INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

9TH ISCAA WORLD CONGRESS

09. - 12. September 2017
INNSBRUCK, TYROL, AUSTRIA

„Learning from each other -
pushing boundaries in the heart of the Alps“

Tirol

INNSBRUCK
ISCAA 2017

MEDIZINISCHE UNIVERSITÄT
INNSBRUCK

INNS' BRUCK

Dear Colleagues, past and future Participants, Guests, and Friends!

It is our most sincere pleasure to cordially invite you to the 9th International Symposium of Clinical and Applied Anatomy!

We, the Organizing Committee and I, are proud to welcome you from 9th to 12th September 2017 here in Innsbruck.

This year we will start the ISCAA on a Saturday and continue to Tuesday - giving you the opportunity to spend the remaining week in marvelous surroundings!

It will be a great challenge to meet the outstanding past symposia held in Budapest, Bratislava, Rijeka and so on.

Therefore we need you - your presence and your contributions! It is you who will make this upcoming symposium famous again for the well-known high standard of scientific merits. In addition, we want to continue to give early career scholars and postgraduates an easy platform to present their valuable work, to get constructive feedback during fruitful discussions in a friendly atmosphere and to set up networks for the future.

As always, the Innsbruck Symposium is open for contributions on any aspect of human or veterinarian morphological sciences. Our Key scientific topics for this year will be: Hernia Surgery, Endocrine Surgery, Plastic Surgery, Neurosurgery, Orthopedic and Trauma Surgery, Oral and Maxillofacial Surgery and Ultrasound but of course also including Surgical Anatomy, Histology, Embryology, Teaching, Imaging, Neurosciences, Molecular Biology and Genetics, Sport Sciences, Comparative Anatomy, History of Anatomy, Histology and Embryology, and others.

We will do our best to give you a framework for high standing scientific exchange, maintenance and establishment of personal and institutional relations including collaborations and – of course – outstanding social events.

For that, Innsbruck has good premises: situated in the heart of the Alps, Innsbruck is a place where the mountains meet the valley and the city is in accordance with nature. Spend some additional time and explore the holiday villages in the surrounding area, from sunny alpine plateaus and wildly romantic mountaineering villages to family-friendly oases of wellbeing. A great range of leisure activities, cultural highlights and sports are offered. Caught your interest?

We are looking forward to welcoming you in Innsbruck!

Univ.Ass.Dr.med.univ. Marko Konschake

Univ.Prof. Dr.med.univ. Erich Brenner

CONGRESS PRESIDENT

o.Univ.Prof.in Dr.in med. Helga Fritsch
Rector of Medical University Innsbruck

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Sektion für Klinisch-Funktionelle Anatomie
Medizinische Universität Innsbruck
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marko.konschake@i-med.ac.at

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PROFESSIONAL CONFERENCE ORGANISER

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INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

GENERAL INFORMATION

CONFERENCE VENUE

Faculty of Theology
Karl-Rahner-Platz 3
6020 Innsbruck, Austria

REGISTRATION FEE

Registration fee includes access to all scientific sessions and the exhibition, a conference bag, a conference badge, a congress booklet, coffee breaks & lunches and access to the opening and closing ceremony.
Conference dinner is not included.

ACCESS TO THE CONFERENCE

Please note that wearing your conference badge is mandatory during all parts of the programme.

CERTIFICATE OF ATTENDANCE

Certificates of attendance are available on request at the welcome desk beginning on Tuesday, September 12, 2017. All participants will receive their certificate electronically after the congress. All certificates are available online as well. Austrian Medical Chamber within their CME program („Diplomfortbildungsprogramm“).

ABSTRACTS

All presenter's abstracts will be published in the Journal of "Surgical and Radiologic Anatomy".
(https://link.springer.com/journal/276)

COFFEE BREAKS

Coffee breaks will be served every day in the Madonnensaal.

LUNCHES

Lunches will be served every day in the Madonnensaal.
Non-vegetarian options are available.

LANGUAGE

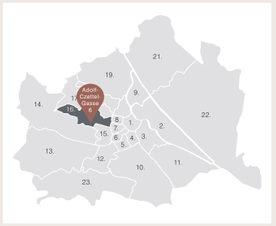
English is the official language of the conference, no oral translation will be available.

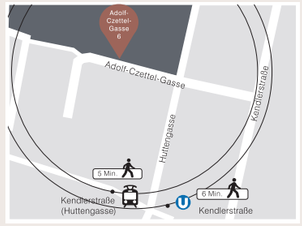
INTERACTIVE POSTER SESSIONS

Poster Sessions will be held in the poster area of the Faculty of Theology and the Madonnensaal

CONFERENCE HEALTH POLICY

This is a non-smoking conference. Please use staircases instead of elevators and escalators. Drink 2-3 litres of alpine spring (tap) water during the day.





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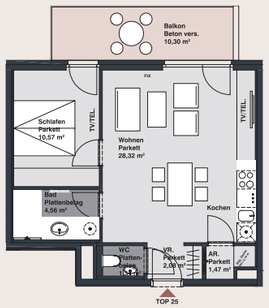

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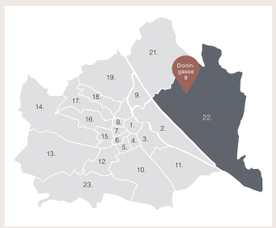

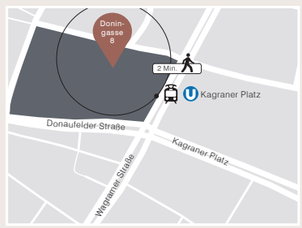

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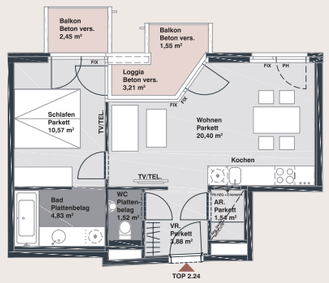

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WLAN ACCESS

There are two ways to connect to the network. Regardless which one you choose, please make sure that your network interface card is activated and you are within reach of the router. According to the settings of your operating system maybe you are asked two times for the network key (WEP-Password), some computers never ask for that.

1. WLAN ACCESS – NETWORK NAME "UIBK"

Click on the WLAN-symbol in the taskbar, choose network "uibk" and type in the required information:

- User: c115135
- Password: 20ISCAA-WC

Most computers keep this configuration and connect with the network again when it is within reach.

2. WLAN ACCESS – NETWORK NAME "WL-PLUG-INN"

Click on the WLAN-symbol in the taskbar, choose network "wl-plug-inn". If required, type in the network key "wlpassword013".
Now open your browser and type in the address "http://google.at" and activate your access:

Your computer stays connected with the network until you logout or turn it off. To reconnect you have to activate access in the browser again.

SOCIAL PROGRAMME

OPENING CEREMONY

All conference delegates are invited to attend the Opening Ceremony and the Welcome Cocktail.
The Opening Ceremony will be surrounded by the musicers of the University Orchestra.

Date and time	Saturday, September 9, 2017 16:00 - 20:00
Place	Kaiser-Leopold-Saal and Atrium, Faculty of Theology, Karl-Rahner-Platz 3
Music	UniCombo

SWAROVSKI CRYSTAL WORLDS - THE GIANT - CHAMBERS OF WONDER

presented by Swarovski Crystal World

We will visit the marvelous and world-famous Swarovski Crystal Worlds in Wattens with a glittering „Cocktail Reception" and a walk through the Crystal Worlds-Chambers of Wonder!
All participants a cordially invited by „Swarovski Crystal Worlds"! (incl. complete Shuttle-Service, Cocktail Reception in front of the „Crystal World Giant", Access to Crystal Worlds-Chambers of Wonder).

Date and time	Sunday, September 10, 2017 18:30 - 21:00 (Registration obligatory!)
Place	Swarovski Crystal Worlds, Wattens

CONFERENCE DINNER

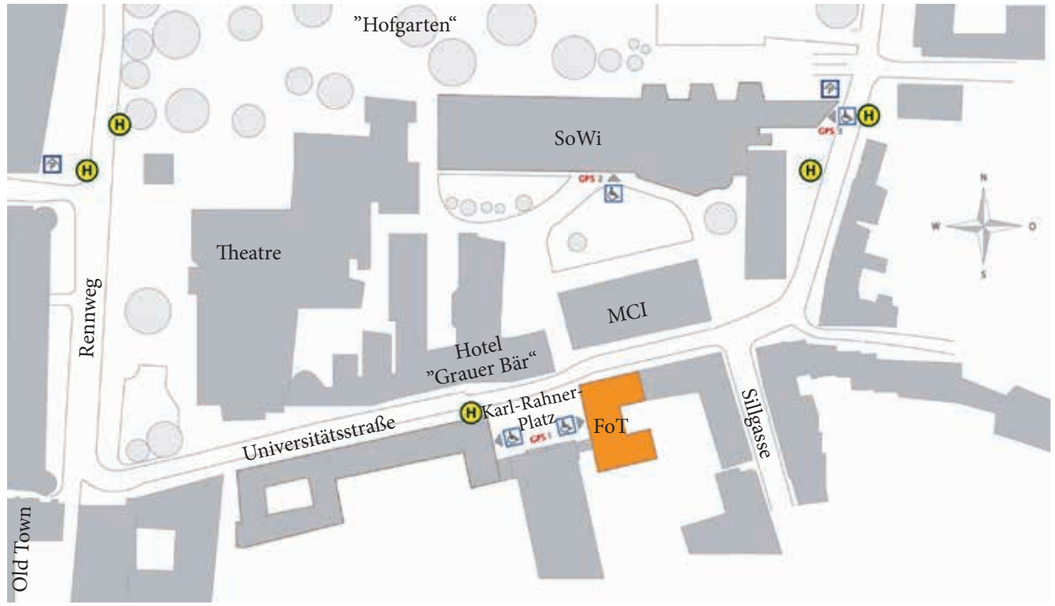
The traditional and legendary ISCAA „Gala Dinner" will be celebrated at the „Restaurant Seegrube" with a magnificent view over Innsbruck and the mountains! After the travel by cablecar to the „Innsbruck Nordkette", we will provide a delicious Gala Dinner, a spectacular show act and more unforgettable surprises, all celebrated over the city of Innsbruck with an awesome view over the tyrolean mountain peaks!
„Open your mind and be prepared and fascinated!"

Please notice As the dinner will take place at an alpine mountain hut, appropriate clothing is required:
* (smart) casual warm clothing
* no high heels, no dinner jacket.

Busses will bring us back to the conference venue.

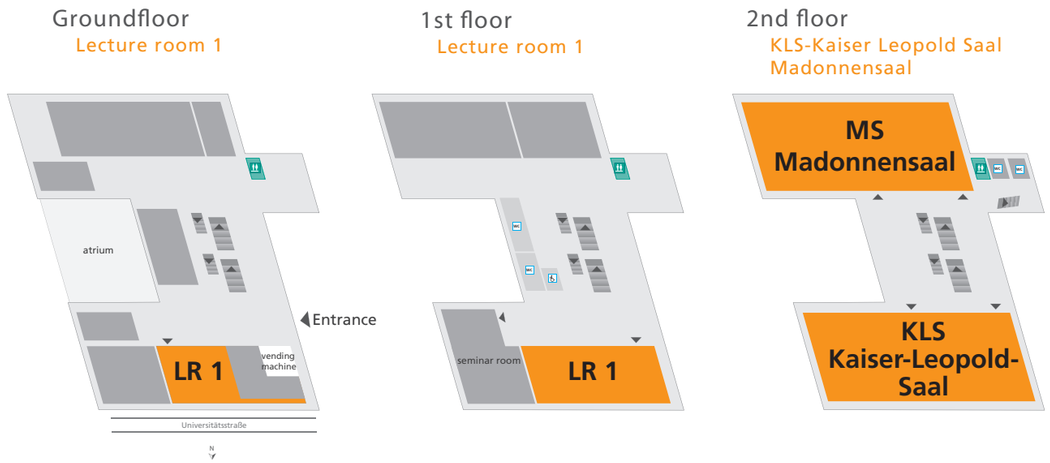
INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

MAP OF THE UNIVERSITY AREA



OVERVIEW CONGRESS VENUE

Karl-Rahner-Platz 3, 6020 Innsbruck



CONGRESS TIMETABLE

Time	SATURDAY	SUNDAY	MONDAY	TUESDAY
	September 9, 2017	September 10, 2017	September 11, 2017	September 12, 2017
08 00		Registration	Registration	Registration
08 15		Plenary Lecture	Scientific Program	Scientific Program
08 30		Plenary Lecture	Scientific Program	Scientific Program
08 45		Plenary Lecture	Scientific Program	Scientific Program
09 00		Scientific Program	Scientific Program	Scientific Program
09 15		Scientific Program	Scientific Program	Scientific Program
09 30		Scientific Program	Scientific Program	Scientific Program
09 45		Scientific Program	Scientific Program	Scientific Program
10 00		Scientific Program	Coffee Break	Coffee Break
10 15		Coffee Break	Plenary Lecture	Plenary Lecture
10 30		Coffee Break	Plenary Lecture	Plenary Lecture
10 45		Coffee Break	Plenary Lecture	Plenary Lecture
11 00		Plenary Lecture	Scientific Program	Scientific Program
11 15		Plenary Lecture	Scientific Program	Scientific Program
11 30		Plenary Lecture	Scientific Program	Scientific Program
11 45		Plenary Lecture	Scientific Program	Scientific Program
12 00		Scientific Program	Scientific Program	Scientific Program
12 15		Scientific Program	Scientific Program	Scientific Program
12 30		Scientific Program	Scientific Program	Scientific Program
12 45		Scientific Program	Scientific Program	Scientific Program
13 00		Scientific Program	Lunch	Poster Award
13 15		Scientific Program	Lunch	Poster Award
13 30		Scientific Program	Lunch	Poster Award
13 45		Scientific Program	Lunch	Closing Ceremony
14 00		Plenary Lecture	Poster Session	
14 15		Plenary Lecture	Poster Session	VISIT
14 30		Plenary Lecture	Poster Session	VISIT
14 45		Plenary Lecture	Poster Session	VISIT
15 00	Registration	Scientific Program	Plenary Lecture	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
15 15	Registration	Scientific Program	Plenary Lecture	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
15 30	Registration	Scientific Program	Plenary Lecture	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
15 45	Registration	Scientific Program	Plenary Lecture	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
16 00	Opening Ceremony	Coffee Break	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
16 15	Opening Ceremony	Coffee Break	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
16 30	Opening Ceremony	Coffee Break	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
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17 00	Opening Lecture	Scientific Program	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
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17 30	Opening Lecture	Scientific Program	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
17 45	Opening Lecture	Scientific Program	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
18 00	Welcome Reception	ISCAA Board	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
18 15	Welcome Reception	ISCAA Board	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
18 30	Welcome Reception	ISCAA Board	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
18 45	Welcome Reception	ISCAA Board	Scientific Program	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
19 00	Welcome Reception	Social Program	Gala Dinner	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
19 15	Welcome Reception	Social Program	Gala Dinner	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
19 30	Welcome Reception	Social Program	Gala Dinner	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
19 45	Welcome Reception	Social Program	Gala Dinner	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
20 00		Swarovski Kristallwelten	Seegrube	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
20 15		Swarovski Kristallwelten	Seegrube	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
20 30		Swarovski Kristallwelten	Seegrube	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
20 45		Swarovski Kristallwelten	Seegrube	Department of Anatomy, Histology and Embryology, Medical University Innsbruck
21 00		Swarovski Kristallwelten	Seegrube	Department of Anatomy, Histology and Embryology, Medical University Innsbruck

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SATURDAY – SEPTEMBER 9, 2017

Kaiser Leopold Saal

16	00		Opening Ceremony	
			Welcome Speeches	Bernhard Tilg (Member of the Tyrolian Government, Territorial Council for Health) Artur Wechselberger (President of the Tyrolean Medical Chamber) Reinhard Putz (Chair of University Council, Medical University of Innsbruck) David Kachlik (Board Member of ISCAA) Georg Feigl (Associate Editor of "Surgical and Radiological Anatomy", Board Member of ISCAA)
17	00		Opening Lectures	Anatomy in the 21st Century Erich Brenner The Iceman Ötzi and his time in Innsbruck Karl-Heinz Künzel
17	45		Welcome Reception	
20	00		End of Day 1	

TIMETABLE SUNDAY, SEPTEMBER 10, 2017

Time	Kaiser Leopold Saal
08 00	
15	
30	Plenary Lecture: Ayhan Cömert
45	
09 00	Plastic Surgery Surgery Clinical Anatomy
15	
30	
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10 00	
15	
30	Coffee Break
45	
11 00	Plenary Lecture: Jose Sanudo
15	
30	Neuroanatomy Neurochemistry Neuroscience Molecular Biology
45	
12 00	
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30	
45	
13 00	Lunch
15	
30	
45	
14 00	Plenary Lecture: Rupert Prommegger
15	
30	Endocrine Surgery Surgery Clinical Anatomy
45	
15 00	
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45	
16 00	Coffee Break
15	
30	Orthopaedics I
45	
17 00	
15	
30	
45	
18 00	ISCAA Board Meeting
15	
30	Social Program Swarovski Kristallwelten
45	
19 00	
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20 00	
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21 00	

SUNDAY – SEPTEMBER 10, 2017

Kaiser Leopold Saal

Time	√	Track/Specification	Title/Speaker
08 30		Plenary Lecture	Neurovascular anatomy studies, anatomical basis for aesthetic concepts and role of translational anatomy for plastic surgery Ayhan Cömert

PLASTIC SURGERY / SURGERY / CLINICAL ANATOMY

Chairs: G.Pierer, M.Konschake

09	00		Eteudo Albert	Anthropometric analysis of palpebral and interpupillary dimension among northern cross river ethnic population of Nigeria
	12		Park Jin Seo	Serially peeled images of face curved-surface based on the sectioned images
	24		Gilan Ismail Yagmurhan	Route of facial artery in facial region and its relation with nasolabial fold
	36		Lucas-Neto Lia	Reestablishing face anatomy - Percutaneous sclerotherapy of low flow vascular malformations
	48		Al Talalwah Waseem	Variable supply of sciatic nerve
10	00		Eric Mirela	Preoperative breast volume estimation using the cavalieri principle and 3D reconstruction
	12		Fogg Quentin	Adult post-traumatic pollicisation: Understanding the thenar raphe for improved true opposition

10 30 Coffee Break

Kaiser Leopold Saal

11	00		Plenary Lecture	Innervation of the human larynx. Is the pig a good choice like animal model for studying? Jose Sanudo

Kaiser Leopold Saal

NEUROANATOMY / NEUROCHEMISTRY / NEUROSCIENCE / MOLECULAR BIOLOGY

Chairs: L.Klimaschewski, D.Kachlik

11	30		Gonçalves Ferreira Antonio	Internal cerebral veins: Branching patterns and ventricular topography
	42		Ozgur Merve	Afferent and efferent connections of the subthalamic nucleus in the rat: Emphasis on its bilateral and crossed connections
	54		Filipovic Branislav	Brain and lying
12	06		Elfaki Amani	Midsagittal surface area of the corpus callosum in schizophrenia: A magnetic resonance imaging analysis
	18		Elfaki Amani	Superior temporal gyrus and primary auditory cortex in schizophrenia: Automatic brain segmentation study
	30		Claudiu Ionut Iordache	Anatomical study of the distribution of the cerebral arteries
	42		Soleimani Maryam	Study of coenzyme q10 on level of TNF-α, IL-10 in spinal cord injury of rat menopausal model

13 00 Lunch

Kaiser Leopold Saal

14	00		Plenary Lecture	Anatomy guided modern endocrine surgery. Rupert Prommegger

ENDOCRINE SURGERY / SURGERY / CLINICAL ANATOMY

Chairs: R.Prommegger, M.Konschake

14	30		Keiler Jonas	Learning from vessel and valve morphology of the human femoral vein - morphometric and histostructural requirements for artificial valve implants
	42		Musil Vladimir	Vasa vasorum interna – a new anatomical object?
	54		Moosbeckhofer Nina	Spinal accessory nerve plexus patterns
15	06		Al Talalwah Waseem	Anatomical variability of Internal pudendal artery
	18		Rehder Peter	Role of the male urethral bulb in normal life and in incontinence surgery
	30		Burger Florian	Postoperative hypoparathyroidism in thyroid surgery: Anatomic-surgical mapping of the parathyroids and implications for thyroid surgery
	42		Khanal Laxman	Effect of local bee honey on dihydro-folate reductase enzyme inhibitor (methotrexate – an anticancer drug) induced mucositis – a histological study on albino Wistar rats

16 00 Coffee Break

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Kaiser Leopold Saal

ORTHOPAEDICS I

Chairs: M.Thaler, V. Baca

16	30		Totlis Trifon	Normative data on the lateral offset of the acromion: Contribution to the use and interpretation of the acromial index and shoulder critical angle.
	42		Haselbacher Matthias	The direct anterior approach for hip revision: Accessing the entire femoral diaphysis without endangering the nerve supply
	54		Thaler Martin	Approaches for total hip arthroplasty, an anatomical review
17	06		Kaiser Peter	The correlation between increased internal femoral torsion and patella instability
	18		Knierzinger Dominik	Biomechanical evaluation of the strength of cable and suture cerclage for tuberosity reattachment in a 4-part proximal humerus fracture model treated with reverse total shoulder arthroplasty
	30		Schwarz Angelika	Safe zone for the deltoid split regarding the axillary nerve – an anatomical study
	42		Eichinger Martin	Screw augmentation leads to improved stability in the minimally invasive treatment of displaced intraarticular fractures of the calcaneus: A biomechanical study

18	00		ISCAA Board Meeting

18	30		Social Program	Swarovski Kristallwelten

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TIMETABLE MONDAY, SEPTEMBER 11, 2017

Time	Kaiser Leopold Saal	Lecture hall 1
08 00		
15		
30	Orthopaedics II Trauma Surgery Clinical Anatomy	
45		
09 00		
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10 00	Coffee Break	
15		
30	Plenary Lecture: Thomas Schmid	
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11 00	Hernia Surgery Surgery Clinical Anatomy	
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12 00		
15		
30	Lunch	
45		
13 00		
15		
30	Poster Session	Poster Session
45		
14 00		
15		
30	Plenary Lecture: Bernhard Moriggl	
45		
15 00	Ultrasound Imaging Clinical Anatomy	Histology / Embryology
15		
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45		
16 00		
15		
30	Coffee Break	
45		
17 00	Teaching	Forensic Clinical Anatomy
15		
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45		
18 00		
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30	Gala Dinner Seegrube	
45		
19 00		
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20 00		
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21 00		

MONDAY – SEPTEMBER 11, 2017

Kaiser Leopold Saal

ORTHOPAEDICS II / TRAUMA SURGERY / CLINICAL ANATOMY

Chairs: M.Thaler, T.Totlis

08	30		Feigl Georg	Success rate of intraarticular sacroiliacal joint injection: Ultrasound versus flouroscopy- an anatomical study!
	42		Vucinic Nikola	Application of algometry in patients with cervical and lumbar radiculopathy
	54		Arsic Stojanka	Method of anatomical features as an anatomical base for reverse engineering of the human bones
09	06		Kaiser Peter	Differences in femoral torsional values
	18		Totlis Trifon	Surgical anatomy of the lateral femoral circumflex artery branches. Contribution to the blood loss control during hip surgical approaches
	30		Wagner Moritz	Biomechanical in vitro comparison of suture anchors for thumb ulnar collateral ligament repair
	42		Schwarz Angelika	Proximity of the radial artery to the Henry's approach

10 00 Coffee Break

SCIENTIFIC PROGRAM Monday, 11. Sep 2017

Kaiser Leopold Saal

10	30		Plenary Lecture	Learning from each other. No surgery without anatomy! Thomas Schmid

HERNIA SURGERY / SURGERY / CLINICAL ANATOMY

Chairs: Th.Schmid, R.Fortelny

11	00		Perepelkin Andrew	Bilateral characteristics of the human hand in adolescent age
	12		Dydykin Sergey	Experimental upper-airway epithelium regeneration using tissue-engineering scaffolds
	24		Elvan Özlem	Radiological management of the exiting points of supraorbital region neurovascular bundles
	36		Al Talalwah Waseem	Coexistence of sciatic artery aneurysm
	48		Dardanov Dragomir	Topographic anatomical relationships between pelvic fasciae and autonomic nerves – implication for rectal and pelvic floor surgery
12	00		Abousif Antonius	Hydronephrosis caused by inguinal herniation of the ureter
	12		Medtronic	New technologies in hernia surgery

12 30 Lunch

13	30		Poster Session

Kaiser Leopold Saal

14	30		Plenary Lecture	The impact of ultrasound in clinical, applied anatomy: past, present, future Bernhard Moriggl

15 00 **PARALLEL SESSION – Kaiser Leopold Saal**

ULTRASOUND / IMAGING / CLINICAL ANATOMY

Chairs: B.Moriggl, G.Feigl

15	00		Feigl Georg	Important anatomical facts for lumbar and thoracic facet joint infiltration techniques of Neuraltherapy!
	12		Johnson Marjorie	Anatomy informs best practices in ultrasound guided anesthesia
	24		Ibrahim Alaa	Volumetric MRI analysis of primary sensory cortex among Sudanese healthy adults
	36		Gasmalla Hosam Eldeen	Primary motor cortex volume among healthy adults Sudanese population, an automatic brain segmentation study
	48		Sahin Bünyamin	Variables effecting the estimation of quantitative data on sectional radiological images
16	00		Bartikian Mickael	3D Printing vascular models
	12		Lucas-Neto Lia	Magnetic resonance vessel wall imaging – going beyond the lumen and its importance for the diagnosis of central nervous system vasculitis

15 00 **PARALLEL SESSION – Lecture hall 1**

HISTOLOGY / EMBRYOLOGY

Chairs: M.Blumer, E.Pechriggl

15	00		Namm Aimar	Expression of Pax2, Pax6 and Pax7 proteins during embryogenesis of the human spinal cord development
	12		Adefolaju Anthony Gbenga	Antiangiogenic VEGF165b expression in human breast MCF- 7 and MCF-10A cells exposed to reverse transcriptase and protease inhibitors
	24		Liashchenko Diana	Fetal anatomy and topography of the arterial duct in the intermediate fetal period of the human ontogenesis
	36		Brenner Erich	Development of the so-called „mandibular symphysis" in humans
	48		Washausen Stefan	Pax2/Pax8-defined subdomains and the occurrence of apoptosis in the expanding posterior placodal area of mice
16	00		Lyashchenko Olga	Analysis of morphological changes in the normal and polycystic ovaries left after unilateral ovariectomy
	12		Pechriggl Elisabeth	The role of FGFS in the early development of the human urethra

16 30 Coffee Break

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

17 00 **PARALLEL SESSION – Kaiser Leopold Saal**

TEACHING

Chairs: E.Brenner, Q.Fogg

17	00		Kachlik David	Is it justifiable and reasonable to introduce new terms into the morphological nomenclatures?
	15		Chung Beom Sun	Free regional anatomy textbook, full of schematics and mnemonics
	30		Kotzé Sanet	Perceptions of anatomy honours students of compulsory abstract writing exercises of articles presented during weekly journal club meetings
	45		Rogers Kem	Development of a model for the integration of basic sciences into a competency-based undergraduate medical education curriculum
18	00		Musil Vladimir	Impact factor - how to distinguish the proper one?
	15		Brenner Erich	The impact of anatomical dissection on Kolb's learning styles

17 00 **PARALLEL SESSION – Lecture hall 1**

FORENSIC CLINICAL ANATOMY

Chairs: R.De Caro, J.R.Sanudo

17	00		De Caro Raffaele	Forensic clinical anatomy of spine in child abuse
	12		Macchi Veronica	Post mortem computed tomography and magnetic resonance imaging of single organs
	24		Porzionato Andrea	Forensic clinical anatomy and medical responsibility
	36		Soleimani Maryam	Sesame oil influence on the Th1/Th2 ratio in spinal cord injury of rat menopausal model
	48		Fogg Quentin	A specialist dissection course for forensic anthropologists on facial approximation. A clinical anatomy approach
18	00		Kachlik David	Pai syndrome: a case report of rare developmental defect at adult patient

Kaiser Leopold Saal

18	30		Gala Dinner Seegrube

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TIMETABLE TUESDAY, SEPTEMBER 12, 2017

Time	Kaiser Leopold Saal
08 00	Registration
09 00	Neurosurgery Neuroscience Maxillofacial Anatomy
10 00	Coffee Break
10 30	Plenary Lecture: Georg Feigl
11 00	Clinical Anatomy Gender Medicine Comparative Anatomy Varia
12 00	Poster Award
13 00	Closing Ceremony
14 00	VISIT Department of Anatomy, Histology and Embryology Medical University Innsbruck

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

TUESDAY – SEPTEMBER 12, 2017

Kaiser Leopold Saal

NEUROSURGERY / NEUROSCIENCE / MAXILLOFACIAL ANATOMY

Chairs: C.Thomé, A.Trödhan

08	30		Sabitzer Ronald Josef	Lateral extended TLIF procedure and new intervertebral implant
	45		Surucu Selcuk	Aging and spinal cord injury: a biochemical and anatomical study
09	00		Haselbacher Matthias	Footprint mismatch in total cervical disc arthroplasty
	15		Carvalho Mateus	Neuroanatomical aspects and clinical correlations in sign-languages processing
	30		Boduç Erengül	Preliminary study for percutaneous intervention of foramen ovale
	45		Jameie Seyed Behnamedin	Effects of 660nm low-level laser therapy on P2X3 expression of lumbar DRG of adult male rats with neuropathic pain

10 00 Coffee Break

Kaiser Leopold Saal

10	30		Plenary Lecture	Anatomical drawings and images of dissection: The good, the bad and the ugly! Georg Feigl

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Kaiser Leopold Saal

CLINICAL ANATOMY / GENDER MEDICINE / COMPARATIVE ANATOMY / VARIA

Chairs: E.Brenner, G.Feigl

11	00		Spirina Galina	Blood vessels microanatomy of atrioventricular part of the cardiac conduction system
	12		Bernardi Sara	Morphological study of the lips' grooves in an Italian population
	24		Bezdickova Marcela	Endoscopic anatomy of the epitympanic diaphragm
	36		Piagkou Maria	Origin, insertion and innervation abnormalities of the coraco-brachialis muscle - An anatomical study with clinical implications
	48		Farhadi Mona	Comparison apoptotic effects of combination carvacrol and Q10 on p53 protein expression in SK-BR3 breast cancer cell line
12	00		Lyashchenko Olga	Formation of informational-communicative competence of medical students at medical biology department
	12		Abousif Antonius	"Vanishing kidney kisease" caused by a rare embryologic anomaly - A case series of combination of renal dysgenesis, Gartner's duct cyst and ipsilateral Muellerian duct obstruction.

Kaiser Leopold Saal

12	30		Poster Award
13	00		Closing Ceremony

14	00		VISIT Department of Anatomy, Histology an Embryology, Medical University Innsbruck

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Scientific Program

(Abstracts and Notes)

in order of program schedule

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Anatomy in the 21st Century

Erich Brenner

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

OPENING LECTURES

Saturday, 09. Sep 2017 – 17:00

The Iceman Ötzi and his time in Innsbruck

Karl-Heinz Künzel

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Sunday, 10. Sep 2017 – 08:30

PLENARY LECTURE

Neurovascular anatomy studies, anatomical basis for aesthetic concepts and role of translational anatomy for plastic surgery

Ayhan Cömert
Associate Professor, Department of Anatomy, Ankara University School of Medicine, Ankara, Turkey

Anatomy and plastic surgery relation always have been very close. Books and colored atlases do not provide satisfactory information in every case. Learning anatomy during postgraduate education is not easy and mostly there is not enough time and motivation. Additionally, some of the learned subjects in anatomy are unnecessary and are not frequently used by every surgeon. Development of modern reconstructive plastic surgery has seen great changes in all areas of plastic surgery but especially in perforator-based flaps. Perforator flap concept has increased the importance of vascular anatomy studies which has been the main problem in plastic and reconstructive surgery. The translational research in plastic surgery and clinical anatomy gave birth to new surgical techniques and adding the update radioanatomical knowledge to these new techniques showed us the current dimensions and limitations of surgical approaches. Detailed vascular anatomy studies are very important for preoperative planning, in addition to preoperative radiological evaluation. Clinic oriented plastic surgery based vascular anatomy studies have indicated much diversity when compared to classical vascular anatomy. Recently, the influences of these studies and information on the surgical procedures and on the surgery oriented anatomical studies become very important. From bedside to bench and back again, clinical anatomy oriented vascular anatomy studies are always necessary. Additionally, three-dimensional integrity only can be learned with cadaver dissections and this personal experience cannot be transferred to the others. For some surgeries, in order to improve success every plastic surgeon should do the cadaver dissections and should learn anatomical data before operations. The variable vascular anatomy not only among different individuals but also between right and left side shows parallel outcomes as relatively longer, more risky and technically challenging procedures. Radiological techniques for preoperative planning of perforator flaps in reconstructive microsurgery (f.i. Doppler ultrasound, Color Doppler imaging, non-contrast MRI) should be considered on the base of vascular anatomical knowledge in relation to flaps harvested from different anatomical areas. During flap surgery, variability of the vascular plexus and surgeons were often surprised by the previous surgical damage, scar formation or anatomical variants intra-operatively. Nowadays, after published good anatomical studies and maps of systematic and precise knowledge of the dominant perforating vessels, perforator-flaps are now feasible. As a conclusion without clinical anatomy knowledge and the interpretation of clinical anatomy oriented vascular anatomy investigations their clinical applications would have been difficult. Good clinical atomy knowledge can help plastic surgeons to be navigated and to understand the complicated anatomy and relations for each patient.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

PLASTIC SURGERY / SURGERY / CLINICAL ANATOMY

Sunday, 10. Sep 2017 – 09:00

Anthropometric analysis of palpebral and interpupillary dimension among northern cross river ethnic population of Nigeria

Eteudo N. Albert, Lukpanta P. Ugbem, Mba Christian

Anthropometric analysis of palpebral and interpupillary dimension is very important to maxillofacial and plastic surgeons, anthropologist, dysmorphologists and in forensic investigations. The study was carried on the Anthropometric analysis of palpebral and interpupillary among Northern Cross River State ethnic population. A total number of five hundred subjects, two hundred and fifty (250) males and two hundred and fifty (250) females between age group 10-49years, were randomly selected from primary and secondary schools, villages and towns within the Northern Cross River extraction. Obtained data was analyzed and there were found statistically significant ($p<0.05$).The results showed that the HPA is significantly higher in males than in females. There was significant difference in IPD between males and females. The near interpupillary distance (NIPD) and far interpupillary distance (FIPD) values were significantly higher ($P<0.05$) in males than in females. There was significant ($p<0.05$) sexual dimorphism. The result drawn from this study could be use immense by maxillofacial and plastic surgeons, anthropologist, dysmorphologists and in forensic investigations

Serially peeled images of face curved-surface based on the sectioned images

Park Jin Seo
Department of Anatomy, Dongguk University School of Medicine

To perform plastic surgery successfully on the face, surgeons must study face anatomy with the five layers (skin, subcutaneous tissue, musculoaponeurotic layer, retaining ligaments and spaces, periosteum and deep fascia). However, the existing educational materials for facial anatomy are insufficient. The purpose of this study was to present color images of the serially peeled layers composing the curved surfaces of a face. These images will be helpful to medical students and doctors who are learning about facial anatomy for plastic surgery. Volume modeling was used to reconstruct head from the sectioned images of male and female head. Serial layers of the volume models were revealed by peeling back each layer along the curved surface of the face and capturing the remaining volume model to create the peeled images of each layer. A total of 1,920 female and 1,920 male peeled images were produced at every 30° from 0° to 330° (voxel size 0.2 mm; 160 images per angle and for each sex). From the peeled images, inner structures of the face curved surface with the five layers could be gradually shown away layer by layer. The peeled images from this study are better than existing educational materials. Accordingly, the peeled images will be helpful in education and research of face anatomy and clinical training for plastic surgery. Because we hope that this information can be useful to other research, we are distributing our data free of charge.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Route of facial artery in facial region and its relation with nasolabial fold

Gilan Ismail Yagmurhan

Purpose: Aesthetic interventions to the facial region has increased in recent years. Therefore, knowledge of vascular structures of this region became significant to avoid complications. For this purpose, the course of facial artery and its relation with nasolabial fold was examined in this study.
Methods: We dissected 20 embalmed adult cadaver hemifaces to find out the route of the facial artery and its branches. Distances between the artery and alar base, angulus oris and angulus mandible were measured at the nearest sites.
Results: Route and branching pattern of facial artery, its close relation with nasolabial fold were revealed and evaluated.
Conclusion: It is thought that, to achive successfull outcomes in dermal filling procedures, knowledge of anatomy of the facial artery and its variations is crucial. Also, estimating the location of arteries via certain landmarks will guide to cosmetic surgeons.

