Abstracts

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ORAL PRESENTATIONS

COMPREHENSIVE VIEW OF THE SUPRASCAPULAR NOTCH TOPOGRAPHICAL VARIATION AS IT APPLIES INTO ITS SUPRASCAPULAR NOTCH STENOSIS AND SURGICAL FEASIBILITY IN SUPRASCAPULAR NERVE ENTRAPMENT

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Objectives: This contribution represents a series of collective work on the suprascapular notch (SSN) morphological variations that play critical role in suprascapular nerve (SN) entrapment at the SSN osteofibrous, muscular, and vascular anatomy. Materials and methods: The collective studies involved dry bones morphometric analysis of SN borders in 252 unpaired and 180 paired scapulae and cadaveric observation of SSN contents and muscles topography in 135 SSN (78 bilateral, 57 free limbs). The SSN morphological stenosis pattern was determined by quantifying the parametric values and their alignments. The vascular relationships to the SSN were observed. Course of the supraspinatus, subscapularis and omohyoid (OMH) muscles were traced at the SSN. Results: The SSN was stenosed in 15% of the dry bones. Type-V SSN (discrete) is at most risk owing to a relatively high incidence of stenosis in 12%. Nine variants of SSN vascular combination ranging from 0-3 suprascapular artery (SA) (6 SA absence cases) and 1-5 suprascapular vein (SV). Eleven SSN exhibited the variant anterior coracoscapular ligament. In 3.48%, the SSN was covered by the subscapularis muscle impinging on the SN. The OMH inserted on the suprascapular ligament (SSL) in 31.25%. Conclusions: Superior transverse distance, width, and height of the SSN serve as indicators in ultrasound evaluation of SSN capacity. The SSN stenosis takes horizontal/ vertical morphologica pattern. Ligamentectomy would relieve a SN impinged by the SSL but osteoplasty is inevitable if the SN is compressed between bones. The insertion of OMH onto the SSL seems to intervene with SN decompression ligamenttectomy.

HISTORICAL NOTE ON THE ANATOMO-CLINICAL RELEVANCE OF UTERINE MALFORMATIONS

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Introduction: Throughout the times, knowledge of human organs' anatomy and anatomo-clinical correlation evolved with postmortem studies, reports and descriptions. Objectives: The authors aim to highlight the importance of historical reports of uterine malformations. Material and Methods: A search for references and/or illustrations of uterine congenital malformations was performed in historical medical books belonging to an Anatomical Pathology Museum. Results: The "Traité d'Anatomie Pathologique du Corps Humain" (1829-1835) from the French anatomist/anatomo-pathologist Jean Cruveilhier, with illustrations of the painter Antoine Chazal and his collaborator J.G. Martin, show the morphology of uterine malformations. Discussion and Conclusions: Congenital malformations of the uterus are not uncommon (ranging from 0.06% to 38% in the international literature). Since they may cause infertility or miscarriage, they are relevant from medico-scientific, but also from social and emotional points of view. Old historical anatomical/anatomo-pathological treatises reveal how morbid conditions due to

morphogenesis errors were recognised in past times, namely in the XIXth century; being valuable tools in medical education.

WHAT'S NEW ABOUT THE FLEXOR TENDON PULLEYS IN THE TRIPHALANGEAL FINGERS OF THE HAND?

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Introduction: There are substantial differences in incidence and shape of the pulleys, depending on the type, the finger and the side of the hand. This has previously been described with small sample sizes. Moreover, there is a controversy in the published works regarding these parameters. Based on these controversies, we aimed to carry out a study with a sample the size of which would provide valid statistics of the main characteristics of the pulleys in the human fingers. Material and Methods: We dissected 192 fingers in 48 fresh cadaveric hands (23 right and 25 left hands from 26 female and 22 male donors) and analysed the incidence, location, length, and structure of the five annular and three cruciform pulleys. Results: No statistically significant differences were found between left and right or between male and female hands. The A1-, A2- and A4 pulleys were present in all fingers while the incidence of other pulleys varied. The structure of the pulleys also varied. Most important was the variation of A1, that could consist of one to four separate rings. In 18% there was no gap between the A1- and A2 pulleys. Discussion: According to previous reports, A1, A2 and A4 showed a constant incidence in our sample. We have found the greatest discrepancy in the incidence of pulleys A5 and C2. Some of our findings may be relevant during surgery, especially release of A1 in the treatment of trigger fingers. A greater understanding of the anatomical variation of the pulley system is beneficial for hand surgeons during open or percutaneous surgery.

ISOKINETIC AND MRI FEATURES OF THE TRUNK MUSCLES IN PATIENTS WITH LOW BACK PAIN SYNDROME

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Introduction: The lumbar spine (LS) is the most stressed segment of the spine because the load and movement of the whole body, through the LS are transferred from the movable segments to the immobile base of the sacrum and further down to the pelvis and lower extremities. Therefore, LS, muscles, and ligaments of this region are extremely susceptible to chronic changes resulting in low back pain syndrome (LBS). The aim of this study was to analyze the strength and morphology of the trunk muscles in patients with LBS. Material and methods: The study was conducted on 50 patients and 30 healthy individuals. Morphology of the muscles was analyzed using magnetic resonance imaging. Measurement of muscle strength was performed by isokinetic dynamometry. Results: Results showed a significantly bigger cross-sectional area (CSA) of psoas major (PM) and rectus abdominis (RA) muscles in healthy individuals. There were no differences in CSA of trunk extensors between examined groups. However, healthy individuals showed higher peak torque (PT) of all examined muscles compared to LBS patients. Moreover, results showed a significant positive correlation between CSA of PM and PT of trunk flexors as well as trunk extensors in patients with LBS. However, in healthy individuals, results showed only a significant positive correlation between CSA of PM and PT of trunk extensors without a significant correlation with PT of trunk flexors. Conclusions: PM and RA are subject to atrophy in patients with LBS. PM plays an essential role in LS stabilization during trunk movement in patients with LBS.

ANATOMICAL VARIABILITY OF THE CORACOACROMIAL LIGAMENT AS THE KEY TO THE SUCCESS OF THE SUBACROMIAL IMPINGEMENT SYNDROME SURGERY

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Introduction: Subacromial impingement syndrome is common cause for shoulder complaints in primary care. Arthroscopic subacromial decompression procedure (ASD), which involves a coracoacromial ligament (CAL) release is often performed in this condition. The aim of this study is to investigate the morphological variability of the CAL, to enable the observation of types among patients using magnetic resonance (MRI) and to corelate the results to the cause of the unsatisfactory results of the operations. Materials and Methods: During anatomical examination sixty shoulders, previously fixed in 10% formalin were studied. To investigate morphology in patients we performed examination on a dedicated 1.5 Tesla digital magnetic resonance shoulder coil. Proprietary 2D T1 sequence planned on standard sequences for shoulder examinations was used to examine thirty patients with recurrent pain syndrome after ASD procedure. Results: Presentation of new anatomical classification of CAL, which consists of: narrow and broad type I, Y-shaped and V-shaped type II, type III, type IV and type V. Statistical analysis of results was

performed. Introduction of new proprietary MRI sequence for CAL. Among patients experiencing recurrent pain syndrome following the ASD procedure, fibrous bands were identified at the site corresponding to CAL. Discussion: Study presents a new, extended and reliable classification of the CAL that allows for a detailed description of its morphology and proprietary MRI sequence enabling examination of the presented types of CAL in patients. Fibrous bands seen in MRI in patients with recurrent manifestations of symptoms after ASD procedure may turn out to be residual parts of CAL.

THE OPTIC NERVE-SHEATH ANATOMY IN INTRACRANIAL PRESSURE

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Background: Intracranial pressure (ICP) assessment and monitoring is critical in the management of several neurological scenarios. Current techniques for ICP monitoring have significant risks and a reliable non-invasive neuroimaging technique to evaluate ICP could revolutionize clinical approach. The optic nerve-sheath complex is continuous with the subarachnoid fluid space. Changes in ICP can affect the fluid space and the optic nerve-sheath diameter (ONSD). Retrobulbar ultrasonography can evaluate the ONSD and may provide useful diagnostic information about raised ICP. However, information is lacking about the normal ONSD in healthy individuals and which cutoff should be used in the detection of intracranial hypertension. Methods: Retrobulbar ultrasonography was performed in healthy individuals (36 eyes) and individuals with raised ICP (8 eyes) to determine the ONSD in the general population compared to intracranial hypertension. Cadaver dissections were performed to corroborate the ultrasonography findings and correlate specimen ONSD with imaging data. Results: The mean ONSD was 6.2mm for healthy subjects and 7.1mm for individuals with raised ICP. Cadaver dissections revealed an ONSD of 5mm. Due to the loss of the normal fluid around the optic nerve, we expect the ONSD to be larger in live subjects, which is therefore consistent with the ultrasonographic findings obtained. Conclusions: We propose a reference ONSD in healthy subjects, which would help to determine a neuroimaging cutoff for the diagnosis of intracranial hypertension. The preliminary data from individuals with raised ICP is part of a larger project to build a predictive model that uses ONSD as a surrogate for ICP.

PANDEMIC CHANGE IN MEDICAL STUDENTS' ATTITUDE REGARDING BODY DONATION

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Between 2018 and 2020 we carried out a research project endorsed by the University Secretary of Sciences and Technology, based on different group's surveys, to obtain supporting data for the creation of the Program for Body Procurement and Donation. As the pandemic COVID-19 stopped all face-to-face educational activities and seriously affected the reception of bodies for teaching and research, in 2021 we reiterated a survey on some similar data, with the aim of evaluating the impact the pandemic had had on the opinion of two of these groups (medical students). This survey included 1406 students from all years of the career, who were asked about their knowledge on body donation and the Program, their interest in collaborating with it, their willingness to donate their own body and reasons for doing or not doing so. Results showed a similar composition of the samples in relation to age, sex, geographic origin, religion and differ ences in each year of the career (compared with those of 2018). Specific aspects also evidenced similarities about knowledge of the possibility of donating (p=0.0812) and interest in collaborating with the Program (p=0.2460), but reached 72% (p=<0,0001) in willingness to donate their own body. We also analyzed the reasons to donate and not donate in the context of the pandemic and concluded that it positively influenced these results; directly, due to the increased appreciation of scientific research and indirectly, because the pandemic facilitated communi-cations and access to scientific information online.

ANATOMICAL BASIS FOR OPTIMAL RESULTS OF UPPER EYELID BLEPHAROPLASTY

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Upper eyelid blepharoplasty is one of the most common procedures performed in aesthetic surgery. There are several surgical techniques of upper eyelid blepharoplasty. All of them require careful preoperative planning, meticulous surgical procedure and good postoperative care to achieve optimal results and avoid possible complications. Patients have different expec-tations but in general the main goal for most of them is to increase distance between upper eyelid crease and margin. This helps restore a youthful and natural look and can also increase field of vision. The knowledge about periorbital anatomy and aging changes is essential for surgical procedures in the area of upper eyelid. The upper eyelid is a complex structure which consists of skin, orbicularis oculi muscle, levator aponeurosis, Müller's muscle, tarsus and conjunctiva. From the medial and lateral border of the superior tarsus to the orbital rim extends medial and lateral canthal ligament. The orbital septum is located deeper than orbicularis oculi muscle and extends from the upper tarsus to the periosteum of the orbital rim. Behind the orbital septum is located orbital fat. The upper eyelid contains two fat pads, nasal and central, separated by the trochlea and superior oblique tendon. The tension of the orbital septum varies among

individuals and with age. During the aging process, atrophy of eyelid fat can cause the eyelids to retract posteriorly, resulting in enophthalmos, and an eyelid crease become wider and displaced proximally. Contrary, orbital fat because of weakening of the orbital septum can prolapse anteriorly, resulting in bulging eyelid.

