
The 48th Annual Conference of the Anatomical Society of Southern Africa 2021

CONFERENCE BOOKLET

ASSA LOCAL ORGANIZING COMMITTEE

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Ms Z Ndlazi



Mr A Mkhize



Mr C Mbokazi



ASSA PRESIDENT

A (Virtual) Welcome to Durban!

Dear Colleagues and Friends

I am pleased to welcome you to the 48th Annual Conference of the Anatomical Society of Southern Africa (ASSA). This congress was planned for 2020 and at that time, the members of the Local Organising Committee (LOC) from the University of KwaZulu-Natal and the Durban University of Technology were very excited to showcase the culture and history of the city and the surrounding attractions by way of hosting the conference in Durban. As always this is an event to look forward to and we are always excited to see all the colleagues again, meet the students and learn about everyone's research projects. However, by March 2020, we were all becoming aware of the effects of the COVID-19 pandemic. Worldwide, scientific meetings were either converted to virtual meetings or cancelled altogether. The hope of still having a physical conference forced the date to be postponed to 2021.



To make up for this, a short-form ASSA World Anatomy Day virtual symposium was organised, while plans for a 2021 ASSA Conference went ahead. As it stands, the ASSA Council and the LOC both feel that there has not yet been significant improvements in the status of the COVID-19 pandemic in Southern Africa, and that the risk to our members and the attendees are still too great to support a physical meeting. Notwithstanding this, the LOC saw a switch from a physical to virtual conference as an opportunity to be innovative and help blaze the trail for future virtual conferences. One clear advantage is that participation and attendance will not be limited to those that could make the trip down to the South Coast, but instead this is an opportunity to make the 48th Conference of ASSA a much more inclusive meeting for both national and international attendees. Another advantage would be the fact that the LOC was able to recoup many of the initial expenses of the conference, which in effect means that they are able to waive registration costs to all attendees! With all of this said, I urge everyone to take this opportunity to participate in this historic meeting and invite your colleagues and students to consider joining as well. All will be welcomed and we look forward to an engaging, virtual meeting!

Sincerely,

Prof. Albert van Schoor

University of Pretoria

MESSAGE FROM ASSA 2021 CO-CHAIRS

Dear Delegates

Welcome to the 48th Annual Conference of the Anatomical Society of Southern Africa, a joint venture proudly co-hosted by the Durban University of Technology and the University of KwaZulu-Natal. The transformation of research and higher education that Anatomy has experienced over the last decade, in light of enhanced technology, student diversity and resource challenges, has fostered the revolutionization of medical research and education. To this effect, “Riding the waves of change”, was identified as the theme for the initial 2020 conference. This has never rung truer for our society where anatomy teaching, learning and research has undergone tremendous transformation in light of the current global COVID-19 pandemic.

The conference is an opportunity for delegates – including medical and veterinary clinicians, researchers and scientists with an interest in the anatomical sciences – to meet and interact in their specific areas of research. The conference integrates the different fields of anatomy including clinical anatomy, cell biology, histology, neurosciences, developmental biology, oro-facial biology, physical anthropology, palaeoanthropology, veterinary sciences, medical education and ethics. It is also envisaged that the conference will serve as a focal point for the engagement of young academics and students with each other and with senior academics and discipline experts across the country and globe.

The organizing committee would like to take this opportunity of inviting you and your colleagues to participate in our meeting and we look forward to welcoming you.

Thank you

Chairpersons of the Local Organising Committee

Prof. Lelika Lazarus (UKZN)



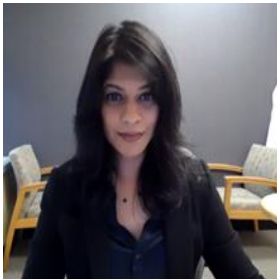
Prof. Julian David Pillay (DUT)



INVITED SPEAKERS



GABRIELE KRUGER is a First Technical Assistant and Forensic Anthropology Lab Coordinator in the Department of Anatomy at the University of Pretoria. She is currently working on her PhD, with the research focusing on assessing cranial variation among Indian South Africans when compared to previously assessed black, coloured and white South Africans. Potential outcomes of the research include the ability to provide possible ancestry estimates for Indian South Africans in forensic contexts to assist in the identification of unknown individuals. Together with Ms Leandi Liebenberg and the FARC team, another current endeavour includes promoting the standardisation of forensic anthropological case analyses by collaborating with the HEI and forensic anthropology labs across South Africa to create best practice guidelines as part of the Southern African Group for Anthropologists (SAGA).



NIRUSHA LACHMAN PhD is Full Professor and Chair of the Department of Clinical Anatomy, Mayo Clinic with joint appointment in the Department of Surgery, Division of Plastic Surgery at Mayo Clinic. Her primary focus lies in integrating patient centered anatomical knowledge for practice and research using anatomical data in translational approaches to close clinical practice gaps. Prof. Lachman's main educational focus is built on Mayo Clinic's BOLD FORWARD initiative of technological integration and advancement in driving new authentic anatomy curricula for practice-based learning. She is one of few clinical anatomists in the world who works collaboratively on a daily basis with clinicians in an active practice-based setting. In her 28-year career as a clinical anatomist, Prof. Lachman has contributed over 111 scientific publications in peer reviewed journals, 20 book chapters and numerous abstract publications, editorials and national and international presentations. Prof. Lachman's leadership role extends to Mayo Clinic institutional committees, the Council of the American Association of Clinical Anatomists, and holds the position of Associate Editor of Anatomical Sciences Education Journal under the oversight of the American Association of Anatomists.



WOJCIECH PAWLINA, M.D., is a Full Professor of Anatomy and Medical Education with joint appointment in the Department of Obstetrics and Gynecology at Mayo Clinic in Rochester, Minnesota, USA. He teaches gross anatomy, histology, and embryology to medical students, as well as residents and fellows. His research interest in medical education is directed towards strategies of implementing innovative teaching methodologies with emphasis on nontraditional discipline-independent skills, and professional identity formation process in early medical curriculum. He has published over 120 scientific publications in peer review journals and is an author of Histology and Anatomy textbooks and atlases. He is a Fellow of the American Association for Anatomy and Editor-in-Chief of the *Anatomical Sciences Education* journal.



BEVERLEY KRAMER is an Emeritus Professor at the Faculty of Health Sciences, University of the Witwatersrand, South Africa. She was Head of both the Department of General Anatomy (Faculty of Dentistry) and the School of Anatomical Sciences (Faculty of Health Sciences) at the University of the Witwatersrand (Wits), Johannesburg South Africa. She also served as Assistant Dean for Research and Postgraduate Support at Wits between 2008-2016. Professor Kramer has been actively involved in the training of thousands of undergraduate and postgraduate health sciences students and has co-authored three textbooks. Beverley's passion is in research and in capacity development. She has authored numerous articles in the fields of developmental biology, anatomical education and in research management. She has supervised postgraduate students at Masters and Ph.D. level. She currently mentors both early career and senior staff members. Professor Kramer has been the recipient of a number of prestigious awards, among these are the "Anatomist Excellence Award" (2012) from the International Symposium on Morphological Science and the J.F van Reenen Award for teaching on two occasions. In her role as Assistant Dean, Professor Kramer was awarded the prestigious DST/SARIMA award (2015) for "distinguished contributions to the research management profession" by the South African Minister for Science and Technology. She is the President of the International Federation of Associations of Anatomists (IFAA) (2014-2024).



