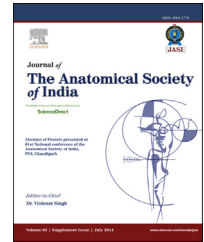


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Oral presentations

Abstracts of Papers Presented at 61st National conference of the Anatomical Society of India

1. Prenatal development of the human endocrine pancreas: A morphological and immunohistochemical study

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Introduction: The endocrine pancreas plays a pivotal role in glucose metabolism. As regards the morphogenesis of the islets of Langerhans, there is conflicting data regarding the timing of appearance of the B cells, and, the proportion and arrangement of the B cells within the islets. The present study is a baseline study with the following 1. To study the histogenesis of islets of Langerhans; 2. To study the immunohistochemistry for B cells using Anti-insulin antibody.

Methods: Ten aborted fetal specimens of pancreas of gestational ages 10-36 weeks were procured from the Department of Obstetrics and Gynaecology, Lok Nayak Hospital, New Delhi. Fetuses were fixed in 10% formalin and then sectioned and stained with Haematoxylin and Eosin. Serial sections were processed for immunocytochemistry with a specific marker for B-cell activity using anti-insulin antibody.

Results: The cells of the islets arise from the lining epithelium of the tubules. The B cells contain insulin at 10th week as seen by immunostaining. Small capillaries are seen enclosed in the islets at 14 weeks. The arrangement of B cells in different islets is variable. The formation of islets continues throughout fetal life.

Discussion: Our study reaffirms that the endocrine pancreas begins to differentiate early in fetal life. The growth and maturation of islets is associated with coordinated vascular development. The understanding of the normal development of islets will help in identifying any abnormalities during development that might contribute to the pathogenesis of diabetes mellitus in the intra-uterine life.

2. Morphological study of the menisci of the knee joint in human fetuses of Manipur population

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Introduction: The objectives were to estimate the different shapes of the medial and lateral menisci and the incidence of discoid meniscus of the knee joint in human fetuses of Manipur population.

Methods: After taking formal permission from the institutional Ethical committee, the study was carried out on 100 fetal knee joints.

The skin with fibrous capsule and the ligamentum patellae was cut.

The anterior and the posterior cruciate ligaments were also cut and the menisci were exposed. The morphological variants of the shapes of the lateral and the medial meniscus were macroscopically noted and classified.

Results: From our observations on the lateral menisci, 56% of them were C-shaped, 31% of them were crescentic shaped, 8% were U-shaped and 5% showed incomplete discoid. From our observation on the medial menisci, 79% were crescentic shaped, 5% were C-shaped and 7% were V-shaped and 3% were incomplete discoid. No total discoid meniscus was observed in the study.

Discussion: The majority of the knees showed C-shaped lateral meniscus and crescentic shaped medial meniscus. No total discoid meniscus was observed in the study.

3. A study on variation of umbilical cord attachment with the placenta

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Introduction: To study the variation of attachment of the umbilical cord with the placenta.

Methods: 50 specimens of placenta with intact umbilical cord were collected from the Department of Obstetrics and Gynaecology, Gauhati Medical College, Guwahati, after fulfilling all medicolegal formalities and a study was conducted in the Department of Anatomy of Gauhati Medical College. The attachment of the umbilical cord with the placenta were observed and the type of insertion of the umbilical cord and its distance from the margin of the placenta were recorded and photographed.

Results: Variation in the attachment of the umbilical cord with the placenta were observed. Centric or eccentric attachment were seen in 41 Specimens (82%), marginal attachment were seen in 7 specimens (14%) and furcate attachment was seen in 2 specimens (4%).

Discussion: If marginal placenta is associated with low implantation of placenta then there is a chance of cord compression in vaginal delivery leading to fetal anoxia and death. Furcated placentae are more prone to early delivery because they are heavier having more voluminous villi. Therefore knowledge of the prevalence of these anomalies and their early diagnosis would prompt an extra care during labour.

4. Coronary dominance in fetuses of Manipuri origin

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Introduction: The right and left coronary arteries supply the heart. The term coronary dominance is used to show which coronary artery irrigates the heart's diaphragmatic surface, based on the origin of the posterior interventricular artery. If this artery is given off by right coronary artery, it is termed right dominance and if from left coronary artery it is termed as left dominance. The term balance is used if both right coronary artery and a branch from the circumflex artery give the posterior interventricular artery. The present study is taken up to determine the pattern of coronary dominance in fetuses of Manipuri origin.