THE ROUND LIGAMENT OF THE UTERUS AND ITS ROLE IN CHRONIC GROIN PAIN

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Purpose: Modern surgery aims to reduce postoperative pain in patients by avoiding trauma to structures bearing afferent nerve fibers. We set our focus on the round ligament of the uterus (RL) searching for structures contributing to the development of chronic postoperative groin pain (CPIP). Aim of this study was to determine whether the topography and histology of the RL has the potential to cause CPIP after inguinal hernia repair. Methods: Macroscopic dissection of 6 formalin fixed pelvises evaluating the course of the RL in 3 anatomical segments (1 intrapelvic, 2 inside inguinal canal, 3 outside inguinal canal) was performed. Additionally, we carried out immunohistochemistry (IHC) as well as HE-staining of sections of the RL of fresh body donors to determine different fiber types, using S100 and CGRP antibodies. Results: The mapping shows that the caudal insertion (segment 3) is never located in the labia majora pudendi. During its course through the pelvic region (segment 1) the fibers maintain their strength while decreasing in thickness throughout the inguinal canal (segment 2) adhering to the abdominal wall. The RL is constantly accompanied by a venous plexus and an artery. Beginning in segment 2 it is macroscopically accompanied by the ilioinguinal nerve. The results of S100 and CGRP-stainings show positive signals in all segments, indicating the presence of (sensory) nerve fibers. Conclusion: The RL in its anatomy and histology enables the surgeon to avoid three potential contributors to CPIP: ilioinguinal nerve, vascular structures, and nerve fibers being inside in its entire course.

AFTER ALL, IT IS THE PARROT'S BEAK'S FAULT

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Introduction and Objectives: Osteophytosis is very common after 60 years old and may be associated with spondylarthrosis with calcification of vertebral ligaments. The authors intend to present a clinical case of anatomic distortion related to osteophytosis and its unusual clinical manifestations. Material and Methods: The authors propose to present the clinical case of a 89-year-old male patient with dysphagia with an episode of aspiration that led to right lobar pneumonia, agitation and grade 3 paresis in the right lower limb. Results: Upon hospital admission, the patient presented a head computed tomography (CT) with no acute neurological injury. There was a complete recovery of motor and cognitive deficits, but severe dysphagia remained. An upper digestive endoscopy was performed, which showed an ulceration in the proximal esophagus, suggestive of neoplasia, although the biopsies revealed a herpetic infection. He was treated with acyclovir without remission of the symptoms. So, the endoscopy was repeated. A cervical CT scan was performed and revealed a calcified anterior longitudinal ligament, anterior osteophytosis with huge traction spurs from C5 to T2, compressing the posterior wall of the hypopharynx and esophagus. Conclusion: So, with this case, the authors pretend to present a rare and underdiagnosed cause of dysphagia. Osteophytes can reach considerable dimensions and, when located on the anterior surface of the cervical spine, compress the pharynx, esophagus, larynx or nerves, causing dysphagia with risk of aspiration, dyspnea and dysphonia. With this type of case, the importance of anatomy applied to clinical and imaging is emphasized.

PROPOSAL FOR A NEW CLASSIFICATION OF THE LIGAMENTUM MUCOSUM - STUDY EXTENDED WITH IMMUNOHISTOCHEMICAL APPROACH

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Introduction: The ligamentum mucosum (LM) is a ligamentous structure within the synovial layer of the knee joint capsule. It usually arises from the infrapatellar fat pad and is inserted into the intercondylar notch of the femur. The complex morphology of the LM has led to many misunderstandings among cientists and clinicians. Therefore, the main objective of this study was to characterize and classify the morphology of the LM. For better understanding immunohistochemical analysis was performed. Material and Methods: 67 lower limbs were examined. 51 fixed in 10% formalin solution and 16 fresh frozen. Upon dissection, the following morphological features were assessed: the types of LM, morphometric measurement, basic histology of each type and immunohistochemical analysis. Results: The prevalence of the LM was 66.7%. Three different types were recognized: Type I – single with attachment to the intercondylar notch, Type IIa – bifurcated, attachment to the ACL, Type IIb – bifurcated, attachments to the intercondylar notch, Type III – double ligament. No significant difference in distribution of LM types between sexes (p=0.2443) and body sides (p=0.1561). Immunostains revealed tiny nerves and the presence of many vascular vessels along the subsynovial layer in all samples of LM.

Conclusions: The LM is variable, yet some variations are crucial to be aware of. In our study the new clinically useful classification is proposed. Our histological and immunohistochemical findings proved that LM morphology is comparable to other knee ligaments and may be responsible for pain sensation. Moreover, rich vascular network of LM may serve as a potential source of revascularization during ACL suturing or reconstruction.

MOVING BETWEEN TWO WORLDS: PREPARING STUDENTS FOR BOTH ANATOMICAL AND CLINICAL TERMINOLOGY

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In North America, medical terminology is typically taught at the undergraduate level by Classicists, people like us, who teach Ancient Greek and Latin. But usually, these medical terminology courses do not teach students the Latin medical terminology (*TA*) or a clear systematic way to break down and translate the terminology. Our teaching approach does things differently: we are advocating for bringing the *TA* back into the classroom, while also giving all students the tools to systematically identify and translate clinical terminology, whether it uses the Latin of the *TA* or not. That is, we teach our students, no matter their medical interests or specialities, how to translate both anatomical and clinical terms whether they be in English or Latin. This presentation will show examples of how we teach medical terminology in the classroom and bridge the gap between clinical and anatomical forms. We look forward to hearing from others about the challenges they face with respect to medical language education.

ANATOMICAL VARIATIONS OF THE HUMAN HYOID BONE AND ITS CLINICAL IMPLICATIONS

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Introduction and Objectives: The aim was to identify the anatomical variations in morphology of the human hyoid bone regarding symmetry, isometry and anisomorphism. These variables are beneficial for surgeons and/or forensic anthropologists. Material and Methods: Sixty-two human hyoid bones (31 male and 31 female) belonging to the Institute Anatómico Forense (I.A.F.) of Madrid (Spain) were dissected. The data collected were analyzed using the Chi^2 test. The results of previous studies were reviewed. Results: The specimens were clustered in five different patterns: U-shaped (16.7%), open (47.6%), triangular (9.5%), horseshoe (7.1%) and trapezoidal (19%). Types were distinguished according to the different shapes of the two halves (isomorphic 67.7% and anisomorphic 32.3%), the length of the greater horn (isometric 37% and anisometric 63%), and the transverse distances between the horns (symmetry 24.2% and asymmetry 75.8%). Discussion and Conclusion: A thorough understanding of these anatomical variations in the shape of the hyoid could help clinicians and forensics in the correct interpretation of this bone.

IS THERE A PATTERN IN THE NEURAL COMMUNICATIONS ON THE LATERAL FOREARM AND DORSUM OF THE HAND?

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Objectives: The arrangement of the communicating branches between the superficial branch of the radial nerve (SBRN) and the lateral antebrachial cutaneous nerve (LACN) in the hand and distal part of the forearm is not sufficiently described and potential communications/overlap can cause diagnostic hesitations. The aim of the study was to reveal if any pattern exists in the communicating branches arrangement. Materials and Methods: Thirty-six adult cadaveric forearms and hands from 10 female and 8 male body donors with no known record and no visible traces of past traumas, embalmed with classical formaldehyde method, were meticulously dissected and neural structures were measured with a digital caliper, photographed and copied on paper. Results: Five different types were revealed based on the direction of the communicating branch (radiodistal, ulnodistal, loop, complex and absent). The most common type (radiodistal branch between the SBRN and LACN) was found in 23 cases, on the contrary the rarest arrangement was a distally convex loop between both nerves. The number of communicating branches ranged from 0 to 3 (in 9, 14, 12 and 1 hands, respectively) and the overlap of the two nerves branches was present in 21 cases. Conclusions: The knowledge of the pattern of the communicating branches between the SBRN and LACN and possible overlap is helpful in resolving the discrepancy in the neurological skin examination in case of the potential nerve interruption / entrapment which do not correspond to the generally acknowledged textbook pattern of the areae nervinae.

IS THE INFRASPINATUS MUSCLE VARIABLE? THE NEW CLASSIFICATION OF THE INFRASPINATUS MUSCLE

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Introduction: The infraspinatus muscle (IFM) is medially attached to the infraspinous fossa with insertion on the greater tubercle of the humerus. Along with three other muscles, it makes up the rotator cuff. There is insufficient information about IFM variability and its accessory muscles in the literature. The purpose of this study was to analyze the morphological variabilities of the IFM. We aimed to create a new classification based on the anatomical variations of the IFM. Material and Methods: During the research, we dissected 92 human upper limbs fixed in a 10% formalin solution. Results: We have defined two variations of the IFM. Type 1 has one head, with

origins in the infraspinatus fossa and insertion on the greater tubercle of the humerus. Type 2 has two heads – superior and inferior – and two tendons. Both heads run parallel, one below the other. They are medially attached to the infraspinatus fossa. Their insertions are on the greater tubercle of the humerus. The infraspinatus minor muscle is a differentiation of the superior bundles of the IFM. It originates from the scapular spine and inserts on the greater tubercle of the humerus or the tendinous part of the IFM. We have also observed fusion of the infraspinatus muscle with teres minor muscle. Conclusion: The IFM is characterized by morphological variability. Variations affect muscle biomechanics. Hence, it may be crucial while operating the rotator cuff region. It is also essential for more effective psychotherapeutic treatments of the IFM pathologies.

THE DOUBLE INTERNAL ILIAC VEIN. IS IT AN ANOMALY OR ANATOMICAL VARIATION? - CASE REPORT

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The internal iliac artery and internal iliac vein are the main vessels responsible for the vascularization of the pelvic walls and organs. Although the course of the internal iliac artery is morphologically variable, the course of the internal iliac vein is much more unpredictable. This vein is clinically significant due to the possible occurrence of its occlusion and a necessity to find an alternative route of circulation. During anatomical dissection of the female pelvis, the double internal iliac vein was found. The first one was connected with the external iliac vein, creating a common trunk. And with this common trunk, the second internal iliac vein was connected forming together the common iliac vein. Additionally, both internal iliac veins were fused with each other through a proximal anastomosis and a distal anastomosis, forming a specific circle encompassing the arterial vessels. What is more, such morphological variation is more complicated than the anatomically normal type of vascularization. For that reason, knowledge of the possibility of the double internal iliac vein (and other morphological variabilities), is necessary for many specialists. It may result not only in increased effectiveness of some surgical procedures, but also in decreased level of iatrogenic complications. Pre-operative knowledge about different anatomical variants of vascularization, their course, or relation to other structures is essential in the diagnosis and treatment of pathologies located in the pelvic area.

PRELIMINARY ANATOMICAL STUDY OF THE HEPATIC PLEXUS. CLINICAL CONSIDERATIONS.