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Reestablishing face anatomy - percutaneous sclerotherapy of low flow vascular malformations

Sequeira Paulo, Basílio Gonçalo, Teotónio Pedro, Correia Manuel, Campos Jorge
Anatomy - Lisbon Medical School

Purpose: Low-flow vascular malformations (LFVM) are congenital anomalies that consist of thin-walled vascular channels lined by quiescent endothelium. They present as venous, lymphatic or combined malformations and the symptoms depend on the predominant vascular channels. Swelling, pain, compression/invasion of adjacent structures, hemorrhage and cosmetic deformity are the main presentations. The treatment of LFVM remains a great challenge. Surgical resection can lead to injuries to the facial nerve, aesthetic problems and intraoperative bleeding. Direct intralesional injection of a sclerosing agent is established as the treatment of choice in LFVM. It causes sludging of the erythrocytes, perivascular inflammatory reaction and a subsequent thrombosis of the injected vessels, followed by fibrosis and reestablishment of normal anatomy. The purpose of this study is to present our initial experience in the treatment of LFVM using intralesional injection of sclerosing agents.
Material and Methods: We present a retrospective review of 13 patients treated, from August/2011-April/2017, at our institution. The procedures were performed in an angiographic suite, under general anesthesia and phlebographic control. The treatment success was assessed at the outpatient clinic, through case note reviews, physical examination and photographic recordings.
Results: We treated 13 patients, from 2-40 years old. Nine had venous malformations, 2 had capillary and 2 lymphatic malformations. The chief complains were swelling and cosmetic deformity (13/13), hemorrhage (3/13) and functional problems (2/13). The lesions were located in the face (4), lips/chin (2), submandibular region (1), preauricular (1), periorbitary (3), epicranial (1) and in the tongue (1). Absolute alcohol was used in 3 patients, bleomycin in 1 patient, Sclerogel in 4 and a combination of agents in 5. All the patients clearly benefited from the treatment and an excellent result with complete resolution was obtained in 8. As complications we registered a transient facial palsy and a small cheek scar after biopsy. No systemic complications were observed.
Conclusions: With thorough planning and careful patient selection, sclerotherapy is a simple, safe and effective treatment for the low-flow vascular malformations, reestablishing normal face anatomy. Plastic Surgery / Surgery / Clinical Anatomy

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Variable supply of sciatic nerve

Al Talalwah Waseem[1], Al Dorazi Shorok[2], Soames Roger[3]
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The sciatic nerve is largest nerve paasing through the sciatic foramen just below the piriformis. It is usually supplied via the inferior the gluteal artery in gluteal region. The inferior gluteal artery provides nourishment for the sciatic nerve by a sciatic branch known as arteria comitans nervi ischiadici. In pelvic region, there is usually median and lateral sacral arteries supply the sciatic nerve roots. It investigates the vascular supply of the sciatic nerve inside the pelvis. There is several arteries participates in sciatic nerve supply such as superior and inferior gluteal arteries. Moreover, the internal pudendal artery and incomplete forms of sciatic arteries supply the sciatic nerve too. The previous arteries supply sciatic nerve either through its root or its formation. The internal pudendal and inferior gluteal arteries supplies the roots in different ways in 87% and 55% respectively. The Superior gluteal artery supplies the roots of sciatic nerve in 80% whereas the sciatic artery found to be in 20%. The sciatic formation is supplied either by penetration. The gluteopudendal trunk penetrates the sciatic formation in almost 23% whereas the inferior gluteal artery in less than 2%. Knowing the arterial supply of the sciatic nerve increases the awareness of surgeons to avoid the iatrogenic injury to any of these arteries during pelvic operations.

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Preoperative breast volume estimation using the cavalieri principle and 3D reconstruction

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Purpose: In the present study, we compared two different breast volume determination methods, Cavalieri principle and 3D reconstruction. Methods: Consecutive sections were taken in slice thickness of 5 mm. Every 2nd breast section in a set of consecutive sections was selected. We marked breast tissue on each selected section, and so prepared CT scans used for breast volume estimation. The volumes of the 60 breasts were estimated using the Cavalieri principle and 3D reconstruction. Results: The mean breast volume value was established to be 467.79 cm^3 (SD=±188.90 cm^3) with Cavalieri method and 465.91 cm^3 (SD=±191.41cm^3) with 3D reconstruction. The mean coefficient of error for the estimates in this study was calculated as 0.25%. Skin-sparing volume was about 91% of the whole breast volume. Both methods are very accurate and have a strong linear association. Conclusion: Our results suggest that the calculation of breast volume or its part in vivo from systematic series of CT scans using the Cavalieri principle or 3D breast reconstruction is accurate enough to have a significant clinical benefit in planning reconstructive breast surgery. These methods can help the surgeon guide the choice of the most appropriate implant or/and flap preoperatively.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

PLASTIC SURGERY / SURGERY / CLINICAL ANATOMY Sunday, 10. Sep 2017 – 09:00

Adult post-traumatic pollicisation: Understanding the thenar raphe for improved true opposition

Fogg A. Quentin
Centre for Human Anatomy Education, Monash University, Australia

Pollicisation of the adult hand receives less attention in the literature than paediatric procedures for congenital defects. Traumatic amputation of the adult thumb is not, however, uncommon, and pollicisation provides a convenient means of restoring considerable function. Anatomic relations make translational movements readily achievable post-operatively, but true, precise opposition is elusive. This study applies the results of recent studies of the radial attachment of the opponens pollicis muscle into a structure termed the thenar raphe, to pollicisation. It is hypothesised that consideration of the thenar raphe in this procedure will increase post-operative hand function scores. Six cadaveric hands had thumb amputations simulated followed by pollicisation with an additional opponens repair. The post-operative movements were simulated to consider the mechanical outcomes. In all cases sufficient tissue existed to perform the additional opponens repair. Tension applied to the transplanted muscle created readily observable rotation around the long-axis of the created first metacarpal in all specimens. This was considered comparable to the distinct movement contributed by native opponens pollicis muscle function. These early experiments suggest that pollicisation of the adult thumb can be enhanced with a novel opponens repair.

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Sunday, 10. Sep 2017 – 11:00

PLENARY LECTURE

Innervation of the human larynx. Is the pig a good choice like animal model for studying?

Jose Sanudo

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

NEUROANATOMY / NEUROCHEMISTRY / NEUROSCIENCE / MOLECULAR BIOLOGY

Sunday, 10. Sep 2017 – 11:30

Internal cerebral veins: Branching patterns and ventricular topography

Gonçalves-Ferreira António
Faculdade Medicina Lisboa

Introduction: The general anatomy of the internal cerebral veins (ICV) tree is well known, but their branching patterns and precise topography in the 3rd and lateral ventricles are not. Such knowledge is of uppermost importance for the microsurgical access to the cerebral ventricles. Aims: The identification of ICV branching patterns within the 3rd and lateral ventricles.
Material and Methods: 106 normal adult human hemispheres (81 brains). Veins injected with coloured silicone and fixed in Winkler solute. Microdissection with an operating microscope. Drawing and photographic registration of the veins and reference structures: interventricular foramen (IF), posterior commissure. Each vein was checked for its presence, location and terminal size. The 3rd ventricle was divided in 3 parts: interventricular foramen (IF), anterior (AS) and posterior segments (PS). Statistical analysis of the quantified data.
Results: The ICV originates at thalamostriate and septal veins junction within the IF in 51,9% of cases. The most frequent collaterals are: Medial thalamic (15%) and choroidal veins (10%) in the AS – 3rd V, Medial (10%) and posterior (5%) thalamic veins in the PS. The most frequent ICV branching patterns are shown. There was no correlation among ICV tributary veins except for the inverse relation of the thalamocaudate and thalamostriate veins calibers. Between the 3rd and lateral ventricles, the choroidal and the thalamic veins run in two distinct anatomical planes (respectively above and beneath) which are easy to separate during surgery.
Discussion and Conclusions: We verified that the classical configuration of the ICV origin locates in the IF in just ½ of the cases. There is a great variability of the ICV tributaries arrangement. The main patterns of ICV tree were identified and their prevalence quantified; none of them represents more than ⍰ of the cases. A microdissectable avascular space between the lateral and 3rd ventricles is well available to the interventricular surgical approach. Neuroanatomy / Neurochemistry / Neuroscience / Molecular Biology

Afferent and efferent connections of the subthalamic nucleus in the rat: Emphasis on its bilateral and crossed connections

Cavdar Safiye, Ozgur Merve, Cakmak Yusuf, Ozgur Kuvvet, Yasemin Kunt, Kezban Sila, Saglam Gökay

The subthalamic nucleus (STN) is important for normal movement as well as in movement disorders. The STN is a target nuclei in patients with advanced Parkinson's disease (PD). The deep brain stimulation (DBS), is the surgical treatment of PD. The DBS significantly reduces motor disability however, negative side effects has been reported. Thus, to understand the side effects of DBS the connection of the STN should be well known. Therefore, the present study aims to reexamine the STN with an emphasis on its poorly/not documented connections. Further, the bilateral and crossed connections of the STN will be discussed. 15 male albino rats received 20-50-nl pressure injections of a Fluoro-Gold (FG) (n=7) retrograde and biotinylated dextran amine (BDA) (n=8) anterograde tracer into the STN. Following 7-10 days of survival period the animals were processed according to the related protocol for the two tracer used. The present study demonstrated ipsilateral reciprocal connections with the cortical (infralimbic, cingulate, frontal, piriform, endopiriform, primary motor, insular and retrosplenial cortex), basal ganglia related structures (caudate putamen, globus pallidus, ventral pallidum, nucleus acumbens clastrum and substantia innominata) and limbic structures (amygdala, bed nucleus of stria terminalis). The STN received only afferent fibers from hypothalamic (posterior, lateral, anterior, mammilary and ventromedial), and epithlamic (habenular) nuclei. However, STN receives both afferents (thalamic reticular, parafasicular and central) and sends efferents (thalamic reticular, ventral anterior, lateral and mediodorsal) to the thalamic nuclei. It also received both afferents and send efferents to vast majority of brainstem nuclei. Further, bilateral and cross connections between the two STN were observed. In addition to the well documented connections of the STN, the present study reported its connections with the piriform, endopiriform, insular cortex, clastrum, hypothalamic, thalamic reticular, cerebellar, habenular, trigeminal, red, cunate and gracilis and substantia innominate which has not been or poorly documented. These connections on various novel routes can change the conceptual architecture of the basal ganglia circuitry. These new findings may modify our view of the functional identity of the STN.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Brain and lying

Filipovic Branislav, Filipovic Branka
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[2] Clinical and Hospital Center „Bezanijska Kosa" Zemun Belgrade

Purpose: Withholding the truth, or simply lying, is for a certain period the subject of interest for scientists worldwide. Studies of several authors applied functional magnetic resonance imaging (fMRI) methodology to deception research and have established fMRI as a golden standard in this field.
Methods: We have reviewed PubMed, Embase, Index Kopernicus, and Google Scholar for the period 2000 - 2017, for key words "deception", "Lying", "fMRI" and "brain". We have got 138 hits, out of which 10 were reviews and meta - analysis, while other were original investigations.
Results: During the deception fabrication process, left medial and left inferior frontal lobes, right hippocampus and right middle temporal gyrus, left lingual gyrus, anterior cingulate, right fusiform gyrus, and right sublobar insula were significantly active, but also precuneus, and middle temporal regions. Truth telling process activated left subcallosal gyrus or lentiform nucleus and left inferior temporal gyrus were significantly active. The polygraph examination revealed 92% accuracy in deceptive subjects and 70% accuracy in truthful subjects.
Conclusion. Functional resonance imaging is an adequate method to explore brain activity during lying process and allows better understanding of involvement of the distinct parts of the cortex and subcortical structures and cognitive correlates with an ancient human necessity for deception and bypassing the truth.

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Midsagittal surface area of the corpus callosum in schizophrenia: A magnetic resonance imaging analysis

Elfaki Amani, Osman Ali, Tahir Mohamed, Osman Amira, Golpinar Murat, Ozdemir Fikri, Erkan Ibrahim, Nahir Mert, Sahin Bunyamin
Faculty of Medicine, National University, 11111 Khartoum

Purpose: This study dedicated to examining the abnormality of corpus callosum (CC) and its subdivisions in schizophrenia at the structural and behavioral levels hence have far been unable to reach an agreement.
Methods: 57 (30 male - 27 female) patients and 88 (51 male - 37 female) healthy controls were included in the study. Structural MR imaging was done for both patients and healthy controls. Morphometric measurements were conducted blindly with clinical data using ImageJ software. The CC was divided into seven subdivisions based on the established Witelson framework. The surface areas of CC as well as the rostrum, genu, rostral body, anterior midbody, posterior midbody, isthmus, and splenium of CC were measured on midsagittal slide.
Results: According to the findings of the present study, the total midsagittal surface area of the CC showed no differences between patients and controls ($p>0.050$), although in patients the midsagittal surface area of the rostrum, genu and splenium (0.25cm^2, 1.10cm^2 and 1.38cm^2, respectively) were less than in controls (0.29cm^2, 1.19cm^2 and 1.52cm^2, respectively). The comparison between sex across the group showed that the genu and anterior midbody were less in female patients (1.03 cm^2 and 0.95cm^2, respectively) than in female controls (1.23 and 1.06 cm^2, respectively).
Conclusions: There were no reductions in the whole CC size in patients with schizophrenia. However, we found reductions in the callosal subdivisions (rostrum, genu and splenium), which indicate that advances in MR image analysis techniques may provide detection of subtle differences of CC in schizophrenia.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

NEUROANATOMY / NEUROCHEMISTRY / NEUROSCIENCE / MOLECULAR BIOLOGY Sunday, 10. Sep 2017 – 11:30

Superior temporal gyrus and primary auditory cortex in schizophrenia: Automatic brain segmentation study

Elfaki Amani, Sarac Hadzihalilovic Aida, Osman Ali, Tahir Elsheikh Abdelgani, Acar Gudek Meltem, Golpinar Murat, Erkan Ibrahim, Sahin Bunyamin
Faculty of Medicine, National University, 11111 Khartoum

Purpose: The aim of present study is to evaluate changes in the superior temporal gyrus (STG) and primary auditory cortex (A1) in schizophrenia patients using reliable automatic brain segmentation, and to correlate the changes with clinical symptoms of patients.
Method: 82 controls and 54 patients participated in the study. Structural magnetic resonance imaging was performed and the DICOM images were evaluated using automatic brain segmentation software (BrainSuite).
Results: The mean volume of STG in patients (28.43 ±3.64cm^3) was smaller than that of controls (32.43 ± 3.87cm^3). The mean volumes of the STG gray and white matter in patients (19.22±2.62 cm^3 and 9.21 ±1.43 cm^3, respectively) were also smaller than that of controls (21.80±2.94 cm^3 and 10.63±1.53cm^3), while, no significant differences were found between patients and controls regarding the cortical area pial and thickness of STG ($p>0.05$). The total volume, gray matter volume, cortical area pial, and thickness of A1 showed no significant differences between patients and controls, although, the white matter volume of A1 was smaller in patients (1.59±0.33cm^3) than that of controls (1.80±0.37cm^3). Both STG and A1 shown significant correlations with hallucinatory behavior and poor organization of thought in schizophrenia ($p<0.05$).
Conclusion: This study positively links the pathophysiological changes in the STG with clinical symptoms of patients. These data are consistent with the intention that dysfunction of the primary auditory cortex may play a role in the production of disintegration of the process of thinking in schizophrenia.

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Anatomical study of the distribution of the cerebral arteries

Claudiu Ionut Iordache, George Lupu
UMF Carol Davila - Morphology and Anatomy Department, Bucharest

Objective: The dissection of cadaveric specimens is a very important tool for a better understanding of the anatomical features and surgical approaches. Teaching anatomy from this perspective, improves the knowledge of the students concerning the most important aspects and details of the human brain. Our study aims to highlight the vascularization areas of the anterior cerebral artery, middle cerebral artery and posterior cerebral artery.
Methods: We first dissected the skull base in order to reach the basilar and the internal carotid territories. After the first step we were able to visualize the vertebral arteries and the petrous and cavernous segments of the internal carotid artery. After the exposure and cannulation of the great vessels, we proceeded with the injection of the colored ink. After storing the specimens overnight, we dissected the cerebral hemispheres using several techniques and following different anatomical planes.
Conclusion: These are well-known procedures prove to be very useful, making the student accustomed to the learning process involving the neurovascular field.
We have described the method used in our Anatomy laboratory from UMF Carol Davila – Bucharest.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Study of Coenzyme Q10 on Level of TNF-α, IL-10 in spinal cord injury of rat menopausal model

Soleimani Maryam[1,2], Jameie Seyed Behnamedin[2], Hassanzadeh Sajad[2,3]
[1] Department of Medical Basic Sciences, University of Social Welfare and Rehabilitation Sciences, Tehran,
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Background: Spinal cord injury (SCI) consists of a two-steps process involving a primary mechanical injury followed by an inflammatory process and apoptosis. Secondary insult is characterized by further destruction of neuronal and glial cells, and leads to expansion of the damage, so that the paralysis can extend to higher segments. With the identification of mechanisms that either promote or prevent neuronal inflammation and apoptosis come new approaches for preventing and treating neurodegenerative disorders. On the other hand local cytokine differences among intact females, those that had been ovariectomized (OVX). Although coenzyme Q10 (CoQ10) acts as an antioxidant, there is a lack of enough research on its effects on SCI. Therefore, the present research was designed.
Methods: Thirty adult female wistar rats (200-250 g) were used in this study. After the animals randomizely divided into groups including ovariectomized (OVX), OVX+SCI, OVX+SCI with Coenzyme Q10, OVX+SCI with sesame oil as a vehicle, sham and control groups were also considered. Three weeks after OVX, Spinal cord injury was performed by placement of an aneurysm clip, extramurally at the level of T9-T10. By detecting score one based on the Basso, Beattie, and Bresnahan (BBB), CoQ10 administration was started (10 mg/kg/three weeks). On day 42 by using ELISA, TNF-α, IL-10 levels in the ischemic spinal cord tissues were studied. Histologic changes were studied using Luxol fast blue staining. Statistical tests were used to analyze the data and the P value less than 0.05 was considered to be significant.
Results: Compared with the control OVX group, the CoQ10 group showed significantly improved neurologic outcome ($P < 0.05$). The level of the TNF-a was significantly decreased following CoQ10 administration versus IL-10 ($P<0.01$) and OVX+SCI caused a significant demyelination in a certain area of level of injury The comparison of SCI group with OVX+SCI + CoQ10 group (42.56 ± 37.12% and 31.19 ± 39.14%, respectively) significantly showed less demyelination in the second group ($P<0.05$)
Conclusion: Our findings showed that CoQ10 is capable of suppressing the inflammatory pathway of Spinal cord injury.

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Sunday, 10. Sep 2017 – 14:00

PLENARY LECTURE

Anatomy guided modern endocrine surgery

Rupert Prommegger

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

ENDOCRINE SURGERY / SURGERY / CLINICAL ANATOMY

Sunday, 10. Sep 2017 – 14:30

Learning from vessel and valve morphology of the human femoral vein – morphometric and histostructural requirements for artificial valve implants

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Objective: Valve reflux in the femoral vein (FV) is suggested as the principal cause for chronic venous insufficiency either by valve damage or venous wall dilatation. Surgical repair of the insufficient valves is not always feasible especially in elderly, multimorbid patients. Therefore, the minimally invasive application of an artificial valve implant is a promising therapeutic approach. Previous prototypes, however, have failed to meet the complex anatomical and physiological requirements. We therefore re-investigated various anatomical aspects of the human FV and its valves.
Methods: In vivo: FV diameters were sonographically measured in 82 probands. Post mortem: Donor FVs (n = 129) were dissected to analyze valve and tributary topography, and inner circumference. Morphology of fixed valve segments, both untreated and decellularized, was studied with high resolution micro computer tomography and electron microscopy. Paraffin sections of FV segments were stained histochemically (e.g. AZAN) and immunohistochemically (e.g., anti-α-SMA, anti-Col3).
Results: In vivo, the common FV diameter (CVFD) averages 13.6 ± 3.0 mm in supine position and dilates to a mean of 120 % (16.4 ± 2.6 mm) in upright position plus Valsalva maneuver. A slight positive correlation between BMI and diameter is observed. Post mortem, the CVFD averages 11.6 ± 2.5 mm. FV valve and tributary topography is highly variable between left and right leg and between donors. Approximately 10 nm thin fibrils variably interconnect subendothelial type-I-collagen microfibrils. Likewise variably present, type-III-collagen-rich longitudinal fibers run in the inner media.
Conclusion: FV morphology is highly variable and complex. Mimicking valve geometry and subendothelial fiber structure might improve both endothelialization and anti-thrombotic properties of future valve prosthetics.

Vasa vasorum interna – a new anatomical object?

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Introduction: The term „vasa vasorum interna" (VVI) was used first in 1960 for the designation of fine luminal arterial branches supplying the media of aortic wall. In 2003 the same term was targeted on description of similar vessels in the porcine r. interventricularis paraconalis (LADA) of the left coronary artery. The aim of this study was to verify the existence of these vessels on the same model.
Methods: The tissue samples were taken from 39 healthy pigs, and analyzed by both light and scanning electron microscopy (SEM).
Results: Histologically, the VVI were not observed. The thickness of the upper, middle and lower segment of LAIB was 240, 190, and 160 µm, respectively. In the SEM specimens the VVI were detected only in two cases, as fine arteries (170 µm thick), originating directly from the stem of LAIB. Further they passed without branching through the whole media, and emanated their first branches in a distance of approximately 400 µm from the LAIB lumen, all of them within the perivascular and subepicardial spaces. The whole VV proper system was located in the adventitia only, and all its feeding arteries originated from the lateral branches of the LAIB.
Conclusions: The occurrence of VVI-like arteries is very rare featuring no participation on the supply of the LAIB wall, and that on the aortic wall is at least questionable. Therefore, it is not suitable to designate these vessels by a special term.

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INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Spinal accessory nerve plexus patterns

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Purpose: The spinal accessory nerve (SAN) plexus comprises all branches of the cervical plexus, the SAN and the anastomoses between them. These nerves may be compromised during neck surgery. Based on the disagreement on the structure of the SAN plexus in literature, a descriptive anatomical study was conducted to classify SAN plexus patterns.

Methods: The posterior triangles of the neck were dissected in ten phenol-formaldehyde fixed anatomic specimens, and the structures of the SAN plexus were analysed. The intra- and interindividual differences on both neck halves were assessed and compared to the results of previous publications.

Results: Three patterns of the SAN plexus could be distinguished. The "Common SAN" plexus pattern (12/20) was characterised by a main SAN trunk that pierced the sternocleidomastoid and the trapezius muscle. The "Early Bifurcating SAN" plexus pattern (6/20) showed an early division of the SAN into separate sternocleidomastoid and trapezius branches before entering the respective muscles. In the "Early Terminating SAN" plexus pattern (2/20) the trapezius muscle was exclusively supplied by cervical branches. The SAN ended within the sternocleidomastoid muscle without sending out trapezial rami. All three SAN plexus patterns showed variable anastomoses with the cervical plexus.
Conclusion To the author's best knowledge this study was the first to classify SAN plexus patterns. To prevent inadvertent iatrogenic nerve injuries during neck surgery, rami and anastomoses of the SAN plexus must be treated with meticulous care. Pattern recognition may facilitate the surgeon in sparing the nerves at risk.

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Anatomical variability of internal pudendal artery

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Internal pudenda artery arises from the anterior division of the internal iliac artery. It may arise with the gluteal artery from a trunk referred as glueopudendal trunk. This artery has three course are proximal (a true pelvic cavity or intrapelvic), middle (gluteal) and distal (internal pudendal canal) courses. It supplies urinary bladder and prostate in male whereas it supplies the uterine and vagina in female. This study investigates the origin of the internal pudendal artery. As the inferior gluteal artery is congintaly absence, the sciatic artery coexists. The sciatic artery is a rare vascular variation which is a compensatory for the inferior gluteal artery. Therefore, the gluteopudendal trunk is also congenital absence. As the gluteopudendal trunk is congenital absence, the internal pudendal artery usually arises directly from the anterior trunk of the internal iliac artery above 60%. As the sciatic artery coexists, it becomes the origin of the inernal pudendal artery in almost 20%. On the other hand, the internal pudendal artery arises indirectly from the internal iliac artery in different origin in 15%. The results indicate the vascular development of internal pudendal artery has to be linked with sciatic artery theory. Moreover, Identification of the internal pudendal artery origin, course and branches, increase awareness of surgeons which lead to reduce the postsurgical complication such as intrapelvic bleeding during hysterectomy, prostatectomy or proctectomy procedure. Knowing the origin variability internal pudendal artery alerts radiologist and surgeons to avoid the iatrogenic fault.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Role of the male urethral bulb in normal life and in incontinence surgery

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Introduction: The proximal male urethral bulb consists of spongiosum tissue especially prominent proximally (bulb) and distally (glans). Proximally it is surrounded by the bulbospongiosus muscle. Contracture propulses the ejaculate during orgasm, and empties urine from the urethra by starting a proximal to distal fluid wave. During sling incontinence surgery the proximal bulb is indented in the process of supporting the distal urinary sphincter mechanism. Using various imaging techniques the possible role of the urethral bulb has been postulated.
Methods: Over a period of more than 10 years the male urethral sphincter has been examined by endoscopy in lithotomy (passively supporting- and not- the midperineum with the index finger), pre- and post- male sling surgery perineal ultrasound, pelvic CT and MRI and videourodynamics in >100 patients with post-prostate surgery urinary incontinence. The reactive ability of the urethral sphincter to occlude the urethral lumen was checked endoscopically during active voluntary sphincter contraction and passive midperineal support. Endoscopy was also performed intra-operatively pre- and post- sling placement. Radiographic imaging was used to define bulb anatomy, including changes that occurred after prostate surgery, radiation and incontinence surgery.
Results: The emptying ability of the proximal urethra was clearly compromised by urethral surgery and radiation atrophy of the bulb. Incontinence sling surgery demonstrated best results with a well vascularized urethral bulb. The male transobturator retroluminal supportive sling causes an obvious indentation of the urethral bulb. This supports distal urethral sphincter function leading to increased urethral closure, thereby improving continence. The sling cannot improve continence in cases of urethral bulbar atrophy and fibrosis.
Conclusion: A well vascularized urethral bulb surrounded by a mantle of bulbospongiosus muscle helps to complete emptying of the urethra during voiding and sexual function. Furthermore it may support the distal urinary sphincter mechanism after placement of a transobturator retroluminal supportive sling in patients with post- prostatectomy urinary incontinence.

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Postoperative hypoparathyroidism in thyroid surgery: Anatomic-surgical mapping of the parathyroids and implications for thyroid surgery

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Purpose: Hypoparathyroidism remains one of the most common complications in thyroid and parathyroid surgery. This study aims for an improved understanding of the complexity and topography of the blood supply as well as the localization of the parathyroid glands compared to the two most important intraoperative landmarks: the inferior laryngeal nerve and Zuckerkandl's tubercle.
Method: We examined 71 laryngeal compounds to classify the blood supply and the location of the parathyroid glands compared to the inferior laryngeal nerve and Zuckerkandl's tubercle (ZT). For intraoperative localization and orientation, we defined in a Cartesian coordinate system the ZT plane as x-axis and the course of the inferior laryngeal nerve as y-axis.
Results: Like expected, the parathyroids are mainly supplied by the inferior thyroid artery, whereas the superior thyroid artery provides a backup supply. It must be pointed out that 7,8 % of parathyroids receive their blood directly from the thyroid gland, making preservation during e.g. thyroidectomy impossible. We discovered that 74,6 % of all parathyroid glands lie within 1 cm of the inferior laryngeal nerve and 1 cm cranial or 2,5 cm caudal to the ZT plane.
Conclusion: Our described perimeters mark the most crucial areas during surgery to preserve the parathyroids glands and the inferior laryngeal nerve – providing the surgeon with a blueprint where special carefulness is needed. Since the inferior thyroid artery provides blood in the most cases, preoperative identification with sonography is advisable, whereas during surgery the vessel should be identified and all branches handled with care.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

ENDOCRINE SURGERY / SURGERY / CLINICAL ANATOMY Sunday, 10. Sep 2017 – 14:00

Effect of local bee honey on dihydrofolate reductase enzyme inhibitor (methotrexate – an anticancer drug) induced mucositis – a histological study on albino Wistar rats

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Introduction: Mucositis is a common complication in around 40% of patients receiving chemotherapy which profoundly impact quality of life. Due to high level of mitotic activity, the oral mucosa is rapidly affected in chemotherapy. Despite the availability of many therapeutic agents that claim to prevent or reduce the severity of oral mucositis, no intervention that is completely successful at preventing oral mucositis exists. Present study aimed to demonstrate the effect of local honey on methotrexate induced mucositis of tongue.
Materials and methods: The study was done in albino rats (N=24), divided into four groups: DW/H (group A), DW/NS (group B) DW/MTX (group c) and H/MTX (group D) dated from January, 2017 to May, 2017. Local honey was given (2.5g/kg) twice a daily for 8 days. NS or methotrexate (60mg/kg) interrupted the experiment procedure at day four. At day 8, rats were sacrificed and middle third of tongue was removed for preparation of histological slides and were examined for inflammatory cell infiltration (ICI), cell vacuolization (CV), congested blood vessels (CBV), thickness of epithelium and keratin.
Results: Chi-square test of association between the groups for ICI & CV showed statistically significant association, $\chi 2$ (3) = 11.97, p=0.003 for ICI and $\chi 2$ (3) = 8.307, p=0.023 for CV. Mean number of CBV per microscopic filed was 0.445, 0.389, 1.28 & 0.5 for group A, B, C & D respectively. Mean value of dorsal epithelial thickness (µm) was 96.78±13.59, 100.50±9.75, 75.53±9.24 & 98.75±10.92 for group A, B, C & D respectively. Mean value of ventral epithelial thickness (µm) was 70.45±13.60, 58.38±14.26, 37.04±5.37 & 52.80±7.97 for group A, B, C & D respectively. Thickness of epithelium of group C was statistically significantly different from other groups ($p<0.05$).
Conclusion: Present study demonstrated the palliative effect of local honey over the mucositis induced by chemotherapeutic drug (methotrexate).
Key words: Oral mucositis, Chemotherapy, Honey, Tongue

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Normative data on the lateral offset of the acromion: Contribution to the use and interpretation of the acromial index and shoulder critical angle

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Purpose: The acromial index (AI), and critical shoulder angle (CSA) have been proposed as two morphological indices that may contribute to rotator cuff pathology. There is debate as to whether patient demographics such as gender bias the indices, decreasing their utility. Purpose of this study is to provide normative data on the lateral offset of the acromion, which may assist in determining the correct use and interpretation of both indices.
Methods: The study used 128 unpaired dried cadaveric scapulae with a mean age of 69.4±11.1 years (66 right, 62 left; 65 female, 63 male). The lateral offset of the acromion was measured from the supraglenoid tubercle to the most lateral point of the acromion with a digital caliper placed perpendicular to the scapula long axis.
Results: The lateral offset was 2.62±0.72cm in men and 2.69±0.73cm in women. The offset in right scapulae was 2.61±0.66cm while that in left was 2.70±0.78cm. The offset in the 46-60 age group was 2.85±0.76cm, in the 61-75 age group it was 2.62±0.76cm, and in the 76+ age group it was 2.54±0.60cm. No statistically significant difference was found between any group.
Conclusions: The lateral offset of the acromion is independent of age, gender, and side. Therefore, the gender bias reported in other shoulder indices may be due to humeral head offset. Between the two indices, the authors suggest the use of the AI with the lateral offset of both the acromion and the humeral head to be measured from the supraglenoid tubercle as the reference point.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

The direct anterior approach for hip revision: Accessing the entire femoral diaphysis without endangering the nerve supply

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Background: The direct anterior approach (DAA) to the hip has been criticized as an approach that is limited to primary arthroplasty only. Our study objective was to demonstrate, in a cadaveric setting, that an alternate extension of the DAA can be used to reach the femur at the posterior border of the lateral vastus muscle without endangering the nerve supply.
Methods: The iliotibial tract is split anteriorly and pulled laterally, thereby opening the interval to the lateral-posterior aspect of the vastus muscle. The muscle fascia is incised at the posterior border to access the femoral diaphysis. The vastus mobilization is started distally and laterally to the greater trochanter, leaving a muscular bridge between the vastus and the medial gluteal muscle intact. If it is necessary to open the femoral cavity for implant retrieval, we perform an anterior wall osteotomy instead of an extended trochanteric osteotomy.
Results: It was possible to split the iliotibial band and pull it laterally, thereby exposing the entire vastus lateralis muscle. The junction of the vastus lateralis and vastus intermedius was not encountered in all cases, nor was the nerve supply with all nerve fibers in that interval.
Conclusion: The alternate technique described here for accessing the femoral diaphysis allows for easy access to the lateral aspect of the vastus lateralis and the femoral diaphysis. Using this technique, it should also be possible to access the femur and perform all necessary reconstructive procedures on it without damaging the surrounding nerve structures.

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Approaches for total Hip arthroplasty, an anatomical review

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There are a great number of different approaches to the hip joint, Several conventional and minimally invasive portals exist and numerous technical variations with different instrument set are available. All approaches can be regarded as standard and can be utilized lege artis. However, the anatomical situs of these approaches is very different. Main differences between approaches are their potential to preserve muscles, avoid damage which would slow down rehabilitation and mobilization. One of the most important anatomical structures the preservation the external rotators and the function of the abductors of the hip joint. A well-functioning gluteal system provides for a limbless gait as well as it supports joint stability and has an important impact on avoiding dislocations. The direct anterior approach has some advantages in this. Yet, minimally invasive approaches should be used with care. Surgical experience, experience with a specific approach and the availability of specialized instruments as well as sufficient training on it are mandatory for a successful performance. A surgeon should always choose the approach he is experienced with.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

The correlation between increased internal femoral torsion and patella instability

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Purpose: The purpose of this study was the evaluation of the effect of increased internal femoral torsion (IT) on patellofemoral biomechanics, as IT is regarded as a risk factor for patella instability.
Methods: Eight fresh-frozen cadaver knees were tested on a knee testing simulator. Patellofemoral motion and patellofemoral pressure were evaluated for 0°, 10° and 20° of relatively increased IT with an intact, a transsected and a reconstructed medial patellofemoral ligament (MPFL).
Results: Native MPFL with 10° and 20° IT vs. 0° IT: Lateral patellar tilt increased for 10° and 20° IT ($p < 0.01$). 20° IT showed a lateral shift of the center of force ($p < 0.05$). Transsected MPFL vs. native MPFL with persistent torsional values: Lateral patella tilt increased for 10° and 20° IT ($p < 0.001$). The center of force shifted lateral for 10° and 20° IT ($p < 0.05$). Reconstructed MPFL vs. native MPFL with 0° IT: Patella tilt showed a significant lateral tilt for 10° and 20° IT ($p < 0.01$). There was a small but not significant lateral shift of the center of force for 20° ($p > 0.05$).
Conclusion: An increase of IT produces a lateralizing force on the patella potentially facilitating patella instability for 10° IT with an insufficient MPFL and 20° with a native MPFL. A MPFL reconstruction seems sufficient in knees with only 10° IT, but an additional derotational osteotomy seems necessary in cases with 20° IT.