ERIC SHEAHAN has worked as a Medical Photographer in his entire professional career of 30 years, with the last 21 years at the Mayo Clinic Rochester. He has been supporting all shields and locations of Mayo Clinic serving as the jack-of-all-trades related to photography and video. Eric has a BA in Professional Photography from Southern Illinois University where he interned at the SIU School of Medicine in Medical Photography. Eric has had many rewarding experiences which include being part of the team from Mayo Clinic's Media Support Services to win a regional Emmy for a short film following Mayo Clinic's first face transplant; he contributed still and video footage. His highest standard is to always be fresh and new each day to contribute the most for the patients, Mayo Clinic and his profession.



SEBASTIAN COTOZANA, M.D., Ph.D., Ph.D. is an associate professor of anatomy in the Department of Clinical Anatomy at Mayo Clinic College of Medicine and Science, Rochester, Minnesota. He additionally is an honorary professor of Pirogov Russian National Research Medical University, Moscow, Russia and a visiting professor at the University of Belgrade, Belgrade, Serbia. He teaches anatomy, embryology, and histology to first-year medical students, residents and health care profession students and his teaching focus is on advanced clinical anatomy for health professionals, residents and physicians. His research interest is in translational and clinical anatomical research with special focus on age-related changes of the human face and medical education. He has published more than 100 peer-reviewed articles, book chapters and online communications.



GRAHAM LOUW originally qualified as a veterinarian (BVSc) at the University of Pretoria, where he later taught the comparative anatomy of domestic animals while completing his doctoral degree (DVSc) in developmental neuro-embryology. He then returned to Cape Town to join the Faculty of Health Sciences as a senior lecturer and is now an Emeritus Professor. He has been teaching human anatomy, embryology and neurosciences for more than three decades. He holds a Distinguished Teacher's Award from UCT and a Masters in Philosophy in Higher Education Studies through the Faculty of Humanities. He is the current Chair of the Animal Research Ethics Committee of the Faculty of Health Sciences and has served two terms as President of the Anatomical Society of Southern Africa (ASSA). He is one of the regional editors of the Clinical Anatomy, the journal of the American Association of Clinical Anatomists.

He has been a member of ASSA since 1980 and served as Honorary Treasurer in the late 1980's and early 1990's, and again from 2014 to the present time. He was Chairperson of the local Organising Committee for the international meeting of the International Federation of the Associations of Anatomists (IFAA) in Cape Town in 2009. He is putting in a bid for ASSA to host the international meeting of the ISMS (International Symposium of Morphological Sciences) in August of 2022. Regarding Medical Education at UCT, he was one of the key figures in revising the traditional medical training of students and launching the PBL curriculum in 2002. He served for many years as Co-Chair of the MBChB Programme Committee, mainly overseeing Years 1-3 of the programme. He has been working on the details of a Graduate Entry Programme at UCT which will hopefully be launched within a couple of years from now. His research interests range from comparative anatomy to growth and development of school children to adult (tertiary) education, particularly regarding assessment practices. He has 40 publications in international journals and 8 in local journals. His cohort of postgraduate students reflect his interests in clinical and applied Anatomy, as well as in Medical Education. The groups of undergraduate and postgraduate students whom he teaches include the Medical students in various years of study, students studying a BSc in Physiology, BScMed, Biokinetics students, Biomedical Engineers, Honours in Applied Anatomy / Biological Anthropology, and Sports Medicine.



KAPIL SATYAPAL (PhD), is an Emeritus Professor and Fellow of the University of KwaZulu-Natal. He is a Clinical Anatomist and Surgeon: he has a Senior Doctorate in General Surgery and Fellowships from the Royal College of Physicians in Ireland and the US International College of Angiology. He also has a Masters in Medical Law and is appointed to the Medical and Dental Board of the HPCSA and the South African Medico-Legal Society Board. He has enjoyed an international reputation in Clinical Anatomy and Related Fields and has been a visiting Professor to several leading international universities including Mayo Clinic (Rochester, USA). He enjoys an extensive publication record and has attended several international and national scientific conferences and a member of various learned societies and editorial boards. He is an NRF rated researcher and has been the recipient of numerous grants from UKZN, NRF, MRC and various travel grants. He is also a recipient of the Chancellors prize for excellence in research.



CAROL HARTMANN (PhD), is a clinical lecturer in the Unit for Undergraduate Medical Education at the Faculty of Health Sciences University of the Witwatersrand in Johannesburg, South Africa. She is the co-Chair of the International Federation of Associations of Anatomists President's Emergent Anatomists Programme (IFAA PEAP), a member of the Federative International Committee for Supranational Anatomical Projects (FICSAP) and the Chair of the Education Interest Group of the Anatomical Society of Southern Africa (ASSA). She is passionate about curriculum evaluation, development and design as well as the effective use of technology to facilitate students' learning. In her current role as the MBBCh I and II Coordinator she is responsible for curriculum development in the first two years of the University of the Witwatersrand's medical program. Carol has received a number of awards for presentations at conferences and symposia and has authored publications on the role of nano-crystalline silver in wound healing as well as the developmental needs of early career anatomists.



ERIN HUTCHINSON (PhD), is a senior lecturer in the Morphological Anatomy Division of the School of Anatomical Sciences at the Faculty of Health Sciences in University of the Witwatersrand in Johannesburg, South Africa. She is also a member of the Anatomical Society of Southern Africa's (ASSA) council as well as the editor of the society's newsletter and chair of the ASSA terminology committee. Dr Hutchinson has also actively contributed to the Terminologia Anthropologica, currently in development under the IFAA. Dr Hutchinson is a course co-ordinator for the second year Oral Biology and regional anatomy for MSc Dentistry students and is actively involved in the training of undergraduate and postgraduate therapeutic sciences and dentistry students. Her teaching interests span the fields of morphological anatomy, craniofacial embryology and oral biology. In addition, she had recently co-edited the second edition of the Practical Anatomy dissection manual and co-authored a book chapter describing the anatomy of the juvenile craniofacial skeleton for use in age estimation of unidentified immature human remains within the Dental and Forensic Anthropological fields. Erin's passion in research is related to the development and growth of the craniofacial anatomy as well as its application within the associated clinical and forensic fields of study. She has authored articles in the fields of craniofacial development and growth, forensic anthropology as well as anatomical education, specifically highlighting the ethical acquisition of cadaveric remains for the teaching of anatomy. Erin has also supervised postgraduate students at Masters and Ph.D. level.



JOSE SANUDO (PhD), is a full Professor and Medical Doctor in Human Anatomy and Embryology, at the University Complutense of Madrid (Spain). He has investigated human anatomy and Embryology for the last 40 years, publishing over 138 indexed publications. He has received 16 competitive projects from the Spanish Government, directed or co-directed 16 Doctoral theses, published 31 book chapters or full books and 8 videos or CDs. He has also organized four International Meetings (Joint Meetings with BACA and ASGB&I) and around 65 continuing professional development courses (CPC) mainly for surgeons. Professor Sanudo is a member of several anatomical societies: SAE, Honorary BACA and SMA, and EACA Past President. In addition he is the co-Chair of the International Federation of Associations of Anatomists President's Emergent Anatomists Programme (IFAA PEAP). He is also Associate Editor of Clinical Anatomy, Surgical and Radiological Anatomy and Editor-In-Chief of the European Journal of Anatomy.