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Introduction: The technique of percutaneous ablation makes it possible to denervate the liver plexus as an alternative treatment for drug-resistant type 2 diabetes mellitus, among other pathologies, safely for the patient. To be able to carry it out, it is essential to have a deep knowledge of the anatomy of the hepatic plexus and its relationship with the hepatic arteries. However, there is very little work on the subject. Objectives: The objectives of this work are to study the constitution, distribution and relationships of the hepatic plexus and locate the points where it establishes a close relationship with the blood vessels, these being the ones of choice to apply the radiofrequency and denervate the plexus. Material and Methods: The microdissection of the hepatic plexus of three embalmed bodies (2 women, 1 man) has been carried out. Results: The hepatic plexus was made up of fibers from the vagus nerves and celiac ganglia on both sides, differentiating an anterior part to the hepatic pedicle and another posterior to it that connected with each other. The anterior hepatic plexus accompanied mainly the hepatic arteries while the posterior one accompanied mainly the portal vein and bile ducts. Conclusions: We consider that the two optimal points to perform the ablation of the hepatic plexus are the common hepatic artery, prior to its bifurcation and in the hepatic artery itself, in the segment immediately following the bifurcation of the common hepatic artery.

A NEW LOOK AT QUADRICEPS TENDON - IS IT REALLY COMPOSED OF THREE LAYERS?

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Background: The purpose of this study was to qualitatively and quantitatively describe the anatomy of the QT including its size, its layers and relationship between layers. Methods: Sixty lower limbs fixed in 10% formalin were examined. A retrospective analysis of 20 thigh MRI examinations was performed. Results: In all dissected specimens, the quadriceps femoris was composed of 4 layers: superficial (first layer), middle (second layer), middle-deep (third layer) and deep (fourth layer). The first layer (superficial) was formed by the rectus femoris tendon and fascia. The second layer was composed of tendons of the vastus medialis and superficial part of the vastus lateralis. The third layer was formed by the intermediate part of the vastus lateralis. The fourth layer was composed of the tendon of the vastus intermedius. This type of anatomy was visualized in 4 males and 2 females on MRI scans. Conclusion: The findings of this study provide a detailed anatomy of the quadriceps tendon. There were 4 different layers of the QT consistently found in all specimens. The first layer was independent and composed by the rectus femoris tendon, the second was formed by the superficial part of the vastus lateralis and vastus medialis. The third layer was formed by the intermediate part of the vastus lateralis, and the deepest fourth layer was composed of the

vastus intermedius. This detailed structural anatomy was also able to be visualized on MRI scans.

CORACOID PROCESS CLASSIFICATION BASED ON MORPHOMETRIC CURVATURE AND INTERVALS IN CORRELATION TO FRACTURES AND SUBCORACOID SPACE IMPINGEMENT.

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Materials and Methods: In order to measure CP morphometry, a digital library of 150 dry scapulae was constructed for image analysis. The scapulae were selected at random without bias towards age, sex, or pathology from the collection of Charles University and the Czech National Museum. Each scapula was individually photographed with a focus on the CP and photos were taken perpendicular to the plane of anterior projection with a tape measure for scaling. All photos were analyzed using FIJI (ImageJ) software (version 2.1.0/1.53c). Within the FIJI interface, each image of the CP was scaled by a 10 mm straight line measurement of the in-photo tape measure for distance-dependent data to be reported as pixels/mm. Scalar measurements were taken of the CP length, thickness (vertical, diagonal, and horizontal), width, and circumflex, and a curvature measurement was computed for the lateral projection of the CP. Results: Morphometric measurements (reported as median ± IQR, n = 150): Length: 44.6 ± 4.8 mm; Thickness: 11.0 ± 3.0 mm (vertical), 12.3 ± 2.5 mm (diagonal), 11.1 ± 2.7 mm (horizontal); Width: 13.8 ± 2.7 mm; Circumflex: 34.1 ± 5.6 mm; Lateral Projection: 0.18 ± 0.05 mm^{-1}. All data were lognormally distributed. Conclusions: Paired with other scalar measurements, curvature can complete the picture of an anatomical structure's pattern. In the case of the CP, curvature plus length and width measurements can describe both the size of the CP along with its projection into a given plane, factors which affect subcoracoid impingement–related surgeries. Grant Agency of Charles University: GAUK Nos. 1720119 and 266222.

THE RADIOLOGY RESOURCES IN THE TEACHING OF HUMAN ANATOMY IN HEALTH CURRICULA

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Introduction:The teaching of Human Anatomy uses several methodologies of which the handling of cadaveric specimens stands out. Although dissections remain the gold standard, teaching has been complemented with alternative resources with different didactic and methodological approaches that stimulate and awaken knowledge. The use of these instruments should be an integral part of the teaching-learning process. Of these, the most frequent has been the incorporation of radiological images, due to its wide availability, easy implementation and clinical relevance. Radiology technology has evolved greatly in the last decades becoming the modality that, through volumetric imaging methods in 3D, 4D, VRT and finally the introduction of kinematics, converts images into photorealistic models that so well represent the anatomical structures. Methodology: To better understand this process, a literature review was performed, following the PRISMA diagram, using Medline, Scopus and Web-of-Science databases, between April and June 2020 with a 5-year retrospection for data collection. The CASP tool was used to assess the quality of the articles. Inclusion criteria were articles that included the keywords "Medical Imag* OR Radiolog* AND Anatomy AND Teaching OR Learn* Process". Results/Conclusion: Of the 56 studies founded, based on the keywords and the languages chosen 14 met the inclusion criteria and presented the effective description of teaching methods. The literature suggests that traditional teaching methods are not complete for intuitive learning and the students are receptive to these new approaches. However, the studies reviewed only present tools that serve as an addition to the curriculum but don't replace completely the traditional methods.

MULTIPARAMETRIC MRI IN PROSTATE CANCER

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Prostate cancer is the second leading cause of cancer death in men, according to the American Cancer Society. Multiparametric Magnetic Resonance Imaging (mpMRI), with a specificity of 89% and sensitivity of 76%, is a diagnostic imaging method used in the characterization (size; location; staging) of prostate neoplasia. The objectives are to characterize prostate lesions, in specific groups, identify the main affected tumor areas and correlate PSA with PIRADS staging. Sample: 45 subjects with prostate cancer, diagnosed or suspected primary/recurrent lesion. The inclusion criteria was to have a prostate MRI prescription with 3T equipment. Data collection resulted from the medical reports analysis and a questionnaire given by the patients prior to the exam. Results: A total of 13, 4, 8, 3 and 17 patients were assigned PIRADS staging 2, 3, 4, 5 and "no lesion", respectively. Regarding the location of lesions, most of the changes were identified in the left peripheral, right peripheral and left transitional zones, respectively. The correlation between PSA and the classification assigned to PIRADS staging was Rp=(-0.03). The study didn't show significant correlation between PSA and PSA density with PIRADS staging, [Rρ=(-0.03 and 0.17)]. According to the results, most lesions tend to appear in the peripheral zone. No relationship was found between BMI and PIRADS staging (Rρ=0.07). Multiparametric MRI is a diagnostic method with high sensitivity and specificity in the detection of prostate cancer. The main tumor area affected was the peripheral zone. Both PSA and

PSA density haven't shown a significant correlation with PIRADS staging.

A PROPOSAL FOR A NEW CLASSIFICATION OF CALCANEOFIBULAR LIGAMENT- PILOT STUDY

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Introduction: Ankle sprain is one of the most common musculoskeletal injuries and it mostly occurs during performing sport activity. Higher grade sprains effects in ankle ligaments injury especially calcaneofibular ligament (CFL) and anterior talofibular ligament (ATFL). Material and Methods: 60 lower limbs (20 male and 10 female) fixed in 10% formalin solution were examined for the presence and shape of the CFL. Results: CFL was present in 100 % of cases. We proposed a three-fold classification. Type I (65%), characterized by presence of one band. That type was divided into three subtypes (Band- shape, V-shape, Y-shape). Type II (20%), characterized by two bands, which was divided into two subtypes according to origin of the second band. Dominant band origin was located on lateral malleolus constantly, while origin of second band was located on anterior surface of lateral malleolus (subtype a) or on talus bone (subtype b). Type III (15%), characterized by presence of three bands. That type was not divided into subtypes. Conclusions: Calcaneofibular ligament is characterized by high morphological variability. Understanding the anatomy of the ankle ligaments is important for correct diagnosis and treatment. A detailed description of the origin and insertion is extremely important during mini-invasive ankle surgery.

ARE WE FATIGUING THE HAMSTRINGS OR THE LUMBAR MUSCLES?: ACTIVATION OF THE LUMBOPELVIC MUSCLES DURING DIFFERENT VERSIONS OF THE BIERING-SORENSEN MANOEUVRE

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Introduction: During the Biering-Sorensen manoeuvre (BSM), subjects lay prone, with their upper body hanging horizontally out of a bench. This causes an isometric contraction of the lumbopelvic extensor muscles, useful for fatigue studies, EMG normalization or exercise-induced hypoalgesia. Objectives: To assess the influence of the position of the trunk respective to the test bench in lumbar-to-hip extensors contraction ratio during BSM. Methods: 18 subjects performed a BSM in three positions, with different anatomical references placed at the bench border: the highest point of the iliac crest (IC), the anterior-superior iliac spine (ASIS) or the greater trochanter (GT). EMG activations of the erector spinae (ES) and biceps femoris (BF) were recorded. Results: ES/BF activation ratio in the IC position was significantly higher than in the ASIS and GT positions, and higher in the ASIS position than in the GT position. Activation of the BF followed the opposite trend, being higher in the GT position than in the IC and ASIS positions, and higher in the ASIS position than in the IC position. Activation of the ES did not show any significant differences. There was no significant effect for gender. Discussion: In both sexes, the further the trunk and the pelvis hang over the border of the bench, the higher the activation of the hip extensors becomes respective to the lumbar extensors. These results may be important to assess the supposed specificity of the BSM to cause an isolated isometric contraction of the lumbar extensor muscles.

CAN WE PREDICT PENILE SIZE INCREASE BEFORE AUGMENTATION SURGERY? A RETROSPECTIVE STUDY

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Introduction and Objectives: Division of the penile suspensory ligament is a surgical procedure that allows for lengthening the penis, which has become increasingly more popular. Despite providing generally satisfactory results, these can be significantly unpredictable. The authors aim to access the validity of cadaver models for predicting individual *in vivo* postoperative penile length increase, comparing results obtained in previous post-mortem procedures to those verified in this retrospective study. Material and Methods: The authors retrospectively reviewed the charts and photographic records of 40 patients who underwent surgical division of the penile suspensory ligament, between January 2017 and June 2022. Immediate postoperative length gains were comparable to those obtained in cadavers, corroborating the use of the latter as models for studying this surgical procedure and its outcomes. Results: The absolute flaccid length increase obtained from the division of the suspensory ligament ranged from 1,5 to 5,1 cm in live patients, and from 4,0 to 6,0 cm in cadaver models. Average absolute flaccid length increase obtained was 3,2 cm, akin to the 2,6 cm verified in cadaver studies. Discussion and Conclusions: Similar results *in vivo* and *ex vivo* protocols reinforce the latter's reliability as a predictive model for postoperative penile length increase following division of the penile suspensory ligament.