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Biomechanical evaluation of the strength of cable and suture cerclage for tuberosity reattachment in a 4-part proximal humerus fracture model treated with reverse total shoulder arthroplasty

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Reverse total shoulder arthroplasty became a reliable treatment modality in complex fracture patterns of the proximal humerus mainly in the elderly during the last decade. Insufficient fixation of the tuberosities leads to malunions and nonunions and often results in poor clinical outcome. The aim of the present study was to investigate the strength of tuberosity reattachment using suture- and cable cerclages in a four-part proximal humerus fracture model treated with reverse total shoulder arthroplasty. Fracture creation was carried out at seven fresh frozen paired human humeri. The tuberosities were reduced anatomically and either fixed with two heavy non-absorbable sutures (suture-group) or with two 1mm titan cables (cable-group) in a cerclage like technique around the neck of the prosthesis. The subscapularis and infraspinatus tendons were grasped by transosseous sutures to be loaded with muscle pulls. The specimens were placed in a custom made test setup. A stepwise increased cyclic loading protocol was applied using a material testing machine. Rotation of the tuberosities was measured with a 3D ultrasound motion tracking system. Total failure was defined as rotation of the tuberosities >15°. Wilcoxon Rank Test was performed to identify differences between both fixation groups. In total the cable group reached 1414±372 cycles and the suture group 1257±230 cycles (p=0,313). Main rotation of the tuberosities was observed at the humerus shaft axis (z-axis). First specimens started to fail after 900 cycles. The lesser tuberosity in the suture group showed significant more rotation at the z-axis compared to the cable group after 600 cycles (5,66°±2,33° vs. 2,65°±2,23°; p=0,043). The tuberosities fixed with suture cerclages tended to an increased rotation compared to the tuberosities reattached with cable cerclages. Especially at moderate load stages greater stability of the reattached tuberosities was observed at the cable group.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Safe zone for the deltoid split regarding the axillary nerve – An anatomical study

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Purpose: Many authors have defined a variety of safe zones for deltoid-splitting incisions. The aim of the survey was to show the distances between the anterolateral edge of the acromion (AC) and the axillary nerve (AN) in a representative collective and to present a safe zone for this common and often used approach. Our hypothesis was that the distance from the AC to the nerve correlates with the arm length and influences the safe zone.
Material and Methods: The study sample involved 75 left and 75 right paired upper extremities of human adult body donors. The study consisted of 43 female and 32 male cadavers with a median age of 81 (range 57 - 99). The anatomical landmarks were marked and a delta-split approach was performed in typical manner. The AN was identified into the axilla and its course and branches were shown on the deltoid muscle. Subsequently, in every specimen the direct distance from the AC to AN was defined. Further, the interval from the tip of the major tubercle (MT) to the AN was surveyed. Ultimately, the humerus length was measured from the MT to the distal point of the lateral humeral epicondyle (LE).
Results: The mean AC to AN distance was 5.89cm on the right (range 4.1 – 8.3 cm) and 5.96cm (range 4.1 – 8.2 cm) on the left sight. The average interval from the MT to the AN was on the right 4.69cm (range 2.5-7.9 cm) and on the left extremities 4.83cm (range 2.5-7.3 cm). The mean humerus length was 31.4cm (range 26.1 – 36.8 cm) on the right and 31.5cm on the left upper limbs (range 25.4 – 37.4 cm).
Conclusion: Via a deltoid split, a safe zone from at least 4cm can be defined.

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Screw augmentation leads to improved stability in the minimally invasive treatment of displaced intraarticular fractures of the calcaneus: A biomechanical study

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Purpose: The purpose of this study was to evaluate if the stability of minimally invasive screw osteosynthesis for displaced intra-articular calcaneal fractures (DIACF) can be effectively increased by screw augmentation.
Methods: In eight paired human cadaver hindfoot specimens DIACF of Sanders type IIB were treated with either standard non-augmented or augmented screw osteosynthesis. The instrumented specimens were subjected to a cyclic loading protocol (9000 cycles, with stepwise increasing loads, starting at 100N – 1000N). The tuber fragment tilt (TFT), the posterior facette inclination angle (PFIA) and the cycles to failure were measured using a 3-D motion analysing system (Winbiomechanics, Zebris, Isny, Germany), Böhler´s angle was evaluated on X-rays. A load-to-failure test was performed after the cyclic loading protocol.
Results: In the paired comparison, all but one specimen of the augmented group withstood more cycles than the respective specimens of the non-augmented group –mean cycles to failure for the failure criterion of 5° TFT were 7299 ± 1876 vs. 3864 ± 1810; equaling 811 N ±195 vs. 481 N ±180), (P = 0.043). Concerning the PFIA there were no statistical differences. In the augmented group the failure criterion of 5° Böhler´s Angle was reached after a mean of 7929 cycles ±2004 (equaling 893 N ±200) compared to 4129 cycles ±2178 (513 N ±218) in the non-augmented group (P = 0,020). Four specimens of the augmented group completed the cyclic loading and reached the load-to-failure test. The mean load-to-failure was 1969 N with a range of 1742 – 2483 N.
Conclusion: Augmentation of the screws lead to significantly increased construct stability with less tuber fragment tilt and Böhler´s Angle, withstanding more cycles to failure and higher failure loads.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Success rate of intraarticular sacroiliacal joint injection: Ultrasound versus flouroscopy – an anatomical study!

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Background: Intraarticular injection of the sacroiliac joint is a treatment of chronic pain. As this injection can be performed with the help of fluoroscopy or ultrasound guidance, we wanted to assess the success rate of both techniques.
Materials and Methods: 21 cadavers (14 female and 7 male) embalmed with Thiel´s method were investigated. 11 were injected with ultrasound via the upper approach and 10 with fluoroscopy. Conditions during puncture were assessed as well as the subjective feeling being intraarticularily and for fluoroscopic guidance the intraarticular spread of the contrast. 2ml of red coloured latex (mixed with Iopamidol for fluoroscopy) were injected and the spread investigated by dissection via anterior opening of the sacroiliac joint. In addition, the capsule was opened dorsally to assess intraligamentous spread
Results: Intraarticular injection was confirmed only in one case by ultrasound technique. In 19 cases the latex spread in the interosseous sacroiliac ligament. Conditions of structure visibility were classified as good in 11 cases, puncture condition classified as good in 16 cases and subjective intraarticular injection feeling in 10 cases. Flouroscopy showed an intraarticular injection in 10 cases. Of these 10 cases, the visibility of structures was classified as good in 9, puncture conditions as good in 8, intraarticular spread of contrast in 9 and subjective feeling of being intraarticular in 10 cases. Intraligamentous injection was documented in 11 cases and intravenous injection in one case.
Conclusions: Flouorscopy clearly shows a higher success rate of intraarticular iliosacral joint injection.

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Application of algometry in patients with cervical and lumbar radiculopathy

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Purpose: Radiculopathy is usually accompanied by pain, with the possibility of occurrence of anxiety and depression to a different extent. Algometry, as a highly sensitive method, provides an objective insight into the degree of pain, while the use of questionnaires can estimate the patient's psychological status in a simple way. The study was conducted in order to measure the pressure pain threshold in patients with cervical and lumbar radiculopathy and to find a possible association of pain with the anxiety and depression. Methods: The study examined 60 hospitalized patients with cervical radiculopathy (30 men and 30 women) and 60 patients with lumbar radiculopathy (30 men and 30 women) before starting and after finishing the treatment cycle. All patients were subjected to kinesitherapy, and the treatment cycle lasted an average of 14-21 days. The research was conducted using the digital algometry device and Hospital Anxiety and Depression Scale. Results: There was no statistically significant difference in algometric values between the patients with cervical radiculopathy and the patients with lumbar radiculopathy. Comparing algometric values before starting and after finishing the treatment cycle, it can be noted that the program of rehabilitation did not lead to significant improvement in the level of pain. It was found that females have a lower pressure pain threshold than males. Psychological factors greatly affect the pain. Conclusions: The applied methods will provide the implementation of appropriate therapy for patients, which is based on individual approach, and would achieve better verification of the results in a rehabilitation program.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

ORTHOPAEDICS II / TRAUMA SURGERY / CLINICAL ANATOMY Monday, 11. Sep 2017 – 09:00

Method of anatomical features as an anatomical base for reverse engineering of the human bones

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Introduction: Research into fabrication of the human bones implants combines knowledge from different fields of science, such as engineering, materials, mathematics and medicine. Modern computer assisted technologies have played an important role in reverse engineering and geometrical modeling of the human bones.
Objectives: The creation of an accurate 3D geometrical model of the human using a new method of anatomical features.
Methods: The first step in the process of reverse engineering(RE) is CT scanning of the bones and digitalization of data. CT data are obtained with the Toshiba MSCT scanner Aquillion 64 and saved in the DICOM format. They are subjected to further processing and imported in the Computer Aided Design (CAD) program as a STL file. The process continues in the CAD program with identification and determination of the Referential Geometrical Entities(RGEs) which are crucial for RE process. The RGEs are the basis for defining the axis and planes of intersection.
Results: 3D geometrical models of the human femur,tibia,fibula and hip bone were created by the method of anatomical features.
Conclusion: The main benefit of the MAF application comes from its capability to create a complete geometrical model of the bone even if a part of bone is missing or only a single X-ray image is available. The testing of MAF method shows a good level of anatomical and morphometric accuracy, within the required limits defined by orthopaedic surgeons.

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Differences in femoral torsional values

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Purpose: The purpose of this investigation was the comparison of femoral torsional values using different measurement techniques with CT.
Methods: CT images of 26 paired human cadaver femora were measured using six different measurement techniques of femoral torsion (described by Waidelich, Murphy, Hernandez and Yoshioka on transverse images and Jarrett and Yoshioka on oblique images).
Results: The measured results were significantly different for all techniques ($p < 0.001$) except for Yoshioka's technique on transverse and oblique images. (Waidelich 22.4° ± 6.8°, Murphy 17.5° ± 7.0°, Hernandez 11.4° ± 7.4°, Yoshioka transverse images 13.4° ± 6.9°, Jarrett 14.9° ± 7.5°, Yoshioka oblique images 13.4° ± 7.1°). The maximal side difference was 13.2° for Waidelich's, 13.9° for Murphy's, 22.6° for Hernandez', 13.6° for Yoshioka's technique on transverse images and 19.8° for Jarrett's and 17.1° for Yoshioka's technique on oblique images.
Conclusion: Values of femoral torsion are strongly dependent on the measurement technique. Norm absolute values and norm values for side differences can only be postulated in reference of the measurement technique.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Surgical anatomy of the lateral femoral circumflex artery branches. Contribution to the blood loss control during hip surgical approaches

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Purpose: Branches of the lateral femoral circumflex artery (LFC) are encountered during anterior and lateral hip approaches; although their ligation is suggested in surgical textbooks, literature is scarce regarding these vessels topography. The present study aims to contribute to the recognition of LFC and its branches during hip surgery and emphasize on the ligation necessity, as a mean to reduce bleeding.
Methods: Dissections of 46 (15 male and 8 female) cadavers were performed to study the origin and distribution pattern of the LFC. The distance from the anterior superior iliac spine (ASIS) was measured for the LFC, the LFC ascending and transverse branch origins. The length of these vessels and the thickness at their origin were also measured. The thickness was compared with the thickness of ulnar artery at the ipsilateral wrist.
Results: The mean vertical and horizontal distances between the LFC origin and the ASIS were 106.9mm και 65.6mm, respectively and the corresponding distances of its branches' origin were 115.1mm and 48.2mm. The mean LFC length and thickness were 23.2mm and 4.3mm and the mean ascending branch length and thickness were 44.8mm and 2.9mm. The mean transverse branch length and thickness were 42.3mm and 2.7mm, respectively. The mean ulnar artery thickness was 2.7mm.
Conclusion: The present study provides data for the topography of these vessels in relation to a palpable bony landmark, the ASIS. Iatrogenic injury to an LFC branch might be equal to ulnar artery injury. This finding supports ligation instead of haemostasis by cauterization of these vessels during surgery.

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Biomechanical in vitro comparison of suture anchors for thumb ulnar collateral ligament repair

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Different types of intraosseous suture anchors can be used for thumb ulnar collateral ligament repair surgery. Some of them have already been tested biomechanically in intact bone, however there exists little knowledge of their stability when implanted in avulsion fracture. In this biomechanical in vitro study, three anchor types (hard, soft and novel BoneWelding) were tested on twenty-four fresh frozen human thumbs from twelve body donors. After the repair of an iatrogenic ligamentous UCL rupture, the thumbs were cyclically loaded. A new set of anchors was implanted at the contralateral radial side of the same specimen into an iatrogenic avulsion fracture and pulled out of the bone. The most common mode of failure in ulnar collateral ligament repairs was the suture-ligament interface, especially when using soft anchors. In avulsion fractures the novel anchor withstood significantly higher pullout forces than the hard or soft anchor (p=.006). The BW anchor provides sufficient anchorage in trabecular bone for UCL repair in case of avulsion fractures.

Proximity of the radial artery to the Henry's approach

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Purpose: Regarding radial shaft fractures in adults, open reduction and internal fixation (ORIF) represents the treatment of choice. Here, Henry's approach (HA) enables exposition alongside the radial length. Since the radial artery (RA) changes its course from the ulnar to the radial portion of the radius, it crosses the HA at an, up to now, undefined height. The aim was a knowledge of the approximate crossing point to help surgeons to prevent iatrogenic vascular injury and make radial shaft fracture treatment safe when using the Henry approach.
Material and Methods: Ninety (90) upper extremities from adult human cadavers underwent dissection, which had been embalmed using Thiel's method. Thirty-six (36) were gained from male and 54 from female body donors with an age span ranging from 55 up to 97 years and a median of 82. Primary, Henry's approach was performed alongside the whole length of the forearm. The RA was depicted and traced down its course. Afterwards, its intersection point with the ulnar border of the brachioradialis muscle – the approach leading muscle - was identified and measured with respect to the radial styloid process. Further, the radial length was surveyed.
Results: The mean intersection point from the RA to the HA was 136.65mm (range 81.9 – 216.6 mm). The average radius length was 230.2mm (range 190 – 279 mm).
Conclusion: The outcome of the present survey is a mean crossing point from 59% of the radius length from the processus styloideus to the RA, lying during this approach in the second quarter from the forearm seen from proximal.

Monday, 11. Sep 2017 – 10:30

PLENARY LECTURE

Learning from each other. No surgery without anatomy!

Thomas Schmid

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

HERNIA SURGERY / SURGERY / CLINICAL ANATOMY

Monday, 11. Sep 2017 – 11:00

Bilateral characteristics of the human hand in adolescent age

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It is important to study anatomical and physiological parameters of the hand in its interrelation with typological peculiarities of the person because it is essential for assessment of the illness condition and forecasting the risks of its development, and also for finding and correcting the methods of medical treatment. The study of morphology and functions of the hand is realized in everyday practice in various medical spheres. It is the subject of peculiar interest for different specialists. The aim of the research is to detect anatomical and functional features of the hand in adolescent people considering typological aspects, sexual dimorphism and bilateral asymmetry. The anatomical characteristics of the hand of 140 healthy young men and 159 young women of the Volgograd state medical university at the age from 17 to 21 years old were observed. Young men and girls were divided into three groups by calculating body mass index. These are: endomorphs, mesomorphs and ectomorphs. For analysis of morphological parameters of the hand flatbed scanning was used which provided a digital image of a palm surface of the hand. Processing of the image was enabled by an originally-developed computer program HandScanner. The data of the conducted research demonstrates statistically meaningful differences between the width of the right and the left hands among girls ($p<0,001$). Among young men no statistically reliable difference between the width of the right and the left hands has been detected ($p>0,05$). According to the results of the research the girls' right hand I finger is longer than their left hand I finger. The percentage is different in each group: 1,5% in mesomorphs ($p<0,05$), 1,9% in ectomorphs ($p<0,05$), 2,2% in endomorphs ($p<0,05$). The results of the research show no statistically meaningful differences in finger index 2D:4D between the right and the left hand in either young men or girls ($p>0,05$). Finger index 2D:4D in girls is more than in young men. This functional index constitutes 42,82±1,18 daN in young men which is 1,8 times higher than in case of girls ($p<0,001$). Therefore morphofunctional parameters of the hand reflect a strict bilateral asymmetry with the character of sexual dimorphism.

Experimental upper-airway epithelium regeneration using tissue-engineering scaffolds

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Purpose: In this research we developed a rabbit model of mucosal layer injury in trachea and a new method of fixing a tissue-engineering graft inside the trachea to cover the injury and improve a tracheal mucosa reparation.
Materials and methods: Fifteen Chinchilla rabbits weighing 4.5 kg were divided into five groups.
Results: In our experiment, we have probed a new method to fix the tissue-engineering scaffold in lumen of any hollow tubular organ to cover the injury of mucosal layer. We have developed an animal model that is suitable for modelling different injuries of upper airways and appears to be less traumatic for an animal.
Conclusion: The experimental model that was described in our study is suitable to perform any injury and any method to influence the regeneration process in upper airways. Fixing the scaffold with a stent is rather simple and less traumatic method that can be performed by using bronchoscope assisted technique. The scaffold may be fixed this way in lumen of any hollow tubular organ to cover the inner injury or even to replace minor full-thickness defects. However, the scaffold and the stent have to be selected carefully, considering features of the materials and properties of tissues and organs.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Radiological management of the exiting points of supraorbital region neurovascular bundles

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Mersin University Medical Faculty

Aim: To provide the radiological data by multidedector computed tomography for estimating exiting points of the neurovascular bundles of the supraorbital region whether through foramen or notch in living subjects related to side (right/left), gender and age.
Materials and Methods: Computed tomography examinations of 214 (102 male and 112 female) adult patients, aged average 44.2 ± 14 years, were evaluated, retrospectively. Presence or absence, number and nature (foramen/notch) of exiting points of neurovascular bundles were noted in each side regarding gender and age groups. The distance of foramen/notch to the midline of the face was recorded.
Results: Single notch was seen on the right in 123 and in 134 on the left, single foramen was seen in 62 on the right and in 56 on the left side and double foramen was seen in 13 on the right and in 6 on the left. The absence was seen in 16 on the right and 18 on the left side. No significant difference was seen on frequency compared between the sexes and age groups. Foramen was seen in 58 sides unilaterally and in 39 sides bilaterally. Notch was unilateral in 75 sides and bilateral in 95 sides. It was shown that males had a wider distance between right side foramen and left side notch to midline. Age groups did not show a significant difference in terms of side.
Conclusion: Absence and foramen presence made up about 30-40% of cases. Notch was the most common form. Foramen/notch presence was statistically unaffected by the sex and age factors. In terms of surgery, preoperative assessment of orbital exit points with computed tomography is essential.

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Coexistence of sciatic artery aneurysm

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The sciatic artery is a rare anatomical variation which has a high possibility of aneurysms. Based on review articles, the most of them are presenting the clinical issue of sciatic artery variation and surgical treatment options. This presenting study estimates the incidence of the sciatic artery aneurysm and the clinical conditions associated with to identify the risk factor. The sciatic artery aneurysm is more common in female than in male. It is more frequently diagnosed beyond sixth decade. The complete form is more susceptible to aneurysm than the incomplete one. It is found to be more in unilateral side than bilateral side. It has been found that the sciatic artery coexists in several condition of liver group disorder as well as in chronic disorder as Diabetes mellitus, Hypertension and hyperlipidemia. Further, the sciatic artery has occurred with different autoimmune and kidney diseases. In addition, atherosclerotic disease is a risk factor of sciatic aneurysm which discovered in peripheral vascular diseases with different rates. Therefore, identifying the clinical significance of the sciatic artery anatomical variations alert radiologist and surgeons to avoid the iatrogenic fault and improve the medical services for patients.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Topographic anatomical relationships between pelvic fasciae and autonomic nerves – Implication for rectal and pelvic floor surgery

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Introduction: Pelvic fasciae consist of parietal and visceral component. A distinct part of the latter is urogenital, or presacral fascia. For precise rectal and pelvic floor surgery, a detailed anatomical knowledge is needed. There is wide dissonance in published literature about the pelvic fascial envelops and nerve position. The aim of the study is to investigate the relationships between autonomic and pelvic floor nerves and plexuses from one side and different layers of pelvic fascia from the other, and to point its importance for rectal and pelvic surgery.
Materials and methods: Detailed dissection of 20 formaldehyde preserved and 10 fresh cadavers was performed. Intraoperative investigations during 60 pelvic surgeries were done. Histological sections from the cadavers, the resected operative specimens and from 4 human fetuses /25-28th weeks/ were examined.
Results: The main part of the autonomic pelvic nerves and plexuses /pl. hypogastricus superior, inferior et nn. hypogastrici/ are enveloped in two layered urogenital /preacral/ fascia. The roots of sympathetic nerves /radix sympathica, nn. splanchnici sacrales/ and parasympathetic nerves /radix parasympathetica, nn. splacnici pelvici/ lies behind parietal pelvic fascia together with truncus sympaticus, plexus sacralis et coccygeus. The end branches and organ plexuses has different course – rectal nerves /pl. rectalis/ perforate the urogenital fascia and enters rectal compartment in lateral rectal ligaments and in rectosacral fascia; weather urogenital nerves – pl. vesicalis, uterovaginalis, prostaticus and their divisions/ are situated in the urogenital compartment. Levator ani nerves are in connection with autonomic nerves.
Discussion: There is clear embryological plane between urogenital fascia and rectal fascia. During surgeries mobilizing the rectum in this plane with sharp cut of lateral rectal ligaments and rectosacral fascia is important for urogenital autonomic nerves preservation.

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Monday, 11. Sep 2017 – 11:00

HERNIA SURGERY / SURGERY / CLINICAL ANATOMY

Hydronephrosis caused by inguinal herniation of the ureter

Abousif Antonius, Böhm Julia, Ouaret Miar, Schönherr Elisabeth, Glodny Bernhard, Rehder Peter
Medical University Innsbruck

Objective: Indirect inguinal hernia is a common affliction often leading to surgical intervention to avoid strangulation or incarceration. We report a rare case of an indirect inguinal hernia involving a long loop of ureter.
Material and Methods: A 77 year old male with history of COPD, obesity, atherosclerosis, hypertension and an aortic aneurysm suffering from abdominal pain was examined.
Results: Sonography showed a right pelvic kidney with grade II hydronephrosis. Computer tomography showed indirect inguinal herniation of a long loop of the right ureter.
Conclusion: Herniation of the ureter is a rare condition that can cause hydronephrosis.
Discussion: In patients with an inguinal hernia, and ipsilateral unexplained hydronephrosis, herniation of the ureter should be considered as a rare possible cause. Surgical intervention without adequate preoperative imaging may lead to unexpected major complications inadvertently injuring the hernia sac contents.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

PLENARY LECTURE

Monday, 11. Sep 2017 – 14:30

The impact of ultrasound in clinical, applied anatomy: past, present, future

Bernhard Moriggl

Important anatomical facts for lumbar and thoracic facet joint infiltration techniques of neuraltherapy!

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Introduction: Neuraltherapeutic facet infiltration techniques are performed blindly. Complications such as pneumothoray or injections at not desireable locations are known in literature. Therefore, two techniques were evaluated with focus on their technique description.
Materials and Methods: Two neuraltherapeutic techniques (Tilscher 2007 vs Kupke/Weinschenk 2012) were investigated on 40 cadavers embalmed with Thiel´s method and in prone position. Spinous process as a landmark was taken in the middle of the process and at its lateral border, an injection a finger width lateral to the spinous process was determined with 1,5cm (thin finger) and 2cm (thick finger). In total, 3840 needles were positioned in the thoracic spine, in the lumbar spine 2400 needles were set. As both techniques require a bony contact, the technique was allocated as "Successful" when contact derived, without contact determined as "failure".
Results: In the thoracic spine, the technique of Tilscher showed "failures" at 1,5cm in 0,43% (4 cases) and 5,53%n at 2,25cm (thick finger, lateral to spinous process). Weinschenk had a failure rate of 8,19% (mid of spinous process) and 17,62% at 2,25cm (lateral spinous process). In the lumbar spine Tilscher showed failures between 10% and 13% and Kupke/Weinschenk 1,39% and 16,67%.
Conclusions: Not precise technique descriptions (mid part or lateral side of spinous process) might increase the complication rate dramatically as well as the different finger widths. Tilscher´s method showed lower rates of failure than techniques of Kupke/Weinschenk.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Anatomy informs best practices in ultrasound guided anesthesia

Johnson I. Marjorie
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Purpose: Ultrasound has become a popular teaching aid for integrating anatomy learning in medical curricula. However, our institution has been slow to implement ultrasound as a teaching modality in undergraduate medical education. Recognizing this fact, the clinical anatomy division has taken a reversal approach and established successful collaborations with the Anesthesiology Department to use anatomy to inform best practices in ultrasound guided nerve injections. This presentation will outline the various clinical problems identified by senior anesthesiologists and the anatomical approach used to propose revised ultrasound practices.
Methods: Multiple ultrasound guided injection projects were conducted: transverse abdominis plane blocks, transmuscular quadratus lumborum injections, transversus thoracic muscle plane and serratus anterior plane blocks, suprascapular nerve block, intercostal nerve blocks and transmuscular obturator internus injections. Fresh cadavers were used when possible for each injection. Trained anesthesiologists performed the injections using a 5-20ml solution of saline, methylcellulose and dye. The area was dissected by a senior anatomist and the spread of injectate was recorded to determine the degree of success.
Results: All the projects demonstrated that ultrasound guidance for nerve blocks or transmuscular injections aided the accuracy of the spread of injectate and helped define the dermatomal anesthesia. Some procedures were more difficult than others to master, such as the serratus anterior plane block, due to lack of anatomy definition, size of surrounding landmark structures, or accurately defining fascial planes. An injectate volume of 5-15ml was suitable for most injections to achieve the desired spread.
Conclusion: Anatomical knowledge is essential for ultrasound guided regional anesthesia and confers higher accuracy compared to anatomic landmarks and allows the use of lower volumes of injectate.

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Volumetric mri analysis of primary sensory cortex among sudanese healthy adults

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Purpose: the primary sensory cortex is the part of cerebral cortex which responsible for general somatocutaneous sensation. The aim of present study was to determine the volume of primary sensory cortex among the Sudanese healthy adult.
Methods: 88 control subjects (51 male and 37 female) were participated in the study. The age of participants were ranging between 20-40 years (mean 29 years). Structural magnetic resonance imaging was performed and the DICOM images were evaluated using automatic brain segmentation software (BrainSuite).
Results: In the right side, the mean total volume was 26.66 ± 2.69 cm^3, the mean thickness was 4.87 mm ± 0.27, cortical area pia was 66.21 cm^2 ± 6.83, the mean gray matter volume was 12.54 cm^3 ± 1.62, the mean white matter volume was 11.11 cm^3± 1.41. The right gray matter significantly correlated with age, while the white matter, total volume, mean thickness and cortical area pial correlated with gender. In the left side, the total volume of the 28.69 ± 3.83 cm^3, the mean thickness was 5.06 mm ± 0.26, cortical area pia was 78.89 cm^2 ± 9.45, the mean gray matter volume was 15.91 cm^3± 2.46, the mean white matter volume was 12.78 cm^3± 1.75. the left mean total volume, mean thickness and cortical area pial were significantly associated with age and gender.
Conclusion: the left sensory cortex measurements are larger than the right side which can be interpreted by early developmental opportunity of the left brain side. There are evidences of age and gender sensitivities.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

ULTRASOUND / IMAGING / CLINICAL ANATOMY Monday, 11. Sep 2017 – 15:00

Primary motor cortex volume among healthy adults sudanese population, an automatic brain segmentation study

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Purpose: The aim of this study was to determine the primary motor cortex volumetric measurements among the Sudanese healthy adult.
Methods: 88 healthy Sudanese young adult were included in a survey for volumetric analysis of primary motor cortex. Magnetic resonance imaging and questionnaire were used to collect data for brain segmentation, personal information, body mass index and hand preference. DICOM images were stereological analyzed using BrainSuite 14c program.
Results: the mean age was 29.2 years ± 6 years, the mean of BMI was 25.1 ± of 4.4. In the right side, the mean total volume was 26.03 ± 2.59 cm^3, the mean thickness was 5.16 mm ± 0.27, cortical area pia was 59.64 cm^2 ± 5.74, the mean gray matter volume was 13.33 ± 1.55 cm^3, the mean white matter volume was 12.71 ± 1.41 cm^3. In the left side, the mean total volume was 22.81 ± 2.73 cm^3, the mean thickness was 4.91 mm ± 0.28, cortical area pia was 51.93 cm^2 ± 6.07, the mean gray matter volume was 11.26 ± 1.57 cm^3, the mean white matter volume was 11.55 ± 1.89 cm^3. Most of the parameters in both sides were significantly associated with age and gender. The mean thickness was correlated negatively and positively with the white and gray matter volumes, respectively.
Conclusion: the measurements of the right motor cortex were larger than those of the left side even though most of the participants were right handed. The white and gray matter influenced differently by cortical thickness.

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Variables effecting the estimation of quantitative data on sectional radiological images

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Aim: The sectional radiological imaging techniques, i.e. magnetic resonance imaging and computed tomography scanning are used very widely for the clinical diagnosis and follow up procedures. Additionally, the images are used to obtain the quantitative data like volume, surface area, thickness or length of any of anatomical structures. However, there are several variables contributing to the obtained quantitative data they must be kept in mind during the processing. Here, we will describe the possible variables and the solutions to decrease their contributions to the obtained data.
Materials and Methods: The following variables may affect the image appearance and results in the variations of the quantitative data: section number, section thickness, orientation of the images, resolution of the images, windowing parameters, and threshold values. The given variables are evaluated and possible corrections are offered.
Results: Few number of sections results in high coefficient of error and differences between the obtained results. The section thickness results in the over/under projections of the structures that is directly changing the quantitative data. The orientation of the sections either decreases or increases the number of slices. Resolution, windowing parameters and threshold values are also change the borders of the organs and lead to the variations.
Conclusion: The coefficient of error estimations should be used for the sufficient number of sections. The slices should be perpendicular to the long axis of the examined organ to do the sufficient sampling. The section thickness, resolution of the images, windowing and threshold values should be standardized in the studies for all the groups.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

3D printing vascular models

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Introduction and Objectives: Anatomy is a fundamental part of medical education, especially for radiologists. The vascular system is mostly presented through text and images, lacking the tri-dimensionality of cadaver dissections or resin models. Therefore, the reduction in dissection-based teaching in medical training demands a modern approach to anatomy. Previously, the Anatomy Institute (Lisbon Medical Faculty) has harboured several projects to create plastinated models of the brain and 3D-printed head bone models. In continuity with the latter, we are now using a 3D printer to produce vascular models of the carotid and vertebrobasilar systems, so that they can be used in anatomy classes and made available to students. Furthermore, our goal was to print 3D models of these systems with abnormalities, such as cerebral aneurysms, to provide interventional radiologists/industry new ways to train and prepare devices for endovascular procedures.
Material and Methods: We selected Angio-CT scans of the carotid and vertebrobasilar arterial systems from healthy subjects and from patients with vascular disease. The images were processed with segmentation software to reconstruct the arteries. The final digital volumes were converted into a printable file for the 3D printer. We are using a filament extrusion printer with 0.2mm resolution.
Results: Normal cerebral arterial vasculature models were successfully 3D printed with fine detail and quality. We also printed a case of a ruptured middle cerebral artery aneurysm and we obtained satisfying results.
Conclusion: The image post-processing tools and the 3D printing technology have once again proved as valuable assets of modern Medicine. We can create reliable, practical, and cost-effective vascular models for anatomy classes and students. Interventional radiologists and industry can use the 3D printed models to obtain a better visualization of the anatomy, to test new devices or to practice a specific treatment procedure.

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Magnetic resonance vessel wall imaging – going beyond the lumen and its importance for the diagnosis of central nervous system vasculitis

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Purpose: The walls of arteries are composed of endothelial cells, smooth muscle and extracellular matrix. These are arranged into three concentric layers – intima, media and adventitia. Intracranial vascular normal anatomy and pathology are usually evaluated with angiography – either conventional digital angiography or non-invasive CT/MR-angiography. However, these techniques are limited by evaluation of the vessel lumen alone, not the wall, making differentiation between cerebral vasculopathies difficult. Current MRI techniques can evaluate extraluminal tissue and vessel wall inflammation, within the limits of clinical practice scan time and signal. The purpose of this study was to investigate the value of contrast enhanced MR for imaging the normal vessel wall and for the diagnosis of intracranial vessel inflammation/vasculitis.
Material/Methods: Ten patients with a diagnosis of cerebral vasculitis were retrieved from the files. The MRI protocol included Diffusion-Weighted-Imaging, FLAIR, T2* and Time of Flight MR-angiography. The study of the Circle of Willis was performed with high-resolution T1 axial and coronal perpendicular planes, 3mm thickness, with flow compensation, with/without contrast. The vessel wall of these patients were compared with those from normal controls.
Results: Vessel wall thickening and contrast uptake pattern of different types of vasculitis are presented and discussed, namely hepatitis C, Varicella zoster, primary angiitis of the CNS. The normal MR vessel wall anatomy is also presented.
Conclusions: Multiplanar, high-resolution contrast enhanced T1-weighted images with flow compensation can demonstrate vessel wall thickening and enhancement in patients with CNS vasculitis. This MRI protocol can be performed in day to day clinical practice and within the limits of scan time. Ultrasound / Imaging / Clinical Anatomy

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Expression of Pax2, Pax6 and Pax7 proteins during embryogenesis of the human spinal cord development

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Recent evidence from experiments made on mouse and chicken embryos indicate that Pax genes play important roles in the early spinal cord embryogenesis. Only limited results exist about the developmental role of Pax proteins in the human spinal cord development, which act as transcriptional regulators that bind to specific DNA. The expression of Pax2, Pax6 and Pax7 was examined in 29 human embryos by immunohistochemistry. The embryos were collected after legal abortions, fixed in 4% paraformaldehyde, embedded in paraffin and tissue blocks were serially cut in transversal direction. The embryos were classified according to Carnegie stages (CS). For immunohistochemistry the slices were incubated with primary antibodies of Pax2, Pax6, and Pax7 and with a universal secondary antibody. The results demonstrated spatially and temporally restricted pattern of the expression of Pax2, Pax6 and Pax7 in the developing spinal cord of human embryos at CS 10-20. Although the studied proteins expression at CS 10-14 was relatively weaker in the forming spinal cord, it was found stronger in later stages. In the embryos of CS 16-20, the Pax2 expression was detected at the essential level in the ventricular, the mantel and also in the marginal layer of the developing spinal cord. In the same embryos the stronger expression of Pax6 and Pax7 was noticed in the ventricular layer while the weaker expression characterized the mantel and marginal layers of the forming spinal cord. Comparing Pax2, Pax6 and Pax7 expression in the dorsal and ventral parts, varying signal intensity was seen in the embryos of CS 14-20. Pax2 and Pax7 proteins expression was more intensive in the dorsal part of the developing spinal cord. The dorsal-ventral boundary of Pax6 expression was very vague compared to that of Pax2 and Pax7. In human embryos Pax2, Pax6 and Pax7 were identified as signaling molecules that involved in the formation of the early spinal cord. It can be said that studied proteins are associated with the establishment of neuroepithelial cells within the developing spinal cord and with the migration and the differentiation of specific neural cell populations. In particular, Pax2, Pax6 and Pax7 proteins play an essentially important role in the determination of the dorsal-ventral axis of the developing spinal cord.

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Antiangiogenic VEGF165b expression in human breast MCF-7 and MCF-10A cells exposed to reverse transcriptase and protease inhibitors

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Purpose: The combined antiretroviral therapy (cART), a multidrug combination regimen, usually consisting Nucleoside Reverse Transcriptase Inhibitors, non- Nucleoside Reverse Transcriptase Inhibitors and Protease Inhibitors has altered the morbidity pattern affecting HIV-infected individuals to include non-AIDS-defining malignancies (nADMs). The speculation is rife; does cART induce or promote the progression of nADMs such as breast cancer?
Methods: This study was therefore designed to investigate of the effects of some antiretroviral drugs (at clinically relevant concentrations) on the expression of anti-angiogenic gene; VEGF165b in two human breast cell lines; MCF-7 and MCF-10A by Real Time qPCR and immuno-fluorescence.
Results: All of the antiretroviral drugs and combinations tested produced patterns of slight up or downregulation of VEGF165b mRNA expression but the alterations did not attain statistical significance. They also did not alter VEGF165bprotein localisation in both cell lines.
Conclusion: The findings reported here suggest that antiretroviral drugs probably do not influence the angiogenic pathway in the development of breast cancer in patients under the combined antiretroviral regimen.