Methods: The present study is carried out in 30 fetuses of gestational age from 17 weeks to 40 weeks; which are the products of abortion under the MTP act and still born fetuses obtained from the department of Obstetrics and Gynecology, RIMS Hospital, Imphal. The fetal hearts are dissected out following fixation in 10% formalin. The gross anatomy of the hearts is studied and the coronary arteries are traced up to their termination. The artery which gives off the posterior interventricular artery is considered the dominant artery. The mode of termination of the right coronary artery is also taken into consideration.

Results: Right dominance is found in 70% of the cases, Left dominance is seen in 20% and balanced pattern is seen in 10%.

Discussion: The knowledge of coronary artery dominance is of importance while conducting surgical interventions and management of coronary artery diseases.

5. Variational study of lobes and fissures in fetal lungs

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Introduction: Interlobar fissures are important landmarks for proper identification of normal pulmonary anatomy and evaluation of diseases. Anatomical variations of lungs including number, fissures and lobes are at utmost important. So, the study was aimed to evaluate the number, fissure and lobes, and if any variation present.

Methods: 30 formalin fixed fetuses from 12 weeks to 40 weeks gestational ages were dissected in the Department of Anatomy, RIMS. The fetuses were categorized into four groups. The fetuses were collected from the department of Obstetrics and Gynaecology, RIMS after getting formal permission from the Institutional Ethics Committee.

Results: On the right side, three specimens showed incomplete oblique fissure and nine specimens showed incomplete horizontal fissure. In addition, four right-sided lungs showed superior

accessory fissure. On the left side, three specimens showed incomplete oblique fissure. The left minor fissure was seen in seven specimens.

Discussion: Knowledge of lobes and fissures in a particular population might help the clinician to make correct diagnosis. This may reduce morbidity and mortality associated with lung disease.

6. Study of suspensory ligament of thyroid in fetuses – A preliminary study

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Introduction: To find out the location and extension of suspensory ligament of thyroid.

Methods: By dissection under stereoscopic trinocular research microscope. 5 (five) fetal thyroid (from 30th week to full term) along with larynx with trachea, pharynx and esophagus were dissected after obtaining permission from the Institutional Ethic Committee, RIMS, Imphal.

Result: This ligament was found attached to 1st to 4th tracheal rings on its lateral side. Only in two specimens it was attached to lower border of cricoid lamina on lateral side. In one of the specimen, there was dense connective tissue attachment to the covering of cricothyroid muscles. In another specimen, similar type of adhesion was found to the esophagus on left side. All the attachments were found to be extending from the postero medial surface of thyroid gland. All isthmus of the gland were found free from the ligament. Only when there was extensive attachment of the ligament, recurrent laryngeal nerve passed through the ligament. Otherwise, this nerve was found posterior to the ligament only.

Discussion: The suspensory ligament of thyroid was found to be attached to cricoid cartilage and tracheal rings, but more consistently to tracheal rings on its lateral side.

7. A morphometric study of sacral hiatus in North Indian population

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Introduction: The sacral hiatus is present at the caudal end of the sacral canal formed due to non-fusion of laminae of fifth (occasionally 4th) sacral vertebra. It is recognized as a variable anatomic structure which hinders its accurate localization, especially in adults. The knowledge of anatomical variations of sacral hiatus and the caudal epidural space increases the success rate of caudal epidural block. The present study analyzes the morphometry of sacral hiatus in North Indian population and its reliability as a clinical landmark for administration of caudal epidural anesthesia.

Methods: The study was conducted on 108 dry adult human sacra and distance between two points was measured by a digital vernier caliper which was accurate up to 0.01 mm. The hiatus shape, height, width and the vertebral level of apex and base were recorded and variables compared.

Results: The most common shape of the sacral hiatus was inverted 'V' (59.3%) with the level of the apex at S4 in 66.7% and base at S5 in 85.2% cases. Mean length of sacral hiatus as per our

study was 19.60 ± 7.85 mm and mean width was 10.74 ± 2.98 mm. A positive and very highly significant correlation ($p < 0.001$) existed between length and width of sacral hiatus.

Discussion: Parameters of sacral hiatus have immense significance during caudal epidural block. Our current endeavour provides a reliable source of data for application in minimally invasive therapeutic interventions.