THE INSEPARABLE BOND BETWEEN ART AND MEDICINE - TWO COLLECTIONS OF ANATOMICAL DRAWINGS FROM THE UNIVERSITY OF LISBON

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Introduction and Objectives: The importance and necessity of understanding the human body for its correct representation in the artistic field made the teaching of Anatomy a recurring practice in European Schools of Fine Arts since the Renaissance. The

implementation of this discipline in Portuguese artistic education became official in the 19th century with the partnership between the Royal Academy of Fine Arts and the Medical-Surgical School of Lisbon. From this collaboration, two drawing collections emerged, with more than 2400 elements, dated between 1840-1950. This PhD. project (2021.08408.BD) aims to study, preserve, safeguard, and disseminate this artistic heritage to the public. Methods/Results: So far more than 2000 drawings of the human body have been identified, photographed, catalogued, and adequately stored. Currently, all the drawings are being organized in a web-based platform to allow their search and observation according to a category, body region, and artistic technique. We have selected and presented some of the most accurate anatomical drawings from this collection, including works by some of the main Portuguese artists of the 20th century. Discussion/ Conclusion: With this ongoing project, we will be able to understand the influence of teaching Anatomy in the national artistic production and give an organized and easy access of this important heritage to the public. We will also understand the endless relationship of mutual help between Art and Medicine and its essential pedagogical contribution. This work is financed by national funds through FCT, I.P, in the scope of the project «IUDB/04042/2020».

A NOTE ON NON-CONCORDANT ATTRIBUTES

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In analyzing the phrasal structures of the TA, the concept of "non-concordant attributes" provides a useful way to discuss genitive nouns (as modifiers of the head noun of a phrase) along with the more commonly seen adjectives. The latter can be called "concordant attributes" because the agreement of adjectives with their head nouns is a fundamental and unavoidable principle of Latin grammar. A problem arises when (by an entirely understandable confusion of technical terms), genitive nouns are called "non-concordant adjectives." In this brief talk, I will describe issues arising from and connected to this misnomer.

VARIATIONS OF THE POSTERIOR CIRCUMFLEX HUMERAL ARTERY ORIGIN AND CONCOMITANT ABERRATIONS: DISSECTION FINDINGS AND CLINICAL SIGNIFICANCE

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Introduction/Objectives: The posterior circumflex humeral artery (PCHA) typically arises as a single trunk from the axillary artery (AA). Less commonly, it arises either as a common trunk with the anterior circumflex humeral artery (ACHA) from the AA or from the subscapular artery (SA). Rarely the PCHA may arise from the deep brachial artery (DBA), the lateral thoracic artery (LTA) or the brachial artery (BA). The purpose of the study is the description of distinct cases of the PCHA atypical origin. Material-Method: Ten Greek donors' bodies were dissected on the axillary cavity and upper arm bilaterally in the Department of Anatomy and Surgical Anatomy, School of Medicine, Aristotle University of Thessaloniki. Results: Ten cases of atypical PCHA origin were found: a) 5 cases of common origin with the ACHA, as branches of the AA, b) 1 case of PCHA duplication, c) case of PCHA arising from the subscapular trunk together with the SA and an accessory LTA, d) 1 case of PCHA arising from the SA, e) 2 cases of common origin with the DBA. Discussion/Conclusions: The atypical course and branching variations of the PCHA have not been systematically reported. Especially, regarding the origin of the PCHA, its branching and the corresponding blood supply a lot of variations exist. Given that the PCHA variations are very important for the surgical approaches to the proximal humerus, it is necessary to systematically investigate the area to contribute to iatrogenic humeral head avascular necrosis prevention.

OUR EXPERIENCE WITH THE IMPLEMENTATION OF THE COURSE "CLINICAL EMBRYOLOGY AND REPRODUCTIVE MEDICINE" INTO THE CURRICULUM OF THE STUDY PROGRAM GENERAL MEDICINE

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Introduction: There is no separate course summarizing all aspects of human reproduction in most medical school curricula. At the same time, such a course would logically connect knowledge from clinical embryology and assisted reproduction, from the field of female and male infertility, mechanisms of formation of congenital malformations, their prenatal diagnosis and subsequent specialized neonatological care of the newborn. Methods: The aim of a wide team of university teachers (embryologists, gynecologists, neonatologists, endocrinologists, geneticists, ...) was to create and implement a new course called "Clinical Embryology and Reproductive Medicine" into the curriculum of the study program General Medicine in the 4th year of study at Faculty of Medicine, Comenius University in Bratislava. Results: There is a great interest in the course among medical students, as evidenced by the number of students who enrolled in this course. The contents of the seminars can be divided into several areas: 1) Clinical embryology and laboratory part of assisted reproduction, 2) Causes and treatment of female and male infertility, 3) A comprehensive view of the issue of congenital malformations, 4) Problems of preconception and prenatal preparation and childbirth, family planning, 5) Reproductive immunology and endocrinology. Despite the complexity of the field of gynecology and obstetrics, it is often relegated to a shorter clerkship length in medical school curricula. Therefore, in the opinion of students, this new course is extremely

helpful in preparing for the final state exam. Grant of Ministry of Education of the Slovak Republic No. KEGA 081UK-4/2021 and grant of Slovak Research and Development Agency No. APVV-18-0499.

IS QUADRICEPS TENDON LAYERING THE SAME AS THERE ARE SUPRANUMERARY HEADS?

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Introduction: The aim of the study was to determine the importance of the presence of additional quadriceps femoris heads on the quadriceps femoris layer arrangement. Methods: One hundred and twenty-eight lower limbs fixed in 10% formalin were examined. Results: Five types of quadriceps tendon layering have been observed depending on the accessory heads of the quadriceps muscle: Type 1 (four heads) – 55.5%, it consisted of four layers the first layer was formed by the rectus femoris tendon and fascia, the second was composed of the vastus medialis and superficial part of the vastus lateralis muscle. The third layer was composed by the intermediate part of the vastus lateralis muscle. The last – fourth layer was composed by the vastus intermedius. Type 2 (five heads) – 27.4%, the first four layers were the same as in Type 1, but the accessory tendon of the fifth head of the quadriceps femoris muscle was located underneath them, and created the deepest layer. Type 3 (sex heads) – 10.9%. It consisted of five layers. Type 4 (seven heads) – 3.1%. It was composed of only four layers. Type 5 (eight heads) – 3.1%. This type was composed of five layers. The tendon of the eighth head of the quadriceps muscle was attached to the medial part of the patella. Conclusion: The findings of this study provide a detailed anatomy of the quadriceps tendon including accessory tendons of the accessory heads of this structure. The accessory heads of the quadriceps femoris contribute to the layering of the quadriceps femoris tendon.

FLASH POSTERS

ACROMION CURVATURE MORPHOLOGICAL PATTERN IN CORRELATION TO EXTERNAL FIXATION PLATE SELECTION

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Introduction: The acromion surface projects laterally in curving orientation. Fractures of the acromion are relatively rare. But if it occurs, an obstacle to selecting the best-fit-fixation plate may be faced due to less options and availability of those plate types. The objectives of this study were to compare the acromion morphology to fixation plates fit. Materials and methods: The thickness, length and width of acromion were measured on 180 paired healthy dry bones. The curvature of the acromion was assessed digitally by software aid (*Fiji Image-J*) and *(*Microsoft Excel running R code*).* The method entitles plotting seven points along the curving margin of acromion. The *solver* function calculates the regression which gives an index value. The same parameters were assessed as applicable on 150 retrospective plain X-rays of healthy acromion including 50 lateral projections as well as on 20 healthy 3D-CTs reconstructions of the scapula. Results: The mean length of the acromion was 48.70mm (SD 5.29mm), mean thickness was 8.51mm (SD 1.67mm) and mean width was 25.97mm (SD 5.97mm). The indexed value of the mean curvature was 0.048508 (SD 0.016482). Conclusions: Utilizing our own developed software method, the curved surface of the acromion was indexed on graph plots giving a spectrum of curvature patterns with index values serving in plate fixation selection with optimum curvature fitness level. Evaluating the acromion curvature was possible on plain X-rays lateral projection only, but was not optimal as with the 3D-CT reconstructions. Grant support: Grant Agency of Charles University: GAUK No. 266222

ANATOMY DEMONSTRATIONS USING INTERDISCIPLINARY PEER-TO-PEER TEACHING AND LEARNING

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Interdisciplinary learning is a desirable element of healthcare education as preparation for inter-professional collaboration in the workplace. At present, there are limited opportunities for peer-to-peer and interdisciplinary learning and teaching interactions in higher education. As such, an attempt to implement these pedagogical approaches was trialled at a college level in Swansea University. Graduate-Entry Medical

(GEM) students acted as volunteer anatomy demonstrators, working alongside anatomists to run practical workshops as part of an undergraduate (UG) module. Demonstrators were matched with student groups, so longitudinal pedagogic relationships could be fostered. Demonstrators were also involved in preparing and delivering mock examinations. The quality and utility of this intervention was measured using three sets of data drawn from separate feedback questionnaires for UG students enrolled, GEM demonstrators, and module lecturers. Of students who gave the module feedback, 51.28% mentioned the advantages conferred by these workshops. Of these, 35% also gave favourable mention to the inclusion of GEM demonstrators. Comment themes included the presence of a role model, improved engagement with course content and GEM demonstrators' abilities to include clinically relevant contexts to taught anatomy. The GEM demonstrators reported a benefit alongside refining their teaching skills. Anatomists identify a pedagogical benefit to both demonstrators and enrolled students. They recognise the great advantage for GEM students who can enhance teaching skills essential to their early professional careers. Degree schemes across Swansea University and beyond may benefit from the integration of a similar approach in delivering early-year undergraduate seminars and practical sessions.

ANATOMICAL NAVIGATION FOR PERFORMING LYMPHADENECTOMY FOR EXTIRPATION OF THE ESOPHAGUS

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Aim: To determine significant anatomical landmarks for safe lymph node dissection in esophageal cancer in the prone position to perform an adequate volume of lymph node dissection. Materials and Methods: The study included an anatomical experiment and video-assisted thoracoscopic surgical treatment based on identified anatomical landmarks. The anatomical part of the study was performed on 30 non-fixed human cadavers (in accordance with the protocol of the Local Ethical Committee No. 01-21 dated January 22, 2021 I. M. Sechenov First Moscow State Medical University (Sechenov University)). Thoracoscopic extirpation of the esophagus was performed in 8 patients using topographic and anatomical navigation and 15 patients in a routine way. Results: Ligation of the archwire v. azygos provides optimal access to the tracheal bifurcation, right and left tracheabronchial angles, where bifurcation, lower paratracheal, and hilar lymph nodes are located. In the region of the aortic arch, access to the aortopulmonary window and lymph nodes of the aortic window, a group of left paratracheal lymph nodes is opened. When dissecting the mediastinal pleura above the vagus nerve, it becomes possible to visualize the right recurrent nerve and lymph nodes of group No. 105 and group No. 106top. The total number of removed lymph nodes from the thoracic and abdominal cavity was 32 (±4) in the "anatomical navigation" group, compared with the "without navigation" group - 27 (±3) lymph nodes. Conclusions: The use of topographic and anatomical navigation made it possible to increase the number of removed lymph nodes.