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Fetal anatomy and topography of the arterial duct in the intermediate fetal period of the human ontogenesis

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The arterial duct plays an important role in a normal circulation into a prenatal ontogenesis. There, The arterial duct plays an important role in a normal circulation into a prenatal ontogenesis. Therefore studying of its anatomy and topography the intermediate fetal period of an ontogenesis became the purpose of this research. The anatomy and topography of the arterial duct were studied on material of normal hearts of 100 person fetuses of 16-22 weeks of development. The arterial duct at a fetus in 16-22 weeks development is the direst continuation of a pulmonary trunk having the same direction and the course. The duct length most intensively changes by 22nd week of development. It is enlarged by 38% with ascending for 21% of the its transversal size. A thickness of the arterial duct wall doesn't change in all age groups: at fetuses of 16-17 weeks the average value was 0,3±0,03 mm whereas in 22 week - 0,04±0,01mm. The duct on horizontal sections is always located in the left half of a thorax posteriorly from the median frontal plane of a body. At the same time it deviates from the sagittal plane of a body to the left side on 19,8±4,6° at the beginning of the studied period and on 22,1±3,5° in the end of this period (p>0,05). The obtained data can be useful at an intravital assessment of ultrasonic examination of a developing fetus.

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Development of the so-called „mandibular symphysis“ in humans

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Objective: In clinical slang, but also in the TA98, the synostosis in the midline of the body-halves of the human mandible is called “mandibular symphysis”. A symphysis is defined as nonsynovial joint composed of fibrocartilage. In humans, this nonsynovial joint fuses and forms a synostosis within the first year of life. The aim of this study was to investigate if this nonsynovial joint is either a symphysis or a syndesmosis in prenatal life.
Methods: Human embryonal and fetal mandibles (11-28 gestational weeks; gw) were investigated by HE-staining, safranin/fast-green-staining and collagen-2-immunohistochemistry.
Results: In gw 11, Meckels cartilages already reached the mental region, separated from each other by a tiny sheet of connective tissue. Initial bone lamellae are situated vestibularly, distinctly separated from Meckels cartilage. With increasing age the bony lamellae grew mesially. At gw 15, a real syndesmosis between the bony mandibular halves developed. This syndesmosis was consistent throughout all later stages, without containing any glycosaminoglycans or collagen 2. At the lingual side, “symphyseal chondriole” (islets of Meckel) could be identified in gw 22, but not later on. They must not be confounded with the cartilaginous anlagen of the mental ossicles, which appeared first in gw 23 at the inside of the developing mandible. In gw 28, the connective tissue also perforated the mesial bone-lamellae of the alveolar process connecting the syndesmosis with the periodontal apparatus of the growing first tooth.
Conclusions: In humans, the nonsynovial joint in-between the developing osseous mandibular halves is a true syndesmosis, at least between gw 11 and gw 28, but not a symphysis.

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Pax2/Pax8-defined subdomains and the occurrence of apoptosis in the expanding posterior placodal area of mice

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The posterior placodal area (PPA) of mammals gives rise to the otic and epibranchial placodes. It, hereby, depends on the concerted action of transcription factors which provide basic (Six1) or specialized posterior placodal competency (Pax2, Pax8). Less well understood are the contributions made by large-scale apoptosis that predominantly occurs in-between the developing posterior placodes. The present work aims (1) to demonstrate the detailed expression patterns of Six1, Pax2, and Pax8 in the mammalian PPA; (2) to clarify the molecular identity of apoptotic cells found within the PPA; and (3) to search for testable clues as to whether or not the early PPA already contains the complete set of posterior placode precursor cells. To compare the patterns of Six1, Pax2, and Pax8 protein expression and apoptosis, schematic maps were established for 8-to 12-day-old embryos of C57BL/6N mice. Our maps reveal hitherto undescribed, differently Pax2/Pax8-coded PPA subdomains which give rise to the otic placode and epibranchial placode 1 (anterior subdomain) and, later, to the epibranchial placodes 2 and 3 (posterior subdomain). The fact that, contrary to all expectations, apoptosis predominantly eliminates specified Six1+ placode precursor cells urgently raises the question on the true developmental potential of these cells. For the first time in a mammal, caudal expansion of the early PPA was noted which, most probably, resulted from the recruitment of caudally adjacent ectodermal cells. Hence, our findings also provide a basis for future fate map studies on the origin of precursor cells destined to populate the different posterior placodes.

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Analysis of morphological changes in the normal and polycystic ovaries left after unilateral ovariectomy

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Introduction. Problems of reproductive health become extremely relevant in the field of the ever increasing frequency of pathology of gamete producing systems, the most frequent manifestation of which is infertility. The aim of our study was to study morphological transformations occurring in normal and polycystic ovaries after a unilateral oophorectomy.
Materials and methods. The work is performed on 132 Wistar female rats. The animals were divided into the following groups: -the first group is furthermore subdivided into A) a group of rats with normal functioning ovaries B) with two polycystic ovaries. Both A and B groups served as a control to the second group. -the second group of rats with single normal and polycystic ovaries left after unilateral oophorectomy at different periods of observation. A comprehensive approach was applied in the processing and analysis of the material with the use of macro-, micro- and ultramicroscopic, morphological and mathematical-statistical methods of investigation.
Results. During the study, the stages of morphological processes in the normal and polycystic ovaries of female rats left after unilateral oophorectomy were revealed. With unilateral oophorectomy in polycystic ovaries, there is a predominance of hormone-producing cysts over cysts devoid of granulosa and internal theca, as well as the presence of secondary follicles and the appearance of yellow bodies in the stroma of the organ beginning at 90 days of life of the rats.
Conclusions. Stages of flow of morphological processes in the ovaries left after unilateral oophorectomy:
I - intensification of folliculogenesis (after 30 days);
II - stable working hypertrophy of the ovary (90 days);
III - extinction of reproductive function, sclerosis and cystic degeneration of organs (180 days).

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The role of FGFS in the early development of the human urethra

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Introduction: Fibroblast growth factors, especially 8 and 10, are required for the development of the anlagen of the external genitalia and also act as regulatory components in the urethral formation. Studies in murine knock out models have shown that lack of these molecules and the associated receptor FGFR2 lead to congenital malformations of the external genitalia like hypospadias. Studies about the distribution of FGF 8 and 10 including their associated receptor in human fetal specimens are missingso far. Our aim was to gain an insight into the dissemination of the fibroblast growth factors 8 and 10, including their receptor FGFR2 in human fetuses.
Material and Methods: In the present study we, therefore, examined the distribution of these moleculein the early fetal period in an uninterrupted series of human specimen (weeks 8- 12 of gestation) by means of immunohistochemistry, in-situ-hybridization and proximity ligation assays.
Results: FGF 8 and 10 can be found both in the epithelium of the urogenital sinus, in the urethral plate and in the surrounding mesenchyme, especially in the anlage of the corpora spongiosa. FGFR2 occurred in the urethral epithelium and is accentuated at the contact site between urogenital sinus and mesonephric duct.
Conclusion: The well-orchestrated FGF-signaling in the early human fetal period is crucial in the development of the external genitalia and the urethra in particular.

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Is it justifiable and reasonable to introduce new terms into the morphological nomenclatures?

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The morphological nomenclatures comprises several documents (Terminologia Anatomica - 1998, Terminologia Histologica - 2007, Terminologia NeuroAnatomica - 2017, Terminologia Embryologica 2 – 2017) featuring more than 10.000 unique and codified terms. We go on in facing new discoveries in morphological research, although usually on the microscopical level. But TA does not contain all until now described gross anatomical structures and should be extended to do so. Many terms do already exist within the nomenclature and it is easy to select the most appropriate and included them into TA. But sometimes, there exist gross anatomical structures lacking their Latin term, English term or are unnamed. Is it justifiable and reasonable to have them named in all main languages and in case they are innominate, is it justifiable and reasonable to create a new names? This a bit controversial and disputable affair should be discussed and strong arguments should be highlighted to support such process. If not, it can successively lead to usage of different terms in different faculties, universities, countries or continents and we can face a threat of having more than 50.000 as in 19th century before BNA appeared. Supported by Charles University in Prague, Project PROGRES Q37. Teaching

Free regional anatomy textbook, full of schematics and mnemonics

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In order for the medical students to learn anatomy with comfort, a cheerful textbook dealing with concise contents is needed. So the authors have elaborated a regional anatomy book fitting for the purpose. Only anatomical facts essential for cadaver dissection were included. Not only the simplified figures but also the comics depicting mnemonics and humors of anatomy were contained. The electronic book (a PDF file) titled “Memory Booster of Regional Anatomy” could be downloaded from the homepage (anatomy.co.kr) without payment or registration. The creative work was utilized as the textbook in a medical school that the authors belong to; then its educational effect was evaluated. As a result, correlation between the reading times of book and the grades of written examinations (even the grades of lab examinations) was approved. The additional feedback from the students was relatively positive; but they also reported weaknesses of the book. The assessment of learning utility is being done in more medical schools in Korea. Hopefully, the presented book would function as a pleasant resource to help the medical students learn anatomy efficiently. Simultaneously, the book would inspire other anatomists to produce their own books. Hopefully, the presented book would function as a pleasant resource to help the medical students learn anatomy efficiently. Simultaneously, the book would inspire other anatomists to produce their own books.

Perceptions of anatomy honours students of compulsory abstract writing exercises of articles presented during weekly journal club meetings

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In recent years the writing of abstracts of articles presented at weekly anatomy honours journal club meetings was made compulsory in our division. Students receive the chosen article a week prior to the meeting after which they write their own abstract without referring to the actual article abstract. The abstracts are peer-marked and monitored by a facilitator (PhD qualified) before the article is presented in the conventional manner in the meeting. The purpose is to enhance the scientific writing skills of students in a nurturing, supportive environment. The aim of the present study was to determine the perceptions and suggestions of students regarding the activity. In 2016 Honours students (n=7) and Masters students (Honours in 2015, n=6) (response rates 100%) were given voluntary questionnaires with 9 questions using a 5-point Likert scale. An area for comments was made available. Honours students all agreed that the activity improved their scientific writing skills, that it helped them to critically appraise a scientific paper and that it improved their scientific reading habits. Most felt that they did their best as they knew a peer and the facilitator would mark their abstracts and found the process of distributing the journal paper and abstracts satisfactory. The Masters students, looking back one year after the activity, were also positive and offered more suggestions than honours students. Suggestions included a first introductory session where examples of poor, good and excellent abstracts are discussed as well as pointers on what to look out for in the critical appraisal of an article. The feedback and perceptions helped us to enhance the abstract writing journal club activity for future students.

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Development of a model for the integration of basic sciences into a competency-based undergraduate medical education curriculum

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Purpose: Competency-based medical education (CBME) assesses performance based on students' abilities to apply knowledge and perform skills. The School is undergoing a curriculum renewal to implement a CBME model. Consequently, the integration of basic sciences into the undergraduate medical education (UME) curriculum will be modified. Thus, the aims of this project are to develop a feedback model to inform curricular design of the high-yield basic science concepts using evidence-based data.
Methods: We developed interview questionnaires for all six clerkship directors. Information gathered from the questionnaires will be utilized to create basic science assessments that address retention and application of basic science content necessary for clerkship. The assessments will determine if students are prepared for clerkship within the current UME curriculum, and will annually monitor basic science retention.
Results: Information gathered from the interview questionnaire will provide insights into what basic science knowledge students should be able to apply to clinical scenarios prior to clerkship. Data collected from the basic science assessments will be used to critically evaluate the delivery and timing of basic science content in the existing UME curriculum, which will ultimately drive the curricular reform and influence the integration of basic sciences in the CBME curriculum.
Conclusions: The primary goal of CBME is to graduate physicians with the knowledge, skills, and attitudes necessary to successfully practice medicine. Information collected from this project will provide evidence to inform the design and delivery of basic sciences within the CBME curriculum, thus, this content will be linked to outlined abilities students must achieve. Annual evaluation of student preparedness prior to clerkship will provide evidence about content retention and enable us to analyze the effectiveness of the CBME curriculum.

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Impact factor – how to distinguish the proper one?

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At present, authors (scientists, clinicians, academic staff, PhD students) increasingly put emphasis on publishing their research in quality journals, i.e. in journals with impact factor. The authors are approached daily with bids for journals that emphasize their "quality" by the impact factor. It often happens that the author is confused with this offer and the manuscript is sent to a not impacted journal, which is found out after publishing. However, this does not always have to be a so-called predatory journal. Thomson Reuters' Journal Citation Reports Impact Factor (JCR IF) have been a benchmark since 1973, which is used to evaluate the scientific quality of journals. Besides this, there are other impact factors that are the work of other companies or activities, most notably e. g. SJIF – Scientific Journal Impact Factor, OAJIF – Open Access Journals Impact Factor, UIF – Universal Impact Factor, which have nothing to do with JCR IF, nor do they contain the journals that are listed in the JCR. Which impact factor is the right one and how to find out which journal is trying to confuse authors is the goal of this presentation.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

The impact of anatomical dissection on Kolb's learning styles

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Starting in 1981 David Kolb described four learning styles (ls), comprising the experiential learning cycle (elc). The modalities of this elc include 'concrete experience' (ce), 'reflective observation' (ro), 'abstract conceptualization' (ac), and 'active experimentation' (ae). Students preferring ce and ae utilize an 'accommodating' ls (acc), ae and ac result in a 'converging' (con), ac and ro comprise an 'assimilating' (ass), and ro and ce a diverging ls (div). Anatomical dissection is thought to support ce and therefore either acc or div experiential learning. We supposed therefore that anatomical dissection would change the ls of the students towards these two. In the winter term 2016/17 390 students of the topographical dissection course (113 contact hours) were asked to fill in Kolb's Learning style inventory prior and after the course. We got 254 valid pretest (65.1%) and 276 valid posttest responses (70.8%), resulting in 181 matching pre- and posttest responses (46.4%), 97 from females and 84 from males. In the pretest, there were 23 acc, 43 con, 93 ass, and 22 div. After completing the anatomical dissection course, there were 21 acc, 29 con, 91 ass and 40 div. As for the learning modalities, there was an increase in ce and ro, and a decrease in ac and ae. The unique learning experience of a dissection course does actually alter the ls of students in 45.3 % of students, whereas the majority retain their experiential ls. Our hypothesis of an increase was true for div (22 vs. 40), but not for acc (23 vs. 21). Besides the anticipated increase in ce we found an unexpected increase in ro, an expected decrease in ac but also in ae. There results help in understanding the perception and the modalities of anatomical dissection.

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Forensic clinical anatomy of spine in child abuse

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Abuse includes studies of Functional and/or Biomechanical Anatomy which are performed on cadavers to verify compatibility of lesions with accidental dynamics. Moreover, some kinds of damages following Child Abuse are strictly anatomical in nature and require morphological/morphometric methods of investigation for adequate assessment. Problems of differential diagnosis between anatomical structures (normal or variant) and pathological findings also frequently arise. In the present work, we focused on anatomical bases of spinal lesions in two autoptical cases of abusive head trauma, with particular reference to methodological issues. Both cases presented brain subdural haemorrhage and multiple bilateral retinal haemorrhages. In both cases, the spinal cord was sampled in continuity with the dura mater and it was subjected to complete sectioning. Spinal subdural haemorrhages were found along all the spinal levels. The histopathological characteristics of these haemorrhages also permitted to reveal different chronologies of the lesions, with consequent forensic implications. Hypoxic-ischaemic damages coexisted, mainly at the level of cervical and lumbar spinal cord, together with glio-mesodermic response. On the basis of in vivo imaging suggesting cervical sub-dislocations, portions of the vertebral column were also sampled and subjected to postmortem imaging before further hystopathological sampling. In one case, postmortem imaging permitted to confirm anterolisthesis of the second vertebral body over the third one. Histopathological analysis also showed the presence of haemorrhagic infiltrations of the epidural adipose tissue at the level of the atlanto-axial joints. A consistent methodology of analysis of the spinal structures should involve integration of postmortem imaging with detailed and exhaustive histopathological study.

Post mortem computed tomography and magnetic resonance imaging of single organs

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Computed tomography (CT) and magnetic resonance (MR) have been increasingly used in routine forensic practice and research, and, recently, also in cases of natural deaths. Post mortem CT and MR of single organs is currently applied only for investigation of cardiovascular pathologies. The aim of the present study was to show our experience of radiological analysis of single organs, as an integrative tool for research and forensic applications. The anatomo-radiologic study for forensic purpose was performed on single organs sampled at autopsy and on historical specimens. The specimen underwent CT and MR examinations. Basing on our experience, post-mortem CT and MR on single organ are very useful tool in detection of anatomical variations; diagnosis of cardiovascular pathologies in combination with macroscopic examination and histological evaluation; evaluation of findings shown at post-mortem CT examination of the body and not confirmed by macroscopic examination; analysis of historical anatomical specimens.

Forensic clinical anatomy and medical responsibility

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Forensic Clinical Anatomy may be defined as the practical application of Clinical Anatomy to the ascertainment and evaluation of medico-legal problems. Implications of Forensic Clin-ical Anatomy may invest various fields of Forensic Medicine but the field of Medical Respon-sibility and/or Liability represents the most intriguing one. European Guidelines have been recently released regarding methods of ascertainment and criteria of evaluation. In the present work, we analyse how individual anatomy may acquire specific significance in the application of the various steps of analysis in cases of Medical Responsibility and/or Liability: how relevant aspects of individual anatomy may arise from application of methods of ascertainment and how they may be furtherly ascertained through specifically anatomical methodology; how data about individual anatomy, once fully ascertained, may help in the correct application of the criteria of evaluation and in final judgment about identification of medical responsibilities. The main methods of ascertainment on living and/or dead persons have been itemized as follows: examination of clinical/documentary data; consultation with specialist; clinical exam-ination; further instrumental diagnostic exams; pre-autopsy examination; autopsy; post-autopsy diagnostic procedures; clinical synthesis. Anatomical data of forensic interest may arise from the correct application of the above steps and anatomical methodologies are fre-quently required for a comprehensive analysis. In the analysis of medical liability cases, the phase of ascertainment is followed by as-sessment of a series of evaluation criteria which may be summarized as follows, with par-ticular reference to cases with relevant anatomical aspects: Reconstruction of the Physio-Pathological Pathway; Identification-Evaluation of Errors; Discussion of Causal Value; Dam-age estimation. In some cases, the rigorous interpretation of the anatomical data, derived from ascertainment phase and analysed on the basis of pertinent literature, is pivotal for correct applying of each evaluation step. In literature about radiologic, clinical, and surgical anatomy, methods and findings are discussed with reference to clinical/surgical implications but forensic implications (although of potential interest) are frequently overlooked. A better awareness about the forensic relevance of some clinically-oriented anatomical data may also invest the research on radiolog-ic/clinical/surgical anatomy.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Sesame oil influence on the Th1/Th2 ratio in spinal cord injury of rat menopausal model

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Background: Spinal cord injury (SCI) as a critical crash result in neurons degeneration. The SCI lead to the onset of biochemical and molecular cascades such as inflammation that in turn has a key role in neurodegeneration development. On the other hand local cytokine differences among intact females, those that had been ovariectomized (OVX). Also lignans present in sesame oil are thought to beresponsible for its antioxidant and anti-inflammatory properties and some reports refer to the allergic reactions caused by sesame oil. In this study we investigated the effectiveness of treatment with sesame oil on development of Spinal cord injury and Th1 and Th2 responses.
Methods: Thirty adult female wistar rats (200-250 g) were used in this study. The animals were randomly divided into five groups of six mice, including (OVX), OVX+SCI, OVX+SCI with sesame oil, sham and control. Three weeks after OVX, Spinal cord injury was performed by placement of an aneurysm clips, extramurally at the level of T9-T10. By detecting score one based on the Basso, Beattie, and Bresnahan (BBB), sesame oil administration was started (4 mL/kg/day as IP /three weeks). On day 42 by using ELISA, TNF-α level as Th1 and IL-10 level as Th2 in the ischemic spinal cord tissues were studied. Histologic changes in level of spinal cord injury were studied by using Luxol fast blue staining. Statistical tests were used to analyze the data and the P value less than 0.05 was considered to be significant.
Results: Clinical symptoms in SCI animals after treatment were significantly decreased ($P<0.05$) as compared to control ones. In addition, the level of the TNF-αwas significantly
decreased following sesame oil administration versus IL-10. The ratio of TH1/TH2 interleukins in treated animals was significantly less than that in non-treated animals ($P<0.01$). The result from the animals that received sesame oil significantly demonstrated less demyelination compared OVX+SCI ($P<0.05$)
Conclusion: According to the results, sesame oil may be able to suppress the inflammatory ways that lead to progress inflammation of spinal cord injury. Whether this ability is clinically valuable in human subjects is not clear and needs more clinical research Spinal cord injury.

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A specialist dissection course for forensic anthropologists on facial approximation. A clinical anatomy approach

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Collaboration between clinical anatomists and forensic anthropologists are valuable for both groups. Little formal collaboration is represented in the literature, although long-standing partnerships certainly have influenced the development of each field. A natural meeting point between the disciplines exists with facial approximation. The evidence-based formulation of prospective soft tissues draws upon expertise inherent to both groups but rarely shared. This study reports on an innovative contribution made by clinical anatomists and biological anthropologists working together to deliver a unique dissection course. The course format, dissection protocol, practical cross-overs (e.g. including facial morphometry) and attendee feedback will be discussed. The clear message was that clinical anatomy and forensic anthropology work extremely well together with both enhancing the other through collaboration.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Pai syndrome: A case report of rare developmental defect at adult patient

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Pai syndrome is a rare developmental defect, described for the first time in 1987 by G. S. Pai. This genetic disorder is mainly characterized by association of several rare congenital anomalies such median cleft of upper lip, hypertelorism, facial and nasal polyps, morphological ocular abnormalities and particularly CNS lipomas adjacent to the corpus callosum. Although the etiology of this condition is still unknown, the autosomal dominant inheritance is considered to be the most probable. Majority of the previously published cases reported about Pai syndrome in newborns or children, but herein we present a case report of fifty-two years old female indicated to autopsy at our department, who was post-mortem diagnosed with Pai syndrome. Autopsy revealed a congestive heart failure as the cause of death. In accessible literature, we have not found any previous reference to this condition in Czech Republic. The purpose of this article is to increase the awareness of this condition aiming especially at pathologists, embryologists and developmental anatomists and also to allow insight into everyday work of forensic pathologist which does not contain only solving cases of violent deaths.

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Lateral extended TLIF procedure and new intervertebral implant

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Introduction: 1953 Ralph B. Cloward introduced PLIF technique for lumbar spinal fusion using cortical grafts. Later on cages were invented: Brantigan, box type, 1985 and Harms, mesh cylindrical, 1988. The later first described a lateral approach for insertion - TLIF. In 1997 Halm et Schäfer and in 1998 Sabitzer et Fuss first invented banana or kidney type cages for TLIF approach. All of the numerous different TLIF cages as well as PLIF cages share in common that they rest on the weak central spongious part of the vertebra giving the risk of implant failure through subsidence, migration or loosening and resulting in pseudoarthrosis. In 2004 Curran, Peterson and Pimenta invented an implant for lateral transpsoas approach to rest on the apophyseal rings. The disadvantage of this approach and cage technique is possible damage to psoas muscle, the sympathetic trunk and the need of a second approach for pedicle screw placement and no chance of application at L5/S1 level and limited at L4/5.
Purpose: The aim was to develop an implant of similar size and mechanical properties as the XLIF cage and to change the TLIF approach so it could be possible to insert a big cage that also rests on the apophyseal rings.
Methods: Anatomical testing of the new developed ACRON cage, 2014, was done at the Anatomical Institute Univ. Graz, Austria. The extent of modification of TLIF approach and X-ray control of position of the cage was investigated.
Results: To insert the ACRON from posterior
1. go to the extraforaminal space
2. dissect the intertransverse muscle and ligament
3. resect the cranial part of the lateral facett up to the pedicle wall
4. go outside- in through the pars
5. resect the medial facett as much as necessary to
6.create a Kambin triangle like street to the lateral aspect of the disc
7. clear the disc space completely
8. insert with insert and push down maneuver
Conclusion: Clinical study started 2015, multi center study of lat.ext. TLIF, ACRON, should follow.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Aging and spinal cord injury: A biochemical and anatomical study

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Pineal melatonin secretion decreases with aging, the toxic effects of free radicals are expected to increase with aging secondary to decreased melatonin secretion.
In this study following experimental spinal cord trauma, the extent of oxidative neuronal injury was measured among different age groups in order to show its relation with aging. For this trial young, old and pinealectomised albino-rats were used. Lipid peroxidation was measured and EM examination was done in all spinal cord segments obtained in every group of experiments.
The levels of lipid peroxidation in the elderly population and artificially old group compared to the young population were prominently high, nevertheless when spinal trauma was added these levels where even higher in all the groups. The administration of exogenous melatonin decreased the levels of lipid peroxidation and increased the amount of spontaneous recovery especially in the young group compared to the old and artificially old groups. High dose melatonin administration was found to decrease the ultrastructural changes induced by trauma both in old and young groups, although old population was much more prone to the effects of melatonin against ultrastructural changes.

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Footprint mismatch in total cervical disc arthroplasty

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Purpose: Cervical disc arthroplasty has become a commonplace surgery for the treatment of cervical radiculopathy and myelopathy. Most manufacturers derive their implant dimensions from early published cadaver studies. Ideal footprint match of the prosthesis is essential for good surgical outcome.
Methods: We measured the dimensions of cervical vertebrae from computed tomography (CT) scans and to assess the accuracy of match achieved with the most common cervical disc prostheses [Bryan (Medtronic), Prestige LP (Medtronic), Discover (DePuy) Prodisc-C (Synthes)]. A total of 192 endplates in 24 patients (56.3 years) were assessed. The anterior–posterior and mediolateral diameters of the superior and inferior endplates were measured with a digital measuring system.
Results: Overall, 53.5 % of the largest device footprints were smaller in the anterior–posterior diameter and 51.1 % in the mediolateral diameter were smaller than cervical endplate diameters. For levels C5/C6 and C6/C7 an inappropriate size match was noted in 61.9 % as calculated from the anteroposterior diameter. Mismatch at the center mediolateral diameter was noted in 56.8 %. Of the endplates in the current study up to 58.1 % of C5/C6 and C6/ C7, and up to 45.3 % of C3/C4 and C4/C5 were larger than the most frequently implanted cervical disc devices.
Conclusion: Surgeons and manufacturers should be aware of the size mismatch in currently available cervical disc prostheses, which may endanger the safety and efficacy of the procedure. Undersizing the prosthetic device may lead to subsidence, loosening, heterotopic ossification and biomechanical failure caused by an incorrect center of rotation and load distribution, affecting the facet joints.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Neuroanatomical aspects and clinical correlations in sign-languages processing

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Spoken languages are encoded in acoustic-temporal changes, while sign languages depends on visual-spatial changes to signal linguistic contrasts. In this way, the objective is to determine if the brain regions that interpret and generate sign language differ from those involved in spoken language. The present work correlates clinically the damage to the cerebral hemispheres and the performance in the sign language, besides synthesizing different studies that explore the neuroanatomical aspects associated with signal language processing, especially when compared to the spoken language. It has been found that neuroanatomical regions that play a role in the comprehension of sign language are very similar to those involved in spoken language and that the neural organization of sign language has more in common with spoken language (performed in the left hemisphere) than with the organization of the brain for visual and spatial processing (performed in the right hemisphere). Patients who have damage ranging from the frontal lobe to the occipital lobe of the left hemisphere exhibit symptoms analogous to Broca's aphasia and Wernike's aphasia. The conclusion suggested by our work, as well as the researches analyzed, is that the brain is a highly modular organ, with each module organized around a given computational task. According to this view, the processing of visual-spatial information is not limited to a single region of the brain. Instead, different neural modules process visual inputs in different ways. This justifies the cortical activation of the same neuroanatomical structures, whether in spoken language or in sign language.

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Preliminary study for percutaneous intervention of foramen ovale

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Approaches to the infratemporal fossa are difficult due to the anatomy and the nature of the inner structures. One of the risky approaches applied to the fossa infratemporalis is percutaneous interventions made to the foramen ovale. In this study, it was aimed to determine the location of foramen ovale with respect to specific guiding points in order to reduce the risk of complications in percutaneous interventions to be performed in the foramen ovale. Besides this inferior alveolar nerve and lingual nerve of mandibular nerve which is passed through the foramen ovale to fossa infratemporalis were investigated. Foramen ovale (FO) and mandibular nerve were investigated in a total of 40 sides of 20 male cadavers bilaterally, which were embalmed with a solution that contains 10% formalin in the Anatomy Department of Medicine Faculty of Ege University. In the end of the dissections mandibular nerve and its branches that were lingual and inferior alveolar nerves were exposed for measurements. A metric scale was placed closely to the structures to be measured using the Image J 1.49 v software program. Two constant point were choosen for creating a straight line for making distance measurements. They were the midpoint of tragus (Tr) and the midpoint of the lateral side of the nasolabial sulcus of ala nasi (An). Thus the straight line between that two point was named as 'TrAn'. One of the measurements for localization of oval foramen is the perpendicular distance to the TrAn line and is measured 4.29mm on average. In addition FO-Tr distance is 49.96mm on average. As for mandibular nerve, the branching points of inferior alveolar nerve and lingual nerves (Bif) was determined for localization measurements. This point had great difference in every cadaver. The average distance of Tr-Bif and Bif-TrAn were 48.08mm and 15.04mm respectively. In addition the average thickness of inferior alveolar nerve and the lingual nerves were 3.22mm and 2.95mm.
Although there are many studies in the literature concerning the mofometric measurement of the foramen ovale, there are not enough anatomical studies to shed light on percutaneous interventions. This study was planned to obtain a preliminary information to be used for percutaneous interventions of foramen ovale. Also it is aimed to have been recruited literature the measurements of inferior alveolar nerve and lingual nerve.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Effects of 660nm low-level laser therapy on P2X3 expression of lumbar DRG of adult male rats with neuropathic pain

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Background: Neuropathic Pain (NP) is a serious suffering medical condition that frequently leads to disability and life style changes. Although the exact mechanisms of NP are still unknown,recently the role of reactive oxygen species (ROS) reported as an important factor for NP. Apoptosis, increase of ATP production and reduction of antioxidants are also the other factors influencing in NP. There are certain therapeutic procedures for NP among them using laser therapy newly received more attention. In the present research we studied the molecular effectsof Low Level Laser Therapy (LLLT) on a rat model of NP.
Methods: Thirty adult male Wistar rats (200-250 g) that randomly divided into three groups including chronic constriction injury (CCI), CCI+LLLT and control were used in this study. CCI technique was used to induce NP. Laser therapy was done by using laser beam of 660 for 14 days following CCI. After that, expression of P2X3 of the DRG, Bax and Bcl2 in lumbar spinal segments measured by Western Blotting. Level of glutathione (GSH) was also measured in lumbar spinal cord segments by Continuous Spectrophotometric Rate Determination method. For behavioral study the mechanical and thermal hyperalgesia were evaluated in days 7 and 14 after CCI.
Results: LLLT for two weeks increased expression of Bcl and GSH, whereas decreased Bax and P2X3 expression significantly. Comparing the results of behavioral study showed significant differences in the mechanical and thermal threshold showed between CCI and CCI+ LLLT groups.
Conclusion: Based on our findings, the therapeutic effects of LLLT for NP act throughout cellular and molecular mechanisms which improve mitochondrial function that in turn improve cell function and prevent apoptosis.

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Anatomical drawings and images of dissection: The good, the bad and the ugly!

Georg Feigl

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Blood vessels microanatomy of atrioventricular part of the cardiac conduction system

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The nature of the distribution of small vessels in the cardiac conduction system (CCS) is relatively poorly researched, there is insufficient data on local features of the blood channel of the constituent parts of its atrioventricular division. At 501 preparations of the heart of fetuses, newborns, children, adults of both sexes and different ages, the angioarchitectonics of the atrioventricular CCS was studied. The injection of arteries and veins of the heart with radiopaque and colored masses was used, followed by radiography, enlightenment, and histological examination. According to the received data, the zones of localization of the atrium-ventricular bundle branches, sometimes of the bundle itself and the node of the same name, are zones of mixed blood supply. The microcirculatory bed of the atrioventricular CCS can be divided into three areas: the atrioventricular node and its surrounding zone, the eponymous band, the branches of the atrioventricular band. The blood supply of the atrioventricular CCS is carried out mainly by arterioles and capillaries. In the predominant number of preparations in fetuses of 12-32 weeks in the atrioventricular band only capillaries are present. In the dorsal part of the atrioventricular node, a different number of vessels is determined, which is apparently connected due to the peculiarities of the course and branching of the artery of the atrioventricular node. These factors are also due to the distribution of the vessels in the atrioventricular band. In newborns in the frontal serial of histological sections, planar measurements were used to determine the cross-sectional area of arteries and arterioles and their ratio to the cross-sectional area of the dorsal part of the atrioventricular node, the penetrating part of the same-named band. It was found that this ratio is 1: 14.5 for the dorsal part of the node and 1:38 for the penetrating part of the same band. In the study of angioarchitectonics of the atrioventricular part of the CCS, local features were revealed: different values of loops of vascular networks in parts of the CCS, orientation of the vessels with respect to the longitudinal axis, adaptation of the geometry of the blood channel to the microtopography of its structural elements.

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Morphological study of the lips' grooves in an Italian population

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Purpose: Previous studies described the patterns and the systems of the lips' grooves of different populations for subject identification in forensic medicine. Till the date, no studies have been carried out on Italian sample. Our study aimed to describe the pattern and the system of the lip print in an Italian population.
Methods: Lip prints from 96 Italian subjects were taken as it follows: a thin film of lipstick was applied onto cleaned and dried upper and lower lips and then the impressions of the lips were taken using a transparent adhesive tape. The grooves were identified and classified according the Suzuki and Tsuchihashi's classification. Thereby a pattern was assigned. A computational analysis of the lip prints was pursued, so a lip resin cast was realized and scanned by a 3D scanner. The related rendering was considered.
Results: Lip prints resulted obvioualy not overlapping at all, but within the used classification system, 68 different patterns in the upper lips and 53 different patterns in the inferior lips were found. The most frequent pattern resulted 3-4-4-3 and 2-1-1-2, respectively for upper lips and lower lips. A volume rendering of the resin cast was obtained from the 3D analysis. The related points map allowed to distinguish the highnesses and the deepness along the entire surfaces of the lip.
Conclusion: The morphological analysis of the lip-prints confirmed their uniqueness in the considered sample, and integrated the lack of data regarding the Italian populations. The 3D-analysis confirmed to be a sound and valid method improving the acquisition and the analysis of the lip-prints.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Endoscopic anatomy of the epitympanic diaphragm

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The transcanal endoscopic ear surgery (TEES) redefines traditional middle ear anatomical perspectives. A surgeon can observe in situ anatomical relationships of middle ear with straight and angled scopes in a way that the traditional microscopic view, with step-wise removal of by infection unaffected structures, is unable to achieve. The aim of this study is to describe the capacity of an endoscope to visualize the epitympanic diaphragm (also called epitympano-mesotympanic membrane) and its variations with anatomical description. The epitympanic diaphragm is described as a collection of mucosal folds and ligaments that divide the epitympanum into superior and inferior compartments. The dominant part of this structure is the lateral incudomalleal and the lateral malleal folds. The tensor fold and the posterior incudal ligament also form part of it. In a healthy ear, the aeration of the upper attic is provided by a natural opening within the diaphragm, i. e. tympanic isthmus. In some patients, an incomplete tensor fold represents an additional route of ventilation. If, for any reason, the ventilation routes are obstructed, the negative pressure in the attic results in a tympanic membrane retraction. In persistent retraction, cholesteatoma is formed. Both retraction pockets and cholesteatomas are clinical signs of chronic otitis media requiring surgical intervention in most patients. The improved visualization of the diaphragm during TEES enables better understanding of the middle ear ventilation and offers a surgeon chance to re-establish attic aeration by reopening of the natural tympanic isthmus or by creating an artificial ostium in a complete tensor fold. The results of the first clinical studies comparing surgeries with and without specific focus in epitympanic diaphragm are expected to show a difference in clinical impact, i. e. decreased recurrence rates.