SHAHED NALLA (PhD), is a Professor at the Faculty of Health Sciences, University of Johannesburg. He commenced his academic career as a Human Anatomy and Physiology lecturer at the University of Johannesburg (then Technikon Witwatersrand) in January 1994, was promoted to Senior Lecturer in September 2011, and then to Associate Professor in October 2017. Appointed as Vice-Dean (Teaching and Learning) (reporting to the Executive Dean of the Faculty of Health Sciences) in July 2012 – June 2015; Re-appointed as Vice-Dean (Teaching and Learning) in July 2015 – June 2018. He was Acting Executive Dean of the Faculty of Health Sciences, University of Johannesburg, from 1 April 2018 until 28 February 2019; the Vice-Dean (Research, Innovation, and Internationalisation) (reporting to the Executive Dean of the Faculty of Health Sciences) in March 2019 – June 2020. He is also a Research Associate with the Department of Anatomy and Human Embryology of the Faculty of Medicine University of Valencia, Valencia, Spain, and was appointed as an Honorary Research Associate/Fellow of the Evolutionary Studies Institute (ESI) of the University of the Witwatersrand, Johannesburg (1 November 2014 – 30 June 2018).

Shahed is an external examiner for Masters dissertations and Ph.D. theses from the School of Laboratory Medicine and Medical Sciences College of Health Sciences, University of KwaZulu Natal (UKZN); moderator/external examiner for Anatomy offerings at the School of Anatomical Sciences, Faculty of Health Sciences, University of the Witwatersrand and at the Sefako Makgatho University; external reviewer of Anatomy offerings in South Africa and internationally; reviewer for National and International Journals in Anatomy/Clinical Anatomy/Palaeontology; reviewer for academic promotions and NRF applications panel reviewer. Research interests are in palaeoanthropology with a focus on thoracic morphology and vertebral column evolution, in clinical anatomy related to cervical vertebral variation in modern and archaic populations, and in the scholarship of teaching and learning (SoTL) in Anatomy education.



NERISSA NAIDOO (PhD), is an Assistant Professor of Anatomy at Mohammed Bin Rashid University of Medicine and Health Sciences in Dubai, United Arab Emirates. She completed her undergraduate and postgraduate education at the University of KwaZulu-Natal, South Africa, under the co-mentorship of Ghent University, Belgium through the INSPIRE project of the Erasmus Mundus Programme. In her study of the subacromial architecture, she devised the computational delto-fulcral triangle model to evaluate normal and pathological shoulder types. Her research contributions pertain to the degenerative and biomechanical aspects of three-dimensional musculoskeletal models, anomalies of arterial trees and blended instructional models in lesson plan dissemination, all of which have culminated in the publication of 30 peer-reviewed papers, 8 short papers and numerous conference presentations. In addition to being a member of the Golden Key International Honour Society, Prof Naidoo was a previous South African representative on the Council of Student Members and a past President of the University of KwaZulu-Natal Chapter. She is also a past recipient of the NRF Innovation Doctoral Scholarship (2015-2016) and she was selected as a Next Generation Women Leader 2020 by McKinsey & Company. Most recently, Prof Naidoo was awarded the Mutairu Ezimokhai Rising Teaching and Innovation awards at the Mohammed Bin Rashid University Excellence Awards ceremony 2021.



NALINI PATHER (PhD), is a Professor at the Faculty of Medicine, UNSW and the Chair of the Department of Anatomy. She leads the Applied Anatomy and Imaging Research Group. Nalini has in excess of 25 years of expertise in designing and implementing educational innovation in higher education in several countries. She is well-respected internationally as a learning innovator and is known for developing international collaborative learning communities. She has won several teaching awards including from the Australian government for successfully enhancing student learning and for developing staff capacity. Her research interests are surgical and paediatric anatomy, 3D digital technologies and imaging, ageing and medical education.



ALBERT VAN SCHOOR (PhD), is an Associate Professor at the University of Pretoria. He has been an employee of the University of Pretoria since April 2003 and completed both his MSc Anatomy (2004) (*Cum Laude*) and PhD (2010) as a staff member of the Department of Anatomy. His research focus has always been the clinical anatomy of regional nerve blocks, especially in a paediatric population, and examining the position of these nerves to avoid iatrogenic injury during surgical procedures. He is also involved with the study of neuroscience and brain development, as well as other facets of anaesthesiology – particularly venous access for catheter placement in both adults and children. In recent times – as the technology and availability of more advanced or specialised imaging modalities increased – his research has started to include these imaging modalities, in particular the use of ultrasound-guided clinical procedures.

During the time as an academic, Prof. van Schoor has published over 40 peer-reviewed scientific articles and has had the opportunity to present research at nine international conferences, most notably to speak at the Symposium for Paediatric Anatomy during the 17th Congress of the International Federation of Associations of Anatomists (IFAA) in 2009. Other highlights include presenting at the American and British Association of Clinical Anatomists meetings. However, much of his success within his research field comes from the successful recruitment and mentoring of postgraduate students. To date he has successfully supervised 18 senior postgraduate students (13 MSc & 5 PhD). He is excited to form part of the virtual mentorship hub during the 48th Annual conference of the Anatomical Society of Southern Africa where he will be available to interact with postgraduate students and share his experiences or answer questions that the students might have regarding the use of imaging modalities in clinical anatomy research.

ABSTRACTS

ORAL PRESENTATIONS

N. MOGALE, N. KEOUGH, M.A. DE BEER, A. MASENGE

Clinical outcomes following rotator cuff repair using the traditional open technique

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Introduction: Rotator cuff (RC) tears are a common occurrence with some publications documenting them as the most frequent presentation in clinical practice after lumbar injuries. This phenomenon seems to increase with the aging process. The aim of this study was to assess RC repair success after an open arthroscopic approach by evaluating a set of predefined pre- and postoperative variables pertaining to the surgery.

Method: Eighty patients (n=80) of age 40 years and older were recruited from the Life Groenkloof Hospital. Full medical history was taken and ultrasound performed on the affected shoulder to assess and confirm the RC tear and the size. Pre-surgery shoulder examination included identifying acromial type, measuring pain scores using the visual analogue scale (VAS) system and assessing the range of motion (ROM). Various shoulder performance scores were taken using the Simple Shoulder Test (SST), Constant score and American Shoulder and Elbow Surgeon (ASES) score. The shoulder was operated on, where the tear was re-measured and biopsies taken in patients on whom the torn RC was found reattaching to the humerus, histological analysis of the sample was carried out. The range of motion (ROM) was then re-documented at eight weeks and at six months' follow-up; this was compared to the initial assessment.

Results: A type II acromion was the most common, present in 84% of the patients. The VAS pain score was documented at 6 points, with the SST at 3 points and the ASES and constant score at 47.319 and 59.36, respectively. Significant differences were noted in the ROM between initial assessment and the eight-week follow-up ($p < 0.001$) and between eight-weeks and six-months follow-up ($p = 0.008$), with clear signs of healing and positive rehabilitation.

Conclusion: No re-tears and/or complications were noted at the sixth month post-surgery.

B.I. MAMABOLO¹, A. ALBLAS², D. BRITS^{1*}

The Accuracy and Repeatability of the Lodox Statscan Osteometric Measurements.

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Introduction: The role of forensic anthropologists is to create a biological profile of remains in advanced stages of decomposition, mutilated, burnt and/or skeletonized. With the rise in the use of radiographic imaging techniques in forensic science, especially Low-dosage X-ray (Lodox) in South African mortuaries, its use in forensic anthropology needs to be explored. This research, therefore, aimed to compare the accuracy of osteometric measurements taken from two-dimensional Lodox images of macerated bones with that of the corresponding dry bone material.