INFLUENCE OF THE ANATOMICAL REGION - SUBCUTANEOUS AND VISCERAL - ON THE OSTEOGENIC POTENTIAL OF CAT ADIPOSE TISSUE-DERIVED STROMAL CELLS

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Introduction: Adipose tissue-derived stromal cells (ADSCs) are a relevant cell population for bone tissue regenerative approaches. These can be obtained from two main depots - subcutaneous and visceral - with further differences in structure, functional behavior and cell content, according to the anatomical location. In the present study we have investigated if the functional characteristics and osteogenic differentiation capacity of cat ADSCs are affected by the origin of the adipose tissue harvesting depots. Methods*:* All experimental procedures were approved by the institutional ethics committee [15-CE-UTAD-2021]. Adipose tissue from the visceral retroperitoneal (VAT) and subcutaneous abdominal region (SCAT) was collected from 5 healthy cats (*F. catus*). ADSCs were isolated through an enzymatic dissociation process and cultured in the presence of osteogenic inducers. The obtained cultures were characterized at different periods for proliferation, morphology and osteogenic activity. Results: Our results demonstrated a distinct biological behavior of the cultured ADSCs, isolated from the two depots, namely in cell size, morphology and functional activity. In the presence of the osteogenic inducers, cultures showed an increased expression of alkaline phosphatase (ALP) activity, compared to control. However, VAT-derived ADSCs presented the highest osteogenic expression. Discussion and Conclusion: Different characteristics were found on the two adipose tissue depots, which may reflect the differences found in the functionality of isolated ADSCs. Accordingly, the harvesting site location must be taken into account in order to optimize ADSCs osteogenic functionality, for bone prospective regenerative purposes. This work was supported by FCT (UIDB/CVT/00772/2020 and SFRH/BD/148830/2019).

INTRA- AND INTER-EXAMINER AGREEMENT AND RELIABILITY ON HIP CONGRUENCE INDEX MEASUREMENT IN DOGS

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Introduction/Objectives: Hip dysplasia is an inherited disease affecting Humans and dogs. Hip congruence index (HCI) is a newly defined objective parameter for the assessment of radiographic hip joint congruence status in dogs, which directly reflects the free space present in the hip joint socket, calculated by dividing the femoral head area with acetabular coverage by all acetabular area, in the ventrodorsal radiographic hip extended view. The main purpose of this retrospective study was to access intra- and inter-examiner agreement and reliability of HCI measurements for the evaluation of hip congruence in 25 dogs (50 hip joints). Material and Methods: Measurements were performed by two examiners, with roughly the same amount of experience, in two independent sessions and a double-blind fashion. Agreement and reliability between sessions, and between examiners, were investigated. Results: There was no evidence of systematic bias in the Paired t-tests, as all mean differences were equal or below 0.027, and all 95 percent confidence intervals (CI) were narrow and included zero. In Bland-Altman analyses, all 95 percent limits of agreement were considered clinically small, so, the practiced methodology may be recognized as interchangeable. The intraclass correlation coefficient (ICC) values showed both excellent intra-examiner reliability (0.967 or above) and inter-examiner reliability (0.972), with all lower limits of 95 percent CI being equal or above 0.942. Discussion/Conclusions: Our study showed HCI is an indicator for joint incongruence, producing both repeatable and reproducible measurements, and may be suggested as a future radiographic parameter to evaluate congruence on dysplastic hips.

LEMMEL'S SYNDROME - UNUSUAL DIAGNOSIS

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Introduction and Objectives: Lemmel's syndrome was first described in 1934 by Lemmel, as an obstructive jaundice in the absence of choledocholithiasis or tumor, being caused by the presence of periampullary diverticula. Material and Methods: The authors propose to present the clinical case of a 90-year-old male patient presented in the Emergency department for an episode of syncope in the context of exposure to heat, associated with dizziness and nausea. Results: Upon hospital admission, the patient was submitted to several exams. From the analytical study, an increase in liver enzymology is highlighted, especially in cholestasis enzymes, as well as direct hyperbilirubinemia (total bilirubin of 2,36 mg/dL with direct bilirubin of 1,89 mg/dL). An abdominal computed tomography (CT) was performed, which revealed prominence of the bile ducts, in close relationship with a diverticulum on medial side of the second portion of duodenum. In this context, he performed upper digestive endoscopy and magnetic resonance cholangiopancreatography which confirmed the presence of duodenal diverticula with some compressive effect on the principal bile duct. Conclusion: The authors present a case of Lemmel's syndrome, whose diagnosis was incidental in an asymptomatic patient, opting for a conservative strategy. Imaging and anatomy correlation was essential for the diagnosis of this rare cause of biliary obstruction.

TISSUE ENGINEERING OF URETHRA - PREPARATION OF ACELLULAR SCAFFOLD

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Introduction: Several scaffolds have been introduced for urethral tissue engineering. However, an acellular human urethral scaffold harvested from deceased donors may provide significant advantages in comparison to synthetic, composite or other biological scaffolds. The aim of this study was to develop a protocol for decellularization of the human urethra that preserves substantial components of extracellular matrix (ECM), which are essential for subsequent recellularization mimicking the natural environment of original ECM. Methodology: 12 human urethras were harvested from deceased donors. Part of every harvested urethra was used as a control sample for analysis. The protocol design was enzyme-detergent based. 0.25% trypsin and 1% Triton X-100 supplemented with enzymatic removal of DNA residues were used. Subsequently, the scaffold was washed in distilled water for 7 days. The efficiency of decellularization was determined using histology examination, immunohistochemical staining, electron microscopy and DNA quantification. Results: Histology confirmed cell removal and preservation of urethral structure after decellularization. The preservation of collagen I, III, IV, elastin and fibronectin was confirmed by histologic examination and immunohistochemical staining. Scanning electron microscopy confirmed maintenance of ultrastructural architecture of ECM, ground substance and fibres. DNA content in decellularized urethra was significantly lower compared to the native sample and the criteria for

decellularized tissue were met. Conclusion: This study demonstrates the feasibility of an enzyme-detergent-based decellularization protocol for the removal of cellular components and maintenance of urethral ECM and its ultrastructure. Results provide solid ground for recellularization and urethral tissue engineering which will follow.

PTERYGOID HAMULUS FRACTURE AS A CLINICAL ENTITY.

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Introduction: Pterygoid Hamulus (PH) is a small hook-shaped protrusion of the sphenoid bone, projecting downward and anterolaterally from the base of each medial pterygoid plate. Does the *fracture of the PH* constitute an undescribed part of Pterygoid Hamular syndrome (PHS) or does it represent an asymptomatic condition, only recognized in dry skulls? Materials and Methods: We performed an on-hand morphology study of 87 pterygoid hamuli of a total of 114 dry skulls. Results: Two (2) hamular fractures were identified (2.3%) both showing obvious bony callus formation. The first fracture was located at the base of an elongated PH and the second at the base of a normal PH. Ipsilateral to the 2nd fracture, an intense periosteal reaction around the second and third maxillary molar tooth was observed. Discussion: Changes of the PH morphology cause clinical symptoms since soft palate movements depend on its integrity. Two clinical conditions are described in association with PHS: *the elongation of the PH* and *PH bursitis*, manifested with orofacial pain and dysphagia. PH fracture cases don't exist in the medical literature. Theoretically, any fracture would alter PH effectiveness, producing instability of the adjoining muscle and tendon attachments. The most probable causative mechanism would be the extraction of the third molar maxillary tooth, since it requires forceful surgical manipulations in close vicinity. If there is no avulsion fracture, bone healing would result in restoration of the PH function. This may explain the absence of studies describing PH fracture, though its presence in dry skulls is undisputed.

THE INTERRELATIONS OF THE PAROTID DUCT AND THE BUCCAL FAT PAD

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Introduction: Buccal fat pad reduction is accompanied by complications like the parotid duct (PD) injuries. The aim of research is full description of anatomical interrelations of PD and buccal fat pad in buccal area. Materials and methods: Research was held at the premises of I.M. Sechenov First Moscow State Medical University and OOO Novonexus. Surgical dissection and anatomic description were made on 108 cadavers of both genders, from 34 to 92 yo. Results: We are suggesting a classification which includes 5 types of parotid duct and buccal fat pad interrelations. 1st - PD was passing along the superior border of the buccal extension in close contact (61.92%). 2nd - PD was lying parallel to the superior border of the buccal fat pad (11.46%). 3rd - PD passes anteriorly to the buccal process, adjacent to its surface (17.43%). 4th - PD passes through the thickness of the buccal fat pad (5.5%). 5th - PD passes near posterior margin of the buccal extension (3.66%). Discussion: In similar studies we could find another classification of these interrelations, but we think that it's important to separate 2nd group because it shows independent to buccal fat pad PD course. And the 5th type was first time demonstrated. Conclusion: The interrelations of PD and buccal fat pad showed many variants. This information should be used in the preoperative period before buccal fat pad reduction.

ADULT HUMAN GLIAL CELLS DURING AGING - MORPHOLOGICAL ANALYSIS

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Introduction: During aging, the natural environment of glial cells is affected, which reflects in their number, size, and structure. The research aimed to determine whether the morphology of glial cells differs between age groups and to quantitatively analyze the possibility of classification of glial cells according to their qualitative description. Material and Methods: The study sample consisted of 30 two-sided sections of the principal olivary nucleus divided into three age groups (the second period of maturation (36-60 years), early aging (61-75 years), and late aging (76-90 years)). Histological preparation of samples was performed and the microscopic images were digitized and then transformed into binary and skeletonized forms. Glial cells (419) were qualitatively evaluated and the quantitative analysis of the size, shape, branching, length, and complexity was carried out by calculating 22 (geometric, computer, and fractal) parameters. Results: A qualitative evaluation of glial cells enabled the description of their types (astrocytes, oligo-dendrocytes, microglia). The body area, parameters of the astrocyte length, and the astrocyte arborization complexity are significantly lower in the sample of the third age group compared with the first and the second. Oligodendrocytes of the first and second groups have larger parameters of the cell length, and lower values of the fractal dimension of a body, glial field, and glial arborization complexity, than the third age group. Conclusions: During the early aging period, astrocytes undergo atrophic changes in the body, glial field, and processes, while the oligodendrocytes in the late period of aging retain their structural complexity.

MICRO-COMPUTED TOMOGRAPHY IN TEACHING MORPHOLOGICAL SUBJECTS - FROM LABORATORY TO MEDICAL STUDENTS

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Introduction: Computed tomography (CT) is an x-ray imaging procedure and together with 3D printed models were incorporated into the medical curriculum. Material and Methods: Cadaverous bone materials were scanned using Bruker SkyScan 1275 micro-CT, and the images were then processed with a CTvox and ORS Dragonfly software. The digital objects were exported to a 3D printer (Prusa SL1 3D printer and Prusa CW1 curing station) in order to create accurate anatomical replicas of the specimen. Results: By means of printing 3D originated copies of the real bone specimen with great detail resolution. It was possible to enlarge bones (e.g. small carpal bones), focusing on their articulation surfaces and color distinction was made; by means of the magnet we were able to position all carpal bones into the correct position with dorsal convexity and ventrally positioned eminentia carpi radialis et ulnaris. In some of the bones it was possible to make virtual cross sections (e.g. temporal bone, middle ear cavity of the temporal bone, facies ventrobasalis of the temporal bone). We printed vertebral column from C1 to L5 where students may observe transitions of the various processes (spinosi, transversi, articulares etc.). This way we print also rare variations of the vertebral structure and other bones from our department ossarium. Conclusions: Because of the detailed artificial specimen it is possible to lend them to students overnight to their homes for studying. Specimen could be then cleaned and disinfected with respect to hygiene rules even in the difficult COVID situation.