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Origin, insertion and innervation abnormalities of the coracobrachialis muscle – An anatomical study with clinical implications

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Purpose: Coracobrachialis muscle (CBM) morphology, possible variations in its origin, insertion and innervation are studied. CBM relationship with musculocutaneous nerve (MCN), brachial plexus (BP) and brachial artery are also described. Coexisted neural and vascular variations are also included.
Methods: Thirteen (7 right and 6 left) upper limbs of 5 male and 2 female cadavers were dissected.
Results: In 10 cases, CBM originated with two heads, while MCN coursed in between them. In 3 cases, CBM had one head and MCN advanced medial to it. Two accessory CBM were found and accessory muscle bundles were also noticed at various combinations such as, between the short head of biceps brachii and superficial CBM head, middle humeral surface and brachialis muscle, as well as between typical and accessory CBM. Several anastomoses were found between BP cords, roots and branches. Commonly found anastomoses were located between the lateral cord (LC) and the lateral root (LR) of the MN. In a single case the LC coursed between the two heads of CBM, in another case the ulnar nerve and the medial root (MR) were highly originated and in 2 cases an anastomosis between MR and LR and between MCN and LR was recorded. An anastomosis between the medial cord and the MR and between LC and medial cord and MR was also detected.
Conclusion: Although the two-headed CBM was the most common finding, it does not match with the typical description provided in the classic anatomical textbooks. This finding advocates over the complex origin of the muscle.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

Comparison apoptotic effects of combination carvacrol and Q10 on p53 protein expression in SK-BR3 breast cancer cell line

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Breast cancer is one of the most common cancers among women in human society. Many breast cancers are resistant to pharmacological agents. A side effect of some medications scholar has prompted the antioxidants use in the treatment of breast cancer. Antioxidants are important poly phenolic component which anticancer effects of them have been proven in in-vitro and in-vivo studies. More than (40,000) combine flavonoids known based on the chemical structure, which are classified into several main groups including: flavonoids, flavanol and Anthocyanins. Carvacrol is one of the most important phenolic components with Therapeutic applications. CoQ10 as well as other phenolic chemical structure is one of the important antioxidants with treatment application in many diseases. Therefore, the present study to evaluate and were discussed Comparison apoptotic effects of Q10 with carvacrol on p53 protein expression in SK-BR3 breast cancer cell line. In this study, different concentrations of two antioxidants: coenzyme Q10 (375 -300 - 225µM), carvacrol (450-750 - 1000µM) and coenzyme Q10 plus carvacrol (225 + 450, 300 + 750, 375 + 1000 µM) was added to SK-BR-3 cells in 72-48-24 hours. The viability of cells was assayed by MTT assay and cell cycle arrest was evaluated by Sub-G1 and expression of p53 protein was measured by Western Blotting. The result showed viability and inhibition of cell growth is dose – depended. The 225 µM dosage of coenzyme Q10 and 450 µM dosage of carvacrol in 48 hours reduced cell viability significantly $p<0.05$, and the low dose of carvacrol+ Q10 (225 + 450) was significantly reduced cell growth compare to control and each of them alone. The p53 expression was also showing a significant increase compared to the same composition as well as the combined effect of two experimental groups also showed significant differences. ($P <0.05$)
Conclusion: according to our results both of two antioxidants (coenzyme Q10 and carvacrol) with further investigation have a potential to drug therapy in breast cancer and Combining both antioxidant had a stronger effect Thus, their combined use is recommended.

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Formation of informational-communicative competence of medical students at medical biology department

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Introduction: In the conditions of the modern dynamic development of education and the complexity of its informational and methodological support, the most important strategic resource is information. Alongside with traditional methodological resources, modern information technologies that allow to create, store, process and provide effective ways of presenting information in the educational process have become an important factor of improving the quality of education in a medical university. The aim of the article is to reveal the peculiarities of the formation of informational competence of students in the process of teaching medical biology at the Medical Academy named after S.I. Georgievsky.
Results.: Improving educational process and quality of student' training is a priority task of medical biology department. The combination of traditional methods of teaching with the effective use of computer training tools increases interest in discipline and activate the students' learning and cognitive activity. Taking into account the modern requirements for the educational process in a medical college, the staff of the department actively uses new teaching technologies. Biology is one of the most important fundamental disciplines in the medical educational system and is designed to provide students with basic knowledge.
Conclusion: Transition to modern education, the creation of conditions for the introduction of the modern imaging techniques, a reasonable combination of new information technologies of education with traditional ones, the formation of informational-communicative competence of students are complex pedagogical tasks that require the solution of a whole complex of psychological, pedagogical, teaching, methodological and organizational tasks.

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

"Vanishing kidney kisease" caused by a rare embryologic anomaly – A case series of combination of renal dysgenesis, Gartner's duct cyst and ipsilateral Muellerian duct obstruction

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Objective: Hydronephrosis can be the result of a variety of different diseases. Muellerian duct obstruction associated with Gartner´s duct cyst is a rare embryologic anomaly resulting in early obstruction of the kidney.
Material and Methods: Two newborns were diagnosed during routine prenatal screening with hydronephrosis, the third patient was a 37 years old female with abdominal pain and recurrent urinary tract infection.
Results: Radiologic examinations showed Muellerian duplication in all three patients; Gartner's duct cyst and ipsilateral Muellerian duct obstruction. All three patients were diagnosed with renal dysgenesis; however, in the newborns the ipsilateral kidney became increasingly hydronephrotic before it vanished months later. The ureter has been shown entering into the cyst in all three patients. The contralateral kidney was hypertrophic due to functional compensation.
Conclusion: Gartner's duct cyst and ipsilateral Muellerian duct obstruction is a rare embryologic anomaly associated with obstruction of the ipsilateral ureter leading to hydronephrosis. Knowledge of this disorder is essential for the correct diagnosis and for therapy.
Discussion: Ultrasound imaging of the two younger patients showed a progressive hydronephrotic destruction of the kidney parenchyma. In patients with Gartner's duct cyst and ipsilateral Muellerian duct obstruction the kidney is present initially as the anomaly is not affecting the metanephric blastema. The obstruction leads to progressive parenchymal degradation; therefore, we postulate that an early surgical intervention may save the kidney.

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CLINICAL ANATOMY

P1 Comparative evaluation of subclavian artery possible compression points in the thoracic outlet region: a radio-anatomical study

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Background: Arterial Thoracic Outlet Syndrome (ATOS) refers to the clinical condition determined by the compression of the subclavian artery passing through the thoracic outlet. In this study, measurements were made in cadavers, tomographic sections and first ribs in order to identify the possible compression points in the transit route of subclavian artery in the thoracic outlet region.
Methods: Eighteen cervical dissections in 9 cadavers for investigation of the dimensions of the subclavian artery transit route (costaclavicular passage width, interscalane space width and length) in the thoracic outlet region were performed. In addition 50 first ribs were investigated for the dimension (width and length) of the groove for subclavian artery (interscalane space). To find out the dimension of the subclavian artery transit route in clinic we have also done measurements from carotid artery computed tomography (CT) angiography studies in 15 patients who have diagnosis other than TOS.
Results: In cadavers the measurements of interscalane space width and length were 15.28±1.94 mm and 15.98±2.13 mm respectively. The costaclavicular passage widths (12.42±1.43 mm) were found narrower than the interscalane space widths in cadavers and this was statistically significant ($p<0.05$). The measurements of the interscalane space (groove for subclavian artery) width and length in 50 first ribs were 15.53±2.12 mm and 16.12±1.95 mm respectively. Additionally the costaclavicular passage widths measured from cadaver were narrower from the interscalane space widths measured from the first ribs ($p<0.05$). The interscalane space widths, lengths and costaclavicular widths measured from the CT angriography studies were 16.2±1.8mm, 16.4±2.1 and 13.78±2.6 mm respectively. In CT images the costaclavicular passage widths were found to be narrower than the interscalane space widths ($p<0.05$). There were no statistically significant difference between the measurements from the cadavers and CT images ($p<0.05$).
Conclusion: In this study we have found that the costaclavicular width was the narrowest space in the passage of the subclavian artery. So according to the results of this study eliminating this narrowest place by the first rib resection can be recommended in the decompression of arterial TOS.

P2 Vascular anatomy of the posterosuperior shoulder joint capsule

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Purpose: A detailed structural anatomy of the posterosuperior shoulder capsule and its blood supply is still rather unknow. The purpose of this study was to investigate and describe blood supply of the glenocapsular ligament and posterosuperior shoulder joint capsule.
Methods: Ten fresh cadaveric shoulder specimens from 4 females and 6 males with a mean age 73.4 (±7.8) years old were analyzed. Before dissection, the ten fresh shoulder specimen arteries were injected 10% aqueous dispersion of latex solution. After the injection shoulder specimens were fixed in an alcohol-formalin-glycerol solution.
Results: The glenocapsular ligament is a constant anatomic structure. The circumflex scapular artery split near the inferior part of the collum scapulae into posteriorly ascending and descending branches. The posterior ascending branch coursed towards the collum scapulae and supplied the supraspinatus muscle belly from below. This posterior ascending branch was gave rise to small lateral and medial branches to the posterior and posterosuperior parts of the joint capsule.
Parts of the results of the presents study have recently been published KSSTA 17 June 2017, DOI 10.1007/s00167-017-4603-x.
Conclusion: The glenocapsular ligament and posterosuperior part of the soulder joint capsule appear well vascularized via the posterior ascending branch of the circumflex scapular artery.
Clinical relevance: It is the hope of the authors that this knowledge of the vascular anatomy should help surgeons who perform surgery to the posterior part of the shoulder to minimize the risk of complications.

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P3 Obstructive sleep apnea syndrome and non alcoholic fatty liver disease: Ultrasonography analysis

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Background and scope: Obstructive sleep apnea syndrome (OSAS) is a common sleep disorder in which complete or partial airway obstruction, caused by pharyngeal collapse during sleep, determines loud snoring or choking, frequent awakenings, disrupted sleep, and excessive daytime sleepiness. Some authors has been shown that nocturnal hypoxia shows correlation with development and progression of non-alcoholic fatty liver disease in OSAS patients.
Patients and methods: Our study involved 72 patients both sexes (25 females and 47 males), average age 57. 10 ± 9.53, which referred to the pulmology unit of the Clinical and Hospital Center "Bezanijska Kosa". Control group consisted of healthy volunteers (18 individuals). An overnight polysomnography was performed for all patients, and electroencephalography, electrooculography, oral-nasal airflow, pulse oximetry, chest and abdominal movement, body position and snoring noise were recorded. Index of severity of OSAS served for the classification patients in to two group:1. mild and moderate; 2. severe. In our study we measured the following ultrasonographically parameters: anterior posterior diameter of the liver (AP), homogeneity, echogenicity of the hepatic parenchyma and pancreas.
Results: Healthy individuals had the smallest AP diameter of the liver while the largest was among those with severe form of OSA. Kruskal Wallis test delineated differences in pancreas and liver homogeneity – better homogeneity of both organs was expressed among the healthy individuals.
Conclusion: Patients with OSAS have, according to our investigation, larger AP diameters of the liver and the lower homogeneity of liver and pancreas comparing to healthy individuals.

P4 The effect of hydralazine on cyclophosphamide induced hemorrhagic cystitis in rats

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Background: Cyclophosphamide is analkylating agent that used as antineoplastic drug in many chemotherapeutic regimens. Hemorrhagic cystitis is the most common side effect of cyclophosphamide. The aim of this study was to evaluate the effect of hydralazine compared with Mesna for the prevention of cyclophosphamide induced hemorrhagic cystitis in rats.
Methods: In this study twenty five male Sparague-Dawley rats were equally divided into five groups. Group I received saline (10 ml/kg, i.p.), Group II received a single dose of cyclophosphamide (200 mg/kg, i.p), Groups III-V received Mesna (40 mg/kg, i.p.) hydralazine, (10 and 20 mg/kg, i.p.) 30 minutes and 7 hours after administration of cyclophosphamide, respectively. Histopathological evaluation of bladder, liver and kidney, glutathione content and lipid peroxidation and also blood urea nitrogen and creatinine in serum were carried out.
Results: This study shows that hydralazine reduces the development of hemorrhagic cystitis induced by cyclophosphamide in comparison with Mesna. No significant difference in the level of glutathione and lipid peroxidation of tissues and their architecture was observed in cyclophosphamide+hydralazine group.
Conclusion: The results of present study suggest that the co-administration of Cyclophosphamide and Hydralazine may have therapeutic potential to protect the cyclophosphamide's side effect in animal model.
Poster accepted

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P5 Examination of the relationship between anthropometric measurements in the period of exacerbation and modified mallampati test in patients with COPD: Preliminary findings

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Objective: We aimed to determine the possibility of difficult intubation by performing modified mallampati scoring (MMS) during the exacerbation period of patients with chronic obstructive pulmonary disease (COPD). We also investigated the possible association between the anthropometric measurements of head and neck and the modified mallampati scores of these COPD patients.
Materials and Methods: A total of 214 subjects over 40 years of age were included in the study. Of these, 107 were healthy subjects entitled control group, while 107 subjects were entitled patient group who diagnosed with COPD and were in the exacerbation period. A modified mallampati test were implemented to the subjects. Forty-two anthropometric measurements of the face, neck, chest and waist regions were performed. All measurements were expressed in mm or cm and recorded on the measurement chart of each patient.
Results: 41.2% of COPD patients were in MMS class 1-2 and 58.8% were in MMS class 3-4. While the values of weight, BMI, head circumference, head width, sternomental distance and lateral neck height values were significantly lower in the patient group than the control group, the facial height, distance between the eyes, nose width, nose height, neck circumference, thorax depth and waist circumference were significantly increased compared to the control group. There was no difference between the groups in terms of MMS. The relationship between MMS and anthropometric parameters was determined only in the facial height. A decrease in facial height revealed a statistically significant increase in MMS.
Discussion: This is the first study to evaluate head and neck anthropometry in the exacerbation period of patients with COPD. In addition, fewer facial height in these patients has been found to increase the likelihood of difficult intubation.
This project was supported by Inonu University Scientific Projects Coordination Unit with the project number of TSA-2017-642.

P6 Ultrastructural changes in the cerebellar cortex under prolonged opioid effect in the experiment.

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Topicality: Thanks to research conducted in recent decades, it became absolutely clear that the dependence on drugs causes diseases of the structures of the brain, including the cerebellum. The key symptom of the cerebellum's lesion in addicts is cerebellar ataxia, which manifested by tremor of the head and the whole body in rest and motion, discoordination of movements and muscle weakness. The unidentified remains the cellular mechanisms of the drug's effect, which are able to help in the development of treatment of cerebellar symptoms in drug addicts.
The aim of the study: Establish the features of the cerebellum cortex's micromorphology in the dynamics of prolonged administration of nalbuphine in the experiment.
Materials and methods: Studies carried out on 29 mature white rats. In the course of the work, we performed a simulation of the long-term effects on the cerebellum cortex and its hemomicrocirculatory bed.
Research results: After 2 weeks of experimental study, the first ultrastructural changes of cells and parts of the hemomicrocirculatory bed of all layers of the cerebellar cortex of the white rat are detected. Changes of cerebellar cortex's fibers are manifested in the form of their hydropic vocuation, myelin shell's stratification and fragmentation, focal proliferation of glyocytes against pericellular oedema. Prolonged administration of nalbuphine significantly disrupts hemomicrocirculatory bed's ultrastructural organization, which manifests itself in the development of paravasal oedema and transendothelial transport's violation. Development of circulatory hypoxia that characterises by the emergence of the microclasmatosis.
Conclusion: The growth of pathological changes in the dynamics of prolonged administration of nalbuphine, is manifested by the development of deep dystrophic changes, caryopicnosis and cariorexis of neurons, the development of circulatory hypoxia, which leads to the development of cerebellar symptomatology in drug addicts.

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P7 Analysis of possible variants of contacts tooth roots with maxillary sinuses according CT scans

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Purpose: To study the structural features of the maxillary sinus and tooth roots contacts with her in spatial reproduction, depending on the sex and age of mature individuals.
Methods: We have examined 102 patients who underwent rhinoscopic, endoscopic examination and Computer Tomography of nose and paranasal sinuses.
Results: Analyzing endoscopic picture of the nasal cavity and paranasal sinuses entrance and three-dimensional computer tomography evident predominance of male over female population.The studies showed the following contacts teeth roots with maxillary sinuses, which displays in the frontal and sagittal planes: - contact left maxillary sinus was held in majority with 25th -28th roots of teeth maxillary dental arch, namely 48 cases of the examined individuals; the right maxillary sinus contact in majority with 15th – 18th roots of tooth, in particular 58 cases.In the most cases, natural hiatus were passable and draining in the middle nasal passages relevant parties, namely in 69 cases left and 63 cases right. There were options such as natural holes were blocked due to various reasons.
Conclusion: The gold standard for diagnosis of rhinosinusitis is Computer tomography; The analysis 102 CT scans helped to identify the possible contact with the maxillary sinuses and teeth roots; it could be permeability diverse roots of teeth in maxillary sinus:in the mucosa or in the cortical plate; Analysis of CT images in the frontal plane revealed that the majority of people analyzed natural outlets were passable.

P8 One cut to lose it all! A learning tool for the pathological and functional anatomy of the forearm and fifth digit of the hand.

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West Virginia University

Purpose: Here, we share and discuss a unique hand injury regarding its anatomy and function, compared to normal one. Discussing a case such as this will allow students to gain a greater appreciation for direct functional implications of injury to anatomical structures.
Methods: The injury was sustained 45 years ago, and due to a lack of resources, a tetanus shot and four stitches were given. From the video images provided, students should be able to determine what tendon(s) of the hand were injured based on the patient's remaining function.
Results: The deep cut occurred in Zone II of hand injury, just above the crease at the base of the right 5th finger and the palm. This zone is located between the opening of the flexor sheath (the distal palmar crease) and the insertion of the flexor digitorum superficialis tendon. While flexing her hand to make a fist, she can only flex the metarcarpophalangeal joint, but not the proximal and distal interphalangeal joints. This indicates both flexor tendons to that finger were cut, and not re-connected for repair. Their muscle bellies in the forearm have atrophied, seen as a long hollowed-out area on the ulnar side of the distal forearm, proximal to the wrist. The palmaris longus muscle and tendon are more prominent, as part of a compensation for the loss of other structures.
Conclusion: This is a very unique interesting injury to emphasize the structures and movement of the muscles and tendons in the hand and finger. It can serve as a teaching tool, used as a problem solving case incorporated into the teaching and learning of the hand anatomy and function.

P9 What has happened to this person? Clinical and applied anatomy observed from a prosected cadaver

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Purpose: Here, we share and discuss unique anomalies seen in a prosected cadaver, when observed very carefully and knowledgably. They include some rare anatomical variations and pathological conditions, which are rarely appreciated and perhaps unheard of with all of these variants in a single cadaver.
Methods: The specimen was an 87-year-old male construction worker. The cadaver died of coronary disease and hyperlipidemia, with other co-morbid conditions including chronic kidney disease, type 2 diabetes, and Alzheimer's disease.

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Results And Discussion: Several interesting anomalies were observed during the prosection, and each was appreciated, measured, photographed, and searched for literature review. They include a coracobrachialis muscle variation involving the median nerve and brachial vasculature, which had potential functional impact and surgical awareness. The second variation appreciated was a flat, transverse muscle in the extensor retinaculum of the right forearm, with hardly any literature reference. Thirdly, an ulnar nerve palsy was found below his right wrist. Atrophy was noticed in the hand's intrinsic musculature innervated by this nerve. Fourth, a sizeable cyst was found along the cadaver's left infraspinatus tendon with a smaller cyst found on the right side. Further inspection of the shoulder musculoskeletal anatomy demonstrated damage to the articular surfaces and synovial fluid leakage beyond the joint capsule.
CONCLUSION: This cadaver is an example of the importance of careful attention to detail when prosecting and dissecting specimens. Not only is this cadaver unique in a number of its variations but it also can be a useful clinical teaching tool for students to appreciate and compare normal and abnormal human cadaveric anatomy.

P10 Comparison of bone mineral content of human and experimental animals

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Environmental degradation,poor nutrition,inadequate exercise today have a negative impact on the human body in general and in particular on the bone system.Reduced bone quality is the cause of bone fractures,complicates their treatment and extends the regenerative processes.For deep and thorough study of quantitative and qualitative changes that occur in bone tissue on a background of chronic diseases, physical inactivity,stress,smoking,alcohol,drugs or drug dependence,etc.conducted experimental studies. Their results may be extrapolated to the clinic only under condition of a certain knowledge of the similarities and differences of structure and mineral composition of human bone and experimental animals.The purpose of our work was to study and compare the mineral composition of human, rabbit and rat bone.The 10 bone fragments of people of mature age (22-35 years)received in trauma departments of Lviv hospitals without a history of diseases that could affect the bone,10 bone fragments of mature rabbits and 10 bone fragments of mature outbred rats kept under standard vivarium conditions were taken for the investigation. Using atomic-absorption spectral analysis it was determined the content of calcium, sodium, phosphorus, magnesium, zinc, potassium, iron and strontium.The studies showed that all the elements contained in bone and humans and experimental animals in quantities suitable for measurement. Absolute numbers of each element studied in humans, rats and rabbits have their own characteristics, but their relationship is similar. Conclusion:The mineral composition of human bone, rabbit and rat are similar, allowing the use of experimental animals in the study of their age, regenerative and reparative peculiarities

P11 Analysis of gallbladder forms variants and morphometric parameters and topography of the extrahepatic biliary tract.

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Due to the high prevalence of biliary tract diseases among people of different age-the problem of studying the characteristics of the structure and topography of the gallbladder and extrahepatic biliary tract is particularly relevant today.Search for new and improve existing methods for early diagnosis of lesions of the gallbladder and extrahepatic bile ducts carried out by experts of the clinical direction-gastroenterologists and surgeons.However without vivo study of individual features of the structure and topography of the gallbladder and biliary tract in normal healthy individuals of different age,sex and constitution arise problems in the diagnosis of pathological changes.The aim of our work-to study the characteristics of shape and size of gall bladder and morphometric and topographical features of the extrahepatic biliary tract in healthy individuals of the juvenile and mature age.Material and methods. It was studied CT scans of 40 people undergoing screening or examination on pathologies not associated with liver and biliary tract or metabolic disorder,that could affect their structure and function.The survey was conducted on magnetic resonance imaging system TOSHIBA with ATLAS 1,5 Ts,COR3.We determined the shape,length and width of the gallbladder,right,left and common hepatic duct,cystic duct and common bile duct.Results:established four

possible forms of gall bladder(pear-shaped,fusiform,boomerang-form and rectangular),that occur with varying frequency in individuals of different sexes.The length and diameter of the extrahepatic biliary tract in patients of both genders are based on the constitutional characteristics and correlated.Conclusions:for people of all ages, sex and constitution are characteristic different variants of the gallbladder form and extrahepatic bile ducts topography.

P12 The effect of postural kinesio taping in the treatment of thoracic kyphosis

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Purpose: The objective of this study is to find out whether postural kinesio taping (KT) contributes to decrease in kyphosis angle in adolescents who have structurally developing abnormal sized thoracic kyphosis.
Methods: In this study, 50 adolescent volunteers were admitted in the age range of 10-18 years who were diagnosed as thoracic kyphosis. The patients were randomly grouped in two as the exercise (Ex) group and exercise and kinesio taping (Ex-KT) group. In addition to the exercises given to Ex group, Ex-KT group received KT application which was renewed each week after the degree of their kyphosis was measured according to Cobb method. At the end of 6 weeks, after the patients' degrees of kyphosis were measured for both groups, the study was concluded and kyphosis angles of the groups were compared.
Results: No statistically significant difference was found between the pre-treatment and post-treatment average kyphosis degrees of males and females in the Ex group ($p>0.05$). Statistically significant difference was found between pre-treatment and post-treatment average kyphosis degrees of males and females in the Ex-KT group ($p<0.05$). Statistically significant difference was found between pre-treatment and post-treatment kyphosis degrees of males and females with postural kyphosis ($p<0.05$).
Conclusion: This study conducted shows the positive results of combining KT technique with exercises in the treatment of Scheuermann kyphosis or postural kyphosis. We observed KT technique to have an obvious effect on increased thoracic kyphosis. We are of the opinion that the results of this study will be a reference to future studies.

P13 Evaluation of normal tibial tubercle to trochlear groove [TT-TG] distance in adult Turkish population

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Purpose: Many studies have confirmed the significance of tibial tuberosity-trochlear groove (TTTG) distance measurement for the preoperative assessment of tibial tubercle osteotomy and refixationof the patients needs surgery. TTTG distance is beingused as threshold. The main purpose of this study is to find normal average TTTG distance of healty adult Turkish population and compare this data with other populations information and establish an index.
Methods: This study was conducted on 200 patients (97 female, 103 male) aged between 18 to 65 years, retrospectively who had magnetic resonance imaging at Istanbul Medipol Mega University Hospital Radiology Department. People with no knee surgical history and deformation included to research group and others with deformities excluded. The scans were analysed in PACS program and compared with other population. Significancy were evaluated with SPSS program.
Results: The mean TTTG distance was found 10,07 ± 1,60 mm in males, 9,96 ± 1,41 mm in females and 10,02± 1,51 mm for total cases. There was no statistically significant difference between genders ($p>0,05$). However overall TTTG distance of right and left knees found significantly different ($p<0,05$).
Conclusion: Obtained results are similar with the results of caucasion population but different than Asian. It is believed that thisresults will be significant in evalution of patellofemoral disorders and helpful in treatment.

P14 An overview of the hamstring muscles: Variations and clinical significance

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Purpose: The hamstring muscles group consists of the semimembranosus, the semitendinosus and the short and long heads of the biceps femoris. Hamstring strain injury is one of the most common injuries in many sports and has a high recurrence rate. Detailed anatomical information about normal and variant anatomy of the hamstring muscles is critical for understanding the injury mechanism and improving the appropriate treatment strategy includes conservative or surgical treatment. The purpose of this overview is to understand the detailed architectural properties of the hamstring muscles.
Methods: Several studies have performed to investigate the anatomy of hamstring muscles, and found several variations related to the hamstring muscles. The literature was reviewed to summarize the variations of the hamstring muscles and their clinical significance.
Results: A review of the literature showed different variations in the hamstring muscle complex. The variations can be classified as fallow: an accessory semimembranosus muscle, hypoblastic or absent semimembranosus muscle, duplicated semimembranosus muscle, common proximal tendon of three muscle, separate distal short head of the biceps femoris insertion and separate proximal long head of the biceps femoris.
Conclusions: Variations of hamstring muscles may change the bio-mechanics of the muscles. Some of these variations could be a potential cause for sciatic nerve compression because of their close relationship to sciatic nerve. Clinically, some muscular variations of hamstring muscles may cause confusion and may be mistaken for soft tissue tumors. Therefore, being aware of variant anatomy of hamstring muscles is necessary to avoid complications during radio-diagnostic procedures or surgeries.

P15 The greater and lesser pelvis anatomy of the person fetuses of the 16-22 weeks of development

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The purpose of this study was to obtain detailed morphometric data on the structure of the skeleton of the human pelvis on the prenatal stage. The present study was based on the study and analysis of sectional material of 20 human fetuses of both sexes of 16-22 weeks of development. We used a set of morphological methods: macromicroscopic preparation, a method of cuts according to N. I. Pirogov, gistotopografic method.
In this study, it was found that the shape of the human fetal pelvis skeleton of the 16-22 weeks of development has pronounced individual differences. Study of sizes of the greater pelvis showed that the interspinous distance on average 30.7 ± 1.6 mm, and the intercristal distance has an average of 36.2 ± 1.9 mm. The transverse diameter of the pelvic inlet at this period of development averaged 14.9 ± 0.6 mm, the anatomical conjugate 13.2 ± 0.8 mm, obstetric conjugate 12.3± 1.1 mm, diagonal conjugate 14.8± 0.6 mm. Oblique diameter of pelvic inlet averages 14.3 ± 0.5 mm on each side. Transverse diameter of the pelvic outlet was 9.3 ± 1.17 mm. Distance between lower border of pubic symphysis and tip of coccyx was 8.2 ± 1.7 mm. Thus in the study new quantitative data about sizes of the greater and lesser pelvis of 16-22 weeks of development fetuses were received. These knowledges may be important for obstetrics, orthopedics and fetal surgery.

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P16 Comparison of the efficiency of ESWT and ESWT+kinesio taping treatments in lateral epicondylitis

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Purpose: The objective of this study is to find out whether using kinesio taping method, which is used frequently in physiotherapy practices recently, combined with ESWT is superior to using only ESWT. Methods: 96 patients (69 females, 27 males) diagnosed with lateral epicondylitis were included in the study. In group Method 1, ESWT was applied on lateral epicondyle in each of the three sessions. Following this, kinesio taping was applied to the forearm of the patient. In group method 2 which was applied only ESWT, ESWT was applied to lateral epicondyle. Visual analogue scale (VAS) was used to assess rest, resistant ankle extension, palpation and pain in patients before treatment, the second and third treatment and 4 weeks after the treatments, while HAQ (health assessment questionnaire) was used for the assessment of general health condition.
Results: In the treatment of male patients, VAS decrease in pain in resistant ankle extension was found to be more effective with method 1 when compared with method 2. In the treatment of female patients, in VAS decrease in palpation and pain, significant difference was found in method 1 when compared with method 2.
Conclusion: ESWT method, which is used extensively in lateral epicondylitis, was found to be effective in recovery. The effects of taping method in increasing proprioceptive healing in females and decreasing resistant ankle extension and pain in males show that the combined use of this method with ESWT method is effective.

P17 Valuation of the relationship between mallampati score and anthropometric measurements of different somatotypes

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Purpose: Our aim in this study is to evaluate the changing mallampati score and anthropometric measures in various somatotypes.
Methods: 308 Patients who were scheduled to undergo elective surgery under general anaesthesia, fell into Group 1-2 according to ASA (American Society of Anesthesia) criteria. Patients were between the ages of 18-70. Demographic data and mallampati scores of patients were recorded. Thyromental, sternomental, hyomental distances, mandibular distance, neck circumference, chest measurements were measured during the anthropometric measurements. Some anthropometric measurements were taken to determine somatotypes using the Carter and Heath method. Somatotype calculations were performed using the “Somatotype for Windows 1.2.6 Trial Version” program.
Results: Five distinct somatotypes were defined. There was a significant difference in all of the antropometric measurements except chest measurement between the mallampati groups ($p<0.05$). Different somatotypes affected the anthropometric measurements and the mallampati score.
Conclusion: Our study is the first study to examine the association of Mallampati classification with anthropometric measurements as well as somatotype, which is used to predetermine difficult intubation. Our work anatomists, medical students, and will provide guidance for clinicians.

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P18 Morphology of ulnar trochlear notch articular surface. Classification and clinical implications

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Purpose: The present study aimed at determining the anatomical variability in the articular surface of the ulnar trochlear notch and potential clinical implications.
Methods: The sample consisted of 273 dried ulnae (138 right, 135 left). The bones belonged to 141 women and 132 men. The morphology of the trochlear notch articular surface was classified into three types: Type I: two fully separated articular surfaces, Type II: incomplete separated articular surface and Type III: single articular surface. Correlation to gender and side was examined.
Results: Two fully separated articular surfaces were the most common type, observed in 165 bones (60.4%). The incomplete separated type was present in 75 out of 273 ulnae (27.5%), while there were 33 bones with a single articular surface (12.1%). The incomplete separated and the single articular surfaces were significantly more common in females ($p<0.001$) compared to males (gender dimorphism). No significant difference was found between sides (side symmetry).
Conclusion: Three different types of the articular surface of the ulnar trochlear notch were found. Variability of the trochlear notch morphology exists between genders. In the fully separated type, the articular surface has an area that is not covered by articular cartilage which is called the "bare area". The bare area does not exist in the single articular surface type, found in 12.1% of ulnae, and this may have clinical implications during olecranon osteotomy for the posterior elbow approach.

P19 Rathke's cleft cyst presented on MRI as pituitary apoplexy: A case report and literature review

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During the examination of the sellar region by Magnetic Resonance Imaging, hyperintensity in T1 weighted is a common finding. This signal intensity has different sources, and its significance depends on the clinical context. Normal variations of hyperintensity in T1 weighted at sellar region are related to vasopressin storage in neuropophysis, the presence of bone marrow in normal and variant anatomic structures, hyperactive hormone secretion in the anterior pituitary lobe and flow artifacts and magnetic susceptibility effects. Pathologic variations in T1 signal hyperintensity may be related to clotting of blood, the presence of a high concentration of protein, fat, calcification or a paramagnetic substance.
We will present the case of a 22- years-old women. On referral to our hospital for head examination with magnetic resonance imaging because she has post-traumatic headache. Pathological findings presented in T1-weighted hypersinjal intrasellar which persist even in T1- fat suppression. These changes signal the presence of methemoglobine impose. The patient is referral to laboratory tests which result in rate with the exception of slight value increase of prolactine. Recommended controller examination after a month but finding the same results which exclude the presence of methemoglobine. Morphological characteristics and signal intensity to impose the presence of high concentration of protein (Rathke cleft cyst).
The purpose of this study is to describe the significance of intracystic nodule a diagnostic characteristic found in Rathke's cleft cyst on MRI.
Keywords: Rathke Cleft Cyst, Magnetic Resonance Imaging, Apoplexy

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

P20 An abnormal branching pattern of facial nerve and its variative relationship with posterior auricular artery in one case

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Variation of the facial nerve accompanying with vascular variation was encountered on the left side of a male cadaver during the routine dissection. Facial nerve gave off five main branches instead of typically bifurcated pattern. On the other hand its trunk was pierced by the posterior auricular artery. In the present case, a unique branching pattern of the facial nerve and its variative relationship with posterior auricular artery were discussed regarding clinical aspects and embryological development. We suggest that the artery piercing the nerve trunk significantly increases the risk of iatrogenic injury of facial nerve. Different branching patterns and anastomoses may result in unexpected functional consequences of mimetic muscles after damage of nerve branches. Therefore, awareness of the variations of the facial nerve and its branches are clinically important to decrease relevant complications.

P21 Investigation of Nutcracker Syndrome: A pilot study

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Purpose: The purpose of this study is to show the association between clinical pictures and symptoms of patients with nutcracker syndrome (NCS) and the angle between superior mesenteric artery (SMA) and aorta. Methods: This study was conducted İnönü University, Faculty of Medicine, Department of Radiology. 202 patients who had urography CT for any reason since 2017 were included in the study.
Results: 4 of the 202 patients were diagnosed with NCS. Male/Female ratio of the patients was 1/3. The average age of the patients was 50.75. While 3 of the patients who had NCS were found to have urinary infection complaints, 1 patient was found to be asymptomatic. Average SMA-aortic angle of 4 patients diagnosed with NCS was 22.5. This angle was found to be greater than 35° in other patients.
Conclusion: Also known as left renal vein (LRV) entrapment syndrome, renal NCS, which has characteristic clinical symptoms, is the compression of the LRV between the SMA and the aorta. Compression of the LRV, which is caused by an acute SMA-aortic angle (<35°) and which results in venous congestion of the left kidney, is the most common etiology of renal vein entrapment. Women are more affected by NCS than men; however, because there is no consensus about the diagnostic criteria of NCS, the exact prevalence is not known. Two previous studies conducted with multidetector computed tomography (MDCT) have reported the estimated incidences of NCS as 10.9% and 27.3%.

P22 Portal vein trifurcation: A case report

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Introduction: Also called "vena portae", portal vein (PV) is an important blood vessel which transmits blood to the liver from the spleen and gastrointestinal tract. 25% of its blood comes to the liver from the hepatic artery proper, while 75% comes through the PV. The purpose of this case report is give information about portal vein trifurcation which is seen in about 6.83% of the cases.
Case Report: 59-year-old male patient diagnosed with urinary bladder cancer referred to our urology polyclinic with complaints of abdominal pain and bladder pain. The axial MDCT taken revealed trifurcation at the main portal vein branch point. Our patient did not have any complaints about liver previously. Laboratory findings were not assessed in favor of any liver diseases.
Discussion: Approximately 10000 liver transplants are made across the world annually. In addition, due to improvements in medicine and technology, there have been increases in complex hepatobiliary surgical and vascular intervention procedures. The frequency of trifurcation was found as 6.1% in a study conducted by surgeons in Japan, while it was found as 7.8% in US examination and as 10.8% in resonance imaging in a study conducted with MDCT by radiologists in Turkey. While managing such complex procedures, it is clinically and radiologically important to have detailed anatomical knowledge of hepatic artery, PV, hepatic

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veins and biliary anatomy. Identification of PV anatomy variations was the objective of this study. We believe that this case report will be a resource for further studies.

