapular index, supraspinous index, infraspinousindex, trigonum spinal index, trigonum index, supra-infra scapular index) obtained from these parameters were measured.

Results: As a result of statistical analysis, scapular width and maximum scapular length were found 85% effective in gender determination at right scapulae, 90% effective at left scapulae and 86.7% effective at all scapulae. No significant difference was found between right and left sides for the maximum scapular length, supraspinous line length, infraspinous line length, trigonum superior border length, trigonum inferior border length, trigonum superior spinal length, trigonum inferior spinal length, spinal axis angle, supraspinous index, trigonum index, trigonum spinal index, supra-infra scapular index measurements. Significant differences were found between men and women for the scapular breath, maximum scapular length, supraspinous line length, infraspinous line length, trigonum superior border length, trigonum inferior border length, trigonum superior spinal length, trigonum inferior spinal length, medial angle and spinal axis angle.

Conclusion: The results of this study will contribute to the gender determination by means of scapula and surgical interventions of this region in Turkish population.

Keywords: sex determination, morphometry, anatomy, computed tomography

O-23

Flipped classroom model in anatomy education during Covid-19 pandemic

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Objective: The Covid-19 pandemic has enabled the development of solutions-oriented strategies rather than traditional approaches to education. The flipped classroom is a modern method of active teaching that aims to encourage students to learn by reversing the learning steps of classic lessons. This study aimed to evaluate the flipped classroom model in anatomy education during the Covid-19 pandemic and to provide guidance for future studies.

Methods: This study was conducted on Physiotherapy and Rehabilitation undergraduate students who studied system and organ subjects in anatomy lessons via the Flipped Classroom model during the spring semester. Then a 21-item questionnaire was administered to evaluate the model. Statistical analysis was done using SPSS 26. The overall Cronbach's alpha for the questionnaire was 0.83.

Results: The questionnaire was answered by a total of 73 undergraduate students. It was determined that 78.1% of the respondents were women, 5.5% were foreign students, and 90.4% had taken the course for the first time. According to the survey, 81.7% of the respondents stated that the learning process was followed successfully with this method, while 92.9% of them said that this method would make a positive contribution to their profession, also 73.9% stated that this method motivates learning, along with 89.1% stated that giving pre-lesson materials had a positive effect on learning. In addition, 93.1% of the students indicated that the meetings they had with experienced colleagues helped them better understand the importance of the anatomy lesson.

Conclusion: We concluded that the Flipped Classroom during the pandemic has the potential to improve students' motivation, learning effectiveness, analytical thinking ability, while also encouraging the development and teamwork of students during the pandemic. Multi-center research is required to determine the long-term impact of the Flipped Classroom model compared with traditional learning in online Anatomy education.

Keywords: anatomy, flipped learning, active learning, physiotherapy, cross-sectional, Covid-19

O-24

A new model in medical education: smart model training set

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Objective: The learning performance and success of students who use different learning tools increase. Our aim is to show the contribution of the training set, which we have patented, to medical education, consisting of smart interactive models and a software program that allows learning branches of science such as anatomy, histology and physiology at the same time with a multidisciplinary approach.

Methods: The training set, which consists of smart interactive models and software program, consists of two main parts including hardware and software parts. Hardware part; It consists of smart models that show three-dimensional models of organs or tissues with light and sound explanations. Both the outer surface and one half of the inner surface of the smart model, which is attached to each other with a hinge and can be opened and closed in two, have an appearance that reflects the macroscopic (anatomical) feature of the relevant structure, while the other half of the inner surface has the appearance that reflects the microscopic (histological) feature of the relevant structure. Software part; It has been developed to reach detailed up-to-date information about tissues or organs that represent a smart model. This information can be accessed within the faculty with the QR code on the model via smart devices, and outside the faculty with the mobile learning program to be developed.

Results and Conclusion: Smart model training set; It provides the integration of basic and clinical information, the learning of basic science courses in a holistic and short time under a single educational material, and allows the courses to be carried out of the laboratory. Considering all these benefits, we think that this training set will bring a new breath to basic medical education.

Keywords: patent; smart model, training set, anatomy, histology

O-25

The importance of supports during the production of 3-D anatomical printings and models

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Objective: In this study; we aimed to inform the researchers who are going to deal with the production of anatomical 3-D printings and models in the future from the point of supports used during production. In order to obtain the anatomical materials which are very near to their real anatomical images; these supports have a great importance.

Methods: 3-D printers have brought a new excitement to the field of gross anatomy. The anatomists can produce more useful and more realistic products by these printers. It is mandatory to use supports during the production of anatomical printing and models with a 3-D printer. These supports can be added either automatically or manually during the production of the material. Depending upon to the structure and characteristics of the printings and models; the localizations of the supports have a great importance and they must be defined finely. Depending upon to this fact; in some printings and models, the supports must be located manually. These supports must be removed from the model before the stage of curing. During these steps; a great care must be shown in order not to give a damage to the model and these supports must be cleaned from the model completely.

Results: The position of the STL image of anatomical printing or model must be well organized by the help of software used. This fact is important both for the localization of the supports and the ideal appearance of the printing or model at the end of the production period. If the supports are put by the help of the software automatically; the less detailed side of the print and model to be produced should definitely be preferred. Additionally, a great care must be shown while positioning the STL image by the help of software used before the step of production. If the supports are going to be applied manually; their localizations must be very suitable and they must be away from foramina or prominences. These supports must be removed after the isopropyl alcohol stage. The last step is curing and it gives hardness to the anatomical printing or model. The duration of isopropyl alcohol stage and curing stage show some differences among anatomical printings and models.

Conclusion: In conclusion; the supports which are necessary during the production of anatomical printing and model must be put into suitable areas of the model and they must be enough in number. If there is some roughness in the place of any support; it must be removed by using sandpaper or other materials. At last; the product must be recleaned and preferably can be shined by the usage of baby oil or equivalents.

Keywords: support techniques in 3-D models, anatomy, 3-D model, 3-D printing

O-26

The importance of using anatomical model in urogenital system anatomy education of first and emergency aid program students

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Objective: First and Emergency Aid program is an associate degree program taught in vocational colleges of universities. The program includes anatomy education in the 1st grade fall semester of the 2019–2020 academic year, and urogenital system anatomy education in the 2nd grade fall semester. Purpose of the study; The aim of the First and Emergency Aid program is to evaluate the effect of using anatomical models in anatomy education by comparing the urogenital system anatomy taught to 2nd grade first education students using an anatomical model and the urogenital system anatomy education taught to second education students without using an anatomical model, with achievement tests.

Methods: The study was carried out with Balıkesir University First and Emergency Aid program students who received face-to-face education in the fall semester of the 2019–2020 academic year. A total of 103 students, including first education students (53 students) and second education students (50 students), were included in the research. Before the urogenital system anatomy training was explained, the students were given a pre-test including questions about the subject. After the subject was explained to the first education students using anatomical models and to the second education students without using anatomical models, the post-test was administered. All data were analyzed by transferring to SPSS 22.0 package program. The Ethics Committee application process of the study continues.

Results: The mean age of the students participating in the study is 20.35±1.44, and 65% of them are female individuals. In the pre-test results applied, the success rate of first education students was determined as 49.71%, and the success rate of second education students as 46.82%. According to the data obtained from the post-test results, the success of first education students increased by 62.52% and the success of second education students increased by 25.14%. It was observed that the correct answers given by the students who received urogenital system anatomy training without using anatomical models to some questions in the pre-test were answered incorrectly in the post-test.

Conclusion: The aim of the First and Emergency Aid program is to train auxiliary health personnel who can perform the first interventions of the sick and injured until they are brought to the hospital. While the theoretical course of anatomy education is included in the program content, the practical course is not included. As a result of the research, it was revealed that the use of anatomical models in the lessons had a positive effect on success. In the light of these data, it is thought that the use of anatomical models in the anatomy education of paramedic students who undertake important tasks for people will be beneficial in terms of visualizing the subject.

Keywords: anatomy, success, model, paramedic

O-27

Creating 3D models and animations to make learning easier – more permanent in embryology lectures and supporting education with new 3D technologies – preparing 3D original embryological models

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Embryology education is of great importance both under the title of basic sciences and in clinical medicine education. The correct understanding of the developmental processes helps the student to comprehend the anatomical localizations more accurately. However, accurate knowledge of the normal developmental process is also of great importance in revealing many common diagnoses such as congenital anomalies. In our study, it was planned to prepare models and animations prepared with the use of 3D digital technology techniques to be used in embryology lectures which have been prepared with great effort for years. In order to create objective data for the needs of these studies, a survey study was conducted in groups of students, assistants and faculty members in Gazi University Faculty of Medicine. The results of the survey were determined to support the view that the addition of the planned 3D techniques to embryology education would make a great contribution to both basic and clinical medicine education. In our presentation, we shared images and video recordings of our first trials, as well as aim, material – method and results of our study.

Keywords: embryology, embryologic model, 3D, 3D printer, medical education

O-28

The effect of the flipped classroom on medical students' success and perception in anatomy course

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Objective: It was aimed to evaluate whether flipped classroom (FC) can be applied in anatomy education of medical faculty based on the students' attitudes towards anatomy, their satisfaction levels towards FC, and effect on academic success of students after FC.

Methods: In FC, instead of teaching subject didactically, students study at home with prepared materials (audio presenta-

tions, videos, etc.) before lesson. When they come to class, they use anatomy knowledge which they have learned at home, with interactive applications. Research was applied during anatomy course of 2nd year students' "macroscopic anatomy of cerebrum, inter-trans cortical connection pathways (white matter) and vascular structures of brain" in 2020–2021 education term in Pamukkale University. Research population consisted of 184 students. Ethics committee approval was obtained from Pamukkale University Non-Interventional Clinical Research Ethics Committee dated 01/09/2020 and numbered 136. Two methods were used to show whether academic achievement increased. First, 5 open-ended questions were applied as pre-test before FC and post-test after FC. Success rate between pre-test and post-test was compared. Secondly, 14 multiple-choice questions were asked after FC. These questions were formed from questions asked to students after didactic explanation of same subject in previous years. Success of students in previous years was compared with success of study group. After FC, questionnaire was applied to evaluate satisfaction of students.

Results: Statistically significant increase in academic achievement was observed in both comparisons. When answers and feedbacks given to questionnaire were examined, it was understood that students were very satisfied with FC and they wanted FC to be applied for all anatomy subjects. Students who have been taking distance education for about year due to pandemic stated that anatomy lessons taught with FC are "most productive" lessons ever.

Conclusion: FC can be successfully applied in anatomy education, as students' academic achievements increase and their attitudes towards anatomy change positively.

Keywords: anatomy, neuroanatomy, flipped classroom, distance education, attitude scale

O-29

The effect of different education methods on the success of anatomy education in medical faculty students

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Objective: In the pre-pandemic period, classical education methods in Anatomy education were in the form of theoretical lessons taught in the classroom and practical lessons using cadavers and models in the laboratory. With the coronavirus epidemic that affected the world in 2020, face-to-face education was interrupted and education was made in internet-based virtual classroom environments. Distance education, which has been going on for one and a half years in our country, is carried out in our school asynchronously with the help of pre-recorded videos at the first stage, and then synchronously, where interactions can take place live. Currently, it is important to examine the effects of these changes in education methods on the success of the students and which method will be used.

Methods: In our study, the theoretical and practical exam results of the students studying at Tekirdağ Namık Kemal University Faculty of Medicine and taking Anatomy course in three different methods were statistically compared.

Results: As a sample set, when the results of Term 1 Board 5 are compared, the theoretical and practical exam results in asynchronous education are higher than (n=188; theoretical 84.01±17.01, practical 87.59±18.39), synchronous (n=184; theoretical 68.85±18.82, practical 68.48±21.26), and face-to-face (n=141; theoretical 63.12±20.14, practical 53.83±25.44) education ($p<0.001$).

Conclusion: The suspension of education as a part of the measures taken to protect public health due to the pandemic did not allow the continuation of education in accordance with the required qualifications. Thanks to the internet, the obstacles in the continuation of education removed partially and gradually. Examining the exam success, it is seen the highest asynchronous and the lowest face-to-face education. It is predicted students are more successful in the digital environment, but the exam security problem is also effective. In addition, the focus and motivation difficulties seen in distance education affect students' learning.

Keywords: anatomy education, synchronous, asynchronous, face to face, pandemic

O-30

Three-dimensional (3D) modeling in anatomy: past, present and future

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Objective: Three-dimensional (3D) anatomical models are used in many fields in medical education. The aim of this study is to evaluate the literature of 3D modeling in anatomy from past to present and to contribute to future anatomical studies.

Methods: The subject was examined in detail by compiling from the existing studies in the literature.

Results: Ancient and contemporary anatomical models differ in detail and material. Modeling of anatomical structures starting from simple wooden or ivory representations, more detailed papier-mache or plaster models continued with intricate wax models of Susini, Towne or Ziegler and it has extended to today's commercial plastic models. Modeling that started with

the first 3D anatomical modeling method by developing anatomical wax modeling techniques at end of the 17th century continued with an emphasis on pathological anatomy from the end of the 17th century to the beginning of the 19th century. Significant advances have been made in anatomical research in the last century. New mediums of photography, relief halftone and color photography have changed the way anatomy is taught. The discovery of the X-ray machine in 1895, the development of MRI machine in 1930, and the discovery of CT in 1972 allowed researchers to visualize patients' organs with unprecedented detail. Although human anatomy has catalogs of detailed macroscopic and microscopic reproductions nowadays, the search for better resolution continues. This led to the creation of detailed transverse CT, MR and cryo-section photographs of the entire human body, first in the USA in 1986, and a similar project was repeated in Korea and China.

Conclusion: The emergence of 3D images has led to the development of virtual medical procedures like virtual surgery through virtual dissection software. One of the newest advances in anatomy is 3D printing of anatomy models. Complicating 3D printing and virtual reality will pave the way for future regenerative treatments, better medical education and medical procedures.

Keywords: 3D modeling, anatomy, medical education, 3D printer

O-31

Anatomic brush strikes in painting: during the Renaissance and Baroque period

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The great awakening and development in the art of painting begins with the Renaissance period. The biggest reason for this development is the mutual assistance and cooperation of artists and anatomists. The desire to show the human condition, body structure and proportions with drawings directed the artists to the anatomists, and with the beginning of the human dissections, the will for a more realistic picture of the organ structure orientate the anatomists to the artists. Both anatomists and artists have benefited greatly from this relationship. With the start of Renaissance, the revival of humanism and the reduction of religious oppression, increased the interest in the human body. Anatomical studies on the human body enhanced the art of painting and forced art and science into coexistence. The monotony created by classical idealism, dominant in the Renaissance period, was abandoned during the Mannerism period, which was the transition period between Renaissance and Baroque period, and made it necessary to increase anatomical studies. The artistic concerns stand out more in the Baroque period. Moreover, the descriptions regarding the expressions of the human face gained importance. Instead of mathematical calculations, the focal point was the light, atmosphere and aesthetics created by the human body. In both of these periods, artists were not content with the external appearance of the human body and participated in cadaver studies with the anatomists of the period, and some artists even made public dissections within the anatomy theaters. The most prominent of these artists are Leonardo da Vinci (1452–1519) and Michelangelo Buonarroti (1475–1564). As a result, the aesthetic concern that started and shaped through the human anatomy in the Renaissance and Baroque periods led to the creation of different artistic concerns. In the scientific field, it has contributed to obtaining more aesthetic, realistic and educational visual products.