8. Is variation in the formation of median nerve common?

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Introduction: The aim of our study was whether the variation in formation of median nerve is common. Median nerve is one of the most important nerve in human body with relatively constant anatomy. We are presenting variation in formation of median nerve.

Method: This study was carried out in Jawaharlal Nehru Medical College, Sawangi (Meghe) Wardha Maharashtra. Dissection of 50 cadavers (100 upper limbs) was done using regular dissection kit with the help of standard dissection manual from Dec 2010 to Dec 2012. The formation and course of median nerve was studied in detail.

Result: Variation in the formation of median nerve was found in 6% cadavers. We found three roots taking part in the formation of median nerve in 4% cadavers & four roots taking part in formation of median nerve in 2% cadavers. The formation of median nerve was different in each case.

Discussion: In present study percentage of variant formation of median nerve was less (6%). These variations can be explained in the light of embryogenic development. Injury to such a variant nerve in the proximal arm may lead to a galaxy of manifestation including sensory, motor, vasomotor and trophic changes hence it is important to keep such variation in mind while doing surgery in breast malignancy or axillary dissection.

9. Incidence of duplicated hypoglossal canal in North Indian population

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Introduction: The hypoglossal canal is a permanent component of the skull in human beings. Beside the hypoglossal nerve, the canal also contains an ample venous plexus, a small variable emissary vein and a branch of the ascending pharyngeal artery. Taking into account such pathological symptoms as fracture of the occipital bone, intra-cranial and extracranial neoplasm and also congenital defects, the hypoglossal canal is of essential, clinical importance. As far as the available literature is concerned, isolated case reports are plenty but the true incidence of duplicated hypoglossal canal is lacking. Therefore, to document its incidence, we observed 175 dried human skulls of North Indian origin.

Method: 175 dried human skulls obtained from the osteology lab of the Anatomy Department of the King George's Medical University, UP, Lucknow, were observed with naked eye for

duplication of hypoglossal canal from internal and external aspect. Photography was done by Sony DSC- W 35 digital camera.

Results: The total incidence of duplicated hypoglossal canal was observed in 20.17% ($n=36$). Out of these, the presentation was bilateral in 3.03% ($n=6$) while it was unilateral in 17.14% ($n=30$). Percentage of skulls showing unilateral duplication was double on left side i.e. 11.43% ($n=20$) as compared to right side i.e. 5.71% ($n=10$).

10. Myocardial bridges: A morphological study and its clinical significance

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Introduction: Myocardial bridge is defined as a band of myocardium which is present over a segment of coronary artery or any of its branches.

Methods: The presence of myocardial bridging was studied by dissecting 100 adult human hearts at Pt. B.D Sharma post graduate institute of medical sciences, Rohtak.

Results: 32% hearts showed the presence of myocardial bridges. All the major branches of both the coronary arteries were involved but left coronary artery and its branches were involved predominantly. The length of the bridges varied from 3 mm to 32 mm. The location of bridges was mainly in the proximal third portions of the arteries.

Discussion: Acquaintance with the presence of myocardial bridges in heart is extremely important for cardiologists as it's an important cause of myocardial infarction at younger age as well as for the surgeons operating on such cases and radiologists while interpreting the angiographies.

11. Study of the anatomy of ear by dissections and sections of the temporal bone

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Introduction: Ear is the organ of hearing and equilibrium. It consists of three main divisions namely outer, middle and inner ear, placed from lateral to medial. The outer ear is anatomically simple. The middle ear is a small compressed space having four walls, ossicles, muscles, etc. The internal ear consists of membranous labyrinth housed inside a bony labyrinth. The ear is difficult to dissect because of its intrapetrous location and miniature size. This area can be effectively studied by dissections and sections using commonly available tools. The sections can be parallel, perpendicular or oblique with respect to the axis of the petrous part of the temporal bone. Sections of the temporal bone can be of value in understanding the relationship among the structures especially of the middle and internal ears. Our aim was to study the anatomy of the ear.

Methods: Eight petrous bones (4 from cadavers and another 4 dry bones) were dissected using chisel and mallet. Sections were also cut parallel, perpendicular and oblique to the axis of the petrous part of the temporal bone using a hack saw with a thin blade. They were studied using a magnifying lens and photographed.