P23 A bilateral persistence of the median artery in the forearm in coexistence with multiple anastomoses between median and ulnar nerve

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Purpose: A bilateral persistence of the median artery (MA) in the forearm is described in a cadaver. MA course and coexisting neural variants are presented with an emphasis on the MA persistence embryological background.
Methods: Thirty (15 right and 15 left) cadaveric upper limbs (18 male and 12 female aged 67-81 years) were dissected.
Results: In the left forearm of an 80-year old male cadaver, MA persisted in association with a median nerve (MN) bifurcation into a superficial and a deep branch. UN was highly divided and anastomosed with the MN. MA emanated from the ulnar artery (UA), 3.5 cm below brachial artery (BA) bifurcation. The superficial palmar arch was absent, and MA ended in the palm giving the 3rd and 4th proper palmar digital arteries. In the right forearm, MA emanated from the UA, at the lower border of pronator teres muscle. The MA after its origin coursed through the loop of the deep branch of the MN and ultimately perforates the superficial branch of the MN, emerging superficially. At the wrist, MA terminated at the tendon of the flexor digitorum superficialis.
Conclusions: MA persistence should be evaluated, as it may be a causative factor of carpal tunnel syndrome. Various tests, such as the modified Allen's test, Doppler ultrasound, and angiography may detect the arterial flow and could be helpful in diagnosis of vessel thrombosis. MA could be a "salvage" vessel for the hand arterial supply, in cases of radial and ulnar artery trauma.

P24 Connections between radial and ulnar nerves at the humeral level in cadavers. Clinical significance and literature review

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The most common anastomoses of the brachial plexus (BP) are between musculocutaneous and median nerves (MCN and MN), between MN and ulnar nerve (UN) and vice versa. Although radial nerve (RN) to UN communications are commonly detected in the dorsum of the hand, they are especially rare in the arm and forearm.
Purpose: Current study demonstrates the presence of RN to UN and reversed anastomoses. Moreover, it depicts coexisted variations in the branching pattern.
Materials and Methods: Two hundred and sixty six arms from 133 (81 male and 52 female) cadavers were dissected.
Results: Three (3/133) cases (2 unilateral and 1 bilateral), an incidence of 2.3% had an abnormal anastomosis between RN and UN, at a high humeral level. In one case, the axillary nerve emanated from the posterior division of the upper trunk and in another case, anastomotic branches were observed between the medial trunk (MT) and the medial cord and the other between the MT, medial root of the MN and the UN. Moreover, an anastomosis between the lateral cord and the medial root of the MN was also observed.
Conclusion: The treatment of the upper limb nerve injury requires appropriate knowledge of the segmental motor innervation and the precise course of individual nerves. Communications branches may cause ineffective nerve blockade and/or blockade of unexpected regions during anaesthesia. Therefore, knowledge of such variations could be proved beneficial for clinicians during diagnosis of unusual clinical symptoms and for surgeons to avoid iatrogenic damage of these nerves.

P25 Stereological volumetric evaluation of the carpal bones using Magnetic Resonance Images

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Introduction: The hand-wrist consists of eight carpal bones, each possessing a unique shape. Each of the carpal bones exhibits sexual dimorphism at varying degrees. The frequency of the carpal bone fractures of all hand injuries ranges from 8% to 19%. The aim of this study is to evaluate the volume of the right-left carpal bones among healthy subjects using the stereological methods.
Material and Methods: The study included 12 healthy female, with age ranged between 27-65 years. Total of 24 right and left wrists were examined. Participants were scanned using 1.5T MR (3D_WATSc MR images of the wrists). DICOM images were transferred to the ImageJ software. Volumes of the carpal bone were obtained using the manual planimetry technique.
Results: The mean volumes of each of carpal bones on the right and left were obtained. We determined that the largest carpal bone was the capitate. The mean (±Standard Deviation) volume for the right capitate was 4237.00±721.41mm^3, the left capitate was 4022.75±715.61mm^3. There were no significant different between the right and left volume of the carpal bones (P>0.05). Our results reveled that there were strong negative correlation between the right-left scaphoid (r=-0.730; p=0.011) and also between the right-left triquetrum volumes (r= -0.670; p=0.017).
Conclusion: Our results showed that there is not an asymmetry for the size of carpal bones in the right and left wrists. However, the bones, especially the scaphoid and triquetrum, have size relation that reflects an anatomical design for the carpal bone architecture.
Key words: Carpal bone volume, Female, Magnetic resonance images, Planimetry, Stereology.

P26 Analysis of the dermatoglyphics of patients with obstructive sleep apnea

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Purpose: Dermatoglyphics are the patterns formed by epidermis lines on fingertips, inner surface of the hands and feet. These patterns are completed on the prenatal 19th week and dermatoglyphics outside normal distribution indicate a hereditary anomaly. Genetic factors are one of the factors blamed in obstructive sleep apnea syndrome. The purpose of this study is to compare the dermatoglyphics of healthy individuals with those of diagnosed with obstructive sleep apnea (OSA).
Methods: Our study was conducted with 65 healthy individuals and 25 patients with severe OSA. The photographs of the palms and fingertips of the right and left hands of the participants were taken with high definition cameras. These images were enlarged with computer and their dermatoglyphics were assessed. Fingertip loop types, total number of fingertip lines, total a-b line numbers and atd angles were assessed in healthy individuals and patients with OSA.
Results: The results of the study showed statistical difference between healthy individuals and patients with OSA in terms of right hand and left hand atd angles irrespective of gender ($p<0.05$)Similarly, statistically significant difference was found between healthy females and females with sleep apnea and healthy males and males with sleep apnea in terms of right hand and left hand atd angles ($p<0.05$
Conclusion: A distinct difference was found between healthy individuals and patients with OSA in terms of both right and left hand atd angles. atd values can be used as an early indicator of obstructive sleep apnea.

P27 Change in topography of the kidney at different body positions according to the computed tomography findings

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Twenty nine patients aged 20-72 years were investigated by standard computed tomography in supine position, as a result of investigation, renal mass was diagnosed. At the preoperative stage the computed tomography in lateral position on healthy side was executed. Then the computed tomography findings were compared. In order to assess the changes in topography of the kidney the coordinate system was developed. On the axial tomography scan a vertical line OY, through the middle of the vertebra body, and a horizontal line OX, through the middle of the spinal channel were drawn. In all cases of body position change to the lateral one the displacement of the kidney passed forward on a distance 7,9-39,3 mm (22,3±3,6 mm on average) on the right and 6,3 - 45,5 mm (20,7±3,3 mm on average) on the left. In 90% of observations displacement occurred medially on a distance 3 - 30,6 mm (13,3±2,1 mm on average) on the right, and 15 - 46,8 mm (17,3±2,7 mm on average) on the left. In 10% of investigations displacement was not revealed. The right kidney was displaced proportionally in 56% of cases, the upper pole to a greater degree in 19%, the lower pole to a greater degree in 25% of cases. The displacement of the left kidney was proportional in 36% of cases, in 64% of cases it was displaced more to the lower pole, these displacements depend on localization of renal mass. Besides, the kidney with mass lesion was displaced down in 66% of cases for 2,6 – 31,3 mm (17,1±2,4 mm on average), the upward displacement for 5,2 – 10,4 mm (9,6±0,9 mm on average) occurred in 21% of cases, and no displacement was found in 3%. Thus, there are significant changes in topography of the kidney at different body positions that needs to be considered during preoperative planning.

P28 Morphological changes to cruciate ligaments and menisci during life

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Aim: The goal was to identify possible age- and gender dependent variations in the morphometry of the cruciate ligaments and the menisci.
Methods: 332 patients, who underwent an MRI examination of the knee, were included. Age distribution ranged from 1 to 78 years. All patients were subdivided in 6 age groups. Exclusion criteria consisted of poor image quality as well as destructive and space occupying, pathological processes in close vicinity to the capsular apparatus and investigated structures, respectively. Measurements were performed evaluating the cruciate ligaments, the menisci and the surrounding osseous structures.
Results: There were significant correlations between age and length, cross sectional diameter and anteroposterior width and both angles of the cruciate ligaments. Sagittal height of the meniscus horns correlated significantly with coronal height of the meniscus body in several age groups. There was also a significant correlation between medial and lateral meniscus height. Tibia width presented a significant but weak predictor of medial and lateral meniscus width.
Conclusion: This is one of the largest studies evaluating the cruciate ligaments and menisci in different phases of life when considering cohort size. The results concur with most of the results stated in previous and similar studies. Although there has been an abundance in studies about the cruciate ligaments and the menisci in the last decades there is still little detail known about the morphological changes of these structures in different phases of life. The results of this study aim to increase the anatomical knowledge of the investigated structures as well as to establish standard measurements for further studies and to differentiate between normal and pathologic conditions.

P29 Footprint of the tibialis anterior tendon and its implications for foot and ankle surgery

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Introduction: This study aimed to analyze precisely the dimensions, shapes and variations of the insertional footprints of the tibialis anterior tendon (TAT) at the medial cuneiform (MC) and first metatarsal (MT1) base.
Material and Methods: Forty-one formalin-fixed human cadaveric specimens were dissected. After preparation of the TAT footprint, standardized photographs were made and following parameters were evaluated: the footprint length, width, area of insertion, dorso-plantar location, shape and additional tendon slips.
Results: Twenty feet (48.8%) showed an equal insertion at the MC and MT1, another 20 feet (48.8%) had a wide insertion at the MC and a narrow insertion at the MT1 and1, foot (2.4%) demonstrated a narrow insertion at the MC and a wide insertion at the MT1. Additional tendon slips inserting at the metatarsal shaft were found in two feet (4.8%). Regarding the dorso-plantar orientation the footprints were located medial in 29 feet (70.7%) and medioplantar in 12 feet (29.3%). The most common shape at the MT1 base was the crescent type (75.6%) and the oval type at the MC (58.5%).
Conclusion: The present study provided more detailed data on the dimensions and morphologic types of the tibialis anterior tendon footprint. The established anatomical data may allow for a safer surgical preparation and a more anatomical reconstruction.

P30 The dorsal innervation of the sacroiliac joint

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Purpose: In spite of high prevalence of sacroiliac pain, the innervation of the Sacroiliac Joint (SIJ) is still marginally investigated. The present study focused on the nerve supply of its dorsal ligamentous structures as a major source of pain to reevaluate the common approaches for injection.
Methods: 17 SIJ from formaldehyde-fixed adult human cadavers (aged 61 to 101 years, 3 females, 7 males) were dissected from the twelfth thoracic vertebra to the coccyx. Derivation and bony landmarks of traced dorsal nerves targeting the SIJ were identified.
Results: Our investigation showed a dorsal SIJ innervation with a vast varying rate from the spinal segments L2 to S5. Moreover, no preparation showed a uniform innervation. Not only existed large interindividual differences, there have also been intraindividual side differences. The left side was more intense innervated as the right one. Additionally, in a few cadavers the nerves observed had to circumvent exostoses of lumbar facet joint.
Conclusion: We showed for the first time an innervation of the SIJ from the upper lumbar segments beginning at L2 down to L4. In the scientific literature, we only found paper about a dorsal innervation from L5 to S4. By our observation, it is conceivable that an upper lumbar nerve irritation refers pain to the sacroiliac joint (nerve compression). Therefore, a higher lumbar course of SIJ innervation might be one possible reason for the large number of therapy failure rates.

P31 The cremasteric reflex. A systematic review

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Background: Profound descriptions of triggering the cremasteric reflex and descriptions of its signalling pathway differ significantly in literature. As a useful sign in diagnosing testicular torsion, orchitis, varicocele and undescended testis, it should be of importance to detect and define the correct mechanism. The aim of this systematic review was therefore, to investigate how the cremasteric reflex and its signaling pathway are described and how the normal variability of the innervation of the inguinal region could affect the frequency of this reflex.
Methods: 35 original articles and 18 current textbooks were included after searching scientific databases for the terms „cremaster muscle“, „cremasteric reflex“ and „genitofemoral nerve“.
Results: Descriptions of eliciting the cremasteric reflex ranged from „rubbing of the upper inner thigh“ to „rubbing of the skin under the inguinal ligament“. Four different afferent pathways were described and the frequency of an intact reflex varied between 42,7% and 92,5% in newborns and 61,7% and 100% in boys between 24 months and 12 years.
Conclusion: It is not possible to define the correct technique of eliciting the cremasteric reflex due to major differences between studies and the lack of convincing results. Four hypotheses on the afferent pathway are given, however, further studies concentrating on the afferent pathway with respect to the individual innervation of the inguinal region should be performed in the future.

SURGICAL ANATOMY

P32 The comparison of anal sphincter morphometric measurements in patients with obstructive defecation syndrome and normal subjects

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Aim: The aim of this study is to compare anal sphincter morphometric measurements in patients with obstructive defecation syndrome and normal subjects.
Method: This prospective study was conducted on 22 patients who applied to a tertiary care center between January 2016 and January 2017. Group A included 11 patients without obstructive defecation syndrome, Group B included 11 patients with obstructive defecation syndrome. The sphincter thickness were measured by 3D and 2D mode of endo-anal ultrasonography.
Results: There wasn't statistically significant difference between the two groups in term of internal anal sphincter thickness (2.42±0.58 mm in Group A, and 3.14±1.22 mm in Group B; $p>0.05$). However, external anal sphincters were statistically more thicker in patients with obstructive defecation syndrome than in normal ones (3.77±0.61 mm in Group A, and 5.16±1.56 mm in Group B; $p<0.05$).
Conclusion: It has been thought that symptoms in obstructive defecation syndrome were developed secondary to discoordination between the pelvic muscles and the anal sphincters, especially the autonomy of the internal sphincter was held responsible for the overactivity. Although there is a need for further study, this study shows that increase in external sphincter thickness may lead to the development of dysfunction in obstructive defacation syndrome.

P33 The extension of the flexor retinaculum in relation to hand size

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Background: The flexor retinaculum (FR) of the hand is a fibrous structure forming the carpal tunnel together with the radial carpal ligament covering the carpal bones. The correlation between the extension of the FR and hand size has not been investigated so far. This information is useful for surgical treatment of carpal tunnel syndrome to avoid incomplete release.
Aim: The aim was to identify the proximodistal length of the FR in relation to hand length and volume.
Material and Methods: In both hands of 20 non-embalmed body donators the proximodistal length of the FR and hand length were measured. Hand volume was determinded by water displacement.
Results: On average, the hands were 188.3mm long and had a volume of 230ml. A positive correlation was noted between the proximodistal length of the FR (mean 23.5mm; range, 18-36mm) and hand volume (Spearman's correlation coefficient 0.287, $p = 0.072$), while a weak positive correlation was observed between the proximodistal length of the flexor retinaculum and hand length (Spearman's correlation coefficient 0.234, $p = 0.146$). The ratio between the length of the FR and the hand ranged from 10-20% and valued on average 13% for the right and 12% for the left hands.
Conclusion: As the length of the FR covers on average 12% (left) to 13% (right) of the hand, the surgeon is able to estimate the individual extension of the FR by simply measuring the length of the hand. This will help to lower the risk of its incomplete release.

P34 Course of the perforant arteries in relation to the femoral shaft

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Background: Perforant arteries (PA) are branches of the deep artery of the thigh supplying muscles and skin of the back of the thigh and the femoral shaft. They pass between the tendons of the adductor muscles

and the femoral shaft near the linea aspera. During surgial approaches to the femoral shaft it is necessary to know if there are zones where no PA could be expected.
Aim: Our aim was to identify safety zones along the femoral shaft where PA unlikely pass to the back of the thigh. These zones should be identified reproducibly on patients by using easily palpable bony landmarks as reference points.
Material and Methods: In both legs of 55 formaline-fixed body donators the number of PA was determined. Leg length from the anterior superior iliac spine to the calcaneal tuberosity and level of passage of PA near the femoral shaft was measured in reference to a line from the anterior superior iliac spine to the medial femoral condyle.
Results: The mean leg length was 94.8cm on the left and 95.1cm on the right side. In each leg two to six PA (median=3) were found to be present, often ramifying into two or three branches. PA could be identified constantly in all levels between 15-37cm from the anterior superior iliac spine. Thus, not any safety zone could be identified; neither absolutely nor in relation to leg length.
Conclusion: Surgeons can be faced with PA at every level on the medial aspect of the femoral shaft between 15-37cm distally to the anterior superior iliac spine.

P35 The importance of surgical anatomy of the pelvic ureter in oncogynecologic surgery

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Purpose: The oncogynecologic surgery of pelvic tumors is based upon the knowledge of regional anatomy in which the ureter represents the key anatomical structure. The anatomical landmarks of the pelvic ureter are the basis for its preservation in cervical cancer during its release from the postradiation fibrotic tissue and from the tumor mass. Also, the pelvic ureter is involved in urinary reconstruction after partial cystectomy or anterior pelvectomy for primary or recurrent pelvic tumors with locoregional invasion.
Methods: We demonstrate the anatomosurgical importance of the pelvic ureter using intraoperative images from 10 patients with primary uterine cervix neoplasia and recurrent cervical tumors with or without urinary bladder invasion. We have performed either radical total hysterectomy, partial cystectomy with the distal ureters resection, or anterior pelvectomy with different surgical procedures of urinary reconstruction.
Results: In patients with non-invasive neoplasia, we have released the ureter from the postradiation fibrotic tissue and from the tumor mass to avoid intraoperative lesions. In case of urinary bladder invasion we have performed urinary reconstruction methods, such as ureteroneocystostomy protected with urinary stents and an orthotopic neobladder using an ileocolic pouch with good functional outcomes.
Conclusion: The pelvic ureter has important anatomical landmarks both in conservatory surgery of pelvic tumors and in radical tumor resection.
Knowledge of the anatomy of the ureter in oncogynecologic surgery ensures the safety by avoiding the intraoperative lesions and success by improving the quality of live without urostomy.

P36 The anatomical basis of multiple visceral resections for transverse colon tumors with locoregional invasion

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Purpose: The surgical approach of colon tumor with bulky locoregional extension involves a series of surgical steps that make an anatomosurgical algorithm indicating the resecability or unresecability of an invasive tumor. Tumor extension into adjacent structures leads to the disappearance of the cleavage spaces. To achieve complete tumor removal it is essential to identify the areas of "surgical advancement" which

represent the cleavage spaces, and also to identify the vasculonervous pedicles on the basis of which the opportunity of an "en bloc" resection of the tumor with adjacent involved organs invaded is appreciated.
Methods: Considering these, we present intraoperative images taken during tumoral resection performed in a 61- year- old patient with transverse colon tumor with invasion in the head of the pancreas and stomach, and also associated with synchronous sigmoidian cancer. Subtotal colectomy was performed "en bloc" with subtotal gastrectomy and cephalic pancreatoduodenectomy.
Results: For the resection of invasive tumors of the transverse colon we have aimed to achieve an algorithm based on the role of restoring the transverse colon anatomical relationships with the organs from the supra – and inframezocolic spaces and on the highlighting of the central anatomical landmark - the mezenterico-portal axis.
Conclusion: Locoregional extension of the transverse colon tumors does not necessarily mean surgical inoperabilty. Identification of the neurovascular structures in the non-invaded areas allows finding the peri-visceral plans for mobilization and tumor ablation.
Radical surgical ablation of invasive tumors plays an adjuvant role in subsequent oncologic therapy with increased chances of patient survival.

P37 Prevalence of neoclassical facial canons in young Sudanese adults

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Introduction: Knowing the absolute and relative variations in the shape and size of human faces is a cornerstone for the planning of plastic and reconstructive procedures involving the craniofacial complex. Despite disproval of neoclassical canonical assumptions by many studies, it remains pivotal in any study of craniofacial anthropometry. This study is addressing this issue among Sudanese.
Objective: to validate the neoclassical facial canons among young Sudanese adults and to compare them to other populations.
Methodology: The craniofacial complex measurements were obtained from 200 Sudanese Arab volunteers age range between 18 and 30 years with direct anthropometry. Data were analyzed by SPSS computer program.
Results: Means of all facial measurements are significantly higher among males than females except for the forehead height. Sudanese faces show statistically significant poor compliance with both vertical and horizontal neoclassical facial canons. The most frequently occurring vertical canon is the naso-aural proportion among 21% of females and 14% of males. The most frequent horizontal one is the orbital canon among 36% of females and 25% of males.
Conclusion: Sudanese faces are longer and slightly narrower than other populations. Genetic proximity alone cannot explain these differences. Baseline data regarding facial anthropometry among Sudanese were developed. The reconstructive surgeon may also use it. There is a need for further studies among other Sudanese ethnic groups.

P38 The distance of the gluteal nerve in relation to anatomical landmarks: An anatomic study

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Introduction: Gluteal insufficiency is of concern with lateral approaches to total hip arthroplasty. Damage to the branches of the superior gluteal nerve may cause degeneration of the innervated muscles. The direct anterior approach exploits the intermuscular and internerval interval between tensor fasciae latae laterally and sartorius and rectus femoris muscle medially. In this study the distance of the superior gluteal nerve in relation to anatomical landmarks was determined.
Materials and Methods: Two experienced surgeons implanted trial components in 15 alcohol glycerol fixed cadavers with 30 hips. The trials were removed, and the main branch of the superior gluteal nerve and muscular branches of the nerve were exposed from lateral.
Results: No visual damage to the main nerve branches and the location of the nerve in relation to the greater trochanter were noted by an experienced surgeon. The superior gluteal nerve and its muscular branches

crossed the muscular interval between the gluteus medius and tensor fasciae latae muscles at a mean distance of 39 mm from the tip of the greater trochanter.
Conclusions: The superior gluteal nerve is spared using the direct anterior approach as it is 2 cm away from the incision. The direct anterior approach for total hip arthroplasty minimizes the risk of injuring the superior gluteal nerve, which may result in a gluteal insufficiency.

P39 The deep layer of the tractus iliotibialis and its relevance when using the direct anterior approach in total hip arthroplasty: A cadaver study

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Introduction: The aim of this study was to determine the location, extension and histomorphology of the deep layer of the iliotibial band during minimally invasive hip surgery using the direct anterior approach (DAA).
Methods: The morphology of the iliotibial tract was determined in this cadaver study on 40 hips. Sections of the profound iliotibial tract were removed from the hips and the thickness of the sections was determined microscopically after staining.
Results: The deep iliotibial band always extended from the distal part of the TFL muscle to the lateral part of the hip capsule (mean length 104 mm, mean 33 mm, mean maximum thickness 584µm).
Discussion: We demonstrated that a deep layer of the iliotibial band exists and covers the hip-joint capsule, rectus and lateral vastus muscles in the DAA interval.
Conclusions: To access the precapsular fat pad and the hip-joint capsule, the deep layer has to be split in all approaches that use the direct anterior interval.

P40 Anatomical study of a chimeric fascio-osteomyocutaneous fibular flap for free microvascular tissue transfer

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In this study, the vascularization of the septo-fasciomyocutaneous vessels originating from the fibular artery was defined as basis for a chimeric flap for free microvascular tissue transfer in reconstructive surgery. For this purpose ten fresh cadaver legs were dissected and the vessels running into the posterior intermuscular septum (PIS) were identified after injection of methylene blue. The number of vessels were noted and evaluated at the lateral border of the proximal, middle and distal thirds of the fibula length. In addition, methylene blue injection was performed to confirm the connection between the fibular artery and the overlaying fascia through these septal vessels and adjacent muscles as the lateral hemisoleus (HS) and the flexor hallucis longus (FHL) muscle.
All specimens had periosteo-septal vessels running in the lateral aspect of the fibula originating into the resected fibular bone, the fasciocutaneous flap and dorsally located muscles. The mean number of vessels was 7.6 with a mean diameter of 1.2 ± 0.6 mm (range: 0.3 – 3.0 mm). 88.9% of the vessels occurred in the proximal and middle thirds of the legs. The described anatomy allows to raise a flap which could be dissected as a triple fascio-osteomyocutaneous flap for microvascular tissue transfer.

P41 Experimental and morphological justification of a microsurgical invagination choledochoduodenal anastomosis

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A new method of microsurgical invagination choledochoduodenal anastomosis was executed in 9 experimental animals after obstructive jaundice modeling. On a duodenum carried out two parallel cuts: the first through all layers, the second only serous and muscular tunicas. Between two cuts formed the muscular tunnel. Carried out the common bile duct and suture a submucosa of a duodenum and a submucosa of

the common bile duct, without taking duodenum mucosa and duct mucosa. Then an external tunica of the common bile duct and a muscular tunica of the duodenum were suture immersing 0,3 – 0,5 cm of the duct into the duodenum lumen, microsurgical invagination anastomosis was formed. The anastomosis was examined using radiological, endoscopic, laboratory and morphological methods. X-ray examination showed bile ducts patency, lack of a stenosis. Duodenoscopy made at the Day 30, showed that the artificial duodenal papilla was identical to the natural one, there was no inflammation of intestine and papilla, dynamic contraction of the papilla and release of some bile was noted. The morphology of an anastomosis was studied at the Days 7, 14, 90. The sections were made including the final part of the common bile duct and a part of duodenum wall, staining the sections with Mayer's hematoxylin and using Van-Gieson's method. At the Day 7 the edema of all layers of duodenum wall and bile duct was noted on the sections, matching of submucosa and mucosa of the common bile duct and duodenum was also defined. The complete recovery of mucosa without necrosis occured at the Day 7. At the Day 14 layers of intestine and duct walls didn't differ from intact sites. Serous tunica in the place of anastomosis was thickened. At Day 30 and later there are no signs of anastomosis inflammation, the muscular tunica in the place of anastomosis is thickened and forms an artificial sphincter.

P42 Experimental justification of plastic repair of pleural cavity after pneumonectomy

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The study was executed in 10 chinchilla rabbits with 3,5-4 kg body weight. In 5 rabbits the model of postpneumonectomy space was performed, other 5 rabbits under went plastic repair of postpneumonectomy cavity.
In the first series of experiments the authors overwatched the animals after left pneumonectomy. At Days 30 and 90 computed tomography investigation was carried out. In a month computed tomography scans show displacement of heart and mediastinum upward and to the left, the postpneumonectomy space is defined only in the field of phrenicocostal sinus on the left. In 90 days there is no cavity in the place of pneumonectomy. The right lung is visualized from ThI level to ThXII. At the level of ThIV – ThX in postmediastinum, the part of the right lung comes over to the contralateral side, forming a diverticulation called "mediastinal hernia". Anterior "mediastinal hernia" is visualized at the ThV – ThVII level. At the ThVI level almost all the section area is occupied by the right lung (24,5 - 28 cm2).
After left-side pneumonectomy the right lung is enlarged in size filling the left side, the mediastinum is displaced upward and to the left. The rising of left hemidiaphragm and ptosis of right hemidiaphragm is noted. 3D reconstruction demonstrates the deformation of ribs on the left, which leads to flattening of thoracic wall in the place of pneumonectomy.
In the second series of experiments pneumonectomy was performed. Gel solution was entered into a pleural cavity. The volume of gel solution was equal to a half volume of an extracted lung. During the first day of observation, the computed tomography scans show gel solution and gas in the cavity. In 7 days there is no gas, gel solution holds the lower and external position. There is no displacement of heart, mediastinum and right lung.

P43 MRA study on anatomical variations of circle of Willis in Kosovo's population

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Introduction and purpose: Located at the base of the brain the circle of Willis is the most important source of collateral circulation in the presence of carotid artery or vertebral artery disease. The purpose of the study is to research the distribution of variations and provide an important source of reference on the presence of anatomical-morphological variations of the Circle of Willis arteries on Kosovo's population.
Methods: This is observation descriptive study performed of the Clinic of Radiology in University Clinical Center of Kosovo. We analyzed 513 healthy participants of both sexes who underwent by Three-Dimensional Time-Of-Flight Magnetic Resonance Angiography (3D-TOF MRA). All arteries forming the circle's lengths and diameters were measured.

Results: In the present study the typical variant of circle of Willis was visible in a small number of patients, in 22% of cases and is slighter in females than males and younger than older (below 40 years old). The complete anterior circle of Willis is common with 77.9 % of the all subjects, while the posterior part had a complete structure in 24.1% of the cases. There were statistically significant differences between the age groups and genders when considering the occurrence of an incomplete circle.
Conclusion: Knowing the structure of the circle of Willis has a great importance in the neurovascular procedures during endovascular interventions in neurosurgery and neurology.
Keywords: Circle of Willis, Anatomic variation, MRA, 3D-TOF.

SURGERY (ALL SPECIALITIES)

P44 Establishment of a scaffold-free 3D-cell culture model for adipose-derived stromal/stem cells

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Purpose: Adipose-derived stromal/stem cells (ASCs) form not only a pool of multipotent cells responsible for the turnover of adipocytes, but also exhibit characteristics common to mesodermal tissue. Furthermore they release growth factors important for wound healing, decrease inflammation, promote angiogenesis and show immunmodulatory effects. This, together with the low donor-site morbidity, makes them a useful tool for clinical application, especially in regenerative medicine. The aim of the study is to establish an innovative 3D scaffold-free cell culture model for in vitro expansion of primary ASCs.
Methods: The stromal vascular fraction (SVF) was received from human abdominal adipose tissue. ASCs were isolated from these samples. Both were independently expanded in 2D and 3D culture, using an innovative 3D „hanging drops" cell culture model to form stable microtissues. Data was validated by immunhistochemical stainings and FACS analysis.
Results: Cultivation of ASCs and SVF together with the induction of adipogenesis will be shown. Cells aggregated in a spheroidal structure with tight cell-cell connections. Microtissues displayed growth by showing an increase in size and positivity for Ki67. CD31+ cells adhered to tube-like structures indicating vessel formation. First results implied that a more "stem cell like" population can be maintained by 3D culture compared to 2D.
Conclusion: This 3D cell culture system represents a novel promising tool to study more in vivo like processes being of special interest in regenerative medicine.
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P45 Biomechanical evaluations of the new femoral fixation device for anterior cruciate ligament reconstruction

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Purpose: T-anchor was developed for ACL reconstruction and is implanted via the outside-in technique using hamstring grafts. The purpose of the present study was to compare the newer T-anchor with the EndoButton.
Methods: 15 matched pairs of knees were included (fresh cadavers). If one of the knees was assigned to the EndoButton Direct, the other knee was assigned to the T-anchor. The specimens were then measured to find out the length of the graft-device complex. The femoral specimen was fixed. Cyclic elongation (10~150 N, 1 Hz, 1,000 cycles) was measured, load to failure and ultimate load were measured at 200 mm/min loading till the complete failure of the specimen.

Results: The fixation site profile was lower in the T-anchor group than in the EndoButton Direct group (2.3±0.4 mm vs. 4.7±1.0 mm, P<0.001). The length of the graft-device complex of the T-anchor specimens was longer than that of the EndoButton Direct specimens (125.0±8.9 mm vs. 115.0±8.7 mm, P<0.001). The mean cyclic elongation was lower for the T-anchor group when compared with the EndoButton Direct group (2.4±0.6 mm vs. 3.9±2.6 mm, P=0.015). There was no difference in ultimate load between the T-anchor (872.0 ± 216.8 N) and EndoButton Direct (826.0 ± 164.7 N) (P = 0.530). Regarding load to failure, there were no difference between T-anchor (808.0 ± 218.3 N) and EndoButton Direct (751.0 ± 231.2 N) (P = 0.609).
Conclusions: Our results suggest that the T-anchor may be a suitable alternative for ACL reconstruction with hamstring grafts using the outside-in technique.

P46 Restoration of the bone skeleton of the chest in patients with polytrauma with predominant thoracic damage purpose

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Purpose: Increasing of the effectiveness of complex treatment of patients with multiple fragmentary rib fractures on the background of polytrauma by osteosynthesis of the ribs with LCP plates and elimination of the “paradoxical breathing” of the rib valve.
Methods: The results of treatment of 63 patients are analyzed. In 46 patients the fixation of the “rib valve” was performed using artificial ventilation. Osteosynthesis of ribs with LCP plates was perfomed in the first two days in 17 patients.
Results: In all patients after the osteosynthesis, the signs of the “paradoxical breathing” of the rib valve were stopped. The duration of ALV and the number of pulmonary-pleural complications decreased by 2.7 times. The bed-day has decreased by 1.5 times.
Conclusion: Early restoration of the thoracic wall frame by LCP plates in patients with multiple fragmentary rib fractures in polytrauma can shorten the duration of ALV, reduce the number of pulmonary-pleural complications and improve the outcome of the disease.

P47 Ex-vivo evaluation of a novel system for implant positioning assistance at the proximal humerus using angular stable plates

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Angular stable plating of proximal humerus fractures (PHF) can be challenging and complications are not infrequent. Several studies reported screw perforation into the glenohumeral joint as the most frequent one. To reduce the risk of screw perforation and to decrease unwarranted variability of implant positioning a novel system in implant-positioning assistance (X-in-One) was investigated. The aim of this cadaveric study was to compare the X-in-One system to the conventional surgical technique regarding the accuracy of implant placement and radiation time.
X-in-One is an implant positioning assistance based on a custom-made software application. The application is connected to a C-arm to calculate the virtual screw positions and – lengths according to a temporary fixed plate.
Surgeries were performed on six embalmed cadavers with non-fractured humeri. Philos standard angular stable plate instrumentations were carried out by a deltopectoral approach. The Tip-Joint-Distance (TJD), which reflects the distance from the tip of the screw to the cartilage surface, was defined to 5 mm at the X-in-One technique and estimated at the conventional technique. Measurement of the TJD was achieved performing a disarticulation of the glenohumeral joint. Radiation exposure was detected and expressed in amount of images. Paired t-tests were performed to calculate differences between the two techniques.
A total of 8 head screws were implanted at both techniques. Two joint perforations were observed at the conventional technique, none at the X-in-One technique. The mean TJD using the X-in-One technique was 5.06±1.27 mm compared to the conventional technique with a mean TJD of 5.84±2.57 mm (p=0.06). During screw placement 14.67±5.24 fluoroscopic images were taken at the conventional technique and 2.33±0.52 at the X-in-One technique (p=0.004).

The novel software tool resulted in less joint perforations and reduced radiation time compared to the conventional technique.

P48 Skull characteristics in different races

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The Gender determination of an unknown person can be determined in 70% cases on the basis of dental and bone parts of face and head,while in 98% cases on the basis of pelvic bones.
In archaeological excavations the teeth and skull are the only reliable material for identification.They observe in the size of teeth and their position in the dental arch.Dentoantropological research are larger eye teeth in men and larger middle incisors in women.
Appearance of dental arches is different in women in comparison with men.In women it is more oval,semi-eliptical whereas in men it is more square,due to the prominent eye teeth whose size sharply divides intercanine space from the transcanine space of the dental arch.On the basis of these parameters and indentification parameters and the accurate results are obtained.
Neurocranium and viscerocranium bones display a certain difference according to gender.Female skull is by a rule smaller than a male skull,as are all the bones of craniofacial skeleton.
Growth and development of the craniofacial skeleton is conditioned by acquired factors.They are not entirely reliable,hence we observe the neurocranium bones that are exclusively under genetic impact.
The entire skull base are frontal,measured from the nazion to selle turcike,back,measured from selle turcike to bazion and it is shorter in females.Skull base angle is smaller in females.
Parts of viscerocranium display certain differences according to gender.Prominence of supraorbital arches,prominent arches,prominent nasal bone and a rasping angle created by the body and the arms of the lower jaw are features of the masculine gender.