Keywords: art anatomy, history of art, history of medicine, medicine and art

O-32

Extensor digitorum brevis muscle mimicking dorsal wrist mass: a case report

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Objective: Extensor digitorum brevis (manus) muscle (EDBM) is an anatomic variation at wrist level with incidence of 2–4%. It orginates from distal radius and attach to dorsal of second metacarpal bone. Even though, it is a relatively common variation, the muscle usually discovered during the surgery. The muscle may mimic the masses like ganglion cysts in wrist dorsal. In this case report, we aimed to present EDBM diagnosed during the surgery in a patient operated for pre-diagnosis of ganglion cyst.

Case: Thirty-four-year-old male patients administered to our outpatient clinic for pain and swelling on dorsal of right wrist. In medical history of patient, he was operated for ganglion cyst removal about 2 years ago. He reported that swelling relapsed 1.5 year after surgery and causing pain. In physical examination, there was a palpable, soft and mobile mass, and previous incision scar about 2 cm. Due to the patients' previous medical history, the mass was thought as recurrent ganglion cyst and surgery scheduled. The operation done with local anesthesia. During the surgery, muscle belly seen after opening the retinaculum of the 4th extensor compartment. We could not able to find ganglion cyst or any other soft tissue mass either in the muscle belly or around the muscle. It was understood the EDBM muscle caused the mass image. After dissection, the muscle belly seen under the extensor tendons. The patient

informed about the EDBM muscle. The patient had no complaint at posteroprative 6th month.

Conclusion: EDBM muscle is an anatomic variation that should be kept in mind by clinicians for differential diagnosis of dorsal wrist pathologies. Ultrasound and magnetic resonance imaging could be used for diagnosis. When EDBM caused symptoms, surgical release of extensor retinaculum may be required. If the symptoms relapse despite surgical release, surgical excision of the EDBM could be performed.

Keywords: wrist mass, anatomic variation

O-33

Following the traces of anatomy in UCEP-2020

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Objective: Basic Medical Sciences could not be included in the scope of UCEP–2020, which is expected to target the entire content of the Medical Education program, and this part is limited to recommendations for the future version. The purpose of this presentation is to bring up the discussion of some proposals to overcome the difficulties experienced in associating Anatomy subjects with UCEP in the preparation of future versions of UCEP and Anatomy-CEP.

Methods: The content of the UCEP–2020, its recommendations for Basic Sciences and the 1st version of Anatomy-CEP were examined from the perspective of an anatomist, who was involved in part of the preparation process of the Anatomy-CEP, who took part in the anatomy part of medical education, and a former medical student. While evaluating these documents, it was focused on whether or not to answer two main questions: "For which part of the UCEP–2020 does the student use the anatomy learning outcomes?", "At which learning levels do the anatomist and clinician demand the anatomy course learning outcomes from the student?"

Results: In the UCEP–2020; (1) There was no anatomist in the study group. (2) A separate UCEP was not recommended for basic sciences on the grounds that it could harm integration in medical education. (3) The tables proposed for the next UCEP version contained uncertainties in terms of their applicability, functionality and comprehensiveness. (4) It did not seem possible to adapt the learning levels defined for clinical sciences under the headings "Core Diseases/Clinical Problems", "Clinical Symptom/Finding/Condition" and "Basic Medicine Practices" to the learning objectives of anatomy. On the other hand, in the first CEP of Anatomy, which is the only basic science whose compliance with UCEP has been studied; (1) In the results of matching with the "Core Diseases/Clinical Problems" tables of UCEP, some findings that could be improved were noted. (2) It included suggestions about determination of learning levels, depth of subjects and teaching methods for the next version. (3) The compatibility study with the "Clinical Symptom/Finding/Condition" and "Basic Medicine Practices" tables was also postponed to the next version.

Conclusion: In the next studies of Anatomy-CEP compatible with UCEP–2020 and a new UCEP covering anatomy, it is recommended to focus on the fact that the Anatomy is a branch of science supplying the "basic knowledge prerequisite" needed for teaching the clinical subjects such as Disease/Clinical Problem/Symptom/Sign/Intervention/Clinical Applications, but does not have a responsibility for "teaching" those subjects directly with the learning levels defined for the clinical targets. Accordingly, the idea that Anatomy courses forms the basis of the headings in the "Clinical Symptom/Finding/Condition" and "Basic Medicine Practices" tables of UCEP, rather than the "Core Disease/Clinical Problems" list, will be proposed. Finally, a proposal of "A learning level definition specific to anatomy" will be shared.

Keywords: Medical education, national core education program, anatomy, learning levels

O-34

A pair of lower extremities containing multivariation: a cadaver study

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Objective: In this study, it was aimed to present a pair of lower extremities in which more than one variational anatomical structure was detected together, which was described in separate cases in literature in thigh and posterior leg regions.

Methods: Cadaveric dissection and literature review.

Results: In routine dissection, multiple variations were detected in lower extremities of a female cadaver. On right side; an accessory muscle was detected under piriformis. Sciatic nerve was not formed, common peroneal nerve emerged under piriformis, and tibial nerve emerged under accessory muscle. In middle 1/3 of thigh, there was a connecting branch between these nerves. At lower border of popliteal fossa, two branches separated from tibial and common peroneal nerves extended to heel without forming sural nerve. Vastus lateralis crossed midline running through lateral aspect of femur, and rectus femoris crossed to medial side of thigh and together they joined common muscle tendon. Tendons of gracilis and semitendinosus were inserted on tibia medially, deep to insertion of sartorius, and pes anserinus was not formed. On left side; saphenous nerve, without entering adductor canal, entered sartorius at upper border of middle 1/3 of thigh, and approximately 2 cm later, emerged from anterior surface of muscle. Sciatic nerve

was not formed, and tibial and common peroneal nerves emerged from infrapiriform foramen as two separate branches. Branches that would form sural nerve were separated from common peroneal nerve in middle 1/3 of thigh and from tibial nerve at lower border of popliteal fossa, and sural nerve was formed in upper 1/3 of leg.

Conclusion: The present study differs in that identified multivariational structures were detected in a pair of lower extremities. Awareness of these variations is important in posterior surgical approaches to hip and leg region, elucidating etiology of various entrapment neuropathies and paralysis.

Keywords: accessory piriformis, sciatic nerve, sural nerve, saphenous nerve, quadriceps femoris, multivariation

O-35

Anatomical posture analysis anywhere and anytime withthe posture screen mobile

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Objective: Good posture is the vertical positioning of the center of gravity of each body segment. Any deviation in the centers of gravity can cause postural changes. Increasing sedentary lifestyle, decreasing physical activity, and weight gain increase postural disorders. In this study, it was aimed to evaluate the posture findings of academicians who have pain in the head, neck, back and waist regions.

Methods: After measuring the height, weight, BMI and metabolic ages of a total of 67 academicians, 40 women and 27 men, working at Başkent University, the 'Mc Gill Melzack Pain Questionnaire' was applied. Craniovertebral angle, rounding of the shoulders, height difference between the right and left shoulders, and kyphosis and scoliosis in the columna vertebralis were evaluated with the 'Posture Screen Mobile' application, the postures of the participants with pain were determined according to the questionnaire.

Results: Only craniovertebral angle differed between the posture parameters and the genders ($p=0.020$). There was no significant difference between posture, pain, and duration of working at the computer ($p>0.05$). However, a significant difference was found between the duration of working at the computer and the pain ($p=0.035$). The difference between BMI and scoliosis in posture parameters CVA and T12–L3 levels was found to be significant (respectively; $p<0.001$, $p=0.024$).

Conclusion: In today's conditions that require certain social distance such as a pandemic, the PSM application, which facilitates posture analysis and provides comparison between consecutive measurements, provides an advantage. In order to determine the appropriate activity and ergonomic conditions for individuals with insufficient physical activity, appropriate planning can be made at any time with posture analysis in their environment.

Keywords: posture, pain, posture screen mobile

O-36

3D restoration and digital prototyping of 13th century late Byzantine era skulls

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Objective: The use of 3D modeling and printers in the field of health continues to increase and improves day by day. One of the usage areas of 3D modeling is on osteological materials. Archiving and preservation of archeological or old bone remains is one of the most important requirements for studies on osteological materials in terms of anatomy, anthropology, forensic sciences and archeology. Old and aged bone structures deform over the years and difficulties may be experienced in their storage.

Methods: In our study, 33 relatively deformed late 13th century Byzantine skulls from Bursa Uludağ University Faculty of Medicine, Department of Anatomy Osteology Collection were used. STL 3D file formats were obtained by modeling the skulls with a 3D Hscan Prince Laser scanner. Solidworks, Catia and Meshmixer programs were used to restore the deformities as much as possible and re-add the missing bone structures to the model, except for the mandible. Zaxe X1 printer and PLA type plastic material were used for plastic sampling of prototyped skulls. In this study, digital measurements were made between standard anthropometric points on the archived 3D STL format files, and the measurements obtained on real bones were determined to be close to originality and compared quantitatively. IBM SPSS Statistics 23 program was used in the analysis of the data and the results were interpreted in a way that $p<0.05$ was considered significant.

Results: The skulls were coded and the STL 3D files obtained with the Hscan Prince Laser scanner were stored as a digital archive. The 3D images obtained digitally were restored digitally and printed. For the variables examined between anthropometric points, the difference between the measurement values obtained with the help of caliper and 3-dimensional was not found statistically significant.

Conclusion: In our study, digital 3D sampled models obtained from Byzantine skulls were archived and kept for future research and educational purposes. In the study, it was also aimed to print out the restored and prototyped historical skulls

with a 3D printer and bring plastic samples to the archive and to use them in education.

Keywords: 3D modelling, restoration, morphometry

O-37

Evaluating the topographical relationship of anatomical structures in the regio frontalis, revealing the importance of these relationships

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Objective: Headaches are one of the most common complaints in society. The rate of people experiencing headache at least once in their lifetime is over 90% in the general population. Headaches, according to the classification made by the International Headache Society; classified as primary headaches, secondary headaches and other types of headaches. Although it is stated in the studies that the most common cause of primary headache is tension-type headache; In the study of the Turkish Headache Working Group, the majority of these are said to be combined with migraine headaches. Detection of trap points in the Regio frontalis, which is included in migraine headaches, and relieving these points are invasive treatment methods. Another treatment method is Botulinum toxin A injection. In addition, facial rejuvenation attempts are increasing, depending on the increased level of well-being and the amount of personal care. The forehead area is one of the areas where these interventions are applied the most. In addition, uncomplicated treatments are given importance in trauma and tumor surgical interventions in which the forehead region is used. This can only be achieved with a good knowledge of anatomy.

Methods: Using 20 human heads fixed with 10% formalin in Ege University Faculty of Medicine, Department of Anatomy; Topographically dissection of the structures in the regio frontalis was performed. The determined measurements were analyzed statistically. It was evaluated whether the data were normally distributed on the basis of gender and variable.

Results: It has been observed that the structures in the regio frontalis can show many variations, and these variations can only be detected by different studies. According to Spearman's Rho Correlation Test, a positive and significant correlation was found between the distance between the a. supratrochlearis-midsagittal plane, and the distance between the n. supratrochlearis-midsagittal plane. A. supraorbitalis-midsagittal plane distance with p=0.006 and r=0.426; a. supratrochlearis-midsagittal plane distance with p=0.011 and r=0.399; the distance between N. Supratrochlearis and midsagittal plane was measured as p=0.010 and r=0.403.

Conclusion: In surgical and aesthetic approaches, the measurements found will be useful; during the treatment, it was understood how important it is to know the anatomy of the structures in this region well.

Keywords: migraine, medical aesthetic, arteria supratrochlearis, arteria supraorbitalis, nervus supratrochlearis, nervus supraorbitalis

O-38

Examining the anatomical relation between trachea and brachiocephalic trunk using 3D modeling and manifacturing

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Objective: Trachea is the part of the respiratory system that below the larynx. The anterior relations include aortic arch, brachiocephalic trunk and left brachicephalic vein. The anatomical relations of trachea is important in surgical procedures involving the neck (retrosternal thyroidectomy, tracheostomy, tracheal resection etc.). Brachiocephalic trunk has a risk of injury during surgery due to anatomical relation with the trachea. In addition, anatomical variations of these structures may cause complications during surgical procedures or in the postoperative period. For this reason, induvidual anatomical structures should be examined in detail in the preoperative period and surgical planning should be done. In this study, it is aimed to examine the anatomical relationship between trachea and brachiocephalic trunk from transvers CT sections by creating a 3D model.

Methods: TT3D-BMMP software was used for the 3D modeling. Manual segmentation of trachea and brachiocephalic trunk was performed from 1.5 mm thickness transverse sections found in the CT scan of an anonymized patient. A 3D mesh-structure (mesh) was formed, and then visualized with the GMESH software. Mesh models and physical models were produced. The models were visually compared with radiography images and ideal atlas images in terms of appearance and scale.

Results: Variation was not observed between 3D models of trachea and brachiocephalic trunk created with TT3D-BMMP and atlas images and 3D images accepted as standard. Brachiocephalic trunk was observed located transversely from left to right on the anterior surface the trachea in between 6–9th tracheal cartilages.

Conclusion: 3D modeling studies provide better evaluation of anatomical structures by creating patient-specific models in the preoperative and postoperative periods in the clinic. In addition, anatomical structures that cannot be shown in classical models and variation can be made visible with models by producing 3D models from radiological images in basic anatomy education.

Keywords: 3D modelling, trachea, brachiocephalic trunk

O-39

Evaluation of neurocranium fractures in individuals applying to the hospital due to trauma on computed tomography images

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Objective: In our study, we aimed to investigate the distribution of neurocranium fractures caused by trauma according to bones.

Methods: The distribution of neurocranium fractures according to bones in individuals who applied to Tokat Gaziosmanpaşa University Research and Application Hospital due to trauma between January 2017 and June 2019 was investigated using computed tomography (CT) images. CT images of 341 individuals aged 3 to 90 years were evaluated.

Results: Of the 341 images evaluated in our study, 276 were male and 65 were female individuals. In-vehicle traffic accidents (n=76) and falling from the same level (n=76) were in the first place in the etiology of trauma. When the images were evaluated, it was determined that 44 individuals did not have neurocranium fractures. Neurocranium fractures were observed in 198 individuals. Fractures were most common in the temporal bone (n=71). It was followed by frontal bone (n=67), sphenoid bone (n=42), occipital bone (n=31), parietal bone (n=29) and ethmoid bone (n=25), respectively. In addition, multiple neurocranial fractures were detected in 73 CT scans.

Conclusion: It was concluded that temporal bone is the most affected neurocranium bone due to trauma, and ethmoid bone and sphenoid bone are less affected by traumas because of their localization.