Methods: A total of 50 full-body Lodox scans with corresponding dry bones were selected from the Kirsten Skeletal Collection, housed in the Division of Clinical Anatomy, Stellenbosch University. Ten standard anthropometric measurements of the cranium, mandible and sacrum were collected from the Lodox scans and corresponding dry bones, including; bizygomatic breadth, foramen magnum length, foramen magnum breadth, height of mandibular body, minimum ramus breadth, maximum ramus height, mandibular length, anterior height of sacrum, anterior breadth of sacrum and the transverse diameter of the first sacral segment. The repeatability and accuracy of the osteometric measurements were assessed using Technical Error of Measurement (TEM), paired t-test, and Bland-Altman plots. All measurements were deemed repeatable, as all intra- and inter observer TEM's were below 1.5% and 2% respectively.

Results: No significant differences between the Lodox scans and dry bone measurements were encountered, except the height of the mandibular body and the anterior breadth of the sacrum. According to the Bland-Altman plot most of the differences were within the acceptable range of 2mm.

Conclusion: Therefore, the specified osteometric measurements can accurately and reliably be collected from Lodox scans.

P. MAASS¹, L. J. FRIEDLING²

Leading from the front – sex and ancestry variation of the frontal bone in a South African cadaveric sample.

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Introduction: The cranium is one of the most researched skeletal elements in the human body. However, in forensic and archaeological contexts, it is often fragmentary when recovered, which may limit possible analyses. Recent studies have indicated that certain isolated portions may be just as informative as the entire cranium.

Methods: This study used geometric morphometric analysis to evaluate shape and size variation of the frontal bone. Frontal bones of 777 adult South African individuals were digitized and superimposed using General Procrustes Analysis. Sex and ancestry groups were compared in terms of size through parametric testing, and morphology through multivariate analyses. Discriminant function analysis and leave-one-out cross-validation were used to assess the accuracy with which differences between groups could be used to classify sex and ancestry.

Results: Similar to previous literature, females presented with more gracile and rounded frontal bones while those of males were more robust and sloped, producing a classification accuracy of 79.3%. Frontal bone morphology of Black, Mixed and White ancestry groups varied mostly in width and slope, confidently separating groups with 85.9% accuracy. When sex and ancestry were combined, classification accuracy reached 83.3%.

Conclusion: These results suggest that the frontal bone morphology shows sufficient variation to allow separation of the sexes and closely related population groups. Obtained classification accuracies are similar to or even exceed those of the whole cranium, indicating that analysis of the frontal bone alone may be useful in contexts where the rest of the cranium is either unavailable or too fragmented.

D. J. VAN TONDER 1, A. N. VAN SCHOOR 1, M. L. VAN NIEKERK 2

Proximal tibial dimensions in a formalin-fixed neonatal sample when performing an intraosseous infusion.

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Introduction: Methods to administer intramedullary medication and fluid infusion dates to the early 20th century. Studies have shown that intraosseous access in the proximal tibia is ideal for resuscitation efforts. Fewer critical structures are at risk, and neither is the blood flow to the lower limbs compromised. Insertion of a needle in children younger than 5 years does have the risk damage to the epiphyseal growth plate however. The aim of this study was to determine the ideal intraosseous insertion site distal to the epiphyseal growth plate.

Methods: The sample consisted of both sides of 15 formalin-fixed neonatal cadavers. The following dimensions were measured on the superior surfaces of each section, the anteromedial border, cortical thickness, medullary space, and tibial thickness.

Results: The smallest cortical thickness (1.32mm), the largest medullary space (4.50mm) and the largest anteromedial surface (7.72mm) was seen at 10mm inferior to the tibial tuberosity. The most important finding of this study was that the most desirable location to gain vascular access when referring to the ratio between the cortical thickness and the medullary space was at 10mm inferior to the tibial tuberosity. This is followed by the locations at 20mm and 30mm inferior to the tibial tuberosity, respectively.

Conclusion: It is of utmost importance that health care professionals are familiar with the osteological sites that could be used safely, as well as having detailed knowledge of the anatomy of the proximal tibia.

Iliocapsularis muscle: anatomical description and relevance in orthopaedic surgery.

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Introduction: Iliocapsularis is a muscle overlying the hip joint that few anatomists have heard of. There is no mention of iliocapsularis in modern anatomical textbooks, with the exception of Gray's Anatomy: The Anatomical Basis of Clinical Practice. Although recent attention is being given to this muscle by orthopaedic surgeons who encounter it during anterior approaches to the hip, it remains hidden in the anatomical literature. The aim was to determine the morphological information reported on iliocapsularis by searching the literature for anatomical studies.

Methods: Electronic databases, included Pubmed and Google Scholar were searched with the terms "iliocapsularis", "iliacus minor", "iliotrochantericus", and "ilioinfratrochantericus" to identify anatomical studies. Articles describing the morphology of iliocapsularis were included.

Results: Only seven studies examining the anatomy of iliocapsularis have been published. The sample sizes of these studies were small, ranging from 11-115 hips. Attached to the anteromedial capsule along its entire length, iliocapsularis has the largest capsular contribution of any of the hip muscles. Thus, it is an important landmark in anterior surgical approaches to the hip joint. The nerve supply has only been investigated in one study, while the blood supply is described in a study as being from the deep femoral and lateral femoral circumflex arteries. The muscle fiber type is unknown. Although its function is still to be elucidated, iliocapsularis may play a role in stabilizing the hip joint.

Conclusion: Few anatomical studies have described iliocapsularis, which has become an important surgical landmark in anterior approaches to the hip joint.

Classification of the Musculocutaneous nerve patterns in fetuses

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Introduction: The musculocutaneous nerve is a terminating branch of lateral cord of the brachial plexus and is formed from spinal roots C5, C6 and C7. The anatomical variations of the Musculocutaneous nerve (MCN) are not unusual, literary reports have described the different courses that the MCN travels in the arm, however very few fetal studies have been conducted on the variations of the MCN. Therefore, the aim of this study was to describe the course of the MCN in fetuses and document variations, if any.

Method: In this study, a sample size of 25 fetuses were bilaterally dissected (n=50) using a stereomicroscope. The anatomy of the MCN was described using a classification system generated based on the findings of this study. Ethical clearance was obtained from Biomedical Research Ethics Committee (BE385/17).

Results: Type I (normal anatomy) of the MCN was found in 42/50 (84%) of specimens in this study. This study found a few variations, viz. 1/50 (2%) case of Type II (absent), 1/50 (2%) Type III (communication between the MCN and MN from the MN to the MCN), 4/50 (8%) cases of Type IV (communication from the MCN to the MN) and 2/50 (4%) cases of Type V (communication from the MCN to the MN, where the MCN does not pierce the Coracobrachialis muscle).

Conclusion: Therefore, this study provides evidence of variations of the MCN in fetuses that may help surgeons in the interpretation of abnormal innervation patterns in the arm.

Scavenging taphonomy in the rural Lowveld and Highveld of South Africa

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Introduction: Scavenging animals often scatter skeletal remains of forensic interest and leave bite marks. This study aimed to identify scavenging animals in the rural Lowveld and Highveld of South Africa, describe their scattering patterns, and bite marks on bone.

Methods: Ten pig carcasses (*Sus scrofa domesticus*) (40-80 kg) were placed at the University of Pretoria's Mierjie Le Roux Experimental Farm (Highveld) and the Wits Rural Facility (Lowveld), in summer and winter. Motion activated cameras recorded the scavenging. Scavenger species were identified and their behaviours, scattering pattern, and bite marks were described.