DENTISTRY AND MAXILLOFACIAL ANATOMY

P49 The evaluation of anatomical structures of periodontium after a regenerative surgical procedure

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HYG-DENT

Purpose: Periodontium is a set of tissues which main function is to keep the tooth in the socket and isolate the internal environment of the organism from the external. The periodontal tissues formed by the cementum, alveolar bone, ligaments, and gingivae. Periodontitis is an infective disease caused by the bacteria present in the dental plaque. Surgery may be indicated to stop disease progression and to regenerate invaded tissues. Several surgical techniques have been developed to regenerate periodontal tissues including the use of enamel matrix derivative (EMD).
Methods: The teeth with periodontitis were tested clinically and radiographicaly. The plan of treatment was prepared for the patient with periodontitis (root treatment) including the application of a surgical technique with EMD.
Results: The periodontitis induces the breakdown of the tooth supporting apparatus. The EMD was used to treat periodontitis. The treatment was made by the stimulation of soft and hard tissues surrounding teeth to regrow after the tissue destruction. When EMD is applied to root surface, the body “remembers” a process that once took place during the embryonic growth period. Enamel matrix proteins form a matrix on the root surface. Mesenchymal cells migrate into the lesion, become fixed to the root surface and begin to proliferate. A new attachment with cementum and ligament is formed on the treated root surface.
Conclusion: The application of EMD markedly improved anatomical changes of the periodontium in probing of attachment levels and pocket depths of the teeth.
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P50 The maxillary sinus morphology in Slovak population

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Purpose: The maxillary sinus shows normally no tendency to change its morphology. The sinus morphology is changed either due to the facial development in children and adolescents or in the ageing process due to the loss of teeth and bone mass. The main aim of this study has been especially to determine the sinus shape and sinus floor morphology related to the age.
Methods: Human adult male and female cadaveric material (heads) aged 37 to 83 years were used with different dental status. The three-dimensional CAD/CAM software was used to scan the solid impressions of maxillary sinus to visualize the real sinus shape and the maxillary sinus floor.
Results: The 3D maxillary sinus morphology related to the age was studied. All models of sinuses and their measured values (height, length and width of sinus) in different decades of life (from third to eighth) were recorded, tabulated and graphically evaluated.
Conclusion: This study provides unique view on the maxillary sinus morphology as well as alveolar recess and their changes in ageing process with preserved topographical relations in the representative sample of the Slovak population. The visualization of the maxillary sinus morphology is necessary in the diagnosis and treatment plan for a dental implant and during current surgical procedures.
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P51 Morphological study of palatal rugae in a sudanese population

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Palatal rugae patterns have unique characteristics and have been proposed as an alternative method to establish identity when other means, such as fingerprints and dental records, are not attainable. This study was conducted to determine the morphological characteristics of palatine rugae and to assess the existence of side asymmetry in them in Sudanese Arabs. It also assesses the possibility of determining sex using logistic regression. One hundred dental casts for 50 males and 50 females aged between 18 and 23 were studied for palatal rugae dimensions, shapes, and orientations, as well as, sexual dimorphism and side symmetry. The most predominant rugae were primary, and the most prevalent shapes in both sexes were wavy, curved, and straight forms. The predominant orientation was forward. Side asymmetry existed more in the orientations than in the shapes, but no side asymmetry was recorded in the dimensions. There was no significant sexual dimorphism in the rugae dimensions, shapes, and orientations, except for forward-directed rugae ($p < 0.037$). A predictive value of 60% was obtained in assigning sex using dimensions and orientations and 58% using shapes alone. Therefore, the palatal rugae are not recommended for assigning sex effectively among Sudanese Arabs unless it is the only means available.

P52 Quantification and prefrence of facial asymmetry of the sub-saharan africans' 3D facial models

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Many authors reported on facial symmetry and asymmetry and their role in human mate choice. However, major gaps persist, with nearly all data originating from the WEIRD (Western, Educated, Industrialized, Rich and Developed) populations, with equivocal results. This study aimed at quantifying facial asymmetry from 3D faces and also determine perceptions and judgements of standardized facial images with different levels of asymmetry using questionnaires.
Materials and method: The faces of 426 participants (215 males, 211 females) from the Hausa ethnic group

of northern Nigeria were scanned using a 3D surface laser scanner. Facial asymmetry data were generated from the resulting virtual 3D models, and Data were analyzed using R-studio software.
Results: The results showed that males were 12% more facially asymmetric than the females. Males were 15% more asymmetric around the eyes than females'. It also demonstrates that males' faces were 20% larger than the females'. Similarly, results indicated that individuals with lower levels of facial asymmetry (near facial symmetry) were perceived as more attractive, more suitable as marriage partners and more caring, whereas individuals with higher levels of facial asymmetry were perceived as more aggressive.
Conclusion: The study conclusively asserts that all faces are asymmetric and the preference of less asymmetric faces was not just dependent on single facial trait, and thus, the study supports that physical attractiveness is not just an arbitrary social construct, but at least in part a cue to general health and possibly related to environmental context.

IMAGING (ALL MODALITIES)

P53 Is unattractive skin color change in aged skin associated with the underlying pathologic alteration, solar elastosis?

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Introduction: Aged skin is reported to be associated with unattractive skin color changes and solar elastosis. However, comparative studies have not documented the possible correlation between the two factors.
Purpose: This study investigated the possible relationship between the facial skin color of elderly Asians and solar elastosis.
Methods: A total of 22 skin specimens were collected from 22 Korean patients. Skin color was quantitatively measured using colorimetric photography techniques and the degree of solar elastosis was quantifiably assessed using a histologic grading scale. These values were used to investigate a correlation between the CIE L*a*b* coordinates and solar elastosis grade.
Results: The solar elastosis grade increased according to patient age ($r=0.67$, $p=0.0006$). However, the extent of solar elastosis was not statistically correlated with the CIE L*a*b* values, including L*, a*, and b* ($r=0.02$, $p=0.95$; $r=0.15$, $p=0.50$; $r= -0.07$, $p=0.76$, respectively).
Conclusion: The results showed that the solar elastosis grade increased, according to patient age, because of cumulative actinic damage. However, colorimetric skin color data did not correlate with the degree of solar elastosis. Therefore, cutaneous color changes and solar elastosis are separate, age-related phenomena. Physicians should be aware of the possible histologic changes in actinically damaged facial skin, regardless of the skin color.

P54 Tractography of the basal ganglia

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Introduction: The basal ganglia is a group of subcortical nuclei: the caudate nucleus, the putamen and the globus pallidus. The basal ganglia are responsible for motor control, motor learning, executive functions, behaviour and emotions. Recent findings also suggest the role of the basal ganglia in non-declarative memory system. DTI-based tractography allows us to visualise neural tracts and see specific connections to the cortex and other structures in the brain.
Aim: The aim of this study was to visualise neural tracts in basal ganglia in healthy participants and to compare statistical parameters of neural tracts from left and right side of the brain to determine laterality.
Methods: 4 subjects in this study were selected out of a database of healthy controls from a study focused on Alzheimer's disease. Subject underwent examinations on a 3T MRI scanner at IKEM. DTI data were reconstructed in DSI Studio software. Regions representing the selected basal ganglia were loaded from a provided atlas and manually corrected according to its proper anatomical position specified by a neuroanato-

mist on T1 weighted images. Fiber tracking was performed and reconstructed neural tracts were analysed. Following statistical parameters were obtained: number of tracts (NT), tract length (TL), tract volume (TV), quantitative anisotropy (QA) and generalised fractional anisotropy (GFA). Statistical analysis was performed using t-test in STATISTICA 10.0.
Results: Our results show visualised neural tracts from 6 regions: left and right pallidum, left and right putamen, left and right caudate. We noted lateral differences in statistical parameters, especially in NT and TV, with the decrease in all subjects in structures in the right side of the brain. Statistically significant ($p<0,05$) decrease of NT and GFA was seen in the putamen and of TL in the caudate.
Conclusion: We found laterality in the basal ganglia with higher statistical parameters in the left side of the brain.

P55 Evaluating the in-vivo anatomy of the thyroid isthmus on computed tomography images

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Purpose: The anatomy of the thyroid isthmus is quite variable. Additionally, results of previous studies rely either on pathologic surgical specimens or cadaveric specimens with no medical history. This study aims to investigate the in-vivo radiologic anatomy of the thyroid isthmus on individuals without thyroid diseases.
Methods: The anatomy of isthmus was evaluated on 120 individuals (60 women, 60 men) with computed tomography. Isthmus width, height, and the distances between the lower ends of thyroid and cricoid cartilages to the upper and lower borders of the isthmus was evaluated on reformated sagital images.
Results: The isthmus was present in all cases. Average isthmus width and height were 4.6 ±1.5 mm and 15.6 ±3.6 mm, respectively. No significant differences were present for width ($p=0.71$) and height ($p=0.37$) between sexes. Average distance from the thyroid cartilage to upper and lower borders of the isthmus were 22.1 ±5.2 mm and 37.7 ±6.8 mm, respectively. The differences among sexes were not significant for both distances ($p=0.46$ and $p=0.92$). Average distance from the cricoid cartilage to upper and lower borders of the isthmus were 7.1 ±3.6 mm and 22.5 ±5.8 mm, respectively. Both distances were significantly greater in women ($p=0.01$ and $p=0.02$).
Conclusion: The results of our study based on in-vivo radiologic images and individuals with no thyroid pathology differs from existing literature.

P56 Virtuopsia of a malformed fetus

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University Central Of Valley Cauca

From the Tomas Uribe Hospital in the city of Tuluá, Valle del Cauca, to the Laboratory of Tanatopraxia and Plastination of the Autonomous University Foundation of the Americas, a female stillborn for analysis, which was carried out without the autopsy methodology Academic but the virtuous. For this purpose a Resonance Equipment Iiag Encade1'T.I. Genera Electric - Srivo Mr355 Inspire - From 8 channels, from which we obtained images that denote a spectrum of associated malformations which allowed to corroborate multiple malformations that such as The relation cranial face is altered in relation of 4 to 1 by macrocranial, Ventriculomegalia communicante , Presence of the septum pelucidum, Descent of the cerebellar amygdala (Chiari I), Cerebellar hypoplasia, Presence of the central and silviane grooves, Flattening of the cortical gyri which is confused with paquigiria but is due to the age of development, Subcortical region Well differentiated but the pattern of myelination is very scarce, cleft lip, cleft palate, present eyeballs, air in the pharynx with dilatation, esophageal air, bilateral hydrothorax, bilateral cystic pulmonary dysplasia, ventricular cavities, presence of the entire interventricular septum, liver with Hypertrophy of the right lobe, prominent vesicle, Diste (Air, calcified meconium), Moderate ascitic fluid, Kidneys of normal size and morphology, Spina bifida occult in the lumbosacral region associated with dural ectasia.Cono medullary at the level of L1, Extremities in Forced flexion without dysplasia, umbilical cord with presence of (2) arterial structures and (1) venous, There are no defects in the abdominal wall, Integral hemidiaphragms. It was verified that the use of the medical images in the postmortem diagnosis is a valuable tool for the service of legal medicine and pathology

INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

P57 Development of patient-spesific 3d-printed dural venous models for preoperative planning

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Background: Despite significant improvement in clinical care, operative strategies, and technology, neurosurgery is still risky, and optimal preoperative planning and anatomical assessment are necessary to minimize risks of serious complications. Our purpose is to document of dural venous sinuses (DVS) and its variations were identified during routine 3D venography created through three dimensional (3D) models for teaching and learning of complex cerebral anatomy.
Methods: 3D models of the DVS networks were printed. Compared with the controls, cases with cortical venous thrombosis have altered venous anatomy, which has not been previously compared.
Results: Geometrical changes between the neighboring DVS could be easily manipulated and explored from different angles. Modelling was helped to conduct the examination in details with reference to geometrical features of DVS, degree of asymmetry, its extension, location and presence of hypoplasia/atresia channels. Challenging DVS anatomy was exposed with models of adverse anatomical variations of DVS network, including highly angulated, asymmetrical view, narrowed lumens, and hypoplasia and atresia structures. It assisted us to comprehend spatial anatomy configuration of life-like models.
Conclusions: The patient-specific models of DVS geometry could provide an improved understanding of the complex brain anatomy and better navigation in difficult areas and allow surgeons to anticipate anatomical issues that might arise during the operation. Such models offer opportunities to accelerate the development of expertise with respect to new and novel procedures as well as new surgical approaches and innovations, thus allowing novice neurosurgeons to gain valuable experience in surgical techniques without exposing patients to risk of harm.

P58 Viewing complex segmental and branch anatomy of cerebral venous sinuses model using 3D printing

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Background: The three-dimensional (3D) visualization of dural venous sinuses (DVS) networks is desired by students/surgical trainers to create a clear mental picture of the anatomical orientation of the complex cerebral anatomy. Our purpose in this study is to document were identified during routine 3D venography created through 3D models using two-dimensional axial images for teaching and learning neuroanatomy.
Methods: Anatomical data were segmented and extracted from magnetic resonance imaging of the DVS of healthy people. The digital data of the extracted anatomical surfaces was then edited and smoothed, resulting in a set of digital 3D models of the superior sagittal, inferior sagittal, transverse, and sigmoid, rectus sinuses and internal jugular veins.
Results: A combination of 3D printing technology and casting processes led to the creation of realistic neuroanatomical models that include high-fidelity reproductions of the anatomical features of DVS. The life-size DVS training models were provided good anatomical detail and representation of the spatial distances. Geometrical details between the neighboring of DVS could be easily manipulated and explored from different angles.
Conclusions: A graspable, patient-specific, 3D printed model of DVS geometry could provide an improved understanding of the complex brain anatomy. These models have advantages that include customizable detail, relative low cost, full control of design focusing on sub segments, color-coding potential, and the utilization of cross-sectional imaging combined with graphic design. Anatomists can design to demonstrate the utility and effectiveness of 3D printed models for teaching simple and complex anatomy, simulating interventions, measuring patient satisfaction, and improving clinical care.

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P59 Can anatomical variations in cortical venous sinus thrombosis cases be determined with 3D-MR venography?

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Introduction: Cerebral contrast-enhanced magnetic resonance venography (CE-MRV) plays an important role to examine dural venous sinuses (DVS) in cerebral venous sinus thrombosis (VST). The purpose of this study is to evaluate the use of CE-MRV in the detection of DVS anatomical variations and to assess its relationship potential pitfalls of VST.
Materials and Methods: This study involved the radioanatomical examination of sinuses of the superior and inferior sagittal, sigmoid, transverse, straight, cavernous and occipital segments were also evaluated in ten separate parameters such as diameters, length, height, angle and shapes.
Results: Anatomical variations with VST patients were located in 53.8% in the superior sagittal, 28.1% in the transverse, and 17.5% in the straight sinuses. In patients with VST, superior sagittal was frequently normal in 30.4%, aplasia in 17.4% (posterior one third), and hypoplasia in 47.8%. Most common variation of superior sagittal was hypoplasia of anterior one third (47.8%). Inferior sagittal was frequently atresia in 30.4 % and hypoplasia in 39.1%. The transverse sinus was hypoplastic or aplastic in 54.3% cases. Frequency of occurrence of the left sigmoid as hypoplastic or aplastic was present in 78.3% and right one was present 30.4% of the cases. The sigmoid sinuses were symmetrical in 60% of the cases (30% normal, 30% hypoplastic). Left sigmoid sinus was hypoplastic or aplastic/atrectic in 82.6% of the cases. The length of superior sagittal ($p=0.03$), diameter of mid of superior sagittal ($p=0.044$), proximal ($p=0.04$) and diameter of distal part of straight sinus ($p=0.028$) were statistically significant.
Conclusion: Well-defined DVS variations have typical characteristics, its position, luminal narrowing, atresia, hypoplasia and sinuses duplication and morphology differentiating them from other pathology. This study will be useful to neurosurgeons for preoperative planning and radiologist to prevent misdiagnosis.

EMBRYOLOGY

P60 New data on hindbrain anatomy at person fetuses of 16-22 weeks of development

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Frequency of congenital malformations of the brain remains high now. Therefore data on anatomy of the brain of the fetus and the newborn have the high importance for morphologists and obstetricians. Studying of a hindbrain of the person fetus in 16-22 weeks ontogenesis became a research objective. 60 fetuses of 16-22 weeks of development became a material of a research. All material was gathered in strict accordance with the legislation of the Russian Federation. The research of anatomic samples was conducted by methods of macromicroscopical preparing, cuts in the horizontal, frontal and sagittal planes with the subsequent photography and recording of data.
A studying of sectional material allowed to establish that the hindbrain in 16-22 weeks of development already includes all main parts, as well as the adult's brain: medulla, pons and cerebellum. In 16-22 weeks of development all elements of a medulla structure are distinctly visualized: anterior median fissure, posterior median and lateral sulcus, inferior corner of a rhomboidal fossa, pyramids, olives, cuneate and gracile tubercles. Medulla length throughout the surveyed period increases from 9,51 ±2,71 mm to 11,08±0,6 mm. Its diagonal is enlarged with 9,68±0,5 mm to 11,19±0,05 mm in 20-21 weeks. In the surveyed period of an ontogenesis there is a gradual increase of width of each of departments of the pons with stabled parameters of length and diagonal. The cerebellum at fetuses of 16-22 weeks development already has the lines inherent in the adult's cerebellum. The worm, hemispheres, floccules are defined distinctly. Hemispheres are covered with foliate folds. However a cortex of a cerebellum isn't developed yet, and its sulcus are superficial and smoothed. The anterior-and-posterior size of a cerebellum was 16,89±0,03 mm, the transversal size was 17,72±0,05 mm.
Results of work can be useful for MRT and US of the developing fetus to the correct interpretation of results of an intravital research. Besides they can be used in fetal surgery and therapy of deeply prematurely born newborns.

P61 Subchronic influence of mercury (II) chloride small doses on rats regulatory systems

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Mercury pollution is a global environmental problem. Influence of mercury and its compounds on the regulatory systems remains significant social and medical problem. The study aimed at identifying characteristics of histological and ultrastructural disorders in spinal cord, spinal ganglia, myocardium, thymus, popliteal lymph nodes and spleen of rats subchronically exposed to small doses of mercury (II) chloride.
20 white Wistar rats were divided into 2 groups, with 10 animals in each group. Animals from group 1(control) received normal saline. Group 2 animals received 10 injections of mercury (II) chloride (0.01 LD50) during two weeks (subchronic exposition).
Excentric location of nuclei in neurons and chromatolysis were observed in spinal cord and spinal ganglia, which indicated down-regulation of synthetic processes in nerve cells. Intensive collagen synthesis was observed in the perivascular and intramuscular interstitial compartments of myocardium. Microvessels were dilated, which indicated increased blood supply. Walls of the intramural coronary arteries branches were thickened. Density of mitochondria and their volume in myocardial cells decreased, but their average area increased due to reduction in number of these small organelles and emergence of large mitochondria. The length and quantity of mitochondrial cristae decreased. The area of compartments where lymphocytes proliferate and mature in thymus, spleen and lymph nodes decreased. Reduced density of lymphoid elements was observed in the cortex and medulla of lymph nodes. Lymphocytes density in spleen and lymph nodes increased. The number of lymphoid nodules with germinative centers increased, lymphocytes optic density decreased and lymphocytes with euchromatin in nuclei were more abundant than in control.
Thus, destructive-dystrophic changes and adaptive responses in regulatory systems have been observed in conditions of subchronic intoxication by small doses of mercury (II) chloride.

HISTOLOGY

P62 Structural changes in the liver, kidneys and lungs under the exposure to carbon tetrachloride and embryonic stem cells introduction

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Multi organ failure is one of the most topical problems of modern medicine. This study aimed at evaluating the outcomes of the stem cells use after experimental simulation of multi organ failure.
45 male mice of the ICR strain were divided into 3 groups. In the 1st and 2nd groups of mice multi organ failure was simulated by intraperitoneal injection of 0.35 ml of 30% carbon tetrachloride oil solution. Then 10,000 murine embryonic fibroblast-like cells (ICR strain, carriers of GFP gene) were injected intraperitoneally to the 2nd group animals, while normal saline was administered to 15 mice of the 3rd group (control). Liver, kidneys and lungs were studied by histological methods three weeks after the introduction of stem cells.
The administered carbon tetrachloride has initiated degenerative changes in the liver, kidneys and lungs which were manifested by atrophy and decreased number of hepatocytes, renal glomeruli, bronchioles and alveolar septa, and development of foci of necrosis and sclerosis in the parenchyma of all organs. Introduction of embryonic fibroblast-like cells led to the emergence of a large number of immature hepatocytes and reconstruction of hepatic plates. Kidneys revealed regeneration of the damaged glomeruli while restoration of normal alveolar histoarchitectonics with their increased number and renewed continuity of their epithelium was found in the lungs.
The described differences in the organ structure of the studied 1st and 2nd groups animals demonstrate the positive effect of embryonic fibroblast-like cells on the rate and depth of regeneration processes after the simulation of multi organ failure caused by the introduction of carbon tetrachloride.
Poster accepted

P63 Quantitative study the effect of testicular cell conditioned medium rich in platelet-rich plasma (PRP) on testis rat

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Testicular conditioned medium (TCM) contain several agent that responsible to germ cell differentiation. Platelet-rich plasma (PRP) also has the potential effect on tissue repair through the proliferation and differentiation of stem cells.
The aim of this study was to evaluate the effect of TCM and PRP on testis structure in infertile rat model by stereological method and light microscopy.
Thirty–two male rats were divided in to 5 groups (control and experimental groups). Infertility was induced by administration of Busulfan (BUS) (10mg/kg, I.P., single dose) and rats were treated by PRP (80µl, testis local injected, single dose) and TCM (40%, testis local injected, single dose). Before and after the experiment, blood samples were taken from heart for measured the level of testosterone. Then, the left testis was removed, fixed, embedded, sectioned and stained by H&E. The volume of the testis, seminiferous tubules(ST), interstitial tissue, length of ST, germinal epithelium height(GEH), and total number of spermatogonia stem cells(SSC) were estimated by stereological technique. The results show that, BUS decrease the volume of testis and ST, GEH, and SSC in comparison with BUS group ($p<0.05$). the level of testestron also decrease in these groups significantly. PRP and TCM increase the number of SSC and testestron level but not effect on the other variable of testis structures in comparison with BUS group($p<0.05$). Our data indicated that the TCM rich in PRP had a positive effect on the spermatogonia stem cells in infertile rat.

P64 Effects of inhibiting the angiotensin converting enzyme and angiotensin II receptor blocker on heart tissue of male rats with renal hypertension

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Introduction: hypertension disease has adverse effects on heart and blood vessels. Studies have shown that Anti hypertensive drugs such as captopril (CAP) and losartan (LOS) can lead to useful changes in cardiovascular structure by interference in rennin-angiotensin system, and then, reduce the mortality caused by blood pressure disease.
Objective(s): The aim of this study was to investigate the cardiac structural changes in renal-induced hypertension rat model and effect of inhibiting the Angiotensin converting enzyme and Angiotensin II receptor blocker by stereological methods.
Materials and methods: 48 male Sprague-Dawley rats were randomly divided into 6 groups (n=8): All animals except the sham group underwent surgical procedure, two-kidney one-clip renovascular-induced hypertension, by renal artery constriction were fitted with a plexiglass clip. In the sham operated rats the abdominal wall was opened, closed without clipping the renal artery. Both sham and vehicle animals were received distilled water p.o./4 weeks. The experimental groups 3 and 4 have received CAP (100 and 50 mg /kg p.o./4 weeks) and experimental groups 5 and 6 received LOS (50 and 25 mg /kg p.o. /4 weeks). Systolic blood pressure was monitored by means of tail-cuff plethysmography at the end of each week. After 4 weeks treatment the animals were dissected and the heart removed, fixed, sectioned and stained by H&E and PAS. Stereological methods were used for estimation of the total volume of heart, volume density of Myocardium, endocardium, matrix and vessels, number of myocytes and purkinje fibers.
Results: our results showed that both doses of CAP and LOS significantly reduce the blood pressure compared to the Vehicle. All experimental animals showed significant reduction of cardiac weight compared to vehicle group and CAP100 has significantly reduced in comparison to LOS 50 and LOS25. Comparison between body weight at the end of treatment showed that only CAP 50 rats group had a significant increment compared with LOS 50 rats group ($P<0.03$) and there was no significant statistical difference between the other groups. CAP 50 could significantly reduce the heart volume compared with the Sham and CAP 100 groups ($P<0.001$) and There was no significant difference between other groups. The comparison of volume density of Myocardium showed that taking the CAP 100 could significantly reduce the volume density of Myocardium compared to LOS 50, LOS 25, and Vehicle groups ($P<0.001$). The mean number of myocytes in different groups showed that the CAP 100 group has a significant increase compared to Vehicle, CAP 50, LOS 50, and LOS 25 ($P<0.03$).

Conclusions: Renovascular hypertension has destructive effects on different parameters of the heart. Both CAP and LOS have protective effects on cardiac structures against hypertension. It seems that between two doses of CAP and LOS, CAP 100 has most protective effects on the cardiac structures.

P65 Duodenal changes associated with chronic intake of liquid nutrition

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The small intestine is sensitive to quantity and quality of provided food. We used liquid nutrition Fresubin, administered chronically 3 groups of rats: Fresubin given for 130 days (LN), for 70 days in juvenility (LNJ) or in adulthood (LNA). We found a significant reduction of the circular layer of muscle tissue in duodenum in LNJ as compared to rats fed with solid food (CON). Villus height was increased only in LNA, while villus width was increased in both LN and LNA. Crypt depth was reduced in LNJ. Villus height/crypt depth ratio and number of goblet cells are not changed in liquid nutrition fed rats. In conclusion, chronic intake of liquid nutrition rich in water and nutrients significantly affects duodenum morphology in rats.

P66 Sampling design for experimental surgery studies in porcine liver

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Porcine liver is widely used as a model organ in experimental surgery. The ammount of connective tissue (CT) is key histological parameter for analysis of such experiments, but no quantitative study of the CT displacement in the porcine liver has been published so far, nor a valid sampling scheme.
Therefore, we: 1. Quantified area fraction of the CT in the liver, 2. Assessed its proportionality in the parenchyma, 3. Designied sampling schemes for further studies.
We used seven healthy livers – Prestice Black-Pied pigs, 9–12 weeks, 25–35 kg, 5 males, 2 females). From each of the six lobes six tissue blocks were harvested with respect to their position in the particular lobe (paracaval, periportal, peripheral). After randomisation of the sectioning plane, all of the 251 tissue blocks were processed to histological sections (aniline blue and nuclear red stain). The area fraction of the CT was quantified on 1757 systematic uniform random photographs with the use of a stereological grid in Ellipse software.
The area fraction of the CT in the porcine liver was below 13%. Intralobular CT formed less than 1% of the total CT, whereas the interlobular CT proportion varied between 1–12%. The area fraction of interlobular CT in right medial lobes was 4.71±1.46%.
Our results show that if we expected a 20% increase in the CT (to 5.65%), we should compare at least 19 tissue blocks of a known position in the lobe (e.g. paracaval in right medial lobe) in each of the compared groups. However, when only the lobe of the tissue blocks is known, at least 30 tissue blocks should be compared. But, if the position of the tissue blocks is unknown, 54 tissue blocks in each of the group should be used.
Based on our results, we recommend comparing only the tissue blocks of the same position in the same lobe.
This study was supported by the National Sustainability Program I (NPU I) No. LO1503 MSMT of CR and by the projects of Charles University Prvouk P36, GA UK No. 1206417, SVV No. 260392.
Poster accepted

P67 Histological characteristics of 1 day and 5 days old bruises: a qualitative study

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Purpose: Bruises are common skin lesions that occur as the force hits the skin, but integrity of the skin is not impaired. Their significance is important in forensic expert reports in determining the time of death in many cases of domestic violence or child abuse. The purpose of this study was to note the differences between bruises with different time of origin, by evaluation of their histological characteristics.
Material and methods: The study was conducted with 24 human skin samples divided into control group and experimental groups A and B. The experimental group A includes bruised human skin samples with 1 day old bruises and experimental group B includes bruised human skin samples with 5 days old bruises. Paraffin sections of the skin were stained with Hematoxillin-eosin and Perl`s Prussian Blue methods of staining, evaluated by light microscopy.
Results: Qualitative histological analysis in group A demonstrated presence of dilated fibrous septa in dermis and hypodermis with extravasated erythrocytes due to ruptured blood vessels and intense infiltration with granulocytes. In group B was noted infiltration by macrophages and presence of hematoidin granules in the field of bleeding, despite signs of bleeding, dilated fibrous septa and extravasated erythrocytes,
Conclusion: Our results have shown granulocyte infiltration shortly after the initiation of the bruise, while after few days of initiation, usually 4-5, there is macrophage infiltration in the field of bleeding. These histological characteristics appear in direction of healing of the bruise, together with phagocytosis of the erythrocytes and removing of the tissue debris.

P68 Reactive changes in mesenteric lymph nodes in wistar rats after long-term administration of medroxyprogesterone acetate

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Purpose: The purpose of our study was to determine eventual structural changes in the mesenteric lymph nodes tissue induced by therapeutic and maximal therapeutic doses of medroxyprogesterone acetate (MPA).
Methods: The experiment was conducted with 36 female Wistar rats divided into 3 groups. The control group of rats received saline, while the other groups were treated with MPA at a therapeutic daily dose of 30 mg/kg bw and maximal therapeutic dose of 150 mg/kg bw. The substances were applied intramuscularly, for 15 days. Paraffin sections of the mesenteric lymph nodes were stained according to the methods: hematoxylin-eosin, elastica Van-Gieson and Periodic acid - Schif. Qualitative histological and quantitative morphometric analyses were done.
Results: Qualitative histological analysis of mesenteric lymph nodes has shown distinct reduction of the nodular and internodular cortex, paracortex and medulla. It was noticeable reduction in the size of lymph follicles followed by disappearance of their germinal centers. At some places it was registered complete disappearance of the cortex and parakortex, resulting in disruption of the typical organization of parenchymal tissue. Prominence of marginal, cortical and medullar sinuses was observed. Morphometric analysis confirmed the significant reduction of the diameters of the lymph follicles.
Conclusion: The results obtained in our study have shown that 15-days administration of MPA provoked reactive changes in lymphoid tissue pointed out to atrophy of mesenteric lymph nodes.

P69 Selenium effect on dexamethasone induced- lymphoid organ atrophy

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Introduction: Stress, diseases, some drugs and chemotherapy may induce lymphoid organs atrophy. Selenium (Se) is a chemical element with an immune-modulatory activity.
Objective(s): The aim of this study was to evaluate the effect of Se on volumetric changes of the dexamethasone (DEX) induced- lymphoid organ atrophy by stereological methods.
Materials& Methods: Thirty two rats were equally divided into four groups. These groups were administrated as: Group I (control): normal saline (0.5ml/kg; I.P, 3 days and O.P, 30 days), Group II: DEX (0.4 mg/kg/day; I.P, 3 days), Group III: Se (0.1 mg/kg/0.5 ml; O.P, 30 days), Group IV: Se plus DEX. Total volume and the volume density of different structures of thymus and spleen were estimated using stereological methods.
Results: The Volume of the thymus and its cortex, total volume of the spleen and volume density of white pulp, PALS, follicle, trabecular, and capsule showed a significant reduction in DEX-treated animals in comparison with the controls ($P<0.05$). DEX plus Se treatment animals showed increased total volume of the thymus and its cortex but Se exert no ameliorative action on the most reduced volumes of spleen except white pulp and its follicle in comparison to the DEX group ($P<0.05$).
Conclusion: Dexamethasone induces atrophic structural changes in the thymus and spleen of the rats. Selenium can ameliorate the volumetric changes mainly of the cortex of thymus and in lesser extent of the white pulp and follicles of the spleen in DEX administrated animals.
Dexamethasone, Selenium, Thymus, Spleen, Stereology.

P70 The O-linked N-acetylglucosamine containing epitope H (O-glcnach) is upregulated in the trophoblastic and downregulated in the fibroblastic cells in human chorionic villi with myxoid degeneration

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Epitope H contains an O-Linked N-Acetylglucosamine (O-GlcNAcH) residue in a specific conformation and/or environment recognized by the mouse monoclonal antibody H (mabH). O-GlcNAcH is present in several types of cells and in several polypeptides, including cytokeratin 8 and vimentin, the latter in cells under stress. The post-translational modification of serine and threonine residues of polypeptides by the addition of the sugar moiety N-Acetylglucosamine (O-GlcNAc) occurs in many cell proteins, which are involved in processes such as transcription, translation, protein compartmentalization, proteasomal degradation, competition with phosphorylation, which influence cell division, differentiation, development, apoptosis, resistance to stress.
Purpose: We examined the expression of the O-GlcNAcH in 60 cases of endometrial curretings from missed miscarriage cases containing normal and myxoid degenerated chorionic villi in each case, using mabH, indirect immunoperoxidase and western-blot immunoblot.
Results: In all cases examined the expression of the O-GlcNAcH was cytoplasmic and is as follows: 1) Syncytiotrophoblastic cells showed very low expression (VLE) in normal chorionic villi (NCHV) and high expression (HE) in myxoid degenerated chorionic villi (MDCHV). 2) Cytotrophoblastic cells showed low expression (LE) in (NCHV) and (HE) in (MDCHV). 3) Fibroblastic cells showed (HE) in (NCHV) and (VLE) in (MDCHV). 4) Histiocytes showed (VLE) in both (NCHV) and in (MDCHV). 5) Endothelial cells showed (HE) in both (NCHV) and in (MDCHV). A western blot- immunoblot from one case including only (NCHV) showed five polypeptides with 118,5 KD, 106,3 KD, 85 KD, 53 KD and 36,7 KD bearing the epitope H and the 53 KD corresponded to cytokeratin 8.
Conclusions: The expression of the O-GlcNAcH is upregulated in the trophoblastic cells and downregulated in the fibroblastic cells in the myxoid degenerated chorionic villi (MDCHV), in comparison to the normal chorionic villi (NCHV).

P71 The gradus of differentiation and the tumor size in correlation with the stromal invasion depth in SCC of lower lip

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Aim of the article is a correlation between the tumor size and tumor differentiation in relation to the depth of the stromal invasive front in SCC of lower lip.
Materials for analyze: In this study we analyzed 60 operative samples of lower lip in patients with SCC. The material has been embedded in paraffin blocks, and the histological sections of the tumor tissue and the surrounding healthy tissue have been stained with H.E. and have been analyzed by using a light microscope. In each of the samples the gradus of histological differentiation (G) and the tumor size based on the TNM classification (AJCC) have been determined. The depth of stromal invasion in each case was measured

on low power field (x40) using morphometric software.
Results: In 39 cases (65%) the neoplasms have pT1 tumor size (≤2cm) and in 21 cases (35%) pT2 tumor size (>2cm). With regard to the differentiation of the neoplasm, 34 cases (56.7%) have well differentiation (G1), 12 cases (20%) have moderately differentiation (G2) and 14 (23.3%) cases have poorly differentiation (G3). The lowest morphometric measured depth of the invasion was 1341,3 μm, and the biggest 14105,6 μm. The statistical analyses showed significance in relation to the size of the tumor and the invasion depth for $p<0.05$, Mann-Whitney $p=0.00001$, as well as significance in relation to the differentiations of the neoplasm and the invasion depth for $p<0.05$, Kruskal-Wallis $p=0.00001$.
Conclusion: Tumors with pT2 and poor differentiation of the neoplasm (G3) showed deepest invasion of the malign process.

NEUROSCIENCES

P72 Extradural features of intraspinal nerve courses

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Purpose: About 10% of misdiagnoses are based on ignorance of the anatomical variability. Newer imaging methods have opened space for the research of nervous system anatomical anomalies. Our work, is focused on the intraspinal extradural features of the peripheral nervous system. Peripheral nerve lesions differ from all other injuries by their clinical course and results, which are largely determined by complexity of the degeneration and regeneration processes. Material and methods: Study was performed on 33 cadavers within 24 hours after death (27 males, 6 females). Bodies were dissected in a prone position, with the wide and long laminectomy revealing the full spinal canal for the bilateral examinations of each spinal nerve root from its origin to its exit through the intervertebral foramen or sacral hiatus. The uncommon extradural features were followed and documented.
Results: Observations of the normotyped intraspinal of the brachial and lumbosacral plexuses prevailed. The frequency of anomalies raised in cranio-caudal direction: totally 19 non-standard extradural features were observed. Conclusions: In our works, we have repeatedly pointed to the importance of the individual approach in the analysis of the course and treatment results of the peripheral nerve injuries. Special attention was paid to the topographic differences. We think, that it´s neccesssary to know not only the „standard anatomical image", but also show what life brings in the clinics every day and on which the whole varying pathology depends. Obtained observations may be helpfull in explaining the differences between the clinical picture and generally accepted anatomical standards.