Results: Dissections or sections of temporal bone could be of immense value in understanding the anatomy of the ear and these would be very useful for the students of Anatomy.

12. Morphological study of coronary sinus in North Indian population

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Introduction: 1) To ascertain various morphological features of the coronary sinus. 2) To compare male and female coronary sinus. 3) To provide anatomical basis for the cannulation of coronary sinus.

Methods: The study was performed on 30 hearts from embalmed cadavers in different age group (varies from 15-65 years) in the Department of Anatomy, SRMS IMS, Bareilly, U.P. Morphological parameters like length & width of coronary sinus at the site of opening into right atrium and shape of coronary sinus were examined.

Results: The most frequent shape of coronary sinus was cylindrical (73.33%). As regards the sexual distribution in all females coronary sinus was cylindrical (100%) whereas in males most common shape of coronary sinus was also cylindrical (63.63%) followed by conical shape (36.37%). The results were put in a tabular form and proper statistical analysis was done. The mean length of coronary sinus was 36.83 +/- 17.29 mm. The length of coronary sinus was greater in males as compared to females. The length of coronary sinus had positive significant relation with weight of heart in males. The width of coronary sinus at the site opening into right atrium showed significant positive correlation with age and weight of cadaver.

Discussion: Anatomical knowledge of coronary sinus is important for cardiothoracic surgeons and cardiologists for the distribution of retrograde cardioplegia through the coronary sinus. Coronary venous length is also an important consideration in implantation of left ventricular leads in the posterolateral branches of the coronary sinus.

13. Anatomicoradiological study of lateral meniscus-clinical relevance in arthroscopic procedures

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Introduction: Study of anatomical features and pathological lesions of lateral meniscus is of immense importance for treatment of ligament injuries of the knee and intra articular fractures. MR imaging of lateral meniscus is of great help in detecting the pathological cysts which may be otherwise missed on physical examination of patients complaining of recurrent pain in the knee.

Methods: The lateral meniscus was studied in 50 cadavers by gross dissections and studies correlated with 50 MRI scans of normal and abnormal cases.

Result: In a unique case during MRI scan a pathological cyst of lateral meniscus was detected in the left knee joint in a young female patient complaining of pain while walking. There was no history of trauma or surgery. Arthroscopic cystectomy was performed and patient was relieved of pain post-surgery.

Discussion: Study of anatomical features of lateral meniscus and its clinical correlation with normal and abnormal cases detected

through MRI scan could be a major step in growth of diagnostic and therapeutic arthroscopic procedures.

14. Variations in the shape of tuberculum anterolaterale

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Introduction: The present study addresses the prevalence and shape of the antero-lateral tubercle which has been named as Gerdy's tubercle in adult human tibia. It is described as a triangular facet in standard textbooks of human anatomy. Routine examination revealed more than usual variation in the shape and texture of tubercle present at the anterior surface of lateral condyle of tibia.

Methods: The study was conducted on 103 (52 right and 51 left) of either side dry Indian tibia bone.

Results: The shape of tubercle was very unpredictable and varied from a small circular smooth facet to totally irregular rough facet. It was triangular & smooth in 44.6%, circular & smooth in 17.4%, vertically oval & smooth in 2.9%, transversely oval & smooth in 3.8%, irregular & rough in 18.4% and triangular & rough in 6.7%. In 5.8% of tibia it was unremarkable.

Discussion: The shape of this facet may contribute to produce significant effect on surgical interventions and may be some shapes are more prone to traumatic injuries on it.

15. Age and gender related variations in the Mental Index (mi) in North Indian population

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Introduction: Mental Index (MI) or Mandibular Cortical Width (MCW) is a radiomorphometric index of mandible, used as a significant predictor of osteoporosis/osteopenia. Aim of the study was to measure MI and study its relation to age and gender in North Indian population.

Methods: The study was carried out in Anatomy department, Post Graduate Institute of Medical Sciences, Rohtak using 60 adult human orthopantomographs obtained from department of Periodontology; which were divided into 6 age groups (35-65 years) with equal number of males and females. MI was measured as the cortical width on the line drawn perpendicular to the tangent to the lower border of mandible.