Results: Lowveld scavenging was primarily by vultures (hooded, white-backed, and lappet-faced). Marabou stork, slender and banded mongoose, genet, civet, warthog and honey badger also actively scavenged. Skeletonization occurred more rapidly in summer and were diffusely scattered within a radius of 7.1 m while winter cases were densely scattered within a radius of 5.7 m. Vultures skeletonized pig carcasses rapidly between 5 - 98 minutes and cleaned bones thoroughly with very minimal markings - primarily nonspecific scores. Highveld scavenging was primarily by black-backed jackals, however mongooses (slender, yellow, and water mongoose), porcupine, and honey badger were also active. Remains were commonly scattered in two directions within a maximum radius of 73.7 m. Scavenged remains were skeletonized between six - 75 days, with a faster rate in summer. Jackals caused minimal bite marks, isolated to superficial, nonspecific scores and punctures.

Conclusion: The described scattering pattern and bite marks will assist in the recovery and analysis of scavenged remains.

KOBEDI R- ABSTRACT MISSING

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The Shape and Course of the Internal Carotid Artery in Relation to the Sphenoidal Air Sinus: A Cadaveric Study

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Introduction: The internal carotid artery (ICA) is one of the delicate neurovascular structures found to be intimately related to the sphenoid air sinus. Trans-sphenoidal surgical approaches involve dissection of the posterior wall of the sphenoid sinus in close proximity to the ICA and this makes the artery susceptible to injury during these procedures. Intraoperative injury to a major vessel, such as the ICA is a serious adverse event that is associated with significant morbidity and risk of mortality. The purpose of this study was to investigate the shape and course of the ICA in relation to the different types of the sphenoid air sinus (viz. pre-sellar, sellar and post-sellar types).

Methods: Twenty-five cadaveric head specimens were cut mid-sagittally and studied bilaterally (n=50)

Results: The protrusion of the ICA in relation to the sphenoid sinus walls was observed in 74% of cases. The ICA was observed coiling and kinking in 37.8% and 45.9% of cases, respectively. It was straight in 16.2% of cases. A longer course of the ICA was observed in sellar and post-sellar sphenoid sinuses.

Conclusion: When performing skull base surgical procedures surgeons need be familiar with the anatomical and positional variations of the ICA in relation to the sphenoid sinus in order for serious complications to be avoided.

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The influence of coronary collateral arteries on left ventricular function in coronary artery occlusion

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Introduction: Coronary artery disease (CAD) is a major cause of morbidity and mortality globally, and in sub-Saharan Africa, CAD is an increasing source of death and disability. The functional significance of coronary collateral artery (CCA) in the human heart has been debated for decades. This argument has been compounded by the lack of a standard, systematic, objective method of grading and documenting CCA in man. CCAs serve as alternative conduits for blood in obstructive CAD. This study aimed to evaluate the impact of CCAs on left ventricular function in the presence of total coronary arterial occlusion.

Methods: The study group comprised the coronary angiographic records of 97 patients (mean age: 59 ± 8 years). CCAs were graded from 0–3 based on the collateral connection between the donor and recipient arteries. Left ventricular function was computed from the ventriculogram and expressed as ejection fraction (EF). Ethical approval (BE196/13) was obtained via University's Biomedical Research Ethics Committee.

Results: The mean EF of the patients with grades 0, 1, 2 and 3 CCAs were calculated as 50.4%, 47%, 60.5% and 70%, respectively. A significant difference was recorded in the mean EF calculated for the different CCA grades (p = 0.001). There was a significant positive correlation (p < 0.001; r = 0.478) between the mean EF and the CCA grades.

Conclusion: The patients with higher CCA grades had a better mean EF. Therefore, as the grade of CCAs increased, there was an improvement in their ability to preserve left ventricular function.

L NAIDU, CO RENNIE

An anatomical study of the extracranial course of the facial nerve.

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Introduction: Facial nerve paralysis is a common complication during parotidectomies, possibly due to the close relationship of the tumour and facial nerve (along its extracranial course). This study aimed to explore the extracranial course of the facial nerve in terms of branching patterns, variations and bony anatomical landmarks.

Materials and Methods: The sample consisted of 40 facial nerve specimens. The parameters recorded and analysed were trunk division, branching patterns (Types I-VI) and variations. The distance between the facial nerve trunk and bony anatomical landmarks (mastoid process, angle of the mandible and external auditory canal) was also measured. All parameters were classified and compared according to sex and laterality.

Results: Bifurcation of the nerve trunk was observed in 90% of cases, whilst trifurcation was observed in only 10%. Trifurcation cases displayed variations. Branching pattern Type V was observed most frequently (27.5% of cases), whilst Type I was observed least frequently (7.5% of cases). The six types were further subdivided into three subtypes, based on buccal branch origin. The angle of the mandible was the only landmark to display significant differences according to sex (p-value <0.001) and laterality (p-value =0.002).

Conclusion: The present study proposes the use of this classification system together with the three subtypes. All three landmarks displayed good-excellent reliability (ICC values: 0.82 - 0.95) as bony anatomical landmarks for the localization of the nerve trunk. Anatomical knowledge regarding the extracranial course of the facial nerve and bony anatomical landmarks, for its localisation, are of importance to surgeons during parotidectomies.

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Hepatoprotective Activities of Ethanolic Leaf Extract of *Moringa oleifera* on Cadmium Chloride-Induced Hepatotoxicity in Liver.

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Introduction: *Moringa*, a multipurpose plant contains high concentration of antioxidants, antiseptic, anti-inflammatory agents that protects against tissue damage. Cadmium chloride (CdCl₂) is an odourless, colourless, crystalline powder used in the manufacture of fungicides, in dyeing and printing textiles and in metal finishing baths. Repeated low exposure to CdCl₂ can cause liver and kidney damage. The present study was designed to investigate the hepatoprotective role of ethanolic leaf extract of *Moringa Oleifera* (MO) on CdCl₂ hepatotoxicity on the liver of albino Wistar rats.

Materials and methods: Sixty-six adult male albino Wistar rats weighing between 130g – 180g were used for the study. LD₅₀ was carried for both CdCl₂ and MO. The experimental rats were distributed into eight groups: A is control, while B, C, D, E, F, G and H, served as the treatment groups that received graded doses of CdCl₂ or MO or both simultaneously and at separate periods. Experiment lasted for two months and animals were painlessly euthanized. Liver tissues harvested for histological analysis and blood samples for investigation of biochemical markers.

Results: Group B demonstrated significant increase in serum level of ALT, AST and ALP when compared with control group and Groups C – H. Histological analysis showed distortion in histoarchitecture of liver of animals in Group B. However, animals in Groups C – H treated with MO alongside CdCl₂ in high and low doses showed normal and mildly distorted histoarchitecture of the liver respectively.

Conclusion: ethanolic leaf extract of *Moringa oleifera* showed appreciable potentials in protecting against deleterious effects CdCl₂-induced hepatotoxicity on the liver.

Anthropometric orbital measurements in a paediatric population.

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Introduction: The orbital cavity is pyramidal shaped, having a base and a long axis directed posteromedially. It is perforated by several number of foramina and fissures through which vital neurovascular structures exit the skull from the brain to reach the eye and face and vice-versa. This study aims to document the bony anthropometric orbital measurements in a paediatric population using computed tomography (CT) scans.