Keywords: trauma, neurocranium, fracture, computed tomography

O-40

Morphometric evaluation of the pedicles of cervical, thoracic and lumbar vertebrae in Turkish population and it's importance in vertebroplasty and kyphoplasty

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Objective: Vertebroplasty & kyphoplasty are minimally invasive procedures to relieve back pain in patients with vertebral compression fractures. These procedures consist of injecting acrylic cement into a fractured vertebral body to strengthen the vertebral body. Amongst the various methods of needle insertion, transpedicular approach is the most preferable. Thus pedicle morphology poses an important factor. The aim of our study was to measure and analyse the vertebrae pedicles height and width to give surgeons an idea of which vertebrae & needles are more suitable.

Methods: This study was performed on 69 cervical, 100 thoracic & 100 lumbar dry vertebrae of unknown age and gender. The height & width of pedicles were measured. The measurements were grouped into 3 groups of cervical, thoracic & lumbar vertebrae and further subdivided into right & left for each pedicle measurements. All measurements were performed with a digital caliper with the accuracy 0.01 mm. Statistical analysis were performed by using SPSS 23. A P value <0.05 was considered as significant.

Results: The mean values and standard deviation of pedicle height and width measurements were defined. It was determined that there were no difference between right and left sides values of pedicle height and width in the same region ($p>0.05$). We also compared different region vertebrae height values and width values and found that lumbal pedicle height and width were largest. When the height was compared to width of same region vertebrae there was a significant difference ($p<0.001$) on both sides (height>width).

Conclusion: In this study, we performed pedicle measurements, regarding which there was not enough data in the Turkish population. This study's results and statistical database will help to determine which method of vertebroplasty/kyphoplasty can be used and the size of needles suitable for the surgery in order to reduce surgical complications.

Keywords: vertebra, pedicle, vertebroplasty, kyphoplasty

O-41

Gender estimation using machine learning algorithms on computed tomography images of the 1st, 11th and 12th thoracic vertebrae

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Objective: Many parts of the human skeleton have been used to predict gender. Pelvis, cranium, humerus, femur, ribs, clavicle, carpal and tarsal bones are the most preferred ones. Studies show that vertebrae also play an important role in identification, especially in cases where the entire skeleton cannot be reached, due to their large number and light weight. In our study, it was aimed to predict gender with the parameters of the

thoracic vertebrae by using machine learning algorithms on computerized tomography (CT) images.

Methods: This study was performed using CT images of 100 (50F, 50M) individuals, aged 25–50 years without any fracture, pathology or surgical intervention in the T1, T11, and T12. vertebrae. Our study was approved by the Ethics Committee of Non-Invasive Clinical Researches of Karabuk University with the number 2020\440. The obtained images were transferred to Horos (version 3.3, USA) program and brought to the coronal, sagittal and transverse planes using the 3D Multiplanar Reconstruction (MPR) tool. Then, 15 different measurements were made on the images brought to the orthogonal plane with reference to the vertebral body and spinous process. Length and angle measurements obtained from the Horos program were recorded in excel and the file was converted to comma separated values (CSV) format. The file in CSV format was transferred to the Sekazu (Version 7.0, 2020) program and machine learning algorithms were applied. Minitab17 package program was used for descriptive statistics. Normally distributed parameters were evaluated with the Two-Sample Ttest, and non-normally distributed parameters were evaluated with the Mann-Whitney U test.

Results: All of the machine learning algorithms we used in our study had an accuracy rate of over 89%. According to the results of basic statistical analysis; length of the spinous process (lePCS), total length of the vertebra (leVRT), height and width of the vertebral body (heCV; genCV), distance between spinous process and right transverse process/left transverse process (PCS-PTD; PCS-PTS), distance between right and left transverse process (PTD-PTS), transverse diameter of the vertebral foramen (ctrFV), length of right and left pedicle (lePD; lePS) were found to be significant for all T1.,T11. and T12. vertebrae ($p<0.05$). The mean values of the measurement results of the men were higher than the results of the women.

Conclusion: The findings of the study revealed that sex determination can be made from the thoracic 1st, 11th and 12th vertebrae with high accuracy rate.

Keywords: computed tomography, gender estimation, machine learning algorithms, sekazu, vertebrae thoracicae

O-42

Investigation of the teratogenic effects of letrozole on fetal bone development

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Objective: Letrozole is mainly used for the treatment of unexplained infertility, breast cancer and polycystic ovarian syndrome, with secondary use inovarian stimulation. In cases of unexpected or unknown pregnancy during the use of letrozole, letrozole may cause a teratogenic effect on the fetus. In this reason, in this study, we aimed to determine the effect of letrozole on fetal bone development.

Methods: In this study, 32 pregnant wistar albino rats were used. The rats were divided into four groups: Control (saline) and high; 0.3 mg/kg, medium; 0.03 mg/kg, low; 0.003 mg/kg letrozole. Saline and letrozole were administered in 100 ÌL solutions by intraperitonaly from day 11 to day 15 of pregnancy. The skeletal system development of fetuses was examined with double skeleton staining methods.

Results: A total of 60 fetuses from female rats, 15 in each group, were included in the study. As a result of double staining, ossification rates were observed to decrease depending on the dose of letrozole in the forelimb extremity (scapula, humerus, radius, ulna) and hindlimb (femur, tibia, fibula) extremity bones. As a result of the statistical analysis, a statistically significant decrease was found in the ossification rates of all bones between the control group and low, medium, high letrozole groups, and between low dose and high dose letrozole groups ($p<0.001$).

Conclusion: Exposure to letrozole during pregnancy adversely affected ossification and bone growth. However, the teratogenic effects of letrozole are unclear. Therefore, it needs to be investigated more extensively.

Keywords: double skeleton staining method, letrozole, ossification

O-43

Articulatio temporomandibularis and artificial intelligence

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Objective: Articulatio temporomandibularis is the only movable joint of the head and is a ginglimodiarthrosis joint located between the fossa mandibularis in the temporal bone and the caput mandible structure of the mandible. Temporomandibular joint disorders (TJD) are common in the community. Although many factors such as trauma, joint anatomy, genetic, psychosocial factors have been suggested, its etiology is controversial. At the beginning of the symptoms that affect the patient's quality of life, there are conditions such as pain in the joint area and around the head, reversible-irreversible decrease in mouth opening, joint sounds during mouth closure, and locking of the mouth.

Patients are expected to be diagnosed with the correct anamnesis, examination and imaging methods. Today, using technology provides scientists with the ability to save time, innovate in the field of medicine, and to diagnose patients more easily. Therefore, in recent years, it has become a necessity to use technology and artificial intelligence (AI) in the diagnosis and treatment of diseases in the medical world. AI is a technology that uses machines to emulate the computer system's skills such as learning and problem solving. In health services, it has been stated that AI has an auxiliary and complementary role to medical professionals in many fields such as diagnosis, speed and accuracy of treatment, drug development, artificial intelligence-assisted surgeries. AI has started to be used in dentistry practice as well as in every field of medicine.

Methods: The aim of this study is to draw attention to the effect of AI in temporomandibular joint and TJD, to investigate its procedures, and to reveal whether it guides us in the diagnosis and treatment stages.

Results and Conclusion: In the diagnosis phase, it was tried to make the diagnosis more easily by using joint sounds and examining the radiographic imaging of the relevant region. However, it was argued that by entering more data, the system error would decrease and the model could be used in clinical diagnosis. In addition, the increasing effectiveness of AI-based tools is an indication that the role of doctors and dentists in the health sector will change. The development and widespread use of these technologies will bring ethical problems in the near future.

Keywords: temporomandibular joint, temporomandibular joint disorders, artificial intelligence

O-44

A study on gender determination with machine learning algorithms by making anthropometric measurements of the first cervical vertebra

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Objective: The aim of this study is; using machine learning algorithms from the atlas vertebra, it was aimed to determine whether this vertebra shows sexual dimorphism or not.

Methods: The population of this study consists of 100 men and 100 women who applied to Karabük University Training and Research Hospital for any reason and underwent Computerized Tomography. In this study, 18 parameters belonging to the atlas vertebra (anterior arch of atlas angle, posterior arch of atlas angle (angAPA), atlas vertebra anterior posterior length, vertebral foramen (for.) anterior posterior length, anterior arch of atlas anterior posterior length , posterior arch of atlas anterior posterior length, left transverse process (proc.) of vertebra width (lenPTS), right transverse proc. of vertebra width, atlas vertebra width (lenAV), left transverse for. of cervical vertebra anterior posterior length, left transverse for. of cervical vertebra width, right vii transverse for. of cervical vertebra width (lenFTD), right transverse for. of cervical vertebra anterior posterior length, distance between anterior tubercle and right transverse proc. of cervical vertebra, distance between anterior tubercle and left transverse proc. of vertebra, the distance between the posterior tubercle and the left transverse proc. of vertebra, the distance between the posterior tubercle and the right transverse proc. of vertebra (lenTP_PTD), and the distance between transverse for. of cervical vertebra were measured. The measurement results are based on 13 machine learning algorithms (Decision Tree, Random Forest, Exra Trees Classification, Gradient Boosting Classification , Gaussian Naive Bayes, Gaussian Processes Classification, K- Nearest neighbor, Support Vector Machines, ADA Boost Classification, Linear Discrimant Analysis, Quadratic Discriminant Analysis) were calculated separately.

Results: Accuracy success ranging from 0.86–0.89 was obtained for all parameters. The highest success was obtained with the parameters angAPA, lenPTS, lenAV, lenFTD, lenTP_PTD in GNB algorithm with 0.89.

Conclusion: As a result of this study; the achievement of sex prediction using machine learning algorithms from the atlas vertebra was 0.86–0.89, and it was revealed that the atlas vertebra was a suitable bone for gender prediction.

Keywords: atlas vertebra, gender prediction, machine learning algorithms, morphometric analysis, computed tomography

O-45

Therapeutic effects of transcranial direct current stimulation on neuroinflammation in an experimental model of acute epilepsy

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Objective: Epilepsy is a serious neurological disease that causes social, psychological and economic problems all over the world. In our study, we aimed to investigate the effects of transcranial

Direct Current Stimulation (tDCS) application on neuroinflammation in rats with an acute temporal lobe epilepsy (TLE) model.

Methods: 18 male Wistar rats, each of which weighs 250–300 g, were divided into three groups as Control, Epilepsy and Epilepsy+tDCS groups, with 6 rats in each group. The acute TLE model was created by administering a single dose of 60 mg/kg Pentylenetetrazole to the rats. The epilepsy+tDCS group was given 1 mA anodal tDCS stimulation for 30 minutes on the 1st and 2nd days of the experiment. Novel object recognition and Y-maze tests were used to evaluate learning and memory, and open field test was performed to evaluate locomotor activity. The expressions of GFAP and nNOS in the thalamus tissue, degeneration and necrosis in neurons and hyperemia in vessels were evaluated semi-quantitatively by histopathological, immunohistochemical and immunofluorescence methods.

Results: In the behavioral experiments data, a significant decrease was observed in the Epilepsy group compared to the Control group, while a significant increase was observed in the Epilepsy+tDCS group compared to the Epilepsy group ($p<0.05$). Compared to the control group, severe degeneration, moderate necrosis, severe hyperemia in the meningeal and parenchymal vessels, and severe GFAP and nNOS expressions were observed in the neurons of the epilepsy group. It was determined that tDCS stimulation decreased the severity levels of degeneration, necrosis, meningeal and hyperemia, and GFAP and nNOS expressions in the epilepsy+tDCS group compared to the epilepsy group.

Conclusion: In our study, it was shown that tDCS application in acute epilepsy has therapeutic and neuroinflation-reducing effects on neuroinflammation. Our project was supported by Coordination Unit of Scientific Research Projects of Hitit University (Project number: TIP19001.21.003).

Keywords: epilepsy, learning and memory, neuroinflammation, PTZ, tDCS

O-46

Gender and age estimation with machine usage algorithms with parameters obtained from computed tomography images of maxillary first molar and canine teeth

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Objective: Estimation of gender and age constitutes the first step of identification as it greatly reduces the possibility of other identification. Because of this feature, gender and age estimation is the first topic to be focused on for forensic anthropologists and forensic medicine specialists. The aim of this study is to estimate gender and age using machine learning algorithms with parameters of maxillary first molar and canine teeth obtained from computed tomography (CT) images.

Methods: Images of 120 female and 120 male individuals aged 25–54 were selected from Picture Archiving Communication Systems (PACS) of our hospital and recorded in Digital Imaging and Communications in Medicine format. These recorded images were transferred to the Horos Medical Image Viewer (Version 3.0, USA) program, which is a personal workstation. Three-dimensional images were obtained by applying the 3D Curved Multiplanar Reconstruction (MPR) process to these transferred images. This three-dimensional image was brought to the orthogonal plane and superposition was applied. Length, angle and curvature length measurements were made on these superimposed images. Accurucy (Acc), Specificity (Spe), Sensitivity (Sen), F1 score (F1) values were obtained by using these measurements at the input of machine learning algorithms.

Results: The data obtained as a result of our measurements, which are machine learning algorithms random forest (RF), decision tree (DT), extra tree classifier (ETC), logistic regression (LR), AdaBoost classifier (ADA), linear discriminant analysis (LDA), quadratic analyzed with discriminant analysis (QDA). As a result of the analysis, 0.81 Acc ratio was obtained with the highest ADA algorithm in terms of gender prediction. In terms of age estimation, the highest RF algorithm is used between 25–30 vs 31–36 age groups, 0.84, RF and ADA algorithms for 25–30 vs 37–49 age groups, 0.74 for 25–30 vs 50–54 age groups, and RF algorithm for 25–30 vs 50–54 age groups. Acc ratio of 0.85 was obtained.

Conclusion: There are two important stages of our study, the first of which is the preference of an imaging technology such as CT with precision measurement and reconstruction instead of classical anthropometric methods, and the second is the preference of up-to-date and high-accuracy machine learning algorithms that have been used in the field of health today.

Keywords: gender estimation, age estimation, computed tomography, machine learning algorithms, maxillary teeth

O-47

Does transauricular vagal stimulation affect intestinal inflammation in an experimental colitis model?

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Objective: Vagus nerve is the main nerve of the parasympathetic division of the autonomic nervous system. Hence, it is considered

as its mediator, while vagal conduction activates the parasympathetic nervous system. The signals produced in the vagus nerve affect various basic brain functions and have great importance for the organism. Transauricular vagus stimulation is a peripheral, nonpharmacological and minimally invasive neuromodulation technique. It activates reflex circuits in the central nervous system, harnesses brain plasticity for different therapeutic purposes and thus affects very different areas of the brain. The aim of this study is to evaluate the anti-inflammatory effects of transauricular vagal stimulation on colonic inflammation in an experimental colitis model.

Methods: In the study, 36 adult male Sprague-Dawley rats were used. A colitis model was created by inserting a trinitrobenzene sulfonic acid (TNBS) into the colon of the rats in the colitis groups with a rubber cannula at a distance of 8 cm. Anesthetized rats were given transauricular vagal stimulation for 30 minutes twice a day for 10 days. After histological and immunohistochemical analyzes, pathological changes and IL-1β, IL-6, IL-10 and TNFα immunoreactivity were evaluated by semiquantitative scoring.