Results: In males, the mean MI values ranged from 5.63 mm ± 0.597 to 7.07 mm ± 0.337. In females, values ranged from 5.07 mm ± 0.725 to 6.4 mm ± 0.433. A trend of decrease in MI values was observed with increasing age in both sexes. Female mean MI values showed lower values than males in all age groups, but statistically significant differences were found only in 3 groups - 1(35-40 years), 4(51-55 years), 5(56-60 years). Sexual dimorphism was also observed as statistically significant difference (p<0.05) was found in the total mean MI values between males and females. Right mean MI was higher (6.553mm ± 0.985) than left mean MI (6.533 mm ± 0.814) in males; whereas in females, left mean MI (5.857 mm ± 0.757) was greater than right mean MI (5.643 mm ± 0.797). These differences were statistically significant (p<0.05). The total mean MI values (males and females combined)

ranged from 5.35 mm \pm 0.692 to 6.735 mm \pm 0.508. Significant negative correlation between total mean MI and age was calculated. Statistically significant difference in total mean MI values was found between group 1(35-40 years) and group 6(61-65 years). **Discussion:** The results of this study highlight the importance of age and gender related changes in MI in identifying skeletal osteopenia.

16. Ultrasonographic anatomy of human adult liver

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Introduction: The knowledge of ultrasonographic anatomy of different organs is an important component of anatomy under the context of imaging anatomy to match with non-invasive and minimal access diagnosis. Hence, the study of ultrasonographic anatomy of human adult liver was conducted.

Methods: USG anatomy was conducted in 108 adults of age ranging from 18 to 70 years in the Department of Anatomy and Radiodiagnosis, RIMS, Imphal. Individuals suffering from diseases related to liver were excluded. The detailed anatomy was studied and dimensions were also taken in mid clavicular line.

Result: The longitudinal and anteroposterior diameters of liver in adults were 12.63 \pm 1.26 cm and 8.78 \pm 1.39 cm. In males and females, the longitudinal diameters were 12.61 \pm 1.32 cm and 12.65 \pm 1.22 cm respectively and anteroposterior diameters were 8.95 \pm 1.28 cm and 8.64 \pm 1.47 cm respectively. The components of intrahepatic biliary system, gallbladder, bile duct and identification of different components of portal triad i.e. portal vein, bile ducts anterior and hepatic artery anterior and left to the portal vein were visualised. Thin walled hepatic veins divided the liver into different lobes and segments. The normal echotexture of the liver parenchyma was also studied in detail to delineate from hyperechoic and hypoechoic in disease.

Discussion: USG of liver will enhance understanding of imaging anatomy to the students.

17. Radiographic fetal osteometry for gestational age estimation

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Introduction: The estimation of gestational age from fetal skeletal remains has always been an important anatomical and forensic issue. This has usually been assessed by the use of reference tables and regression equations derived from ultrasonographic measurements. These previously cited measurements are seen to differ from actual bone length measurements as they vary over a wide range due to differences in fetal position. This can be overcome by radiographic evaluation of long bones as these are closer to real anatomical size. Previous studies have been done on radiographic femoral morphometry but little work has been done on evaluation of tibia and fibula.

Methods: The present study was conducted in the department of Anatomy, Government Medical College and Hospital, Chandigarh with the aim of collecting the radiographic fetal osteometric parameters of the long bones of lower limb viz. femur, tibia and fibula. **Results:** Maximum diaphyseal bone length measurements of 30 fetuses from 12+1 to 30 weeks of gestation were assessed using post-mortem radiographs. After a gradual increase in lengths till 25 weeks of gestation, a plateau was observed in the growth charts. Strong and significant correlation was seen between the lengths with gestational age. An attempt was made to notice the appearance of ossification centres for the three bones.

Discussion: The present study can be of immense importance for its use in the estimation of fetal gestational age, detection of skeletal growth anomalies and also in certain medicolegal cases of abortions.

18. Two dimensional ultrasonographic study of placental maturity in third trimester of pregnancy and its correlation with gestational age

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Introduction: The existence of fetus in utero depends on one vital organ - "the placenta". Normally the placental morphology varies considerably during its short life span. Alterations in placenta as part of "Ageing" phenomenon are probably a part of maturation process and go hand in hand with continued growth of placenta. Sonography is the imaging modality of choice for visualization of the placenta in-situ. The purpose of the present study was to evaluate the placental growth and its correlation with fetal growth.

Methods: This study was conducted on 100 women coming to antenatal clinic of Obstetrics and Gynecology at Queen Mary's Hospital, King George's Medical University, Lucknow.