Materials and methods: A total number of ninety paediatric CT scans (fifty-nine males and thirty-one females) were obtained and grouped by age for each parameter. The CT scans were analysed and intercanthal, interorbital and lateral wall interorbital distances were measured with a RadiAnt DICOM Viewer.

Results: In this study, the interorbital, intercanthal and lateral wall interorbital distances increased with increasing age groups. Furthermore, for intercanthal and interorbital distances, males had greater distances than females in the 0-<2 years age group and as the age group increased, females had greater distances than males in the 10-<14 years and 14+ years age groups. With regards to the lateral wall interorbital distance, males had greater distances than females between the ages 0-4 years and after 8 years of age. After 17 years of age, both males and females reflected approximately similar lateral wall interorbital distances.

Conclusion: This study reports normal anthropometric orbital measurements in a paediatric population using axial CT scans which may be useful to clinicians when evaluating the presence of hypertelorism, hypotelorism and telecanthus.

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Grey matter atrophy in Nyaope addiction - Implications for local drug policy

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Introduction: Sub-Saharan Africa is one of the top three regions with the highest rates of opioid-related premature mortality. In South Africa, heroin is the most commonly abused opioid and Nyaope is the street name for the heroin-based drug cocktail that is devastating low-income communities yet policy makers are slow to implement adequate treatment for opioid dependence. Substance use disorders alter brain morphology in regions specific to the relevant receptor-ligand interactions of each drug. There are no neuroimaging studies to date that have examined the neuroanatomical sequela of nyaope addiction.

Methods: Nyaope users (n=28) and healthy, matched controls (n=30) were recruited from drug rehabilitation centers and the community of Johannesburg. Magnetic resonance imaging was performed using a 3T General Electric Discovery. FLOAT (3) images were obtained with dimensions 256mm x 256mm x 156mm, voxel size 0.937500, 0.937500, 1.200000, field of view (FOV) = 240, repetition time (TR) 6.04msec, time to echo (TE) 0.00msec, and flip angle of 0°. Data was analyzed using Freesurfer and MATLAB software.

Results: In comparison to the control group, nyaope users displayed significant grey matter atrophy in the mOFC, the DLPFC as well as in superior temporal, frontal and supramarginal gyri (two-sided t-test, $p < 0.05$, FDR corrected).

Conclusion: The cortical regions affected by nyaope use are similar to previous research of heroin addiction. By uncovering that nyaope has the neuroanatomical signature of heroin, policy makers may take notice and implement drug treatment policy according to WHO guidelines which recommends opioid agonist maintenance treatment as a basic requirement.

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Tessier clefts - numbers 3 and 4: presentation of soft tissue and bony deformities in a South African population

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Introduction: Tessier cleft numbers 3 and 4 are uncommon congenital craniofacial deformities. Tessier cleft number 3 runs from the philtrum of the superior lip, traverses the wing of the nostril and ends at the medial canthus of the eye. Tessier cleft number 4 commences between the philtrum and oral commissure in the superior lip, and ascends into the orbit, remaining medial to the infraorbital foramen. The associated clinical manifestation of each cleft type varies amongst patients. This study documented the soft tissue and bony deformities of Tessier cleft numbers 3 and 4 in a select South African population.

Methods: Seven out of fifty CT scans that met the inclusion criteria were assessed and analysed. The patient records associated with the selected scans were reviewed. The soft tissue and bony deformities characteristic of Tessier cleft numbers 3 and 4 were documented.

Results: The bony deformities present in the cases of this study included alveolar clefts, nasal septum deviation, hypertelorism, and maxillary bone defects. The soft tissue deformities included cleft lip, nasolacrimal abnormalities, eye dystopia, anophthalmia, and nasal ala defects.

Conclusion: The extent of the associated deformities of each case varied; however, the primary affected regions remained constant i.e. ocular, nasal, and oral regions. The variation in soft tissue and bony presentation warranted the need to document these clefts. This study will contribute to the anatomical interpretation of Tessier cleft numbers 3 and 4 in South Africa; and aid clinicians in the assessment, diagnosis, and management of such clefts.

R. MASIU, D. BRITS, M. STEYN

Review of 2019 cases involving women and children at the Human Identification Unit, University of the Witwatersrand

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Introduction: Crimes against women and children are reaching epidemic proportions in South Africa.

Methods: A total of 10 forensic anthropological cases involving women and children were analysed (out of 30 that were analysed in total) by the Human Identification Unit at the University of the Witwatersrand in 2019. Eight of these cases exhibited signs of trauma. This review seeks to demonstrate, using case studies, the violent nature of some of the cases. Each case that is received comes with varying amounts of accompanying information and documentation. It is, however, important that each analysis is conducted meticulously so as to divulge all the details that shed more light onto each case. One case, for example, was that of a known female where during analysis over 60 antemortem fractures were noted. This victim had suffered severe and repeated trauma in life. In another case, unknown skeletal remains were received with no additional information.

Results: The analysis revealed that the remains were of an adolescent female who exhibited multiple blunt perimortem impacts. A third case of a juvenile said to be 10 years old at the time of death exhibited multiple sharp force trauma in several areas of the skeleton.

Conclusion: All the victims showed evidence of perimortem trauma which may be linked to how they died and highlights that violence against women and children is a reality in South Africa. Forensic anthropological analysis is an essential tool when dealing with these cases, as it provides evidence that would not have otherwise been available.

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A morphological and morphometric study of the basilar artery

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Introduction: The basilar artery (BA) is formed by the confluence of the two vertebral arteries at the ponto-medullary junction and terminates at the ponto-mesencephalic junction. The vessel courses along the midline of the pons and is responsible for the vascular irrigation of the brainstem and posterior parts of the cerebrum. The objectives of this study were to investigate the levels at which the BA originates and terminates, as well as the length and diameter of the vessel.

Methods: Upon ethical approval (BE361/19), this study used computed tomography images (GE 128 slice Revolution Evo, 0.625mm slice thickness) as well as cadaveric specimens to describe the morphology and morphometry of the basilar artery.

Results: The BA was found to originate at the ponto-medullary junction and terminate at the ponto-mesencephalic junction in 70% and 75% of the sample size, respectively. In 43% of the study sample it was determined that both vertebral arteries were dominant. The most common pattern observed was the dominant lambda observed in 40.83% of the study sample. The mean length and diameter of the BA was determined to be 26.07 ± 6.17 mm and 2.82 ± 0.83 mm, respectively.

Conclusion: Variations among the gender groups were documented and trends and anomalies identified. An anatomical understanding of this vessel and its trends in a South African population with regards to the morphology and morphometry is imperative to the clinician in the diagnosis of many vascular-related pathologies such as: stroke, aneurysms and in rare cases hydrocephalus and vertigo.

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Qupath as a histology teaching tool, in Southern African universities; what we need, what we could use, and the compromise.

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Introduction: A lack of histological knowledge in undergraduate Medical students was identified in two southern African Universities; Stellenbosch University (SU) and the University of Namibia (UNAM). Various underlying reasons for this knowledge deficit have been identified e.g. staff reduction vs student increase. The University of Oulu (UO), in Finland, introduced a collaborative project with UNAM and SU, to address the learning deficit. The project involves the use of an online, whole slide image (WSI) analysis platform, called Qupath.

Methods: Lecturers from both Southern African Universities were introduced to the software, and the possible use in their context explored. Histology sections from SU, in existing practical applications, were digitally captured and collaborative learning units with formative assignments were developed in association with OU.