Results: Ulceration, intense inflammation including mucosa, submucosa and serosa layers, necrotic changes in some areas and submucosal edema were noted in the TNBS injected group without VNS (vagal nerve stimulation). It was observed that histopathological changes were partially reduced in the VSS-treated TNBS-injected group, but lymphocyte infiltration and epithelial tissue loss continued in some areas. When the TNFα, IL-1β, IL-6 and IL-10 immunoreactivity intensity of the experimental groups was evaluated, a significant increase was observed in the TNFα, IL-6, IL-1β, IL-10 immunoreactivity intensities in the colitis group without VSS.

Conclusion: In the colitis group without VNS; ulceration, intense inflammation, necrotic changes in some areas and submucosal edema were detected. It was observed that histopathological changes were partially reduced in the colitis group who underwent VNS, but lymphocyte infiltration and epithelial tissue loss continued in some areas. These findings have opened the door for transauricular vagal stimulation to be one of the methods that can be used in the treatment of colitis and will make an important contribution to the literature at this point.

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Keywords: transauricular vagal stimulation, neuroinflammation, experimental colitis model, rat

O-48

Comparative analysis of normalized volume data of primary sensory cortex on magnetic resonance images of Parkinson's patients with the control group

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Objective: Parkinson's disease characterized by motor and sensory symptoms is one of the most common neurodegenerative diseases. When the studies in the literature are examined it is suggested that the disease causes changes in the cortical area. The aim of our study is to examine the volume changes of primary sensory areas in Parkinson's patients. It is aimed to obtain more objective results by evaluating the ratios of volume data to total intracranial space volume.

Methods: Magnetic resonance images of 55 Parkinson's patients (14 women; 41 men) and 28 healthy individuals (7 women; 21 men) with 1 mm slice thickness were included in the study. The resulting images were brought into the appropriate format for the automatic segmentation software BrainSuite using Horos and ImageJ programs. Volume data were obtained with BrainSuite and ImageJ programs.

Results: The ratio of the gray matter volume of the left gyrus postcentralis to the total intracranial space volume was found to be lower in Parkinson's patients than in healthy individuals. There was no difference in the ratio of the volume data of the gyrus temporalis transversus, gyrus lingualis and cuneus in the two cerebral hemispheres and the volume data to the total intracranial space volume in Parkinson's patients compared to healthy individuals.

Conclusion: It is thought that the volumetric differences will contribute to the early diagnosis of the disease, the response to treatment, the evaluation of its course and stages, as well as the prediction of the symptoms that will occur.

Keywords: brainSuite, intracranial space volume, gray matter volume, white matter volume

O-49

Investigation of structural variations of patella

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Objective: The patella is a pair of left and right bones located in the anterior part of the knee joint in the lower extremity. Patella, which is considered the largest sesamoid bone of the body; The anatomical localization of the knee joint is extremely important since it is a very actively used and deformation-prone structure. Structural variations are also observed in anthropological studies. In medicine, especially in branches such as anatomy, orthopedics, sports medicine, radiology, patella and its variations gain more importance in terms of patients presenting with knee pain and limitation of movement. For this purpose, patella variations are examined in this study.

Methods: In this study, patella were examined in 60 complete skeletons (20 females and 40 males) of adult individuals excavated from the Van Castle Mound between 2013 and 2016. According to Barnes Atlas, which is a reference in human skeletal developmental anomalies, patellas are; bipartite patella in terms of atypical anomalies, notched patella (vastus notch) and duplicated patella; It was evaluated by inspection, photographic technique and manual examination. In the complete skeletons examined in 60 individuals in total; 54 individuals with or without patella on both sides were evaluated. Gender distribution of individuals; It consists of 35 (64.81%) men and 19 (35.19%) women. Regardless of the right-left distinction, the patellas examined were 99 (63 males, 33 females) in total.

Results: One bipartite (male) and 27 vastus notches (19 males, 8 females) were detected in a total of 99 patellas examined in the study. The detected variations are mostly on the right side in both sexes.

Conclusion: Variations of the patella and patella are important in pain in the knee and around the knee. In the studies, especially the bipartite patella type; It has been reported that it causes undiagnosed pain around the knee-knee. In medical diagnosis and treatments; It should not be forgotten that such patella variations may have a role in the pathologies detected, especially in orthopedics.

Keywords: atella, bipartite, knee pain, Van Castle Mound

O-50

The effect of smartphone addiction on hand functions and grip strength

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Objective: Nowadays, smartphone usage, especially in young individuals, has reached the level of addiction. In smartphone addicts, osteoarthritis and De Quervain's tenosynovitis may have seen in the first carpometacarpal joint due to overuse of the first finger, and Carpal Tunel Syndrome may be seen due to the wrist flexion position. Holding the phone in the hand for a long time causes pain in the hand and wrist. Therefore, our aim in this study was to evaluate the functional capacity and hand grip strength of the hand bilaterally in people using smartphones.

Methods: Our study was applied 23 people between the ages of 18–65, using smartphones. Participants were evaluated with the form of demographic information, Smartphone Addiction Scale Short Form, Michigan Hand Outcome Questionnaire that measures general functions of the hand, and the Visual Analog Scale that measures pain severity. In addition, gross and pinch grip strength were measured bilaterally. Gross grip strength measurement is made with Jamar Hydraulic Hand Dynamometer, which is accepted as the gold standard; pinch strength was measured with a pinchmeter.

Results: According to the findings; a positive correlation was found between the number of years the participant used a smartphone and general hand functions (p=0,028). Hand using phone of the paticipant was compared with the other hand. The gross grip strength of the hand using phone was found to be higher (p=0.01). Lateral grip strength's mean of hand using phone was 18.16±2.53 kg, pinch strength was 14.12±3.38 kg, three point strength was 15.76±3.39 kg. Lateral grip strength's mean of the other hand was 14.12±2.24 kg, pinch strength was 11.39±2.53 kg, three point strength was 11.39±2.53 kg. No difference was found between gross and pinch grip strength of the hand among people with and without smartphone addiction.

Conclusion: In our study, both hands were evaluated in about functionality in the same participant, it was found that the functional capacity of the hand holding the phone increased compared to the other hand. In addition, we observed that the gross and pinch grip strength increased due to do the fast and complex movements of the thumb of the hand using the phone. As a result, it has been determined that holding the phone for a long time improves the gripping, but it can also cause pain and some health problems in the hand and wrist.

Keywords: smartphone addiction, hand functions, grip strength

O-51

Effects of high-heeled shoes on myofascia

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Objective: It has been reported that there is an increase in the incidence of different foot deformities and gonarthrosis caused by repetitive stresses on the lower extremities (especially the knee and distal part of the foot) in women who use high-heeled shoes in their daily lives. We think that the use of high-heeled shoes may affect the myofascia of the lower extremity, lumbar region and neck region, since it changes the gait biomechanics and load distribution in the lower extremity and lumbar region. Therefore, the aim of our study is to investigate the effects of high-heeled shoes on the elasticity of the neck region and myofascia of the soles of the feet.

Methods: Our study was carried out in Yüksek İhtisas University, Faculty of Medicine, Department of Anatomy. The heel usage times and heel lengths of a total of 26 participants, 14 of whom used high-heeled shoes and 12 of whom did not, were questioned. elasticity, stiffness, tone parameters were obtained. The results of the participants who used and did not use high-heeled shoes were compared with each other.

Results: As a result of our study; The tone, stiffness and elasticity parameters of the myofascia at the level of the head of the right and left 1st metatarsal bone of the participants using high heels were found to be significantly higher than the participants not using high heels. Right semispinalis capitis muscle of the participants using high-heeled shoes. The tone and stiffness parameters of myofascia at the level of right semispinalis capitis muscle of the participants using high-heeled shoes were found to be significantly higher than the participants who did not use high heels.

Conclusion: As a result of the study, it was determined that the muscle tone, stiffness increased and elasticity decreased at the level of the 1st metatarsal bone head of the participants who used heels. Also in the same group it was observed that the tone and stiffness of the semispinalis capitis muscle were higher. Heeled shoes increase the load on the first metatarsal bone during walking and standing due to its structure and disrupt the natural alignment of the body. The data we obtained as a result of our study will help the diagnosis and treatment of health professionals in the clinic and the determination of the points to be considered in women who use high-heeled shoes for a long time in their daily lives. It is recommended that women do not wear high-heeled shoes in their daily lives.

Keywords: myofascia, heeled shoes, tone, elasticity, stiffness

Poster Presentations

(P-01 — P-36)

P-01

Examination of the marginal mandibular branch in the fetuses

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Objective: There isariskof damage to the marginal mandibular branch in procedures such as rhytidoplasty, parotidectomy, placement of chin implants and surgical reduction of the mandibular angle. To reduce this risk,it is necessary to pay attention to the variations of the marginal mandibular branch during the surgical procedure. The aim of this study is to examine the marginal mandibular branch morphologically and morphometrically after it emerges from the parotid gland.

Methods: Fifteen hemifaces from 8 fetuses (4 in the second and 4 in the third trimester) in the laboratory of Gaziantep University Faculty of Medicine, Department of Anatomy were dissected. The branching pattern of the marginal mandibular branch after leaving the parotid gland and the localization where these branches cross the facial artery and vein were examined. Descriptive statistics of the obtained data were made.

Results: After the marginal mandibular branch emerged from the parotid gland, 6 types were determined because of the classification based on the number of branches. The most common pattern was determined to be type 1a (40%). The rates of crossing points of the facial vascular structures of nerve branches in the anterior, middle and posterior third of the distance between the angle of mandible and the midline of the mandible were found to be 5.17%, 36.2%, and 51.72%, respectively. The highest points where the nerve branches cross the facial artery and facial vein were found to be above the lower edge of the mandible 4.9 mm and 4.7 mm, respectively. The lowest point where the nerve branches cross the facial artery and facial vein were found to be below the lower edge of the mandible 3.5 mm and 3.6 mm, respectively

Conclusion: It is thought that knowing the localization of the marginal mandibular branch and its relationship with the facial vascular structures will increase the success rate and reduce complications in submandibular gland excision and submental flap surgeries.

Keywords: marginal mandibular branch, fetus, dissection

P-02

Morphometric analysis of the infraorbital foramen

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Objective: Infraorbital foramen's (IOF) anatomical location varies between individuals hence, performing a precise localisation is crucial for periorbital, dental, plastic and maxillofacial surgeries. In this study orbital tubercle (OT), rhinion and anterior nasal spine (ANS) structures will be used as reference points to achieve a new measuring method that makes localisation of IOF easier. Therewithal, local anesthesia of face will be done accurately and surgical complications for instance entrapment neuropathies, neuralgia, bleeding and loss of sensation will be prevented. By measuring different dry skulls, a probability map indicating possible locations of IOF will be drawn and by using the map surgeons will have an option to operate more invasively.

Methods: 7 dry skulls and 5 cadaver heads were analysed using a digital caliper with sensitivity of 0.01 millimetres. Age and sex were not differentiated in used specimens. 15 measurements concerning OT, rhinion and ANS were performed. Vertical and horizontal lengths of IOF to line between rhinion and OT and also vertical length of IOF to line between ANS and OT were measured.

Results: IOF was localised inferolaterally to the imaginary triangular area formed by OT, rhinion and ANS in every specimen. The range of horizontal length between IOF and rhinion was 25.55–34.55 mm; horizontal length between IOF and OT was 20.05–29.65 mm, vertical length between IOF and line connecting ANS-OT was 3.65–11.98 mm, vertical length between IOF and line connecting rhinion-TO was 19.51–28.57 mm. By considering minimum and maximum values of these measurements a probability map was drawn.

Conclusion: IOF's localisation can be detected with this new method especially on skulls with shorter lengths between rhinion-OT. Probability maps drawn for these skulls will provide more specified localisations of IOF. We believe that results of this study will open a new perspective on literature.

Keywords: infraorbital foramen, orbital tubercle, rhinion, anterior nasal spine, surgical anatomy

P-03

The morphometry of the supraorbital foramen: it's importance in periorbital-transorbital surgery

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Objective: The supraorbital foramen or notch is the opening at the superior orbital margin on the frontal bone just below the

superciliary arch. It transmits the supra-orbital nerve, artery and vein. The aim of this study was to evaluate the supraorbital foramina and notches, the distances between these foramina and certain anatomical landmarks, and variations between the right and left sides. This data can be used to minimize complications during transorbital-periorbital surgical procedures.

Methods: The supraorbital foramina and notches were evaluated, classified and measured on the right and left sides of 46 human dry frontal bones. The dimensions of supraorbital foramina were measured via intravenous catheter needles. The distance from the foramen to nasion, to the nearest point of temporal line, to supraorbital margin, and the shortest distance between the two temporal lines were measured with a digital caliper. Descriptive statistical analysis and correlation analysis were performed with SPSS 23.

Results: In this study, the supraorbital notch was found 50%, the supraorbital foramen was found 50%. On the frontal bones, 37.7% bilateral foramina, 37.7% bilateral notches and 24.6% unilateral foramen were identified. At the 64% of unilateral ones, the foramen was found on the right. The supraorbital foramina were most commonly measured 16G-18G. Its distance to nasion was 28±4 mm, to temporal line was 23.3±3.8 mm, to supraorbital margin was 2.5±1.3 mm, and the minimum distance between two temporal lines was 95.5±4.3 mm. A positive correlation was found between the distance of supraorbital foramen to nasion and the distance to supraorbital margin and the minimum temporal line distance.

Conclusion: The results of this data analysis can be used to determine a safe zone in the supraorbital region to prevent damage to the supraorbital nerve, artery and vein passing through the supraorbital foramen during transorbital-periorbital surgical procedures.

Keywords: supraorbital foramen, supraorbital notch, frontal bone, transorbital-periorbital surgery

P-04

Radiological investigation of the relationship between calcaneal spur and other morphological features of the foot

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Objective: The calcaneal spur (calcar avis) is a bony growth on the sole of the foot, often medial to the tuber calcanei. In this study, it was aimed to radiologically examine the relationship between the calcaneal spur and other morphological features of the foot.

Methods: This study was approved by the Hatay Mustafa Kemal University Non-Interventional Clinical Research Ethics Committee with the decision No. 01 of 29 decision of 2021. The images of patients over 18 years of age who had lateral ankle X-rays with the diagnosis of 'Calcaneal spur' and 'Joint pain' who applied to the Physical Therapy and Rehabilitation Policlinicin the last five years were included in the study.The patients' calcaneal spur length, calcaneal spur base width, Fowler-Philip angle and plantar fat pad height were measured. In addition, the Fowler-Philip angle and the height of the plantar fat pad were measured in the control group of the patients who were similar in age to the patient group and who did not have a calcaneal spur and who had a radiological appearance. Statistical analysis was performed using the IBM SPSS Statistics 21.0 package program. In our study, a comparison was made according to the sexes for all the parameters measured. In this comparison, the Independent-Samples t test was used. The right and left measurement values of the individuals were compared with the Paired Samples t test.