Cases having any obstetrical, gynecological, medical or surgical illnesses were excluded. Placental grading was done according to Grannum's classification.

Results: In third trimester, we observed all grades of placental maturity i.e. grade 0 (1%); grade I (6%); grade II (46%) and grade III (47%). In 26 -30 weeks of gestation, maximum cases showed grade I maturity, whereas in 30 -34 weeks of gestation, grade II maturity was most frequent. Majority of placentae nearing the term i.e. 34-38 weeks exhibited grade III maturity.

Discussion: In the third trimester there can occur any grade of maturity of placenta. This grading is important to define the outcome of pregnancy.

19. To document the pelvic conjugates of the inlet, and categorised them into different types of pelvis according to Caldwell and Moly classification, from the ct scan radiograph of the population of Manipur

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Introduction: Human pelvis has dimorphic characters in male and female, apart from the differences that are seen among the primates.

The pelvis is so called for its resemblance to a basin. It is composed of four bones, two hip bones laterally and in front and sacrum and coccyx behind.

An oblique plane called the pelvic brim or inlet, divides the pelvis into greater and lesser pelvis or false and true pelvis. This plane bears significant differences between male and female pelvis.

Methods: The study is done on the 100 CT scan radiographs which have been collected from the patients who have come to the Department of Radiodiagnosis, RIMS, Imphal, from the period of April 2013 to July 2013, for CT abdomen and pelvis after obtaining prior permission from the authority.

Result: The mean of Anteroposterior (AP) diameter in male is 110.28579 and in female is 132.0375. Their Standard deviation (SD) in male AP is 6.776043, in female is 25.21507. Mean Transverse Diameter (TD) in male 119.4143 and female is 131.2143 and their SD is 10.04414 in male and female is 17.89622. Oblique diameter of right side is frequently larger than that of the left side.

Discussion: The result of this study will be of utmost importance in anthropology, forensic medicine genetics and practical obstetrics.

20. A comparative study of plastination of anatomy specimens: A study on various methodologies

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Introduction: Tissue preservation is an important aspect in teaching Anatomy. Most of the organs and tissues are preserved in formalin with its own set of disadvantages. Plastination is a unique method of permanently preserving tissue in a life like state.

The classical way of plastination developed by western authorities is a labour and equipment intensive affair. The expensive polymers and equipments are required to be imported at a higher cost. However certain studies on newer polymers have showed inexpensive ways to preserve anatomical tissues. The quality of these specimens matches those produced by the classical method.

Method: Various polymers like Epoxy resins, Polypropylene resins, Orthocryl and silicone were used in plastinating the anatomical specimens. Specific methods were used for solid, hollow organs and brain specimens. The specimens were made to undergo stages of dehydration, impregnation with polymers and curing. The results were studied and interpreted under various parameters.

Results: The results were interpreted under various parameters like shrinkage, retention of colour, odour, pliability and retention of gross anatomy. The study concluded that Orthocryl and Epoxy resins retained maximum colour with minimal shrinkage while maximum discolouration was with polypropylene. Brain sections were best preserved in Orthocryl.

Discussion: The study concluded that indigenous methods and materials can produce quality plastinates which can be an important adjunct to traditional methods of teaching.

21. Comparative analysis of mandibular cortical index in orthopantomogram (OPG) and bone mineral density in dual energy x-ray absorptiometry (DEXA) in postmenopausal females radiological study in Uttarakhand

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Introduction: Osteoporosis is a systemic disorder characterized by low bone mass leading to fractures reported commonly in females after menopause. The investigations for osteoporosis are very costly and not easily available. Few studies have proposed the use of orthopantomogram as a diagnostic marker for osteoporosis as it is simple, quick, easy, inexpensive, non-invasive and widely used. Present study was undertaken to assess the efficacy of OPG to diagnose osteoporosis apropos DEXA.

Method: The study comprised of fifty post-menopausal females. All the females were subjected to panoramic radiographs and DEXA. The visual analysis was done based on the radiographic appearance of the lower border of the mandible on the left side by two observers who were blinded about DEXA results. Intra/Inter-observer variability was ruled out by visual analysis at two occasions which was followed by comparison of different grades of mandibular cortical index (MCI) and bone mineral density (BMD).