Results: The collaboration and support from European countries, such as Finland, have been welcomed by African Universities. However, the gap between westernized education and our context is expansive; student diversity, educational background, student maturity and English literacy should be considered when collaborative assignments are designed. Barriers such as infrastructure and internet deficiencies, limited technological support, and off-campus data restraints should be addressed prior to implementation.

Conclusion: If the barriers in implementing the learning tool can be resolved, Qupath could be used as an addition to current histology teaching, at both SU and UNAM. Future research into the use of this tool should include students' perception of continuous exposure to histology assignments versus formative assessment as well as objective measurements of enhanced learning.

Estimation of Cardiothoracic Ratio in Relation to Basic Anthropometric Parameters among Selected Adult Nigerians

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The precise diagnosis of cardiovascular disease is of immense clinical importance to the cardiac surgeons, pathologists and cardiologists. Cardiothoracic ratio by chest radiograph is a simple marker of cardiac size and a predictor of cardiovascular diseases. This study aimed to estimate the normal values of the cardiothoracic ratio (CTR) in relation to some basic selected anthropometric measured parameters such as height, weight, waist circumference, hip circumference and calculated parameters such as body mass index (BMI), body surface area (BSA), and waist hip ratio (WHR) among selected healthy young Nigerians adult in a University setting. Five hundred and sixty-seven (328 females and 239 males) subjects were recruited for this study. The mean age of the subjects was 21.93 ± 7.42 years (male 22.36 ± 4.00 years and female 21.70 ± 4.78 years). Two age groupings were used for this study (17 – 28 years and 29 – 40 years). All anthropometric measurements and calculations were done using standard procedures and formulas. Result from study showed that CTR across age grouping was increased both in males and females. The average CTR for this study in males was 0.4310 ± 0.03 while in females it was 0.4449 ± 0.042 . CTR showed positive correlation BMI, waist circumference, hip circumference and WHR which were the most common and consistent across different age groupings used for this study both in males and females. The study concluded that cardiothoracic ratio in relation to BMI, waist circumference, hip circumference can be used for surface diagnosis of possible cardiovascular disease.

POSTER PRESENTATIONS

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A morphological and morphometric analysis of the human insula

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Introduction: Since its initial description in 1796, the insula has been a ‘mysterious’ structure hidden beneath cerebral opercula and its role in cognition, emotional intelligence and sensory-motor systems is still being understood. The insula is divided into anterior and posterior lobes which generally consist of three and two gyri, respectively. The present study aimed to employ descriptive statistics to outline the morphology and morphometry of the human insula. Materials and **Methods:** Thirty cadaveric brains (n=60) obtained from the Discipline of Clinical Anatomy, UKZN (Ethics: BE604/18) were included in the present study. The temporo-parieto-frontal opercula were retracted to visualize the insula for morphologic and morphometric analysis.

Results: The shape of the insula was classified as either trapezoid (55%) or triangular (45%). The mean length of the insula was 41.0mm and the mean width was 23.9mm. On the anterior lobe, there were cases of four gyri (6.7%), three gyri (60%), two gyri (26.7%) and one gyrus (6.7%) present. On the posterior lobe, three gyri (3.3%), two gyri (78.3%) and one gyrus (18.3%) were present.

Conclusion: The anatomy of the insula is imperative during surgical removal of insula tumours and cavernomas in order to preserve branches of the middle cerebral artery which lie in the central insula sulcus. Furthermore, advances in clinical neuroscience is elucidating the role of the insula in emotional intelligence, cognition and disorders such as insula cortex epilepsy and autism. Therefore, the clinical relevance of this area warrants clinicians to have a detailed understanding of the anatomy of this structure.

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Developing early career anatomists: An international challenge

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Introduction: The initial years in an academic’s journey significantly influence their educational philosophy and professional persona. For early career anatomists (ECAs), recent changes in the role of the academic and reforms in health sciences education, confound the transition period into academia. Consequently, young academics must balance curriculum innovations and administrative duties while establishing their research career and adapting to their new role as an educator. Development of ECAs is vital for the future of the discipline. However little is known about the support ECAs require. Thus, this study explored the needs of international ECAs with respect to teaching, research and career/professional development.

Material and methods: An online survey was distributed to ECAs of member associations of the International Federation of Association of Anatomists (IFAA). The survey contained both closed- and open-response questions. Information on the level of academic appointment, training for teaching and nature of support required by ECAs for their development as anatomists was requested. Frequencies and 95% confidence intervals were calculated and answers to open-response questions were analysed qualitatively.

Results: Over 590 responses were received from ECAs globally. Training in clinical relevance and application of anatomy, support to establish collaborations, mentorship relationships and professional networks were repeatedly identified.

Conclusion: There is a need for both local and global initiatives that provide training and mentoring opportunities to assist ECAs through their transition into new academic roles. Partnerships between the IFAA, institutions, anatomical and educational associations could create these opportunities that will strengthen the future leaders in the discipline.

Urban scavenging of skeletal remains by the slender mongoose (*Galerella sanguinea*) in Johannesburg, South Africa

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Introduction: Unidentified human remains are frequently recovered in urban velds in South Africa. These often exhibit animal bite marks and are scattered by animals. The slender mongoose (*Galerella sanguinea*) is a common scavenger in urban and rural Highveld of South Africa. This study aimed to determine the scattering pattern of skeletonized remains by the slender mongoose and describe their bite marks on bone.

Methods: Six pig carcasses (*Sus scrofa domesticus*) (40-80 kg) were placed in a veldt in Frankenwald, Johannesburg. Motion-activated cameras recorded the scavenging. Motion activated cameras recorded the scavenging. Scavenger species were identified and their behaviours, scattering pattern, and bite marks were described.

Results: Mongooses scavenged and scattered remains in the advanced stage of decomposition. Mongooses were diurnally active (09h00-16h00) with activity peaking in the afternoon (14h00-16h59). The bones commonly scattered included the scapula, ribs, vertebrae and whole limbs. Skeletal remains were never scattered in more than two general directions (in a north-western and south-eastern) within a maximum radius of 10.49 metres. Bite marks were observed on the ribs, vertebrae, and mandible. Sternal and costal ends of the ribs were gnawed off with a crushed appearance. Gnawing on the mandible was concentrated on the angle of the mandible with multiple parallel scores on the flat surfaces and the angle margin having a stepped appearance.

Conclusion: The described scattering pattern will assist in recovery of scattered skeletal remains. The description of bite marks will assist in differentiating between perimortem bone trauma and taphonomic alterations.

EE. ANIRUDH, L. LAZARUS

Aberrant origin of the left common carotid from the brachiocephalic trunk

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Introduction: According to standard anatomical textbooks, there are three branches that arise from the aortic arch viz. brachiocephalic trunk, left common carotid and left subclavian arteries. These vessels are responsible for the vascular irrigation of the upper limbs as well as the viscera of the head and neck. Embryologically, the aortic arch, including vessels in the head and neck are formed from the fusion and degeneration of the six aortic arches. The common carotid artery is an embryological derivative of the third aortic arch. During development, some vessels may become conjoined or fail to join resulting in variant origins of vessels.

Methods: We present a case of a variant origin of the left common carotid artery from the brachiocephalic trunk observed in a 64-year old South African male on computed tomography (BE361/19).

Results: The origin of the vessel was at a distance of 5.30 mm from the origin of the brachiocephalic artery and the diameter of the vessel was 3.85 mm. The common brachiocephalic trunk was 6.11mm in diameter.

Conclusion: The artery was noted to be tortuous in its trajectory within the mediastinum, thereafter it returned to its standard anatomical position. This type of variation is imperative to the clinician when analysing radiographic images of the thorax as well as during endovascular procedures in the thorax and neck.