Results: Measurements were performed on lateral ankle radiographs (135 bilateral, 49 right, 51 left) images of 235 (67 men, 168 women) patients diagnosed with calcaneal spur and 88 (37 men, 51 women) control groups. Dorsal spur was detected in 80 people on the right side and 75 people on the left side of the patient group. When the data of the patient and control groups were compared, the height of the right side calcaneal fat pad showed a statistically significant difference between the groups ($p<0.05$), while no statistically significant difference was observed in other parameters ($p>0.05$). Theröe was no statistically significant difference ($p>0.05$) between the measurement values of the side (right-left) and genders (male female) in all parameters in both the patient and control groups.

Conclusion: The obtained data can be a guide in foot surgery by providing numerical data on the descriptive features of the calcaneal spurs and the morphological features of the foot seen in the study population. This is a preliminary study and the measurements are continuing.

Keywords: plantar spur, dorsal spur, ankle, Haglund angle

P-05

Morphological approach to superior mesenteric artery syndrome

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Objective: Superior mesenteric artery is the branch of the abdominal aorta that separates at the level of the 1st lumbar ver-

tebra and passes in front of the 3rd portion of the duodenum. SMA (Superior mesenteric artery) syndrome (Wilkie's syndrome), symptomatic obstruction due to extrinsic compression of the duodenum located in the posterior neighborhood of the superior mesenteric artery and in the anterior neighborhood of abdominal aorta as a result of narrowing of the angle (<25 degrees) and reduction of the distance (<10 mm) between superior mesenteric artery and abdominal aorta and this syndrome is defined as one of the vascular compression syndromes. As a result of the compression of the third portion of the duodenum between superior mesenteric artery and abdominal aorta, dilatation develops due to mechanical obstruction in the stomach and proximal duodenum. The clinical signs include postprandial epigastric pain, nausea, vomiting, weight loss and anorexia. Morphologically, this syndrome may be caused by the presence of a highly located insertion of the ligament of Treitz, separation of the superior mesenteric artery from the lower levels of the aorta abdominalis, and increased lumbar lordosis. The aim of this study is to show the clinical importance of the morphological structure, course and neighborhoods of superior mesenteric artery.

Methods: Abdominal computed tomography images in the archive of Hacettepe University Department of Emergency Radiology were analyzed and patients compatible with SMA syndrome were identified. The angles and distances between superior mesenteric artery and abdominal aorta were measured in the images obtained with the computed tomography-enterography protocol. The presence of predisposing morphological features was evaluated.

Results: The angles and distances between superior mesenteric artery and abdominal aorta in both cases were measured as 15° and 11°, 6 mm and 7 mm, respectively. Due to vascular extrinsic compression, dilatation of the duodenum in the proximal part of the compression and in the stomach was detected. However, morphological anomalies that may cause compression were not detected.

Conclusion: Although SMA syndrome is one of the rare diseases, it is a life-threatening condition that requires rapid diagnosis and treatment. It is clinically important to know the neighborhood and location of arteria mesenterica superior.

Keywords: SMA syndrome, superior mesenteric artery, abdominal aorta, duodenal obstruction, anatomy

P-06

The morphometric evaluation and classification of the nutrient foramen of femur

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Objective: Vascularization of long bones is supplied by nutrient, metaphyseal, epiphyseal, and periosteal arteries however, the main vessel is the nutrient artery passing through the nutrient foramen. The nutrient artery is important for the active growth period, and the early phases of ossification. The nutrient artery damage may cause nonunion or delayed union and also it is the starting point of longitudinal stress fractures. The aim of this study is to determine the morphometric features of nutrient foramina and to compare them with other studies.

Methods: Nutrient foramina on 85 femora (50 right, 35 left) were examined. The size, number, localization and direction of nutrient foramina were recorded. All measurements were performed with digital caliper, tape measure and hypodermic needles ranging in size from 14G-24G. The foraminal index was calculated. The approximate localization of the nutrient foramina was marked on the illustration. Descriptive statistical analyzes were performed using the SPSS v23 software.

Results: In this study, total 124 nutrient foramina; 1 foramen in 40 bones, 2 in 39 bones, 3 in 2 bones, were found. No foramen was detected on 4 femora. Nutrient foramina were mostly seen at the linea aspera (55.6%) and at the middle part 1/3)of femur (75.9%). The direction of the foramen was generally towards the proximal end (97.5%). The mean femur length and foraminal index were 42.57±2.98 cm and 46.86±12.31, respectively. Nutrient foramina were mostly detected as 18G (34.7%) size.

Conclusion: Knowledge of the localization and morphological features of the nutrient foramen is important to preserve the circulation in orthopedic procedures such as trauma surgery, bone grafting, and vascularized bone microsurgery. The linea aspera, especially the middle part of femur is defined as the risky area, surgeons must be careful to avoid damaging the supplying arteries.

Keywords: femur, nutrient foramen, nutrient artery, anatomy

P-07

Osteometric measurement of the mandible and localization of the mandibular foramen

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Objective: The mandible is the largest, strongest and only mobile bone of the skull. It is known that skeletal characteristics differ in different populations and therefore each needs its own specific assessment standards. In this study, it was aimed to provide the clinician with information about some measurements of the mandible in orthognathic surgery and to give an idea to the dentists about the localization of the mandibular foramen for anesthesia of the inferior alveolar nerve.

Methods: A total of 62 dry human mandibles from Ankara University Medical Faculty Anatomy Department and Eskişehir

Osmangazi University Medical Faculty Anatomy Department were included in the study. The intact parts of the mandible were included, but the broken parts were not included in the study. The gender and age range of the measured mandibles is unknown. Maximum ramus breadth, minimum ramus breadth, distance from condylar process to mandibular foramen, distance from condylar process to mental spine, distance from angle of mandible to mental protuberance, distance from angle of mandible to mandibular foramen, minimum distance from mandibular foramen to anterior, posterior. superior, inferior border of mandibular ramus were included in this study.

Results: As a result of this study maximum ramus breadth 43±3.7 mm, minimum ramus breadth 29.5±3.1 mm, distance from condylar process to mandibular foramen 42.7±4.4 mm, distance from condylar process to mental spine 110.8±7.9 mm, distance from angle of mandible to mandibular foramen 20.6±3.8 mm, distance from angle of mandible to mental protuberance 87.9±5.9 mm, minimum distance from mandibular foramen to anterior border of mandibular ramus 16.5±2 mm, minimum distance from mandibular foramen to posterior border of mandibular ramus 14.1±2 mm, minimum distance from mandibular foramen to superior border of mandibular ramus 23.1±3.6 mm, minimum distance from mandibular foramen to inferior border of mandibular ramus 24.9±4.1 mm were faund.

Conclusion: Osteometric data of the mandible give important clues to the clinician in orthognathic surgery. In addition, the data in this study will contribute to the accurate determination of the localization of the mandibular foramen when performing inferior alveolar nerve anesthesia to dentists. With such studies, the data in our region will be increased. This may benefit anatomists and anthropologists.

Keywords: inferior alveolar nerve, mandibular foramen, mandibular ramus

P-08

Pterion morphology and morphometry in adult skulls

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Objective: Pterion is an important topographical point located at the junction of the frontal, sphenoid, temporal and parietal bones. In addition to being the most vulnerable place of the skull against trauma, it can cause epidural hematoma as a result of arteria meningea media rupture. Also its morphology and morphometry gain importance as it is the surgical access point to Broca's motor speech area, sulcus lateralis cerebri and insula. With this study, we aimed to contribute to the forensic and archaeological literature by determining the incidence of pterion types in Turkish adult skulls, as well as to contribute to surgical intervention planning by measuring the distance of the pterion to important anatomical points.

Methods: Adult craniums which belong to the anatomy laboratory of Aydın Adnan Menderes University Faculty of Medicine were used in our study. Craniums with alveoli of dens molaris tertius were evaluated as adult skulls and included in the study. Craniums with unspecified gender or damage due to trauma or wear at the pterion or other topographical points to be measured excluded from the study. Since we did not aim to examine asymmetry in craniums, craniums that we could measure only on the right or left side were also included in the study. In total, 53 pterion images were obtained. Craniums included in the study were photographed with Nikon D5300 from a distance of 60 cm, and the images were transferred to ImageJ version 1.53 program for morphometric measurements. In our study, the classification defined by Murphy T. in 1956 was applied for pterion morphology. SPSS for Windows release 18.0 program was used for statistical analysis of the data. The mean, standard deviation, minimum and maximum values of the data were calculated. Normality control of continuous variables with Shapiro Wilk test; Homogeneity control was done by Levene test. Student's t test was applied since normal distribution was determined in the comparison of genders and means between the right and left sides. Statistical significance criterion was accepted as $p<0.05$.

Results: Of the pterions, 1 (1.8%) was epipteric, 3 were (5.6%) frontotemporal, 3 were (5.6%) stellate, and 46 were (86.7%) sphenoparietal type. The mean distances from the center of the pterion as the to the zygomatic arch were (vertical distance) 42.39±6.97 mm; to the frontozygomatic suture 31.36±5.74 mm; to the zygomatic angle 43.20±6.41 mm; to the mastoid process 84.31±10.03 mm; to the upper border of meatus acousticus externus 56.84±7.14 mm

Conclusion: Our morphometric and morphological study results are consistent with the results of previous studies. Male-female and right-left measurements were not statistically significant. ($p>0.05$) We think that the results we obtained in our study will contribute to forensic and archaeological studies and will be important in the planning of surgical interventions.

Keywords: pterion, morphometry, morphology

P-09

Evaluation of the cranial aperture of the optic canal on cone beam computed tomography images

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Objective: Surgical procedures such as pterional, supraorbital and endoscopic endonasal approaches can be applied due to

traumatic or pathological lesions located around the optic canal. Knowing the anatomical features of the cranial aperture of the optic canal may guide surgical approaches; therefore, we aimed to examine the morphometric and morphological features of the aperture.

Methods: This study was approved by Gaziantep University Clinical Research Ethics (decision no:2021/13). Cone-beam computed tomography images of 400 (mean age: 37.32±15.87, 200 male, 200 female) adults in Gaziantep University Faculty of Dentistry, Department of Oral, Dental and Maxillofacial Radiology were analyzed retrospectively with the Planmeca Romexis Viewer program. In the study, the shape, location and dimensions of the aperture were evaluated. Statistical analyzes were made with the SPSS for Windows version 22.0 package program. Mean ± standard deviation values were calculated for numbers data, and number and percentage values were calculated for categorical data.

Results: The mean height and width of the cranial aperture of the optic canal were found as 4.22±0.74 mm and 7.27±1.15 mm, respectively. The following distance measurements were performed in transverse sections. The mean distance from the medial edge of the aperture to the midsagittal line was 5.77±1.32 mm. The mean distance between the aperture and the frontal plane passing through the most anterior end of the cranial base in this section was 64.97±6.36 mm. The mean distance between the lateral edge of the aperture and the frontal plane passing through the outer lateral wall of the cranial fossa in this section was 41±4.05 mm. The mean angle of the optic canal was 7.57±3.95° in the sagittal plane and 38.96±4.36° in the axial plane. Shape of the aperture was observed as teardrop (413 holes, 51.62%), triangular (180 holes, 22.50%), oval (158 holes, 19.75%) round (30 holes, 3.75%) and polygonal (19 holes, 2.38%).

Conclusion: Anatomical features of the aperture are significant in terms of positioning the patient's head during the surgical procedure, determining the anatomical reference points, and choosing the appropriate surgical approach and equipment. Our expanded dataset aiding to understand the anatomy of the region may contribute to surgery.

Keywords: optic canal, cranial aperture, conebeam computed tomography, transcranial approach, adult

P-10

Prevalence and morphology of fabella: a radiological study

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Objective: Fabella is a sesamoid bone located within the musculus gastrocnemius tendon in the posterior knee region. It is encountered with a prevalence of 10–30%. The presence of fabella should be considered when dealing with patients with posterolateral knee pain and related pathologies. In our study, we aimed to contribute to the clinicians working on this subject and to the literature by determining the prevalence, distribution and dimensions of this bone in our population according to age and gender.

Methods: Before starting our study, approval was obtained from the Ethics Committee for Non-Invasive Clinical Research at Aydın Adnan Menderes University Faculty of Medicine. From May 1, 2015 to July 1, 2020, images of adult patients aged 18–65 years who were referred to the direct X-ray unit of the Department of Radiology for bilateral comparative AP and lateral knee radiography in our hospital were included in our study.

Results: Within the scope of the study, 1600 knee radiographies of 800 patients, 400 women and 400 men, were examined. The ages of our patients included in the study ranged between 18 and 65 (mean age 43.80). The presence of fabella was observed bilaterally in 160 (20%) of 800 patients, and unilaterally in 84 (10.5%) (39 on left knee only 46.42%; 45 on right knee only 53.57%). The prevalence of fabella for the general group was 30.5%. The prevalence of fabella in women was 30.5%,and it was 30,5% in men. The dimensions of the detected fabella were distributed between the smallest 1.3 mm on the short axis and largest 16 mm on the long axis (mean 8.02 mm × 5.00 mm on the left knee, 8.08 mm × 5.08 mm on the right knee). While the prevalence of fabella in 91 patients aged between 18–25 years was 16.48%, 193 patients in the 56–65 age group was included in the study. the prevalence was found to be 41.96%.

Conclusion: We found the prevalence of Fabella to be 30.5%, which is close to the literature. We evaluated the prevalence of fabella to increase in different age groups, especially with increasing age. This supports the hypotheses of late ossification and fabella appear in advanced ages with increasing use.

Keywords: fabella, knee joint, sesamoid bones, gastrocnemius muscle

P-11

Evaluation of the effects of distance education on university students during the social isolation period with the web-based learning environment instrument (WEBLEI)

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Objective: Distance education at universities has been generally preferred as a blended program that involves traditional edu-

cation and online education. But many universities were closed down and had to conduct distance education due to the Covid-19 pandemic in the spring semester of the 2019–2020 academic year. Thus, the aim of this study is to determine the satisfaction, thoughts, and experiences of university students regarding the completely online and distance education process during the pandemic period.

Methods: In this process, all theoretical lessons and exams were conducted on the Advance Learning Management System (ALMS) for distance education at Istinye University. The WEBLEI, has four-factor subscales that are called access, interaction, response, and results. The multidimensional construct assesses student perceptions of four core aspects of the Web-based learning environment. In the present study, the original form of WEBLEI was used and 324 students from medicine, pharmacy and health science departments at Istinye University participated in the survey study.

Results: The WEBLEI measures students' perceptions with these four scales: access, interaction, response, results. According stastical comparison among the department, significant difference was obtained between physiotherapy and rehabilitation (2.58) and both medicine (3.46) / pharmacy (3.07) / nutrition (3.17) ($p<0.001$). Average mean for the female students (M:3.11) is significantly higher than the male (M:2.76) students in this scale ($p=0.008$). Although students did not experience any problem regarding access to online lessons and interaction with their teacher and other students, they did not think that distance education is more effective and satisfying than traditional education when they take all of their lessons online.

Conclusion: This study could contribute to a better understanding of the negative results and opportunities of distance education by evaluating the thoughts of university students.