P73 Expression of the O-linked N-Acetylglucosamine containing epitope H (O-GlcNAcH) in human PNS

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O-GlcNAcH is present in several types of cells and in several polypeptides, including cytokeratin 8 and vimentin, the latter in cells under stress. PURPOSE:
In the present work, we examined the expression of the O-GlcNAcH in the elements of human PNS in embryos up to 13 weeks (13w) of gestasion and in adult tissues, and in nerve polypeptides, using mabH and the indirect immunoperoxidase in formalin fixed parafin embedded sections and the 10% SDS PAGE western-blot immunoblot for the polypeptides in fresh occulomotor nerve.
RESULTS: The expression of the O-GlcNAcH is as follows:
1) Positive staining was cytoplasmic. 2) Neural crest cells in about 25-26 days were negative and in 27-28 d. showed strong stain. 3) The ganglia of the sympathetic chain in embryos showed occasional neuroblasts with weak stain, whereas in the adult a minority of neurons in coeliac ganlia showed weak to moderate patchy stain and moderate to intense stain of the satellite cells. 3) Neurons and glial type cells of the submucosal and myenteric plexus of GI tract showed diffuse strong stain. 4) The embryonic DRG neural cells up to 13w. remained negative except for a positive transient paranuclear stained dot in 8w. and adult DRG were not examined. 5) Embryonic Schwann cells and nerve axons remained negative by 13w. 6) In adult nerves non-myelinating and myelinating Schwann cells showed strong staining, although the extent of the

myelin stain can not be appreciated so far, because no antigen retrieval means were used, and the nerve axons remained negative. 7) A western blot- immunoblot from one occulomotor nerve showed seven polypeptides bearing the epitope with 268, 189, 61, 57.5, 53, 49.5 and 35 KD.
CONCLUSIONS: There is heterogeneous expression of the O-GlcNAcH in PNS neurons and developmental expression in Schwann cells and further characterization of the polypeptides with the epitope might shed more light into the role of the (O-GlcNAcH) in the biology of these cells

P74 Relationship between APGAR score and temporal lobe hypoxia

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Introduction: The mesial temporal epilepsy (as a result of the hippocampus sclerosis) is the most common and most resistant to drugs kind of epilepsy. Is also one that could be treated with surgery with a high rate of success. However, we must study the different etiologies of hippocampus sclerosis to stablish prevention programs that decrease its frequency.
Purpose: Determinate the relationship between a low APGAR score and alterations in the temporal lobe by MRI diffusion sequence technique.
Patients and Methods: A qualitative, descriptive, correlational research was performed on 40 temporal lobes of newborns with less than 96 hours alive with an APGAR score same or less than 7, five minutes after they were born, hemodynamically and metabolically stable with a diffusion sequence by MRI
Results: On the 40 newborn temporal lobes studied with moderate perinatal asphyxia evaluated by the APGAR scale, anomalies were not observed in the MRI diffusion sequence that suggests alterations in the intra-extracellular exchange as the ones observed in the hypoxic–ischemic disorders. In the 15.38% of the population studied, it was possible to observe alterations in the diffusion sequence by MRI in other regions of the brain different of temporal lobes.
Conclusions: Perinatal asphyxia evaluated by APGAR does not relate with changes in diffusion sequence that suggests a hypoxic–ischemic condition on the temporal lobes, mean while other regions can be damaged or affected suggesting the possibility of a greater sensibility to hypoxia than the temporal lobe.

P75 Volumetry of insular opercula in patients with Alzheimer's disease

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Introduction: Innovative approaches to Alzheimer's disease and its treatment depend mainly on early diagnosis and differentiation from other dementias. The emphasis in dementia diagnosis is laid on both the molecular analysis and imaging techniques. We focused on using MRI for measuring insular operculum and its atrophy that progresses with advancing disease. We assume this area could be the next potential biomarker for early diagnosis.
Methods: The analysis contained MRIs of 64 patients with Alzheimer's disease and 39 control persons. Patients repeatedly undertook a battery of psychological tests evaluated by a neurologist and were divided into groups according to their age. Using the software ImageJ, the area of insular operculum was measured and statistically compared in the programme Statistica 10. The process of selection of measured slices was carried out according to our previous research – we chose so-called "ideal slice" (defined as the slice next after disappearance of amygdaloid nuclei and presence of hippocampus and its fimbria in the coronal plane) which we use in our established visual scoring system of hippocampal atrophy. Assessment of insular operculum would extend, support, and upgrade our "single slice" scoring system for neurologists/psychiatrics.

Results: After statistical comparison of measured areas in the ideal slices for both the right and the left hemisphere, T-test revealed significant results for areas of right operculum; p=0.044. Left operculum showed no remarkable result; p=0.065.
Conclusion: The statistically significant result found only for the right insular operculum offers a possible connection to the lateralised atrophy of the temporal lobe in hippocampal area – also right-sided. The noteworthy atrophy of adjacent cortex of right insular area in the plain of the ideal slice can now be used in our visual scoring system for early diagnosis of Alzheimer's disease in MRI, as a biomarker refining diagnostics using imaging methods.

P76 Correlation of cell proliferation, cell death and total granule cell number in the four-striped mouse (Rhabdomys pumilio) and common mole-rat (Crytomys hottentotus)

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In this study, cell proliferation, cell death and total granule cell number were examined in the dentate gyrus of the hippocampus in wild captive-bred and wild caught animal models of the four-striped mouse (FSM) (Rhabdomys pumilio) and common mole-rat (CMR) (Cryptomys hottentotus) respectively. Ki-67 and DCX immunostaining confirmed adult neurogenesis in the dentate gyrus of the hippocampus. Total granular cell number was used as a baseline to compare the rate of cell proliferation (Ki-67 positive) and cell death (pyknotic cells) in the dentate gyrus to investigate if cell proliferation leads to the recruitment of granule cells. High correlation coefficient was observed between cell proliferation and cell death in both experimental animals. The estimated total granule cell number in FSM was almost twice that of CMR. The estimated total granule cell number in dentate gyrus was between 1.65 x 10^6 and 0.9 x 10^6 with Gundersen coefficient of error of 0.05 (FSM) and 0.06 (CMR). Estimated total granule cell number in the FSM and CMR shows 69.7 and 44.4 percent increase compared to values from laboratory animal, 61.2 and 28.9 percent increase to values of wild rodents.

P77 Plastic change of basketball players' brain

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Many neuroanatomical structures such as cerebellum, striatum, pons and motor cortex have been known to play important roles in motor skill learning and memory from animal experiment and human researches. The continuous specific stimuli trigger the corresponding functional and structural plasticity of the brain, which covers from molecular level to behavioral level as an organism.
Our laboratory has investigated brain plasticity in response to motor activity in acrobat animal model, treadmill running monkey, and elite sportsmen with wide range of tools from electron microscope to MRI. We have analyzed the brains of basketball players with MRI based on the hypothesis, brain regions related with motor control would have morphological plasticity with manual segmentation. We found cerebellar vermis lobules (VI, VII) and striatum of basketball players are larger than that of control. In this study we employed the latest MRI analysis tools including VBM, Brain Surfer and FSL to understand holistic morphological evaluation of the basketball players to overcome the limitation of manual segmentation.
The VBM analysis result showed that increase volume of white matter of left precentral gyrus, and right superior semiluar lobule adjacent to vermian lobule VI, VII. Free Surfer analysis revealed increased cortical thickness of left precentral gyrus. FIRST analysis showed shape alteration was detected in left thalamic nuclei such as ventral anterior, ventrolateral, and pulvinar. In addition, left amygdala also showed morphological change in basketball players.
This study implies that plastic change of cortico-striato-thalamo-cortical loop and cortico-cerebello-thalamo-cortical loop are key modules in motor activities of the basketball players. In addition, this study suggests that non-motor function might contribute to these elite athletes.

GENDER MEDICINE

P78 Gender differences in spinal infection: a single-center retrospective study of 159 cases

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Background: Spinal infection (SI) is defined as an infectious disease affecting the spine and/or paravertebral tissue and is still known as a life-threatening condition. There are numerous factors which may facilitate the course and outcome of SI including advanced patient's age and comorbidities, but also gender. To date, no comparative data investigating sex differences is available. Thus, the purpose of the present retrospective trial was to investigate differences between male and female patients.
Methods: 159 patients that were treated due to a spinal infection at our department between 2000 and 2016 were included in the retrospective analysis. The patients were categorized into two groups based on gender. Evaluation included MRI, laboratory values, clinical outcome and conservative/ operative management.
Results: Male patients were treated conservatively significantly more often than female patients ($p<0.05$). Furthermore, operatively treated male patients showed a significantly higher risk for intraoperative complications ($p<0.05$) Nevertheless, after 12 months of recovery no significant intergroup differences were apparent.
Conclusion: Male patients suffering from SI more often receive conservative treatment than female patients. Nevertheless, their outcome after 12 months is comparably good and mortality rates are equal. Due to the similar outcome and the higher intraoperative risk for complication, men could therefore qualify for an initial conservative treatment with good prognosis in case of SI.

MOLECULAR BIOLOGY

P79 Focal adhesion proteins, vinculin and integrin β5, during early pregnancy in rat uterine epithelial cells: Anastrozole favors their normal distribution

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Purpose: An alternative superovulator to replace clomiphene citrate is needed as clomiphene citrate is associated with low pregnancy rates. Anastrozole is an effective superovulator, but it has not been well researched.
Methods: In order to determine the effectiveness of anastrozole as a superovulator and to compare it with clomiphene citrate in similar situations, this study ascertained the effects of these drugs on the expression of the focal adhesion proteins, vinculin and integrin β5, which are uterine receptivity markers, in the uterine epithelial cells of day 1 and day 6 pregnant Wistar rats. Results: The results show that vinculin and integrin β5 are co-localized at the base of the uterine epithelium at day 1 of pregnancy whereas at day 6, they disassemble from the basal focal adhesions and co-localize and significantly increase their expression apically ($p<0.0001$). Moreover, there is a significant difference in the protein expression levels of vinculin and integrin β5 in uterine luminal epithelial cells between untreated (control) and chlomiphene citrate treated rats ($p<0.0001$), anastrozole and chlomiphene citrate treated rats at day 6 ($p<0.0001$) suggesting the interpretation that anastrozole seems to enhance their expression in order to perhaps assist in the implantation process of the blastocyst.
The immunofluorescence experiments agree with the vinculin and integrin β5 gene expression findings in which at day 6 of pregnancy, vinculin and integrin β5 gene expression are significantly up-regulated in uterine luminal epithelial cells in the anastrozole treated group relative to the calibrator sample ($p<0.0001$).
Conclusion: These findings suggest that anastrozole is implantation friendly.
Poster accepted

P80 iPSCs from long-term cryopreserved human neonatal fibroblasts in feeder-free condition and their prospect for articular cartilage regeneration.

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Purpose: Cartilage disorders represent group of acute or chronic traumatic, degenerative, malignant or congenital pathologies. Current therapies only partially treat these disorders. The introduction of cell reprogramming methods and the generation of induced pluripotent stem cells (iPSCs) provide a new approach to treat and model cartilage disorders. The main goal of this study was to generate iPSCs from long-term cryopreserved human neonatal fibroblasts, perform their comprehensive analysis and asses their chondrogenic potential in vitro.
Methods: Thawed human neonatal fibroblasts were sub-cultured up to third passage. Then, they were reprogrammed by lipid nano-particle technology in combination with Epi5 reprogramming vectors and expanded in feeder-free condition. After 20 days, iPSCs were differentiated into chondrocytes by using chondrogenic medium and 3D and 2D culture system respectively. Fibroblasts were used as negative control. iPSCs were characterized by sophisticated methods of molecular biology and microscopy.
Results: Distinct colonies of iPSCs started to appear by day 20 after reprogramming and they were proved by alkaline phosphatase live staining. After manual picking the colonies and their subsequent passaging, they did not lose ability to form embryoid bodies, they were positive for Tra-1-60, and SSEA-5. Moreover, iPSCs expressed pluripotency markers Oct4, Sox2 and Nanog, and the expression levels of chondrogenic markers were significantly higher in comparison to control.
Conclusion: Long-term cryopreserved human neonatal fibroblasts can be reprogrammed into iPSCs and after further analysis concerns on their bio-safety they may be used in cartilage regeneration.

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TEACHING

P81 Significance of the head anthropology measurements in the medical students' education

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Series of diameters and indices are commonly used for detailed description of individual parts of cephalic and facial subparts of the head. Principal points (glabela, opistocranion, zygion, euryon, nasion, bregma, basion, gnathion) and indices (cephalicus and facialis) are included in the syllabus of skull lectures including their clinical significance. Craniometry is rarely a part of examining the skull and therefore the students often omit it, which causes lack of knowledge and possible wrong diagnoses in later clinical practice.
One of the basic indices used in clinical anthropology when describing head and its shape is index cephalicus. It represents the ratio of the highest biparietal width of braincase (euryon–euryon distance) and the highest occipitofrontal length of braincase (glabella–opistocranion distance).
As it was confirmed in clinical education in paediatrics in higher study years, this lack of knowledge of index cephalicus significance still remains, medical students are unable to describe deformities of children's heads and they cannot interpret clinical anthropologists findings correctly either.
Monitoring of anthropometric parameters of the head and especially head indices plays a pivotal role in clinical practice. Our presented index cephalicus is used for example when monitoring uneven head growth and especially after head shape corrections – solitary measurement of the head circumference is not adequate due to the possibility of prevailing outgrowth in one direction only.
As for the considerable clinical significance, we recommend to pay more attention to head diameters and indices, and subsequently evaluate students' knowledge during examination accordingly.
Study was supported by Charles University project PROGRES Q16.

P82 Students' perspectives towards teaching histology: conventional vs. virtual microscopy; the need of virtual microscopy in the undergraduate medical histology course at the Medical Faculty – Skopje

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Purpose: Although virtual microscopy (VM) became an integral part of many undergraduate histology laboratory courses/classes (HLC), it is still not being implemented at our University. Therefore, in order to follow the recent trend in histology education (HE) and implement VM in the most suitable way for the students, we conducted a survey which aims to evaluate their opinions towards the two teaching modalities for better quality of the future HE.
Methods: Teaching instructors (TI) familiarized students with VM usage from the beginning of the semester in order to bring it closer to the students and make it possible for them to compare both techniques and share their preferences. Students have continuously been instructed to benefit from the use of in-house access to publicly available virtual histology collections by accessing web-links in VM format. 285 first year medical students were enrolled in the study during the period January-May 2017. Students' opinions and preferences were assessed through a self-developed questionnaire.
Results: 88% of students reported in-house use of VM. 90% of respondents support VM implementation and expect higher quality during their HLC. However, the majority of them (72%) do not support the elimination of conventional microscopy (CM). 70% feel more inspired while using CM and find it more useful for developing practical skills. Moreover, 83% of the students reported that the role of TI is essential, despite the use of pre-labeled VM slides.
Conclusion: The vast majority of students support VM implementation at the HLC only as an additional tool beside the use of CM.

P83 A wake-up call for anatomists: Current status of cadaver sources in Turkey

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Purpose: In Turkey, cadavers are acquired by obtaining donated, unclaimed, autopsied, and imported bodies, the process of which is regulated under Act 2238. The difficulties in body procurement gradually led to these diverse applications. We aimed to outline cadaver sources in anatomy departments and their effectiveness.
Methods: Each department was approached by phone and invited to the study. Official websites of each department was investigated regarding any information on body donation or National Body Donation Campaign. IRB approval (date: 01.03.2016; number: 311) was obtained.
Results: Fifty-two departments responded to our survey. Unclaimed cadavers (84.8%) were the major source for anatomy departments which was followed by donated (50%) and imported cadavers (39.1%). Private universities were more likely to import cadavers (10/41 vs 8/11; p=0.008). There was a moderate increase (rs=0.567; p=0.018) in donation registrations to our department after 2000. Departments that used donated cadavers were housed in cities with significantly higher City Based Gross Domestic Product measures (21.652 vs 36.680 , p=0.041) and had significantly higher frequencies for mid- or high-school graduates (30.4% vs 31.3%, p=0.041) and under- or post-graduates (13.1% vs 15.8%, p=0.24). Reasons for using unclaimed cadavers were education (45.9%), unclaimed cadavers being the only source (24.3%), and receiving inadequate donations (21.6%). Nine (12.2%) departments provided information regarding body donation on their websites.
Conclusions: It is apparent that current legislature does not provide a sufficient cadaver inflow. Similarly, anatomy departments' effectiveness in public awareness on body donation and support in the National Body Donation Campaign seems questionable.

P84 Plastination of human body structures and animal specimens, and its employment in the practices of the health programs of the autonomous university foundation of the Americas and the central unit of ..

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The preservation of animal and human specimens for teaching and museum exhibits must incorporate traditional techniques of dissection and modern techniques in conservation, this guarantees the durability of the specimens, their maintenance and ostensibly reduces the risks of exposure to potentially harmful chemicals (Phenolic acid, formaldehyde, potassium peroxide, among others), with the ease of manipulation by teachers and students. This project integrates the needs of three programs of the Autonomous University Foundation of the Americas (Medicine, Respiratory Therapy and Veterinary Medicine and Zootechnics). Six specimens were dissected by anatomy planes: canine, feline, porcine and avian (two for each species) In addition to 3 human cardiopulmonary blocks and 7 human body structures, which will later be preserved with the technique of Silicone Plastination, S-10 according to the Von Hagens Protocol, modified in its dehydration stage in which the selected solvent Is isopropyl alcohol. Finally, with these pieces will be designed didactic instruments for their learning such as interpretation cards in both physical and virtual environments. It was found that these methods are invaluable in the development of skills and abilities required by students of Medicine and Veterinary Medicine and Animal Science.

P85 The preparation of the textbook for head and neck anatomy

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Purpose The anatomy structures of the head and neck are probably one of the most difficult part of human body to learn. In the past, the material available for learning was for Slovak students mostly focused on describing of systems (bones, vessels, nerves, etc.). There was a lack of material for learning regional anatomy of the head and neck. Our challenge has been to provide adequate text, to fit a new learning style.
Methods With the new teaching material was necessary to provide students with effective learning of anatomy structures (systemic anatomy) and in the same way with the understanding the importance of these structures when located in the middle of surrounding tissues (topographical anatomy).
Results The content of this material was aimed firstly to learn anatomy structures in body systems. Following, the regional anatomy should help students to understand location of structures and their meaning for clinical practice. Coverage of head and neck regions begins by description of bones, joints and the muscles, the vasculature and the nerves. This information is then integrated in the topographic anatomy of the head and neck. Finally, the material is provided with the anatomy of the eye and ear.
Conclusion By preparing of new learning material, we had establish the main goal, to help students learn anatomy of head and neck. The immediate sequence of learning simple anatomy structures to more difficult understanding of their location can contribute to learning anatomy of head and neck.
This work was supported by grants KEGA 005UPJŠ-4/2016 and KEGA 017UPJŠ-4/2016.

P86 Medical students' perception of cadaver images in anatomy education and scientific research

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Purpose: Fast implementation of technological developments, such as digital photographs and videos, in education and research gave birth to new ethical obstacles. We aimed to outline medical students' perception on the acquisition, use, and distribution of cadaver images.
Methods: After obtaining ethical approval (date: 25.05.2016; number:677), qualitative data from students were collected via an online survey. We asked the students to evaluate the use of cadaver images by the anatomy department (AD) and by students themselves.
Results: Nine-hundred-and-forty students participated to the study. Students agreed that the AD should use images in research (median: 5), theses (median: 5), and presentations (median: 5). They agreed that the AD should use images to produce lecture notes (median: 5), atlases (median: 5), and educational videos (median: 5). For research (75.5%) and education (72.9%), permissions from the donors should be acquired prior their death. Their opinions varied regarding student acquired images. They agreed that using and sharing these images without donor consent was unacceptable (median: 1). They were unsure about images from unclaimed cadavers (median: 3). They agreed that student acquired images could be considered as educational material (median: 4). They also agreed that some situations allowed the use of these images, such as inadequate lecture notes (median: 4), cadaver / student ratio (median: 4), wish to get high grades (median: 4), and wish to become a better physician (median: 4).
Conclusion: It is apparent that factors like student expectations and number of cadavers utilized affects students' ethical boundaries regarding cadaver images.

P87 The effect of the attitudes toward learningof the first aid and emergency programme students on the anatomy course achievements

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Introduction: On today's health education, understanding the functional relationships of anatomic structures on the diseases or injuries will provide the opportunity of fast diagnosis, application and intervention both in medical and pre-hospital field. İt is stated that by that way, the students are more willing to solve problems and to learn useful knowledge and skills. In this study, we compared the attitudes toward learning of the First Aid and Emergency Programme students with the anatomy course achievements.
Material and Methods: This study consists of at least 134 students attending the first class of the First Aid and Emergency Programme of Ondokuz Mayis University, with the percentages of 95% confidence and 3% error.
The attitudes toward learning scale which was developed by Kara (2010) has been used. The scale has 4 sub-dimensions as nature of learning, attitudes reflecting the expectations of learning, openness to learning and anxiety about learning. The data obtained from the attitudes toward learning scale and the theoretical exam results of the students from anatomy course have been evaluated.
Results: 35.4% of the students have stated that they always like anatomy course and 60% of them have stated that anatomy course is always necessary. 81.5% of them have explained that the visual materials will increase the course achievement further and 69.8% of them have reported that they have more difficulty on learning nervous system. It has been determined that the anatomy course achievement of the students differs from each other according to their studying and loving anatomy course ($p<0.05$). A negatively significant low relationship has been established between the attitudes toward learning and anatomy course achievement of the students ($r=-0.187$; $p=0.034 <0.05$).
Conclusıon: It is important to research and update the anatomy course materials and methods to make the attitudes of students positive about the anatomy course, a basic medical science.
Key words: Anatomy, Anatomy Course Achievement, Learning, The Attitudes Toward Learning

COMPARATIVE ANATOMY

P88 Anthropometric assessment of nutritional status in Macedonian children

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Anthropometrical measurements are sensitive, noninvasive and reliable and have a special place in children population
Aim: Evaluation of sex-specific differences of anthropometric parameters that were used as indicators for assessment of nutritional status in children.
In order to achieve these objectives 220 healthy children (110 boys, 110 girls) aged 6 from Macedonian nationality were analysed. We selected 5 anthropometrical parameters to measure (body weight, height, mid upper arm circumferences-MUAC, skinfolds thickness triceps-SFTr and subscapular-SFSc) and in addition according to the standard formulas we calculated: weight-for-age (BW), height-for-age (BH), body mass index-for-age (BMI), mid upper arm circumferences-for-age (MUAC), and skinfolds thickness-for-age (SFTr and SFSc).
In general, results have shown sex-specific differences in the examined parameters (BH, BW, BMI) in favour of the boys. On the other hand, skinfolds thickness (SFTr and SFSc) were significantly higher in girls.Values of the 50th percentile in boys were as follows: 23 kg for BW, 119 cm for BH, 16.18 kg/m2 for BMI, 16 cm for MUAC, 4.2 mm for SFSc, and 7.5mm for SFTr. The values of these parameters in girls were: 21 kg for BW,117. 2cm for BH,15.41 kg/m2 for BMI, 16.5cm for MUAC, 4.8mm for SFSc and 8.5 for SFTr.
These results can be used as criteria for assessment and detection of deviations in the nutritional status of children aged 6 from Macedonia.
Kye words: anthropometry, children, nutritional status

P89 Teaching anatomy when there are no corpses: The pig as an experimental animal model for the development of surgical skills in students of human medicine, dentistry and veterinary medicine

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Advances in the area of medicine are important and necessary for the welfare of society, have the main objective of applying the knowledge or results obtained in humans, and as part of this experimental surgery in animals is a tool that allows To achieve it
Research in animal models of experimentation is a tool that allows the acquisition of knowledge prior to the application of the same in a human being. The objective of this work is to present an illustrative and guided basis of the dissections that can be made in the porcine animal model so that the students of Human Medicine, Dentistry and Veterinary Medicine achieve their surgical skills prior to their clinical training.

P90 Arterial dimensions of circle of Willis study by Magnetic Resonance Angiography

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Introduction: The circle of Willis is the most important part of collateral circulatory system of the brain and plays a vital role in redistribution of blood to all areas of the brain. The objectives of this study are to study the average dimensions of vessels forming the circle of Willis in a sample of Kosovo's population and to detect any sex-related and ages differences in these variations.
Materials and Methods: One hundred and fifty adult patients were observed by 3-Dimensional Time-of-Flight Magnetic Resonance Angiography.

Results: In our study, larger diameters and length of vessels forming the circle of Willis were observed in the younger subjects compared to older except the diameter of the middle cerebral artery which was about 0.7 to 0.9 mm larger in older ($p<0.01$). Length of the anterior communicating artery was about 0.2-0.3 mm larger in the older than younger ($p<0.01$). Also, all dimensions of the arteries are larger in male than female, except the diameter of posterior communicating artery that is larger in female ($p <0.05$) and length of the anterior communicating artery ($p<0.01$).
Conclusion: Our study showed the amazing great variability of the anatomy of circle of Willis in asymptomatic persons. But there were no marked differences between both sexes in most of the components and the mean diameters and length of the arteries. All of these arteries variations can influence in functional localization of the specialized areas of the brain and in showing asymmetry of these areas.
Keywords; The circle of Willis, TOF3D, MRA, Arterial dimensions, Length and diameter.

HISTORY OF MEDICINE

P91 150 Years of histology and embryology in Kiev

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In the late 60's of the 19th century Volodymyr Betz, Professor of Anatomy Department at Kiev University, developed method of CNS neurons staining by carmine. He used this method for the in-depth study of the cerebral architectonics and discovered giant pyramidal cells, which were later named after him. Understanding the importance of studying histology for medical students, the scientist had initiated establishment of Histology and Embryology Department at the Faculty of Medicine with the University graduate P. Peremeschko elected its first Head.
Prior to taking this job in Kiev P. Permeshko had worked in the field of histology in Kazan, where he studied the process of striated muscles regeneration. In Kiev Professor investigated the process of cell division. He described cytokinesis in Triton larvae and Ascaris eggs and published his works in "Archiv fur Mikroskopische Anatomie".
The next bright page of histology history was activity of Prof. A. Cherniahivsky at Kiev Medical Institute. He had conducted profound study of the heart and internal ear innervation and described multinucleated neurons in sympathetic ganglia. Results of his work were published in "Zeitschrift fur Zellforschung und mikroskopische Anatomie" and "Travaux de Laboratoire de Recherches Biologiques". Scientist visited Cajal Institute in Madrid and disseminated the method of silver impregnation throughout Ukraine.
Chernyahivsky's successor Prof. S. Shahov was a prominent embryologist, who studied development of different mammals from early to late stages. Unfortunately, due to the closed nature of the soviet society results of his investigations have never become known outside Ukraine. The same can be said about brilliant neurohistologist Prof. M. Zazybin.
Nowadays histological and embryological studies are conducted in Kyiv at Bogomolets National Medical University, Kyiv Taras Shevchenko National University and some other universities and scientific research institutes.

VARIA

P92 A case report: Bilateral coronoid hyperplasia

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Introduction: Coronoid hyperplasia (CH) is an uncommon event that can be described as an abnormal bony elongation of normal bone. The etiology of CH is not explained yet, and usually CH cases are not diagnosed easily because of complex anatomy and confused other diseases. The main clinical finding of CH is progressive, painless difficulty in opening the mouth because of the impingement of the hyperplastic coronoid process with the temporal surface of the zygomatic bone or medial surface of the zygomatic arch.
Case Report: A 17-year-old male patient was referred to our dental clinic with a history of limitations in mouth opening. His medical anamnesis was not significant. There were no musculoskeletal anomalies, con-

genital bone dysplasia, or trauma. Clinical examination did not reveal facial asymmetry, deviation, or pain. Due to cone beam systems can produce three-dimensional data with very low radiation doses at a time, the patient had been scanned with CBCT (NewTom 5G FP Verona, Italy).
Discussion: CH was first defined and named as Jacob disease by Jacob in 1899 as joint formation between an osteochondroma of the coronoid process and the zygomatic arches. The etiology of CH is not clear, and it could be related to developmental changes, bone pathologies (such as osteochondroma, exocytosis, and osteoma), increased temporal bone activity, genetic inheritance, endocrine stimulus, and trauma. In conclusion the diagnosis of CH is confusing, and radiographic examination especially CBCT is essential.

P93 Anthropometrical parameters for assessment of nutritional status and growth in preschool children

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The aim of this research is to present body mass index (BMI) data in preschool children and provide the information on the prevalence of different categories of nutritional status and growth during the childhood. The study included 300 preschool children (150 boys and 150 girls). Stature and body weight were measured, and the BMI value was calculated. Eleven anthropometric parameters were measured such as body weight, body height, longitudinal and transversal diameters and skin folds for triceps and scapula. We used standard equipment and measurement technique according to the International Biological Programme (IBP).
Values of anthropometrical parameters have shown significant age and sex specific differences in favor of female subjects. Values at the 50th percentile in our females and males subjects for the weight-for-age index were 20 kg. The height-for-age index values corresponding to the 50th percentile showed slightly higher values in our female subjects 115.4 cm, and those in our male subjects was 113.5 cm. The values of 50th percentile of BMI in our females subjects was 15.64 kg/m², whereas in our males was 16 kg/m².
These results show that obesity prevention is recommended, and the detected values could be applied for evaluation of deviations in growth and nutritional status in preschool children.
Key words: anthropometry, preschool children, nutritional status, growth, assessment

P94 Volumetric changes of pineal gland in patients with schizophrenia

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Purpose: Recently neuroimaging techniques have enabled researchers to identify many structural brain changes that are associated with schizophrenia that may be used as useful biomarkers. In this study we investigated the volumetric changes of pineal gland that are associated with schizophrenia using standard brain segmentation.
Methods: in this study 135 subjects (82 controls and 53 schizophrenic patients) were included after they were voluntarily consented. MR brain imaging obtained using (MP-RAG) protocol. And the images were analyzed using free server computer software. The results were analyzed using SPSS version 21.
Results: The intracranial volume, which used for head size correction was found to be significantly smaller among patients with schizophrenia ($p<0.001$). According to the findings of the present study, the volume of the pineal gland showed significant differences between patients and control (47.78±20.85mm3 and 63.57±26.44mm3, respectively). The mean volume of the pineal gland in patients was significantly lower than that of the controls ($F(1; 131) = 12.563$ $p=0.001$).
Conclusion: Based on these findings, patients with schizophrenia have smaller brains than normal population and their pineal glands are also significantly smaller. We concluded that MRI can be used to evaluate structural brain changes associated with schizophrenia and pineal gland may have a role in the pathogenesis of schizophrenia.
Key words: Schizophrenia, Volumetric changes, Pineal gland, Magnetic resonance images, Automatic brain segmentation

P95 Shock waves enhance neuronal survival and improve motor function after traumatic spinal cord injury

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Objective: Shock wave therapy (SWT) has been shown to induce tissue regeneration and improve function in spinal cord ischemia via TLR3. Here, induction of angiogenesis and alteration of microglial response could be observed. We hypothesized that SWT induces regeneration in traumatic spinal cord injury.
Methods: SWT was performed in a murine contusion model in wild-type (WT) and TLR3$^{-/-}$ mice. Animals received 500 shock waves at 0.1mJ/mm2. Functional performance of animals was evaluated. Spinal cord lesions and bladder size were quantified and evaluated via MRI. Dorsal root ganglia (DRGs) were isolated and neuronal outgrowth, sprouting, survival and metabolism were evaluated. Also, human spinal slice culture was performed.
Results: SW treated animals showed significantly improved motor function and decreased neuronal degeneration. MRI revealed reduction of lesion size. SWT resulted in upregulation of angiogenic genes and modulation of inflammation. Treated animals showed a survival benefit. We found enhanced neuronal regeneration, reduced apoptosis and improved metabolism after SWT. Effects were TLR3-dependent.
Conclusion: SWT induces spinal cord regeneration via enhanced neuronal regeneration, reduction of apoptosis and stimulation of cell metabolism. Treated animals show improved motor function and survival. All observed effects are TLR3-dependent. SWT could develop a potent regenerative treatment option for patients with spinal cord injury.
Keywords: Traumatic spinal cord injury – shock wave therapy – neuronal regeneration – toll-like receptor 3

P96 Morphologic analysis of spinal cord ischemia/ reperfusion injury caused by aortic cross clamping in a rat model

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Background: Spinal cord ischemia couses devastating postoperative complications after surgery of aortic aneurysm. Here, we report the longitudinal analysis of activity and number of neurologic cells in the area of aortic clamping.
Methods: Transient aortic occlusion was produced in rats by cross – clamping of the abdominal aorta for 45 minutes. Animals were sacrificed at 1, 6 and 48h after reperfusion to determine time correlated changes in activity and number of neurologic cells in spinal cord. Spinal cord tissue was analyzed by immunofluorescence method.
Results: In the present study, ischemia/reperfusion injury of spinal cord was manifested by significant loss of neurons after 48h of reperfusion. Surviving neuron cells showed expression of Nrf2 with its nuclear translocation. Longitudinal analysis of neuronal number showed that loss of neurons in dorsal horn was limited to lumbar part of spinal cord. Analysis of GFAP positive cells revealed moderate increase in number 6h post reperfusion in lateral part of spinal cord, while 48h post reperfusion this increase was even more pronounced compared to sham animals. Longitudinal analysis of spinal cord revealed that astrocyte activation is present even in thoracic parts of spinal cord.
Conclusion: I/R spinal cord injury induces changes in number of GFAP and NeuN positive cells and these changes correlate to duration of reperfusion time. The surviving neurons express Nrf2 in their nucleus, which shows that the involvement of Nrf2 pathway is valuable in neuron survival.

P97 Role of Withania somnifera -Ashwagandha in ischemic stroke rat model produced by unilateral internal carotid artery ligation: a behavior analysis and staining with 2,3,5 Triphenyltetrazolium Chloride

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Introduction: A stroke is a medical emergency and can cause permanent neurological damage.The more extensive the area of brain affected, the more functions that are likely to be lost.
Objectives: To access and compare neurological deficits after 60 min of reperfusion after induction of stroke and 14 days after treatment with ashwagandha i .p. in different groups and to see infract area in brain using 2,3,5 Triphenyltetrazolium chloride (TTC) stain.
Materials and Methods: 21 Male wistar albino rats weighing 200–220gm, 7 in each group were randomly allocated to form 3 groups. Control group was made with only skin incision in neck region (Group A0), Experimental group with unilateral internal carotid artery ligation and Group with unilateral internal carotid artery ligation and treatment with ashwaganda 10 mg/kg i. p. for 14 days. Commercially available Withania somnifera (ashwagandha) root extract (Vitamin world. Inc. NY, USA) was used as intra peritoneal route. After 14 days of i.p injection, neurological deficits tests was assessed, animal were anesthetized and sacrificed. The brain was removed, cut in coronal section of 2mm thickness, immersed in TTC (Sigma Aldrich, Merck Group Germany) solution and incubated at 37 0C for 20 min. Images of brain section was captured using Nikkon DSC 501 model digital camera and the infract area was calculated using KLONK Image Measurement Software, USA. Inferential analysis was done by t- test to see the significant level at $p< 0.05$ with 95% confidence interval and ANOVA, Post Hoc test was applied to compare between different groups.
Results: There was red stained area in normal brain tissue indicating normal activity of mitochondrial enzyme activity- succinate dehydrogenase which caused conversion of 2,3,5 TTC to formazen, a tetrazolium salt. The white infarct area (unstained) was formed because of increased level of free oxygen radicals and reduced activity of succinate dehydrogenase enzyme after hypoxic ischemia caused by artery ligation. Area of infarct in the ashwagandha treated group as compared to non- treatment group after 14days was seen significant. There was significant differences in area of infract between Withania somnifera (ashwagandha) treated group and non-medicated group $p= 0.017$. Latency of fall off time in Rotarod test was seen significant ($p= 0.000$) in between the group while no significant difference was seen in grip strength test and in Grid walking (fault foot) test 60 min after reperfusion after the induction of stroke ($p= 0.71$)
Similarly, 14days after the induction of stroke, significant differences was present in different groups in rotarod fall off latency time test ($p= 0.043$) and Grid walking test ($p=0.002$), post hoc- one way ANOVA test.
Conclusion: Ashwagandha showed improved neurosensorimotor activities in stroke model produced after unilateral ligation of internal carotid artery.
Keywords: 2,3,5 Triphenyltetrazolium chloride –TTC, internal carotid artery-ICA, neurological deficits behavior tests, ashwaganda, intraperitoneal - i.p

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Ein paar Monate ohne Job komme ich schon über die **Runden.** Aber länger?

Manfred H., 31, Schwaz

Verstanden:

Die Generali Berufsunfähigkeits-Vorsorge.

Um zu verstehen, muss man zuhören.
Berufsunfähigkeit kann jeden treffen, leisten kann es sich lanfritig keiner. Die finanziellen Mittel, die Betroffene vom Staat erhalten, reichen in den meisten Fällen nicht aus. Unsere Berufsunfähigkeits-Zusatzversicherung hilft, Ihren Lebensstandard auch im Krankheitsfall halten zu können. Und für den Fall der Fälle ist eine individuelle Ablebensversicherung inkludiert.
Herbert Lener, M +43 664 3490249, herbert.lener@generali.com

Unter den Flügeln des Löwen.

GENERALI