IMPACT OF LABIAPLASTY ON WOMEN'S QUALITY OF LIFE: A RETROSPECTIVE STUDY

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Introduction: The labia minor sustain an important role in the anatomy of the female genitalia by protecting the introitus from infectious microorganisms and retaining moisture. Some anatomical variations, however, are associated with a variable degree of physical and psychological discomfort that may affect women's quality of life. The composite reduction labiaplasty, as described by Gress, manages to reduce the labia minora and the foreskin of the clitoris with the usual goal of its inferior margin not surpassing the inferior margin of the labia. This study aims to evaluate the psychological outcomes of this technique using patient- reported outcomes. Methods/Materials: Two previously validated questionnaires which focus specifically on this surgery (Genital Appearance Satisfaction Scale and the Cosmetic Procedures Screening Questionnaire - Labiaplasty) were translated to the Portuguese language using a formal translation and back-translation method. We then methodically transformed these questionnaires along with the Female Sexual Function Index so they would become more suitable for a retrospective study. Patients submitted to surgical labiaplasty, between January 2016 and May 2022 were invited to participate by filling out the aforementioned questionnaires. Results: A total of 305 women were invited to participate in this study. The scores for the mentioned scales will be described in both the group submitted to labiaplasty and the control group. A statistical analysis will also be presented. Discussion: Patients in the group submitted to composite reduction labiaplasty scored significantly higher for perceived genital appearance, self-confidence and sexual function when compared to patients in the control group.

POSTERS

ANATOMICAL SUBSTRACT OF THE MASSETER MUSCLE MYOFASCIAL TRIGGER POINTS IN FRESH AND FORMALIZED CADAVER: COMPARATIVE STUDY

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Introduction: Myofascial pain syndrome (MPS) is a common cause of chronic musculoskeletal pain and is characterized by myofascial trigger points (MTPs). These MTPs have been correlated to anatomical areas supporting the hypothesis that innervation zone (IZ) dysfunction can be a cause for trigger point development. Comparative study in fresh and formalized cadavers aims to ascertain whether morphological and quantitative differences should be considered. Methods: Masseter muscles from five fresh and five formalized cadavers were carefully dissected from their origins in order to observe the exact point where nerve fibers penetrated the muscle belly. As muscle size varies among individuals, we

calculated the relative entry point of the nerve into the muscle by defining six different areas in the muscle belly: three superior (I, II and III) and three inferior (IV, V and VI), beginning at the posterior margin of the muscle and statistical analysis using anatomical data with Poisson distribution and logarithm link function followed Bonferroni multiple comparisons ($p < 0.005$). The comparison of points and muscle dimensions between the groups was made by Student's t-test ($p < 0.05$). Results: Areas I, II, V and VI concentrated the masseteric nerve entry points in both fixed and fresh frozen groups. These locations correspond to the clinically described MTP. No differences were found between fresh and formalized cadavers. Conclusion: Anatomical identification of the branching pattern of the masseteric nerve can be achieved irrespective of the cadavers being fixed or fresh frozen.

DISTAL OBLIQUE BUNDLE OF THE FOREARM - SURGICAL ANATOMY - OUR MEASURING AND POSSIBILITIES IN MODERN WRIST SURGERY

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Introduction: The distal oblique bundle is part of the distal interosseous membrane (DIOM) of the forearm and has been treated as a recognizable separate structure since 2009 when it was first referred to as "Distal Oblique Bundle (DOB)". Material and methods: Eight forearms were studied for the presence of the DOB. In the presence of the DOB, thickness, width and length were measured while points of insertion to the ulna and radius were analyzed, respectively. Results: Three DOBs were discovered. Two were found in right-handed males and one in a left-handed female. The average thickness was estimated to be 0.83 mm. The average width was 4.2 mm and the average length was 25.4 mm. Proximally, the mean distance from the middle of the bundle's ulnar insertion to the tip of the styloid process of the ulna was 50.3 mm (range: 45.5 to 53.4 mm). Distally, the mean distance from the middle of the bundle's insertion to the radius to the tip of the styloid process of the radius was 34.0 mm (range: 31.3 to 37.7 mm). Discussion/Conclusions: DOB deserves full and in-depth research because when present, it appears to play an important role as an isometric stabilizer of the distal radioulnar joint (DRUJ). It is considered very likely to give keystone answers and solutions for future stabilization techniques to the complex biomechanics of the unstable DRUJ, where in many cases conventional operative techniques are too complex or even insufficient.

EXPERIENCE WITH CHEMICAL ANALYSIS OF EMBALMING SOLUTION FOR LONG-TERM BODY PRESERVATION OF PROFESSOR N.I. PIROGOV

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Embalmed body of anatomist and surgeon Professor N.I. Pirogov (1810-1881) has been maintained in a very good condition since 1881. The method of long-term preservation of biological tissues using formaldehyde, ethanol, glycerine, potassium acetate and other components was developed by Professor Melnikow-Raswedenkow. In 2011, the body was re-embalmed with an experimental embalming solution from the VILAR laboratory in Moscow. In 2018, embalming was carried out by Ukrainian experts. The original embalming solution was taken from the interior of the overall in which the body of N. I. Pirogov has been placed in the sarcophagus. Analysis of the previous solution composition has been essential to evaluate the effectiveness of the solution and the state of embalmed tissues. Collected embalming solution was further examined by NMR and GC MS spectroscopy. NMR spectroscopy confirmed the declared composition of the embalming solution, GC MS spectroscopy revealed the presence of fatty acids that entered the solution by hydrolysis of fats from the embalmed body. The identification of fatty acids was performed based on their derivatization. The results of the analyses and visual inspection of the body during re-embalming showed the optimal properties of the solution and the level of preservation and the body condition.

COMPARISON OF THE SURFACE ULTRASTRUCTURE OF THE FALLOPIAN TUBE LINING EPITHELIUM FROM BIOPTIC AND NECROTIC TISSUE SAMPLES BY A SCANNING ELECTRON MICROSCOPY

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Scanning electron microscopy (SEM) allows the investigation of surface structures of biological

samples. SEM represents an advanced imaging method useful for studying the ultrastructure of human fallopian tubes because it can detect even slight changes in lining cells surface. Epithelial cell surfaces of the human fallopian tube display large diversity according to the anatomic location and change their ultrastructure during pathological conditions. Samples from human fallopian tubes were obtained from the salpingectomy (within the ERTU study, approved by the Ethics Committee of the Faculty of Medicine of the Comenius University and the University Old Town Hospital, approval number EK 051/2019) and autopsy (number EK 62/2019). The samples were processed for SEM and evaluated by SEM ZEISS EVO LS 15. Bioptic samples displayed an irregular surface of the fallopian tube epithelial cells. Cells with long cilia were alternating with secretory cells with microvilli. The size and shape of secretory cells and the density of microvilli were different under physiological conditions. Their detailed surface ultrastructure has been recorded for reference samples and will serve to compare the surface epithelial morphology under pathological conditions related to impaired fertility. Samples from autopsy underwent rapid autolytic changes and the lining surface could not be evaluated. Samples from autopsies are not suitable for the fallopian tube surface observation by SEM and only perioperative biopsies can provide useful information about epithelial cells surface and morphological abnormalities can reveal possible causes of tubal infertility. Study was supported by the Slovak Research and Development Agency, project No APVV-18-0499.

BEYOND A LOW BACK PAIN…

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Introduction and Objectives: Meralgia paresthetica is characterized by compression of the lateral femoral cutaneous nerve leading to decreased sensitivity of the lateral face of the thigh, in addition to pain, paresthesia and burning sensation. Its incidence is 4,3 cases per 100.000 patients. Material and Methods: The authors propose to present the clinical case of a 35-year-old male patient, electrician with paresthesia in the right lower limb with one-week duration, associated with mechanical low back pain. Results: Upon hospital admission, the patient was submitted to several exams, namely analytical study, doppler of lower limbs and computed tomography (CT) of head and spine without changes. The patient was discharged with indication of pain medication and muscle relaxers. Despite this therapy, the patient continued to complain of pain and paresthesia in the right thigh. Magnetic resonance imaging (absence of spinal cord compression in the lumbar spine) and electromyography were performed, which revealed no sensory response due to stimulation of the right lateral femoral cutaneous nerve. Conclusion: So, with this case, the authors pretend to present an unusual diagnosis, where the importance of anatomy applied to clinics is emphasized. The lack of studies and consensus on the approach to this type of patient makes it a diagnostic and therapeutic challenge.

ANATOMICAL DISTORTION OF THE THORAX AND CLINICAL IMPORTANCE

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Introduction and Objectives: To present a clinical case of anatomic distortion of the thorax related to trauma and its clinical manifestations. Material and Methods: The authors propose to present the clinical case of an 80-year-old male patient with dyspnea while performing an abdominal ultrasound. Results: Upon hospital admission, the patient presented a decompensated heart failure and global respiratory failure requiring ventilation therapy. The imaging study revealed an anatomic distortion of the thorax with the heart on the right side and mediastinal compression. A thorax computed tomography was performed and revealed an elevation of the left diaphragmatic hemisphere and contralateral mediastinal shift. From the patient's history, there is a story of traumatic rupture of the diaphragm (7 years old) with eventration of abdominal viscera. The patient is being followed in Pneumology consultation due to global respiratory failure. Conclusion: So, with this case, the authors pretend to present an appealing and rare image of anatomic distortion related to traumatic rupture of the diaphragm. With this type of case, the importance of anatomy applied to clinical and imaging is emphasized.

ADVANCED RHEUMATOID ARTHRITIS - ANATOMICAL DISTORTION AND FUNCTION IMPACT

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Introduction and Objectives: To present a clinical case of anatomic distortion related to rheumatological pathology and its clinical manifestations. Material and Methods: The authors propose to present the clinical case of a 65-year-old female patient followed up in an autoimmune diseases consultation since 1997 with seropositive and highly deforming rheumatoid arthritis (RA). Results: The patient presents a history of papillary thyroid carcinoma after total thyroidectomy, which contraindicated biological therapy, but also, intolerance to hydroxychloroquine and methotrexate. Medicated with prednisolone 5-10 mg per day. With the most recent therapies and knowledge about the pathophysiology of RA, it is rare to find cases with high degree of deformity, such as the one presented. Despite the disabling deformations with rheumatoid nodules and swan neck fingers, this patient has minimal functional limitation. Conclusion: So, with this case, the authors pretend to present an appealing and rare image in terms of the deformity, emphasizing the importance of knowing the anatomy of the joints in this disease and its importance in clinical and radiological terms. The authors intend to warn that despite increasingly early diagnoses and more effective

therapies, there are still cases of high deformity in patients with RA, which are increasingly rare.