Keywords: distance education, online lessons, social isolation, WEBLEI, web-based learning

P-12

Evaluation of accuracy of eponyms related to cranial nerves in academic publications according to Terminologia Anatomica and Terminologia Neuroanatomica: a web of science based study

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Objective: The eponyms used in literature have different spellings than those in Terminologia Anatomica (TA) (1998) and Terminologia Neuroanatomica (TNA) (2017). This situation can restrict access to information in databases by making it challenging to establish standardization in the language of science. The aim of this study is to examine the accuracy of the eponyms related to the cranial nerve used in the publications indexed in the Web of Science (WoS) database according to TA/TNA.

Methods: Eponyms related to cranial nerves in TA/TNA were determined. Using the advanced search section of the WoS, different spellings of each eponym from TA/TNA were also detected. For all the spellings of these eponyms; the search field was searched as topic, title, or abstract. The descriptive statistical analysis was performed, and the suitability of these eponyms to TA/TNA was evaluated.

Results: Total of 31 different eponyms of 18 terms related to cranial nerves were detected in TA/TNA. In addition, 37 eponyms used for these structures in WoS and whose spellings are not found in TA/TNA were seen. For each eponym, the agreement between the use of TA/TNA and the uses in literature ranged from 0% to 100%. It was found that the two most frequently used eponyms in literature were related to cochlear and trigeminal ganglions and were highly compatible with TA/TNA (94.31% and 93.01%, respectively). It was determined that the three eponyms with the lowest use of eponyms compatible with TA/TNA were eponyms related to inferior ganglion (glossopharyngeal nerve), anterior and posterior nerves of lesser curvature (0% for all three).

Conclusion: The eponyms that are widely used in literature are mostly used in accordance with TA/TNA, and it isn't easy to give up on these eponyms. However, the low compatibility of the few used eponyms to TA/TNA support the idea that these eponyms should be abandoned.

Keywords: eponym, nomina anatomica, terminologica anatomica

P-13

A survey study on anatomy education from the perspective of students during the Covid-19 pandemic period

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Objective: The aim of this study is to present the concerns caused by the Covid-19 pandemic, which has affected the education and training life for three semesters, on the students of the Faculty of Medicine in terms of Anatomy theoretical and practical lessons from a student perspective.

Methods: A questionnaire consisting of 22 questions about anatomy education and training was applied to 122 students, most of whom were studying at Lokman Hekim University, Necmettin Erbakan University, Istanbul Cerrahpaşa University and Selcuk University Medical Faculties. The questions in the survey included the interest of the students in the anatomy lesson during the pandemic period, the possibility of accessing the anatomy materials during the pandemic period, the materials they could use and access with distance education, the impor-

tance of practical training on cadavers for learning, the way clinical and theoretical lessons were given, the hours of the lessons and the number of models that students could access in the laboratory lessons. By evaluating the answers to the questions, the effects of education on the education and quality of life of students during the pandemic process were investigated.

Results: In line with the answers from 20 different universities, it was concluded that students could hardly reach anatomy models during the Covid-19 pandemic (55.7%), and that the inability to work on anatomy models caused a learning deficiency (82.8%). Another remarkable result in the surveys was that working on models as a group or individually, as in the face-to-face education period, was more effective in learning anatomy (96.7%). Moreover, the majority of the students stated that they thought that 3D learning in anatomy was more effective (98.4%).

Conclusion: With Covid-19, it has been observed that the anatomy education process in many universities is generally carried out online. Although technological developments support online education, it has been concluded that working on models and cadavers with in-group interaction in the field of anatomy science is more effective on learning by students. Face-to-face laboratory training has proven to be more attractive and preferable for students.

Keywords: anatomy-1, survey work-2, Covid-3

P-14

The effect of leg strenght and jumpm performance on balance in handball players

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Objective: Handball being a sport requiring the combined use of various motor skills means that muscle power, muscular-nervous system compatibility, endurance, speed, flexibility, mobility, anaerobic capacity, and performance reaction time in anaerobic capacity are all important components of success in dynamic and static balance. The purpose of this study is to investigate the effect of leg strength and jumping performance on the balance for handball players.

Methods: Our study is about the evaluation of balance, leg power and jumping performance measurements of registered handball players in our region. In the CSMI-Tecnobody PK-252 model, stabilimeter the equilibrium measurements were taken in three parameters: open eye static balance, closed eye static balance and bipedal dynamic balance. Vertical jumping on the jumping mat, horizontal (forward) jumping on a flat surface and leg strength on the back-leg dynamometer were calculated. The anaerobic forces of the athletes were calculated by using the Lewis formula and all datas were evaluated in SPSS 22.0 V statistical package program. In order to check whether the data show, normal distribution, test of normality (shapiro wilk) was applied ($p > 0.05$). Pearson correlation (r) for normal distribution values, Spearman correlation (r) analysis were applied for the values which did not show normal distribution in test result.

Results: A negative correlation was observed between vertical jump and Bipedal ATE and SI values. A negative correlation was seen between Bipedal ATE values and horizontal bounce. A negative correlation was seen between the leg strength and CE A-MLS values. Also a negative correlation was found between anaerobic power values and CE A-FBS, between anaerobic power values and CE PM, between anaerobic power values and Bipedal-ATE ($p<0.05$).

Conclusion: Examination of the analysis results showed that balance values decreased as vertical jump, horizontal jump, leg strength, and anaerobic strength increased. We concluded that an athlete will acquire better balance performance through jump, strength, strength, and anaerobic strength-developing training.

Keywords: handball, static equilibrium, dynamic equilibrium, leg force, vertical jumping, horizontal jumping

P-15

Respiratory mechanics after coronary bypass

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Objective: Coronary artery bypass graft surgery is the provision of blood supply, thus nutrition and oxygenation of the myocardium, which cannot be vascularized due to coronary atherosclerosis, by using artery and vein grafts. With this surgical intervention, symptoms related to ischemia are relieved, complications such as myocardial infarction and sudden death are prevented, and the patient is enabled to continue his daily life without pain.

Methods: In the treatment of coronary artery diseases, aorta-coronary bypass operation (CABG) has a 30-year history in routine. The population of patients undergoing successful coronary revascularization is constantly increasing and aging. In some of these cases, anginal symptoms develop again and require reoperation. They report that in the first 5 years following CABG, 3% of the cases are indicated for reoperation due to early graft degeneration, stenosis or incomplete revascularization. In the late period, atherosclerosis progressing in the native coronary arteries, late graft failure or factors related to both have been shown as the cause of reoperation).

Results: The patient's respiratory system, past/current health history, and physical examination with inspection, palpation, percussion, and auscultation are evaluated by performing

CABG surgery. In this process, the structure of the thorax, normal and pathological sounds of the lungs are evaluated. The patient is evaluated for signs of chronic obstructive pulmonary disease and restrictive pulmonary disease. If there is a need for direct chest X-ray, further examinations are performed. In order to evaluate lung functions, PFT, arterial blood gases are evaluated according to need and treatment is performed if necessary in the preoperative period. PFT is performed with spirometry and lung flow/volume and capacities are evaluated.

Conclusion: The physiopathology of pulmonary dysfunction after coronary artery bypass graft surgery is based on the combination of abnormalities in lung mechanics and gas exchange. Abnormalities in gas exchange have been shown to be associated with widening of the alveolar-arterial oxygen gradient, increased microvascular permeability in the lungs, increased pulmonary vascular resistance, increased pulmonary shunt fraction, and aggression of intrapulmonary leukocytes and platelets. Changes occur in vital capacity due to changes in the mechanical function of the lungs, and decrease in static and dynamic lung compliance. In the context of cardiac surgery, the main factors in the etiology of postoperative lung function failure can be grouped specific to the pre, intra- and postoperative period. The purpose of the review is post-bypass.

Keywords: bypass, ventilation

P-16

The parameters effecting the quality of 3-D anatomic printings and models

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Objective: In this study; we aimed to detail the parameters which are important during the production of 3-D anatomic printings and models in order to obtain the anatomic materials which are very near to their real anatomical images. These parameters will help to the researchers who are going to deal with 3-D anatomical printings and models in the future.

Methods: The widespread usage of 3-D printers in technology enabled the anatomists to produce 3-D printings and models in the field of gross anatomy. The ever-developing technology of 3-D printers increase the quality of anatomical printings and models and also their real like appearances. Serial sections of CT images give the best results during the production of bony structures. However; serial sections of MR images are very important for the production of soft tissues by 3-D printers. The serial sections obtained by CT or MR imaging are turned into STL images by using programs such as MIMICS Innovation Suit, Synopsys Simpleware, Slicer 3D, Inobitec Dicom Viewer, 3D-Doctor, Rhnio3Dmedical. At the end of this stage; the printing of the anatomical structure can be done in 3-D printer. After obtaining the 3-D model or printing; isopropyl alcohol is used for washing and at the end stage; curing is done to the anatomical printing or model for obtaining hardness.

Results: The slice thickness of the CT or MR serial sections have a great importance during the production of anatomical printings and models. The thickness of every slice must be no more than 0.1 mm. The printings and models obtained from 0.1 mm serial sections have nearly a similar appearance with their real forms. Before beginning to the production phase with a 3-D printer; the details that will impair the production quality, such as shadows and holes must be corrected with the help of software. The 3-D printer should be placed on a stable and stationary table. Following the production of 3-D anatomical model by 3-D printer; it must always be remembered that the duration of isopropyl alcohol and curing stages may show differences among printings and models.

Conclusion: In conclusion; the section thickness of radiological images or scanned real anatomical structures such as bones, the localization of 3-D printer, the localizations and numbers of supports on 3-D printing or model, the duration of washing step with isopropyl alcohol and the duration of curing stage have a great importance for the production of perfect 3-D printings and models. At the end of last step; a very small amount of oil, such as baby oil can be used in order to make the appearance of the printing or model shinier for having a better appearance.

Keywords: anatomy, 3-D model, 3-D printing, anatomical technique

P-17

Three-dimensional segmentation and modeling of the diagnosis of Eagle's syndrome

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Objective: Eagle's syndrome is a rare clinical condition associated with styloid process length greater than 25 mm or calcification of the stylohyoid ligament. The first clinical definition was made by Watt Weems Eagle in 1937. In Eagle's syndrome, symptoms of sore throat extending to the ear, foreign body sensation in the throat, dysphagia, odynophagia, headache, pain in neck rotation, dizziness, tinnitus, pain in protruding the tongue, pain in mouth opening, discomfort during chewing, dysphonia, temporary differentiation in voice and hypersalivation are observed. Multislice computed tomography (CT) and three-dimensional (3D) reconstruction are the best diagnostic methods for radiological diagnosis. The aim of this study is to visualize the relationship between the clinical symptoms of Eagle's syndrome and the surrounding

anatomical structures by using three-dimensional printing technology and to help diagnose this syndrome.

Methods: In our study, CT sections of patients with a prediagnosis of Eagle syndrome from the archive of Ege University Faculty of Medicine, Department of Radiology were used. The styloid process, common carotid artery, external carotid artery and internal carotid artery were segmented on the sections. The images were reconstructed and made ready for 3D printing.

Results: The mean length of the styloid process of the patients was 42.1±6 mm. The mean distance between the styloid process and the common carotid artery was 4.3±2 mm, the mean distance from the external carotid artery was 5.2±1 mm, and the mean distance from the internal carotid artery was 4.9±2 mm.

Conclusion: We think that segmentation and modeling of Eagle syndrome will be useful in finding the exact location of the styloid process and planning its surgical resection without damaging nerve structures such as facial, accessory, hypoglossal, and vagal nerve and arterial structures such as common carotid artery, external carotid artery, internal carotid artery.

Keywords: computed tomography, eagle syndrome, segmentation, styloid process, three-dimensional modeling

P-18

Evaluation of the acromion morphology and subacromial distance in patients with shoulder pain by radiological findings

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Objective: The purpose of the present study was to examine the relations between acromion morphology and subacromial distance measurements with age, gender, height, weight, and pain.

Methods: The present MR images of 240 patients (120 men and 120 women) who applied to Private Adana Yaşam Medical Center in 2019 and to Gaziosmanpaşa Education and Research Hospital of the University of Healty Sciences in 2020 were evaluated in the present study. The subacromial distance measurements of the patients were taken in MR images and Acromion types were examined in 4 subgroups according to the Vanarthos and Monu classification (1995). Also, the demographic data of the patients such as age, gender, height, and weight were recorded, and pain status was obtained according to the Visual Analog Scale (VAS), which is one of the pain scales. The R vers. 2.15.3 program was used for statistical analyses. The conformity of the quantitative data to normal distribution was evaluated with the Shapiro-Wilk Test and with graphical examinations.

Results: The rate of Type I acromion was found to be 29.6%, Type 2 acromion rate 64.2%, Type 3 acromion rate 4.6%, and Type 4 acromion rate 1.7% in our study. Statistically significant differences were found in terms of subacromial distance values according to acromion types ($p<0.001$). Also, statistically significant positive correlations were found between the subacromial distance and the height, weight, and Body Mass Index values of the patients ($p<0.05$). However, no statistically significant correlations were detected between the subacromial distance, the age of the patients, and VAS values ($p>0.05$).

Conclusion: In line with the data obtained in our study and the and considerations as a result of the comparison of these data with similar studies in the literature, we believe that acromion types and especially the subacromial distance must be considered in patients with shoulder pain.

Keywords: acromion shape, shoulder pain, rotator cuff pathologies, subacromial distance

P-19

Evaluation of the relation between the humeral retroversion angle, intertubercular sulcus angle and inclination angle according to sides

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Objective: In our study, It was aimed to define the relationships between humerus retroversion and sulcus intertubercularis and inclination angles, which are important in upper extremity diseases and especially shoulder joint replacement arthroplasty, and the differences between right and left sides.

Methods: 38 (20 right and 18 left) humerus were photographed using two cameras, positioning their transepicondylar lines parallel to the horizontal plane. Retroversion, which was made with two different methods in the literature, sulcus intertubercularis and inclination angles were measured with the Image J program. In retroversion angle 1, the axis passing through the midpoint of the proximal humeral articular surface and the most proximal point of the tuberculum majus was used. In retroversion angle 2, the caput humeri axis, which was created by drawing an axis perpendicular to the axis passing through the collum anatomicum, was used. The angle between these axes and the transepicondylar axis were measured for retroversion angles. Side differences and correlations between measurements are defined.

Results: The mean retroversion angles 1 and 2, defined in two different ways in the literature, were 20.35±9.91° and 24.77±8.74°, respectively. The mean sulcus intertubercularis angle was 29.69±5.39°, and the inclination angle was 130.54±6.13°. A statistically significant difference was found between the right and left sides in the retroversion angle 2 with the Mann-Whitney U Test ($p=0.007$). No significant difference was found between the sides in other measurements. According to Spearman correlation

test; a statistically significant (p=0.001) moderate positive correlation (r=0.62) was found between these two different retroversion angles. In the subgroup analysis according to the sides, a significant (p=0.009) moderate positive correlation (r=0.58) was found between two different retroversion angles. A significant (p=0.001) moderate negative (r=-0.68) correlation was found between the retroversion angle and the sulcus intertubercularis angle on the right side. A statistically significant (p=0.002) moderate positive correlation (r=0.65) was found between two different retroversion angles measurements on the left side.