N. NAIDOO, R. KHAN, G. AL-SHARIF

A cross-sectional investigation appraising perceptions of body donation for medical education and research in the Middle East: A Proof-of-Concept Study

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Introduction: Cadaveric dissection is the traditional method of delivery for anatomy education, providing a kinesthetics learning experience that is often challenging to achieve with other teaching techniques. However, due to lack of body donation programs in Middle Eastern medical schools, cadavers are imported from abroad. Since literature suggests that the cadaver shortage in the Middle East is influenced by reluctance to donate one's body, this study aimed to determine the perceptions of faculty, staff and students regarding body donation for educational purposed at a new Dubai-based medical school.

Methods: An online dually translated questionnaire was administered to one-hundred and fifty individuals (n = 150), representative of faculty, staff and students. The questionnaire was categorized into two parts, viz. (i) Socio-demographic information, and (ii) Perceptions and attitudes towards body donation for teaching and research.

Results: Although 92.0% of participants considered body donation to be an altruistic act that is appropriate for educational purposes, only 30.0% of participants expressed willingness to donate their bodies.

Conclusion: The cadaver was primarily perceived as the First Teacher and participants reported that body donation directly impacted their educational trajectory as it provided an unforgettable hands-on learning experience. Conversely, reluctance to donate (70.0%) was influenced by religion, wastage and misuse of cadaveric tissue, familial belief, prior exposure to cadaveric dissection and lack of knowledge. This provided insight into the level of awareness of faculty, students and staff regarding body donation for teaching and research and also emphasized the consideration of relevant socio-demographic factors of a population when establishing body donation programs.

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E-learning resources in undergraduate anatomy education: awareness and use at UKZN

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Introduction: E-Learning is the use of technology for education to supplement traditional class-based learning. E-Learning promotes student-centered learning and enhances activities that promote collaboration, communication and interaction. The Department of Clinical Anatomy at the University of KwaZulu Natal (UKZN) services a large diverse student body where learners are faced with infrastructural challenges. A drawback of eLearning is that information may not be authenticated as it comes from various sources. This study examines the nature and the extent of eLearning activities at UKZN in the anatomy undergraduate programme.

Materials and Methods: A total of 92 B. Medical Science students from UKZN voluntarily participated in the study (BE119/19).

Results: A total of 91% of students reported the use of e-learning resources for anatomy. Blended learning (72%) was the preferred style as opposed to didactic instruction (10%). A total of 59% of students accessed the UKZN eLearning platform (Moodle). eBooks obtained from Clinical Key were only used by 32% of the sample. A total of 83% of students accessed Primal Pictures. Access to online material occurred either via student laptops (41%) or their mobile phones (29%). The majority of students (62%) were satisfied with their preferred e-learning platform.

Conclusion: The findings of this study indicate that the level of eLearning usage and adoption is optimal at UKZN in the B. Medical Science program. However, whilst most students utilize e-learning resources and prefer blended learning, they are not making use of all platforms available to them.

C. LANDSMAN, A. MEYER and M. STEYN

Assessment of skeletal remains recovered from a Late Iron Age site located on Van Zyl's farm, Clarens

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Introduction: Several skeletons were discovered at Van Zyl's farm in Clarens in 1933. There is little information pertaining to the site and excavations. The aim of this study was to analyse and describe these skeletons to better understand their past life ways.

Methods: The skeletons are currently housed at the University of the Witwatersrand. The remains were in a commingled state necessitating the estimation of the minimum number of individuals (MNI). Additionally, each skull was analysed for demographics and pathological lesions.

Results: The results indicate a MNI of 11. Additionally, there was one complete and intact male individual which raised the total MNI to 12. There were three juveniles and nine adults. There were approximately five males and four adult females. Craniometric analysis, using FORDISC, suggested that the group was closely aligned with the Teita population group, but the typicalities were low. This correlates with the Eastern stream migrations. Osteoarthritic changes, advanced dental wear and periodontitis were common. One female individual had a dental modification. The health of the sample was difficult to infer due to the small sample size. The complete male individual was unique. A radiocarbon date of AD1150-1270 was obtained from the complete individual, placing these skeletons into the early part of the Late Iron Age.

Conclusion: The date is of significance as it predates many of the Iron Age sites for this region. This sample could possibly represent one of the proto-Nguni speaking populations that were part of the early expansions into the grasslands.

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Attenuation of the deleterious effects of bisphenol-A in wistar rat offspring brains by fermented rooibos herbal tea consumed during gestation and lactation.

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Introduction: Bisphenol A (BPA) is an endocrine-disrupting chemical used in the production of a range of consumer products, despite concerns about its safety. Only few studies have reported on the neuroprotection strategies in cases of BPA exposure during gestation and early postnatal life. Fermented rooibos (*Aspalathus linearis*) herbal tea (FRHT) and other herbal teas have been reported to have significant neuroprotective properties against tissue damage caused by a number of neurotoxic agents through different mechanisms that prevent cell death, oxidative stress, inflammation and morphological changes. This study aims at investigating the protective effects of FRHT against the deleterious effects of BPA in a Wistar rat model, considering the widely acclaimed health benefits often linked to the polyphenolic compounds in this tea, especially aspalathin.

Methods: Forty pregnant rats (3-month old, average weight 250g), were randomly assigned to four groups (n=10) and exposed ad libitum to 9% normal saline, 400µg/kg/day BPA, 20% FRHT as well as 20% FRHT mixed 400µg/kg/day BPA, respectively. Offspring were weaned on postnatal day (PND) 21 and neurobehavioural assessment was done using the open field apparatus on PND 42. Animals were sacrificed and tissues of interest removed for histological, biochemical and immunohistochemical studies.

Results: BPA-treated rats showed significantly impaired neurobehavioural activity, decreased antioxidant enzyme activity, reduced hippocampal CA1 dimensions, significant reduction in cerebellar Purkinje cells and significant astrocyte activation.

Conclusion: Co-administration of FRHT however resulted in significant attenuation of the respective BPA-induced distortions. Taken together, these findings suggest that rooibos tea could be a potent neuroprotective agent against BPA-induced neuropathology.

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Developing a high-resolution photograph and CCTV recording face database

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Introduction: Facial comparison is a common tool employed in forensics. It is, however, an under-evaluated procedure that requires further development and refinement. The use of controlled, large-scale matched facial image databases is required to test the reliability and accuracy of this procedure. Numerous large-scale databases are available; however, most are developed in order to address machine learning and facial detection algorithms and do not employ strict standardization. This study aims to review the available databases and describe the development of a high resolution standardised facial photograph and CCTV recording database of Black males.

Materials and Methods: The database was compiled through the collection of photographs and multimodal CCTV footage of Black male volunteers at the University of the Witwatersrand. The facial photographs were standardised and include multiple views, while the CCTV recordings were captured under multiple conditions.

Results: The database totals 6220 standardised and wildtype facial photographs of 622 matching individuals in five different views, as well as corresponding CCTV footage of 334 individuals. The CCTV data includes footage from cameras at ceiling-height, eye-level, analogue, and participants with hats and glasses.

Conclusion: There are many limitations and challenges involved in database creation, especially around CCTV footage acquisition and the ethical practice regarding facial data. This database is available for research, following an initial embargo period and controlled access. A database of this nature may be used for several purposes such as morphometric research, law enforcement training and development of machine learning/ artificial intelligence algorithms in a forensic context.