ANATOMICAL STUDY OF THE INNERVATION OF THE FIBULARIS BREVIS (FB) MUSCLE AND ITS CORRELATION WITH MYOFASCIAL TRIGGER POINTS

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Myofascial syndrome is a common cause of chronic musculoskeletal pain characterized by myofascial trigger points (MTPs). MTPs coincide with neuro-muscular junctions at the innervation zone (IZ). Referred pain and tenderness caused by the trigger points of the FB muscle are concentrated above, behind, and below the lateral malleolus and may extend over a short distance along the lateral aspect of the foot. Our study aimed to describe the innervation of the FB muscles and relate it to clinically described MTPs**.** We studied 20 FB from ten cadavers and identified the entry nerve location into the muscle belly. As muscle size varies among individuals, we calculated the relative entry point of the nerve into the muscle by defining four different areas in the muscle belly: two superior (I, II) and two inferior (III and IV). Statistical analysis of anatomical data was obtained by Poisson distribution and logarithm link function followed by Bonferroni multiple comparisons ($p < 0.05$). Areas I and II had the largest number of superficial fibular nerve branches to PB muscle, with a mean of 3 (50%) and 2 (33%) sites on areas I and II respectively; areas II and I with 1 site (17%). No entry points were observed in area IV. In accordance with the clinical literature, the branches of the superficial peroneal nerve in the PB muscles corresponded to the described areas of MTPs. Anatomical correlations between MTPs may be a useful tool for a better understanding of the physiopathology of these disorders.

THE CROSS-TALK BETWEEN UTERINE TUBE EPITHELIUM, OOCYTES, SPERMATOZOA AND EARLY EMBRYO AND ITS ROLE IN REPRODUCTION

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The uterine tubes (UTs) play a cardinal role in normal processes necessary for successful fertilization and early embryo development. The modern techniques of reproductive medicine, have caused a mistaken impression that UTs are superfluous since most of their functions can be reproduced *in vitro.* Moreover, UTs have fallen into disgrace in the eyes of oncogyecologists because they can be a source of highly malignant serous ovarian carcinomas. In spite of that UTs are still absolutely unique in providing the optimal environment that no *in vitro* technique however modern has been able to mimic precisely. As infertility rates are on the rise around the globe, it is absolutely vital to fully understand the early processes occurring close to and soon after fertilization. Among the most significant in the mentioned processes are the cells of the UTE (UTECs). Despite many ongoing research endeavors, numerous interactions between UTECs, oocytes, spermatozoa, and early embryos are ill-understood. The main functions of UTs are storage, transportation and capacitation of spermatozoa, providing an environment for fertilization and transport of an early embryo towards the uterus. Far from a passive conduit, UTs have been demonstrated to bidirectionally communicate with spermatozoa, oocytes, and early embryos. The latter for instance has been shown to regulate its own transport speed through the UT. The thorough elucidation of all these processes has the potential to significantly contribute to the novel diagnostic and therapeutic approaches in the field of reproductive medicine so their intense research is highly warranted. Slovak Research and Development Agency grant n. APVV-18-0499.

THE TEACHING OF CLINICAL ANATOMY OF THE HEART IN MEDICAL EDUCATION

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Introduction: Complex module education of anatomy could be demonstrated on the teachings of the heart topic. Material and Methods: Among imaging techniques could be mentioned Anatomage virtual table, PC virtual reality, echocardiography, X-ray and micro-CT. These are complemented by wet specimens from dissection of cadavers and histology-stained slides. Results: Students step by step get involved in specific anatomic topics, starting from imaging techniques to wet specimen dissection in cadaver room. Firstly, they encounter a heart on the Anatomage table (making sections, heart rotations, position in the body). Then comes VR with spatial orientation and inside various heart cavities, valve insertions and fiction, blood flow and conductive system electrical discharges. Follows X-ray (different planes of projections) and experimental scans of various animals (rat, rabbit, mouse) from micro-CT. Histological slides could be compared between Anatomage table and classical microscopy of embedded tissue. This amount is then covered in the dissection room with cadaver specimen in the whole body as well as separate organs (which could be also dissected into the slices). For comparison of structure and fiction of the heart students may use a heart ultrasound machine. Conclusions: We do combined curriculum (Structure and fiction of the human body) and therefore we prefer an interdisciplinary view of the e.g. heart topic education. Various imaging methods together offer static as well as a dynamic model of organs education.

CORONARY ARTERY TO PULMONARY ARTERY FISTULA

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Introduction: Coronary Artery to Pulmonary Artery fistula (CAPF) is a rare coronary anomaly causing heart failure, due to a left to right shunt. Case Report: An 80-year-old female patient with a history of hypertension was admitted to the emergency department, reporting recurrent episodes of chest pain, during mild activity. Her vital signs were stable, cardiac enzymes were normal and pulmonary arterial pressure was increased on echo. The electrocardiography showed no pathological changes. Cardiac catheterization revealed five fistulas: three from the left anterior descending artery merging to a common vessel and two from the right coronary artery joined into it, which finally drained into the pulmonary artery. Discussion: Most CPAFs are congenital and not gender specific, although they may be the result of cardiac surgery or chest trauma. The right or left coronary artery as the most frequent site of fistula origin are in dispute in earlier and recent studies. In the presented case fistulas derive from both coronary arteries. CPAF symptoms depend on the age, the amount of shunting, the development of cardiac ischemia, and the resistance of the recipient vessel or chamber. Most adult patients are asymptomatic. The lesion is detected incidentally on physical examination or during coronary angiography. Our patient, asymptomatic all her life, recently developed progressive chest pain, due to ischemia, pulmonary hypertension and high cardiac output heart failure. Coronary artery catheterization revealed a rather impressive image of five, left and right coronary fistulas, joining into a common trunk to drain into the pulmonary artery.

A PROPOSAL FOR THE FIRST CLASSIFICATION OF MORPHOLOGICAL VARIABILITY ORIGIN AND INSERTION OF ANTERIOR SCALENE AND THEIR POTENTIAL CLINICAL SIGNIFICANCE

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Introduction: The anterior scalene (AS) is the most anteriorly located muscle of this group and usually originates from the anterior tubercles of the transverse processes of cervical vertebrae. Its distal part is located between the subclavian vein and subclavian artery, where it attaches to the first rib. The phrenic nerve crosses its anterior surface. Because of the close relation of these structures to AS, morphological changes in their attachments may have great clinical importance. Material and Methods: The cervical region of seventeen cadavers fixed in 10% formalin solution, were examined. Results: We have designated three main types of insertion and origin with subtypes. Type I (70,5%) of origin was located on the transverse processes of the cervical vertebrae over the entire width and was the most frequent. The second most common was Type II (20,6%) and was located on transverse processes and fusion with capitis longus. Type III, which was located on transverse processes and fusion with the scalene middle occurred in 8.9% of the cases. We also distinguished three types of insertion and each of them was attached to first rib (FR). Type 2 (38,2%) was attached to the upper border of FR, Type 3 (8,9%) to the anterior surface of FR, while the most common was Type 1 (52,9%) which contained the features of both previous types. Conclusion: Scaleni anterior has long been associated with variations in its morphology. Type of origin, slightly more than type of insertion can have a direct effect on the limited structures such as the scalene triangle.

ULTRASONOGRAPHY SCREENING OF HIP DYSPLASIA IN NEWBORNS-OUTCOMES OF ULTRASOUND-MONITORED TREATMENT OF DEVELOPMENTAL HIP DYSPLASIA GRAF TYPE II

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Introduction/Objective: The management of developmental dysplasia of the hips (DDH) type Graf IIa is still controversial. The aim of this study is to examine the outcomes of ultrasound-monitored Pavlik harness treatment, as well as the effects of associated factors, such as gender, side of DDH, the age at the treatment start, and laterality on the treatment outcomes in different Graf type II subtypes. Methods: A cohort retrospective investigation was performed on 88 ultrasound screened infants or 125 hips diagnosed with Graf type II dysplasia during a six-month period at a single institution, the University Clinic for Orthopedic Surgery, Skopje, R. North Macedonia. Subsequently, 47 infants (18 boys, 29 girls), or 73 hips who underwent Pavlik harness treatment with at least one follow-up throughout treatment monitoring were included in this study. Results: The treatment success rate of the right DDH Graf type IIa (-) was higher (70.8%) compared to the rate of success (50%) in the treatment of left Graf type IIa (-) hips. The mean age of the infants at the treatment start in successfully treated Graf type IIa (-) hips was lower (9.12 ±2.27 weeks), compared to the age of the infants with treatment failure at the last follow-up (11.33 ±3.06 weeks), P= 0.04. Conclusion: The age of treatment initiation and the side of DDH were the most relevant factors related

to the treatment outcome. Infants with maturational deficit hips, Graf type IIa (-) should undergo early initiated, carefully guided, and monitored Pavlik harness treatment.

ANTERIOR CINGULATE CORTEX MORPHOLOGY IN RELATION TO SCHIZOPHRENIA

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Introduction: Folding of the anterior cingulate cortex (ACC) represents a neurodevelopmental marker. This is a result of individual patterning of its major anatomical landmarks, the cingulate (CS) and the paracingulate (PCS) sulci remaining fixed upon the beginning of the third trimester of *in utero* development. Presumed deviations in the *in utero* development in schizophrenia could therefore be traced using CS and PCS morphometry. Material and Methods: MRI high-resolution T1 brain images at 3T allowed us to assess morphology types of CS and PCS in 93 patients with first-episode schizophrenia and compare them with 42 age/sex-matched controls. The length of non-parcellated CS and PCS as well as the length of their segments were measured. The frequency of particular types of CS/PCS morphology was compared between controls and patients with respect to the left-right asymmetry. Results: Distribution of CS and PCS morphotypes (prominent, present, absent) in patients was significantly different from controls. Parcellated sulcal pattern CS3a in the left hemisphere was significantly longer in patients but in the sulcal pattern CS3c it was reversed. Non-parcellated PCS in the right hemisphere was statistically significantly longer in patients. Conclusion: Our study expands previously documented morphological deviations in the sulcal pattern within ACC in patients compared to controls. It consistently points towards deviant ACC cortical folding and thus changes in brain ontogeny as a consequence of presumed developmental insult during early *in utero* development in the disease. Funding: Charles University Q35, Q41, 260388/SVV/2021; MHCR NU20-04-00393; RVO 67985807.

EXPERIMENTAL RETROGRADE INJECTION OF THE CORONARY SINUS

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Introduction: Retrograde application of cardioplegic drugs into the coronary sinus has been used successfully for decades in cardiac surgery to obtain cardiac arrest. The aim of the study was to investigate the morphology of the small heart veins with particular attention to their valvular apparatus using injection methods of preparation. Material and Methods: Twenty-five hearts from young healthy pigs were used in our study. All hearts were injected with India ink via the coronary sinus and fixed by formalin. The histological specimens obtained were studied by light microscopy. Results: In most cases, the venous system was completely filled. Histologically, almost total valvular insufficiency was demonstrated in most cases. Only in three cases were sufficient valves found on the strongest branches of the coronary sinus, blocking the transport of injected India ink into the venous periphery. The second important finding was complete filling of the vasa nervorum of the epicardial nerves. Conclusions: The results obtained explain the high success rate of retrograde application of cardioplegic agents via the coronary sinus. It is also evident that filling of the vasa nervorum allows penetration of injected substances directly into the epicardial nerves.