Conclusion: It is seen that a more detailed examination of these measurements, which are used as references for prosthesis placement, in pre-surgical planning will affect the success of the operation. We think that the standardization of the methods in the literature and the improvement of humeral head anatomy knowledge would be beneficial to orthopedists.

Keywords: humeral retroversion angle, sulcus intertubercularis angle, inclination angle

P-20

Can visualization contribute to persistence of knowledge in anatomy education?

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Objective: Learning by drawing is a learning method supported by traditional learning methods, providing deep learning and increasing the permanence of knowledge. Visualization; is used in the world of medicine in student and patient education, in surgical operation planning, and in transferring to patients. In this study, we aimed to determine whether the Anatomy study method by drawing increases permanent learning in students who were away from the anatomy laboratory during the pandemic period.

Methods: We planned a drawing assignment for students who could not touch the models and make enough observations during the distance education period to improve the practical lessons and increase the permanence of learning. We took pictures of the heart and liver models from 6 directions: front-back-right-left-top-bottom. In addition, we sent detailed short videos of heart and liver models to the students. With the help of the atlas, we asked them to create the visuals of the models using any method (charcoal-coloring-digital drawing) "to make it easier for them to learn the subject while studying". We stated that we are not interested in the artistic value of the images, they can make schematized drawings. We conveyed these requests to the students 10 days before the relevant exams.

Results: A total of 176 people (91%) (85% of medical faculty students, 97% of Dentistry students) participated in the drawing assignment. While the general average of the related board exam of the faculty of medicine students was 80%, the average success rate of practice questions related to homework was 94%, and the average of theoretical questions was 87%. In the final exam held 6 months later, it was determined that the success average of the related questions was 85%. While the average success of the dentistry students in the related questions of the midterm exam before the drawing assignment was 76%, it was determined that the average success rate in the related questions of the midterm exam after the homework increased to 91%. In the final exam held 7 weeks later, the success average of the related questions was 88%.

Conclusion: The high success rate of the related questions in the exams showed that working by drawing in anatomy education will contribute to learning. After the oral survey, the students stated that trying to examine an organ in detail from every aspect and to transfer it to paper by thinking in three dimensions contributed to their learning permanently and that visual drawing assignments should be increased to encourage them to study. As a result, although they knew that the homework would not contribute to the exam grade, the high participation rate and the increase in the feasibility rate of the same subjects among the exams showed that working by drawing in anatomy increased permanent learning.

Keywords: anatomy education, anatomical drawing, medical illustration, learning by drawing, visualization

P-21

Morphological analysis of linea aspera

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Objective: The body of femur (corpus femoris) has an almost cylindrical structure. On the posterior side is the longitudinal linea aspera. Linea aspera consists of 2 parts, labium mediale and labium laterale. The linea aspera is an important anatomical and surgical landmark on the femoral shaft. In literature review, there were not many publications related to linea aspera. In this study, our aim is to examine morphology of linea aspera by measurements made on femur bone and to examine the relationship between the length of linea aspera and length of femur.

Methods: Measurements were made on 57 left and 45 right femur bones in bone laboratory of Erciyes University Faculty of Medicine, Department of Anatomy. Using caliper, linea aspera length (LAU), linea aspera width (LAG), distance of labium mediale linea aspera to anterior surface of femur (LMU), distance of labium laterale linea aspera to anterior surface of femur (LLU), linea aspera origin distance between trochanter major point (LA-TM), linea aspera end point and fossa intercondylaris (LA-FI), distance between trochanter major- condylus medialis (TM-CM), distance between caput

femoris upper point and condlylus medialis (CF-CM) and femoral weights (FA) were measured.

Results: In the measurements made, the length of linea aspera on right and left femurs was 121.97 on right, 119.55 on left, and width of the linea aspera on the right was 7.39 on left and 5.46 on left. The correlation between linea aspera and weights of right and left femurs (right r=0.311 low strength (p=0.038), left: 0.595 medium strength (p=0.00) was found to be significant.

Conclusion: We think that results we obtained will be helpful and guiding for similar studies on radiological and morphological features of linea aspera in femur in the future. In addition, gender differences in linea aspera characteristics can be determined, which can be particularly helpful to forensic experts.

Keywords: femur, linea aspera, morphology

P-22

Angular position and morphology of the medial malleolus relative to the tibial body

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Objective: The aim of this study was to determine morphometric measurements of the medial malleolus, the medial and anterior angles relative to the mechanical axis of the tibia and coronal plane in human dry tibia bones.

Methods: The angular position of the medial malleolus relative to the mechanical axis of the tibia and coronal plane was investigated with using caliper and Image J software in 48 dry tibia bones (27 left, 21 right) in the anatomy laboratory. In the anterior view of the tibia, the angle made by the axis of the medial malleolus with respect to the mechanical axis of the tibia was defined as medial angle and then measured. In the inferior view of the tibia, the angle made by the axis of the medial malleolus with respect to the coronal plane which passing through the midpoints of the upper surfaces of the medial condyle and lateral condyle was defined as anterior angle and then measured. In addition, general morphometric parameters (width-depth-length) of the medial malleolus and tibia were measured. Statistical analysis of the obtained data was performed.

Results: The medial angle was found 25.24±5.25 degrees on average (minimum: 15.47, maximum: 35.53 degrees). The mean anterior angle of the medial malleolus was 17.45±7.85 degrees (minimum: 0.43, maximum: 33.68 degrees). Both angles of the medial malleolus did not differ between the sides. The anterior angle was found between 0 and 10 degrees in 17% of the cases. A positive correlation was found between the morphometric measurements of the medial malleolus and the general morphometric parameters of the tibia.

Conclusion: The medial malleolus is important in traumas of the distal end of the tibia and in surgical procedures related to this region. In our study, the medial angle (made by the axis of the medial malleolus with respect to the mechanical axis of the tibia) and the anterior angle (made by the axis of the medial malleolus with respect to the coronal plane) of the medial malleolus which were not previously defined in the literature were determined. It is hoped that the angular and morphometric parameters of the medial malleolus which were defined in our study will help orthopedic surgeons to plan the fixation devices and surgical/clinical procedures related to this region.

Keywords: medial malleolus, tibia, malleolus angle, morphology, anatomy

P-23

Effectiveness of platelet-rich plasma treatment in perineal trauma: a case report

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Objective: It is estimated that 85% of women will experience perineal trauma because of vaginal birth. Pain is one of the most important long-term complications of perineal trauma. The quality of life is negatively affected and cause of negative prejudice against vaginal birth by pain experienced. Therefore, it is very important to treat the pain. Platelet rich plasm treatment in the perineal trauma has not yet been reported.

Case: A 31-year-old female patient presented to Gynaecology department with pain during urination, defecation, in coitus, during menstruation, while walking and while sitting. The pain continued to increase 10 years after the first birth until analgesic medications were ineffective. A result of the gynecological examination, a diagnosis of perineal trauma (second degree) due to deep episiotomy in the first vaginal birth wasmade. The patient received three platelet rich plasm treatment at three-week intervals.

Conclusion: Perineal trauma was treated with platelet rich plasm containing high platelet concentration and various growth factors. The patient's intense pain complaints ended.

Keywords: episiotomy, pain, perineal trauma, platelet rich plasma

P-24

Rare asymptomatic leiomyoma of the mediastinum posterior

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Objective: In this study, we aimed to report that a rare asymptomatic mass (leiomyoma) in oesophagus is important in terms of anatomical localization.

Case: FEV: 22.4 (82%), laboratory findings were normal, CRP was high in a 29 year-old female patient who applied to the emergency department with complaints of dysphagia, cough, weakness. The patient had no known chronic disease and muscle-joint pain in her history and she had seen blood in her sputum two months ago. Physical examination revealed dyspnea with pain in the regio epigastrica. In thorax CT, arcus aorta, aorta descendens, truncus pulmonalis, a. pulmonalis, v. cava superior, v. brachiocephalica, v. cava inferior was evaluated as normal. However, 2.7 cm dilatation was observed at the bifurcatio trachea level in the oesophagus, 42×25 mm nodular soft tissue area in the carina region and a 31×28 mm soft tissue density area in the inferior of the carina were seen. In the post contrast view of the oesophagus passage, a 3.5 cm dilatation was observed in the osophagus lumen at the widest- inferior part of the arcus aorta. With these data, an oesophageal lesion of approximately 7×3×2 cm was observed in the right thoracotomy, starting just below the v. azygos and extending to the oesophageal mucosa. The mediastinal pleura was opened and the lesion was dissected and the lesion extended to the mucosa and thinned the mucosa very much. The lesion was totally excised by mini-thoracotomy. On biopsy, findings consistent with a leiomyoma, which is a tissue piece measuring 7×2.6×2 cm, weighing 22 gr were observed.

Conclusion: Oesophageal leiomyoma, which may remain asymptomatic, should be kept in mind in the differential diagnosis of posterior mediastinal pathologies. The presence of leiomyoma has clinical importance due to the anatomical proximity of the oesophagus in this region with the important structures in the posterior mediastinum.

Keywords: mediastinal leiomyoma, posterior mediastinum, variation

P-25

Evaluation of regional complications of popular aesthetic surgery procedures on the face, head and neck

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Objective: International Society of Aesthetic Plastic Surgery's (ISAPS) shares according to statistical data obtained from 16 countries in 2019. Surgical interventions on the face, head and neck region (rhinoplasty, eyelid surgery, fat grafting, facelift, ear surgery, neck lift, brow lift, facial bone contouring) increased by approximately 13.5% compared to 2018 data. While Turkey ranks the 7th in all surgical interventions in those regions, the most frequently performed procedure is rhinoplasty (2nd place) and the least performed procedure is facial bone contouring (6th place). The aim of this study is to draw attention to the regional complications of popular aesthetic interventions applied in the face and neck region.

Methods: Studies published between 2010-2021 were based on the words "safety", "aesthetics", "complications" searched with the keywords "brow lift", "rhinoplasty", "eyelid surgery", "fat grafting", "facelift", "ear surgery", "neck lift" search in PubMed. Publications with clinical anatomical features were identified and regional complications defined as a result of interventions were noted.

Results: In addition to common complications such as hematoma, edema, infection, asymmetry, venous thromboembolism (in rhinoplasty), nasal ptosis, keratopathy, periorbital wrinkle, vascular occlusion (in eyelid surgery), graft hypertrophy, periocular embolism, telangiectasia, acne activation (in fat graft), hypopigmentation, hyperpigmentation, transient apraxia of the mandibular nerve, paresthesia of the nerve frontalis, paresthesia of the nerve supratrochlearis (in face lift), alopecia and ptosis (in brow lift), submandibular sialobularis, marginal mandibular branch of facial nerve neuropraxia (neck lift) has been reported.

Conclusion: Apart from medical necessity, the need for aesthetic appearance of the face, head and neck region is increasing due to various reasons. For these reasons, the success of invasive interventions in the region is closely related to minimizing complications. This is possible with good knowledge of the anatomy of the region. We believe that the study will shed light on clinical anatomical studies on the face, head and neck regions.

Keywords: aestetic surgery, complication, safety

P-26

Determination of musculus sternocleidomastoideus possible innervation characteristics and intramuscular nerve distribution by modified Sihler's technique

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Objective: We aimed to describe the optimal places for intramuscular applications like botulinum toxin used in the treatment of common diseases such as cervical dystonia by determining the innervation zone and intramuscular nerve distribution of the sternocleidomastoid muscles (SCM). We targeted to describe the nerve innervation zones of the muscles and the injection sites according to the bone landmarks that can be applied to the patient. Another objective is to describe relations of intramuscular nerve zones with adjacent vascular structures that may cause complications during injections.

Methods: In our study, 14 neck muscles fixed with 10% formalin were used. Totally 14 right and left SCM of 7 cadavers were investigated. For each muscle, bone landmarks were chosen to represent the length of the muscle in accordance with the origin and insertion points. The tip of the mastoid process (PM) superiorly and the sternoclavicular joint inferiorly were selected for SCM. The risky vascular structures for injection were determined and measured during dissection. Motor entry points (MEP) were determined and measured on the muscles. The modified Sihler's staining technique (MST) was applied after the muscles were dissected and removed. At the end of the technique, the distribution of stained nerve fibers between muscle fibers that became transparent was examined. Intramuscular nerve innervation zones were determined at 10% intervals. Innervation zones were defined according to other landmarks that determined on the neck for botulinum toxin and other injections.

Results: The lengths of SCM was respectively 160.1±1.17 mm according to the selected landmarks. It was determined that SCM had 2 MGN in 14.3% cases and 1 MGN in 85.7% cases. The distance of accessory nerve MEP to the tip of the PM was 48 ± 0.61 mm. The MST was successfully applied in 14 muscles and intramuscular nerves could be traced in all cases. The intramuscular innervation of the SCM was intense at the level of 40-70% of the muscle length in the anterior part and 50-70% in the posterior part of the muscle.

Conclusion: The MST has been successfully applied to the SCM. The innervation zones and intramuscular nerve distribution of the SCM were determined. In cervical dystonia, the BT injection may give more effective results if it's applied to these muscles' nerve innervation zones. It is important to know the MGNs of the muscles to prevent muscle paralysis in surgical interventions in the neck region.

Keywords: sternocleidomastoid muscle, modified Sihler's staining technique, muscle innervation zone, botulinum toxin, cervical dystonia

P-27

Comparison of palmar creases and anthropometric characteristics of the hand by to hand and eye dominance in children with hemiparetic cerebral palsy

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Objective: In this study; it was aimed to compare the palmar creases and anthropometric features of the hand in children with hemiparetic (HP) cerebral palsy (CP) between HP and non-HP side and according to eye preference.

Methods: In the study, right and left hands of 13 subjects (7 female, 6 male) with HP CP were imaged. The lengths of palmar creases, finger lengths, and anthropometric measurementsof hand on images were measured with ImageJ. The affected side of subjects was determined (7 right HP, 6 left). Dolman method was used to determine dominant eye of subjects. Since three subjects had mild intellectual disability, dominant eye couldn't be determined (4 right, 6 left). Data were statistically evaluated according to HP-non-HP side and eye preference.

Results: The mean age of subjects was 10.54±3.95. There was a statistically significant relationship between non-HP hand and dominant eye ($p=0.048$, $p<0.05$). Lengths of palmar creases, finger lengths and anthropometric measurements of the hand; there was no statistically significant difference when compared according to hand side and eye preference ($p>0.05$).

Conclusion: It is thought that if dominant hemisphere is affected in CP, natural cerebral dominance will also be affected. Children with HP CP use non-HP hands as dominant hand compulsorily and distinctly from an early age. Therefore, in our study, eye preference was also questioned to determine cerebral dominance. It was observed that there was a relationship between eye preference and handedness, and thus, whether the dominant hand was the non-HP hand was reviewed. According to our results obtained by evaluating 13subjects, it was seen that palmar creases and anthropometric features of the hand didn't differ according to handedness and eye preference. With the inclusion of more subjects in our ongoing work, we think that it'll contribute to explanation of relationship between handedness and cerebral dominance with palmar creases.

Keywords: cerebral palsy, eye dominance, handedness

P-28

Evaluation of the effects of video-assisted anatomy education in terms of learning

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Objective: This study is designed to demonstrate how traditional teaching methodology is addressed, and how traditional anatomy education can be supported through video-based learning.