ANATOMICAL VARIANTS OF OVARIAN ARTERIES RELATED TO THE URETER

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Introduction | Objectives: The anatomical variants of the ovarian arteries (OA) related to the anatomical trajectory of the ureter have clinical importance for gynecologists, urologists, general surgeons, and invasive radiologists who perform operations in the minor pelvis. In the present study, the literature was reviewed to summarize, classify, and highlight the clinical significance of these anatomical variants. Material and Methods: International databases (Pubmed and Scopus) were reviewed with keywords: ovarian artery, ureter, anatomical variants. After reading the abstracts, articles that were not research studies with results on the anatomy and variants of the structures studied were excluded. The anatomical variations from the articles that were finally included in the study were recorded, the variations were classified, and their clinical significance was reported in summary tables. Results: The bibliographically recorded anatomical variants of OA are numerous. The most common anatomical variants of the ovarian artery concern its flat protrusion from the aorta or its ectopic protrusion from the renal artery. Of clinical importance are the variants in which there is the protrusion of OA from the renal arteries and coexistence of bifurcated ureter, as well as dilation of vessels primarily or secondarily. Discussion | Conclusions: The summary presentation and classification of ureteral-related anatomical variants of OA performed in the present study will hopefully contribute to their more expansive knowledge among radiologists, gynecologists, urologists, and general surgeons to avoid complications in vessels and operations on the pelvic area.

EFFECTS OF SINGLE APPLICATION OF DRY NEEDLING ON MUSCLE ACTIVITY OF THE LUMBAR MULTIFIDUS MUSCLE

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Introduction and Objectives: Dry needling (DN) of muscles is mainly used to decrease pain sensitivity and increase flexibility in musculoskeletal disorders. Nevertheless, the effects of dry needling on the surface electromyography (sEMG) activity of multifidus muscle of healthy subjects are poorly investigated. The aim of this investigation is to evaluate the immediate effect of single application of dry needling on bioelectric signal of lumbar multifidus muscle in healthy subjects. Material and methods: Eleven healthy volunteers (7 males and 4 females) are included in the study. All participants received a single session of DN to the lumbar multifidus muscles using a deep insertion technique with 8 needles (4 on each side of the spine). The needles were left in situ for 20 minutes. sEMG was used to measure lumbar multifidus muscle activity during flexion and reextension movements and isometric test pre and post-procedure. Results: Significant increase in the frequency of the myoelectric signal in the position of complete flexion and in the standing position after DN treatment was found ($p < 0.05$). The results of the isometric test showed a statistically significant decrease in the frequency of the myoelectric signal after the DN treatment in all subjects ($p =< 0.05$). Discussion and Conclusions: An improvement of lumbar multifidus muscle function following dry needling procedure in healthy individuals was found. This implies that dry needling might stimulate motor nerve fibers and as such increase muscle activity.

EXPLORING THE ORYCTOLAGUS CUNICULUS' SEX-RELATED PROTEOME: A BIOINFORMATIC APPROACH

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The differential protein profile of the X- and Y-chromosomes would lay the groundwork for a better understanding of the biological characteristics of both X-/Y-bearing sperm. We aimed to explore the *Oryctolagus cuniculus*' X-chromosome proteome available in the UniProt database and to establish a connection between the rabbit's proteome and a list of proteins described to be upregulated in X-/Y-bovine sperm. Based on the "Ensembl canonical" flag, we selected for further study 675 of the 1215 existent ID entries. The UniProt/eggNOG-mapper v2.1.7 (experimental evidence, hit-bit-score 60, identity/query-subject coverage 80%) annotation returned 480 gene names. When searching them against the PANTHER v17.0 database (*Homo sapiens*), we observed that the two most common molecular functions, protein classes and cellular components were binding (137), and catalytic activity (99), metabolite interconversion (51) and protein modifying (43) enzymes, and membrane (220) and intracellular anatomical structure (209), respectively. Preliminary results based on Gene Ontology terms show that rabbits have at least 97 X-proteins that may be integral plasma membrane proteins or present on the cell surface/(external side of) plasma membrane. Of these, 50 were classified as transmembrane proteins (DeepTMHMM v.1.0.11). Also, from 25/11 proteins upregulated in the X-/Y-bovine sperm, 18/8 were characterized and identified in the rabbits' proteome with a similarity higher than 74%/86%, respectively. Considering the potential of those proteins as sex-specific biomarkers with biotechnological/health applications, more comprehendsive bioinformatic analyses are necessary to gather relevant information on the rabbit's sex-related proteome. The authors acknowledge FCT (EXPL/CVT-CVT/1112/2021).

ANTERIOR TIBIAL TRANSLATION IN ANTERIOR CRUCIATE LIGAMENT TEAR: A MAGNETIC RESONANCE IMAGING STUDY

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Introduction: Anterior Cruciate Ligament (ACL) tear represents about 50% of knee injuries. Magnetic Resonance Imaging (MRI) allows an anatomo-pathological study of this ligament and its bundles with great accuracy. Direct signs of ACL tear have a 93%/97% sensitivity/specificity, and secondary signs are indirectly associated with bone and biomechanical changes. One of these indirect signs is the anterior tibial translation (ATT). Objectives: Analyze through MRI the correlation between ATT and ACL tear, as well as its sensitivity/specificity in the detection of this pathology. Material and Methods: Quantitative, descriptive-correlational and retrospective study that analyzed sagittal PDw knee MRI images. Based on the medical reports of knee MRI scans about ACL tear, with a sample of 151 scans, ATT measurements were performed for disruptive, acute, chronic, or post-ligamentoplasty involvement of ACL. MRI sensitivity and specificity were calculated for this measurement. Results: Patients´ mean age was 44.94±15.80 years, with males predominant (55.6%). 51.7% reported ACL integrity, 11.3% partial tear, 15.2% complete tear, 9.3% chronic partial tear, 5.3% chronic complete tear, 4.0% showed integrity of the ACL graft after ligamentoplasty and 3.3% its tear. A weak positive

correlation was found between the types of acute ACL injury and ATT. Precision test for the evaluation of ATT measured by MRI has low sensitivity (29.03/43.55%) and high specificity (89.74/80.77%) to this central pivot-like evaluation. Conclusion: ATT, measured by MRI, can be useful for Radiologists/Orthopedists in detecting/excluding ACL tears in patients with acute injury, but shouldn't be a diagnostic criterion, by itself.

THE RELATIONSHIPS BETWEEN INTER-RECTUS DISTANCE AND TRUNK MUSCLE FUNCTION IN POSTPARTUM WOMEN

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Introduction and Objectives: Diastasis of the rectus abdominis muscle (DRAM) most commonly occurs during and after pregnancy and it can persist even up to 12 months after birth. Little information exists on the relationship between inter-rectus distance (IRD) and the functional performance of the trunk muscles. Therefore, the aim of the study was to determine if differences exist in trunk muscle function between women with and without DRAM at one year postpartum and to examine the relationship between IRD and trunk muscle function. Material and methods: Women without (n=19; IRD <2.2 cm) and with DRAM (n=15; IRD ≥2.2 cm) were included in the study. The ultrasound assessment of the IRD was performed using Aloca Prosound alpha 7 system. Isometric trunk flexion and extension (Newton-meters) were measured using hand-held dynamometer (KFORCE Muscle Controller, Kinvent). Trunk flexion and extension endurance (seconds) were measured using stopwatch. Results: The mean IRD was significantly different between the group with and without DRAM ($P < .05$). However the range of IRD values in our sample was low. When compared with the group without DRAM, the DRAM group showed lower trunk flexor and trunk extensor strength but without significant difference. Both groups exhibited similar trunk flexor and extensor endurance task performance. Discussion and Conclusions: The presence of DRAM in women at one year postpartum is not associated with trunk muscle strength and endurance. Future research is essential to explore the relationship between trunk muscle strength and endurance with wider DRAM.

ABSENCE OF THE INFRARENAL INFERIOR VENA CAVA WITH TETRALOGY OF FALLOT

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Introduction: The aplasia or agenesis of the inferior vena cava (IVC) is a rare congenital anomaly, found in 5% of people under 30 years of age with deep venous thrombosis. Material and methods: A 16-year-old female visited the emergency department complaining about repetitive symptoms of abdominal and pelvic discomfort. The patient had a history of surgical correction of Tetralogy of Fallot (TF) in infancy and a pulmonary valve replacement in the early puberty. She was on oral anticoagulation prophylaxis. Abdominal Ultrasound and Computer Tomography showed absence of the infrarenal segment of the IVC and the common ileac veins. Numerous enlarged vessels in the pelvis and lower abdomen and extensive anastomoses with varicose veins of the upper abdomen were noted. Discussion/Conclusions: IVC agenesis is documented mainly in young individuals, with men having 2-fold higher incidence than women. The absence of the infrarenal IVC and the iliac confluence suggests failure of the formation of the supracardinal and posterior cardinal veins, respect-tively. In our case, venous drainage was achieved by several collateral pathways, including the dilated gonadal and lumbar veins, as well as the enlarged hemorrhoidal plexus. The outcome was venous insufficiency, causing circulation stasis to the caudal half of the body and complications in the abdomen, pelvis and lower limbs. This is the first documented case with absence of the IVC and TF. Extensive use of imaging nowadays brought further recognition of the aplasia of IVC in asymptomatic patients, raising the need for establishing treatment and follow-up guidelines.

ASSESSEMENT OF FETAL WEIGHT BASED ON ANTHROPOMETRICAL FETAL GROWTH MEASUREMENTS

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Introduction: To develop a more accurate fetal weight model using fetal anthropometrical measurements. Material and Methods**:** The total number of fetuses (n=180), according to gestational age and sex was divided in three groups, (first group 14-16g.a; second group 17-19g.a and the third group 20-22g.a). Each group was divided in subgroups according to the sex criterion. Anthropological measurements were done using the methodology of the International Biological Programme (IBP) with standard technique of measurements. Some anthropometrical parameters of the fetus were analyzed. Measurements included: fetal weight, fetal length, head circumference, abdominal circumference and longitudinal parameters. **Results:** The fetal weight as a basic characteristic and indicator of the physical growth is of great practical importance because it supplies information whether the fetus weight is normal for the gestational week or there are some deviations which lead to an abnormal development of the fetus. The results showed that anthropometrical parameters of the fetus were in positive correlations with fetal weight and their values were increased in different groups according to gestational age. **Conclusions:** Fetal anthropometric models are strongly predictive of actual fetal weight. The need for using measurements of some

anthropometrical parameters of the fetus is imposed as sensitive, safe and sample, above all compelling in routine clinical practice.

ANTHROPOMETRIC INDICATORS FOR IDENTIFYING GENERAL AND ABDOMINAL, CENTRAL OBESITY AMONG THE STUDENT POPULATION IN NORTH MACEDONIA

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Objectives: The objective of this study is to investi-gate the distribution of overweight/obesity among the student population in North Macedonia. Obesity is determined by the means of anthropometric indices, BMI for general as well as WC and WHR for central or abdominal obesity. Subjects and Methods: In this study, a total of 839 healthy students aged 18-20 (411 males and 428 females) are investigated. Anthropometric indicators are measured using a standard protocol. We select four parameters to measure (weight and height) and two circumferences (waist WC and hip HC). The following indices are taken into consideration: Body mass index (BMI), Waist circumference (WC) and waist-to-hip ratio (WHR). Results: One-fifth of the students across BMI were found to be overweight and obese i.e. 18.1% and 4.1% respectively with statistically significant differences in favour in males. Conversely, in the underweight group, the number of females was significantly higher (12.61 vs 2.19%). Abdominal obesity (overweight/obesity) across WC and WHR cut-off points occurred at 34.55% and 52.55% of the male and 25.47% and 43.23% of the females. Overall, statistically significant differences were registered in favour of males**.** Conclusion**:** Central obesity, as well as general obesity, is more frequent in males than females. These results and the determination of BMI, WC, and WHR cut-off values can be used for identifying obesity in the student population of North Macedonia.