Methods: An educational video named "Topographic Anatomy of Arm" was taken on the cadaver. A Likert-type questionnaire was conducted to participants between

17.07.2019–26.07.2019 on the Internet. 441 volunteer participants (%71.4 of them: women, average age: 20.2) were included in this study. The questionnaire was administered to participants after taken some demographic information of them. Opinions of participants about the effectiveness of video-based learning have been obtained thanks to the questionnaire.

Results: %47.2 of the participants stated that they had already taken video-based education, and %83.4 of the participants stated that they had not taken any video-based anatomy education. The questionnaire was computed for each answer of participants, and statistical data have been shown with table.

Conclusion: This study has shown that an interactive mobile learning method which is effective about availability, courses' contents and the satisfaction of students can be developed in a short time with minimal expense. This application does not have some limitations of traditional practical anatomy education such as the schedule, physical classroom environment, academic staff and needed equipment for cadaver. So, the results of this study are encouraging and will lead lecturers of medicine and anatomy to find creative solutions for assisting to anatomy curriculum.

Keywords: anatomy education, cadaver, video-based learning, web

P-29

Gastric perforation while inserting a lumboperitoneal shunt; interesting anatomical structure and rare etiology in iatrogenic perforation

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Objective: Gastric perforation is an emergency with high mortality and morbidity. Although the most common cause is peptic ulcer, it can rarely be iatrogenic. The most common reason for this is endoscopic interventions. Pseudotumor Cerebri is a disease characterized by increased intracranial pressure, the etiology is not clear, and it is more common in obese women. The aim of treatment is primarily reduction of intracranial pressure, treatment of secondary causes and weight control in obese patients. Lumboperitoneal shunt applied for this and many other reasons; catheter placement to provide CSF drainage at the appropriate intervertebral distance; It is a surgery performed in the form of conveying the distal end under the skin to the incision made from the abdomen and inserting this end into the peritoneum. In the meantime, intestinal perforation associated with the incision made in the right lower quadrant of the abdomen is a rare but possible complication; it is anatomically more likely to be an ascending colon. The aim of this case report is; which is a complication not frequently encountered in the literature; to address the development of gastric perforation during lumboperitoneal shunt insertion.

Case: 41 year old female patient. She hasn't other than Pseudotumor Cerebri, and while a lumboperitoneal shunt was inserted by the neurosurgery, the shunt was placed in the abdomen of its distal end; the general surgery participated in the operation on the grounds that an intestinal structure was perforated during the incision made in the right lower quadrant so that it could be placed in the peritoneum. The incision was enlarged and the anterior surface of the stomach antrum was observed. The perforation was primarily repaired. Due to the possibility of infection, the fascia was closed without placing the shunt distal to the abdomen. The distal tip was placed in the subcutaneous region. After control with fluoroscopic upper gastrointestinal tract radiography and gastroscopy performed approximately 1 month later, reoperation was performed and the inactive distal end was left on the peritoneum into the abdomen. There was no pathological finding at discharge and routine controls.

Conclusion: Frequent complications for lumboperitoneal shunts are shunt obstruction and intracranial hypotension, and infections can also be counted. Intestinal injury is rare and surprising in this case is the extremely wide gastric structure that invites complications and extends to the right lower quadrant. Despite the preoperative hunger, it is noteworthy that the stomach occupies a large space. Obesity, which is occasionally present among some of the features brought about by Pseudotumor Cerebri, and although there is no obvious abnormality in this patient, it is necessary to be careful in terms of nutritional problems and possible gastric pathologies in such patients.

Keywords: iatrogenic gastric perforation, lumboperitoneal shunt complications, pseudotumor cerebri and obesity

P-30

Angular position and morphology of the medial malleolus relative to the tibial body

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Objective: The aim of this study was to determine morphometric measurements of the medial malleolus, the medial and anterior angles relative to the mechanical axis of the tibia and coronal plane in human dry tibia bones.

Methods: The angular position of the medial malleolus relative to the mechanical axis of the tibia and coronal plane was investigated with using caliper and Image J software in 48 dry

tibia bones (27 left, 21 right) in the anatomy laboratory. In the anterior view of the tibia, the angle made by the axis of the medial malleolus with respect to the mechanical axis of the tibia was defined as medial angle and then measured. In the inferior view of the tibia, the angle made by the axis of the medial malleolus with respect to the coronal plane which passing throughthe midpoints of the upper surfaces of the medial condyle and lateral condyle was defined as anterior angle and then measured. In addition, general morphometric parameters (width-depth-length) of the medial malleolus and tibia were measured. Statistical analysis of the obtained data was performed.

Results: The medial angle was found 25.24±5.25 degrees on average (minimum: 15.47, maximum: 35.53 degrees). The mean anterior angle of the medial malleolus was 17.45±7.85 degrees (minimum: 0.43, maximum: 33.68 degrees). Both angles of the medial malleolus did not differ between the sides. The anterior angle was found between 0 and 10 degrees in 17% of the cases. A positive correlation was found between the morphometric measurements of the medial malleolus and the general morphometric parameters of the tibia.

Conclusion: The medial malleolus is important in traumas of the distal end of the tibia and in surgical procedures related to this region. In our study, the medial angle (made by the axis of the medial malleolus with respect to the mechanical axis of the tibia) and the anterior angle (made by the axis of the medial malleolus with respect to the coronal plane) of the medial malleolus which were not previously defined in the literature were determined. It is hoped that the angular and morphometric parameters of the medial malleolus which were defined in our study will help orthopedic surgeons to plan the fixation devices and surgical/clinical procedures related to this region.

Keywords: medial malleolus, tibia, malleolus angle, morphology, anatomy

P-31

Relationship of paranasal region morphometry with anatomical variations

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Objective: The aim of our study was to investigate the relationship of paranasal region morphometry with various anatomical variations in this region.

Methods: The research is a retrospective study on paranasal computed tomography images. The research universe was obtained by retrospectively scanning 1200 CT images in the PACS archive of the Department of Radiology of Sivas Cumhuriyet Faculty of Medicine Hospital. A total of 453 individuals, 228 females and 225 males meeting the criteria for inclusion in the study were included. The parameters examined in the study was sinus maxillaris (SM) volume (right-left), sinus frontalis (SF) volume (right-left), sinus sphenoidalis (SS) volume (right-left), cavitas nasi width parameters obtained from the axial section; anterior cavitas nasi (ACN) width (right-left), posterior cavitas nasi (PCN) width (right-left), distances between anatomical points determined in the coronal section, septum nasi length (SNU), septum nasi width (SNG), choanae width (CG). In the research, paranasal region variations incidence and association between variations were investigated.

Results: In the findings obtained from the study, there were significant gender differences in the parameters of SM, SF, SS, PCN, LCLP-CNLD, CNLD-CNLDT, SNU, SNG, CG. Significant differences were observed in SM, SF, ACN, LCLP-CNLD, CNLD-CNLDT values according to NSD. A significant association was found between NSD–NSS, NSP–OH, NSP–HH, NSP–NSS, DEB and HH, DEB and CGP, OH–UB among the anatomical variations of the paranasal region.

Conclusion: In most of the measurements, the values of male individuals were found to be higher than the values of female individuals. According to our results, it was determined that low or moderate deviation of the septum caused a difference in the measurement values of the sinus maxillaris and cavitas nasi.

Keywords: paranasal region, sinus volumes, nasal septum deviation, variation

P-32

Morphometric measurements of anterior cruciate ligament related structures on adult dry bones

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Objective: This study aims to determine the differences between the genders about the distal end of the femur and the proximal end of the tibia associated with the anterior cruciate ligament (ACL) using dry bones from the same individuals.

Methods: The study included 219 bones [108 femurs (74 male/34 female) / 111 tibias (72 male/39 female)]. Bicondylar width (BCW), intercondylar notch width (NW), intercondylar notch width index (NWI), tibial width (TW), tibial eminence width (EW), and tibial eminence width index (EWI) were measured with a manual caliper.

Results: In this study, the BCW, NW, NWI parameters were determined to be 65.90±3.23, 75.08±3.96, 20.91±2.39, 23.45±2.80, 0.31±0.03, 0.30±0.03 mm in females and males, respectively. The TW, EW, EWI parameters were determined to be

66.05±5.83, 75.74±4.29, 8.89±1.48, 11.02±1.96, 0.13±0.02, 0.14±0.02 mm in females and males, respectively.

Conclusions: In studying the structures associated with the ACL, it was found that there are morphological differences between the genders, which is an anatomically unavoidable situation. Also the femur and tibia structures are statistically significantly correlated, we believe it would be more accurate to look for answers to ACL injuries by studying the two bones together.

Keywords: anterior cruciate ligament, intercondylar notch width, tibial eminence width, distal end of femur, proximal end of tibia

P-33

Measurement of topographic, anatomical and morphometric features of the fossa cranii posterior in 15 dry bones

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Objective: Location and its nearby structures of fossa cranii posterior are important for outcomes of posterior fossa surgery in neurosurgical practice. Knowing the detailed anatomy of these structures is fundamental in planning safe surgical methods. In our study, we aimed to reveal the topographic, anatomic and morphometric properties of fossa cranii posterior.

Methods: An ethics committee was approved for the anatomy PhD program 'Morphometric analysis of posterior fossa-related structures for surgical approaches' at Dokuz Eylül University Medical Faculty on working on dry skulls. Measurements were made on the 15 dry bone in Anatomy Laboratory of the Dokuz Eylul University. The measurements between the specified points (For. magnum, porus acusticus internus, for. jugulare etc.) were made with an electronic caliper capable of measuring the millimeter to a precision of 1/100. The distance between all these landmarks of the fossa cranii posterior, was measured with an electronic caliper in to determine safe entry points for fossa cranii posterior.

Results: All measurements were made carefully and recorded. Sagittal and transverse diameters of foramen magnum; length and diameter of porus acusticus internus, length and diameter of foramen jugulare; distance between these foraminas, distance between these foraminas and the angle between sinus sygmoideus-sınus transversus, distance between foramen magnum and sphenooccipital synchondrosis and protuberentia ossipitalis interna were measured.

Conclusion: It is important to know the morphological and morphometric properties of fossa cranii posterior for the safety of planned neurosurgical operations and outcomes for these surgeries.

Keywords: fossa cranii posterior, dry bone, foramen magnum

P-34

Evaluation of the effects of the volumes of the posterior and anterior vertebral muscles estamaiated from the computed tomography images on the lumber lordosis

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Objective: This study aims to analyze the prevertebral and postvertebral muscle volumes comparatively with the PAL technique, (The projection area per length squared), which enables the diagnosis of Lumbar Lordosis to be made by calculating the diagnosis quantitatively on radiological images, and the follow-up of the disease course before and after treatment with numerical data.

Methods: CT scan images were collected from the Archival System of the Radiological Department of Ondokuz Mayıs University Hospital in Samsun, Turkey, and used in this investigation. During the data collecting procedure, 62 CT scan images for patients aged from (19 to 84) were obtained in supine position. Two different software are used to in this study, the first "Osiri X" which enables viewing the files in our image bank. With this software, the images in the files will be displayed in a single window in sagittal, coronal and transverse planes, the oriented images were exported to DICOM file, the second software application were used called (Image J), by this software the measurements of anterior (psoas major) and posterior (paraspinal, multifidus) muscles volume calculated, furthermore measuring the value of PAL it's also calculated.

Results: The study's findings indicated that there is no significant correlation between the variables regardless of total anterior volume, total posterior volume and the total of PAL. Moreover, there are no statistically significant correlations between anterior volume, posterior volume, and PAL in both genders, according to the Pearson test.

Conclusion: In line with the findings, we think that knowing body mass index, height and weight, activity status and physical conditions, low back pain history and age-related fat changes in muscles volume due to the importance of these factors, and their direct relationship to muscles volume, in the subsequent study they will be taken into account to include them with the data.

Keywords: lumbar lordosis, PAL (projection area length squared), psoas major, paraspinal, multifidus, CT

P-35

The comparison of urinary system morphometry of kidney stone patients with healthy individuals

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Objective: Individuals who get kidney stones CT and intravenous urography through images of healthy individuals with radiological imaging method by comparing morphometric measurements of anatomical structures of the urinary system is to investigate the impact of the formation of kidney stones.

Methods: In our study, two groups, those with kidney stones between the ages of 20–70, and a healthy group without stones in the urinary tract were determined from the PACS system belonging to Namik Kemal University Research and Training Hospital. In the radiological methods used, morphometric measurements were made on the intravenous pyelography images of 30 individuals with kidney stones and 30 without kidney stones; and on the computed tomography images of 50 individuals with kidney stones and 50 without kidney stones.

Results: The results of the study showed a significant difference in the measurements of the right upper infundibulum width, right infundibulopelvic angle, right infundibular height and left infundbulum width in patients with kidney stones in intravenous pyelography. On tomography, a statistically significant difference was found in patients with kidney stones in the measurement results of the right parenchyma thickness, the distance between the upper and lower poles of the right and left kidney, the right kidney pelvis renalis angle, left parenchyma thickness, left ureteropelvic junction and left kidney width.

Conclusion: Considering the data we have obtained from radiological imaging, we believe that the likelihood of developing kidney stones in the future and the anatomical changes that the Stone may create are predictable. In addition, we believe that it will shed light on Radiological anatomy studies on a similar topic and will contribute to the literature in our measurement data.

Keywords: kidney stones, morphometric measurement, intravenous pyelography, computed tomography

P-36

Morphological analysis of the proximal end of the tibia

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Objective: Knowing the morphology of the tibia is important in the treatment of tibial fractures and arthroplastic surgery. At the same time, these studies guide the design of prostheses. In this study, our aim is to analyze the measurements taken from the proximal end of the tibia and to investigate the correlation between tibia length and weight.

Methods: Measurements were made on 52 left and 53 right tibia bones in the bone laboratory of Erciyes University Faculty of Medicine, Department of Anatomy. Using the caliper, the width of its proximal end (AB), the anteroposterior length (CD) of the superior articular facet in the condylus medialis, the superior transverse length (EF) of the articular surface in the condylus medialis, the superior articular facet in the condylus lateralis. the antero-posterior length (GH) of the condylus lateralis, the superior transverse length (IJ) of the articular surface in the condylus lateralis, the antero-posterior length (KL) of the area intercodylaris, the antero-posterior length (MN) of the area intercodylaris anterior, area Antero-posterior length (OP), tibia length (RS), mechanical axis length (TU) and tibia weight of intercodylaris posterior were measured and noted.

Results: The antero-posterior length (C-D) of the superior articular facet in the right and left medial condylus was 39.91, respectively; The anteroposterior length (G-H) of the facies articularis superior in the right and left lateral condyle was determined as 35.56; 36.54, respectively. The correlation between the length and weight of right and left tibias (right r=0.537 medium strength, left: 0.711 high strength) was found to significant (p=0.00).

Conclusion: It is important that the bones participating in the knee joint structure are compatible with the implant in prosthetic surgeries. In this study, morphological analyzes were performed on 105 tibiae. We think that the results we obtained will useful in knee prosthesis designs.

Keywords: medial condylus, tibia, lateral condyle, morphology

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