Results: There was significant difference in the three groups of mandibular cortical index of panoramic radiograph as interpreted by the two observers (p value < 0.05). The intra-observer reproducibility of this index had moderate agreement (Kappa value of 0.35 & 0.31) and the inter-observer agreement of this index followed fair reproducibility (kappa value of 0.38 & 0.32).

Discussion: It was concluded that there is a significant correlation between results obtained by mandibular cortical index (MCI) and bone mineral density (BMD) of the lumbar vertebrae as determined by the dual energy x-ray absorptiometry (DEXA) hence proving OPG to be an effective mode of screening for osteoporosis and thus further referral and evaluation.

22. Role of nuclear anomalies in treatment of oral carcinoma

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Introduction: Various genetic alterations have been implicated in the development and progress of squamous cell carcinoma of the oral cavity. Oral cancer consistently ranks as one of the top ten cancers worldwide, represents approximately 5% of cancers in men and 2% in women. In the present study an attempt is made to assess the frequency of nuclear abnormalities in patients with oral cancer undergoing radiotherapy and to correlate the nuclear abnormalities with applied dosage and duration of radiotherapy.

Methods: 50 patients with histopathologically confirmed squamous cell carcinoma of oral mucosa were included in the study. Specimens from the site of lesion were collected prior to initiation of radiotherapy and also after radiotherapy delivery of various radiotherapy fractions at 2, 3, 4, 12 day. Obtained materials were

spread over the slides and were processed. The slides were observed for various nuclear anomalies at each stage with each dose of radiotherapy.

Results: Any progressive or static increase or decrease in the number of various nuclear anomalies such as micronucleation, binucleation multinucleation, karyorrhexis and karyolysis indices with increasing dose of radiation were noted and analysed. Results indicate that these parameters can be used as indicators for assessing the response of tumour to radiotherapy.

Discussion: These indices taken at 4 days have been found to be very useful in selecting the line of treatment by differentiating the radio-resistant and radiosensitive tumors. These various parameters may also be used as prognostic indicators in all malignant cases undergoing radiotherapy.

23. Cytogenetic pattern profiling in cases of acute lymphoblastic leukemia in pediatric age group

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Introduction: Acute Lymphoblastic Leukemia comprises 80-90% of all childhood leukemias. It is associated with spectrum of structural and numerical cytogenetic abnormalities. Pre treatment cytogenetics is one of the strongest indicators of response to treatment. This study was conducted to study cytogenetic abnormalities in hematologically confirmed acute lymphoblastic leukemia cases in north Indian Pediatric population.

Methods: The present study was conducted in Department of Anatomy Maulana Azad Medical College. We analysed 20 hematologically confirmed cases of Acute Lymphoblastic Leukemia (ALL). Bone marrow aspirates were collected from these patients and cytogenetic analysis was done using direct method and 24 hour culture method.

Results: In the present study, among the 20 cases taken up for the study, in 14 cases analyzable metaphase spreads could be obtained. All cases had numerical abnormalities. 11 cases (78.57%) cases belonged to hypodiploidy. In this hypodiploid group, trisomy 17 and trisomy 14 were seen in 2 cases. Hyperdiploidy was seen in 3 cases (27.27%) cases. In one hyperdiploid case, extra copies of chromosomes 9, 11 and 17 were found. Two cases showed deletions of 4q and 6p.

Discussion: There is a contrasting regional variation in cytogenetic pattern in different parts of the country as evident in the present study which included patients from North Indian ethnic origin. Hypodiploidy was seen in 78.5% of cases, which is very high in comparison to other parts of the country. Cytogenetics should play a significant role in risk stratification and treatment protocols considering heterogeneity of pediatric ALL.

24. Phenotypes and congenital anomalies of Down syndrome in Manipur

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Introduction: The clinical diagnosis of Down syndrome presents with no particular difficulty. The diagnostic accuracy of Down syndrome on the basis of clinical features is reported to be 73% to

100%. Occasionally, even an experienced physician might find it difficult to give a confirmatory diagnosis in an infant with subtle clinical features. Karyotyping is essential for confirmation of the clinical diagnosis, determination of recurrent risk and to provide a basis for genetic counseling.

Methods: The study was carried out in the Department of Anatomy on 50 cases of Down Syndrome selected from mental homes of Manipur and Regional Institute of Medical Sciences hospital with due permission from the concerned authorities.

Results: The results of the present study showed that, females have a higher incidence over males in the study of population contrary to other findings which show male predominance. As in the findings of studies by other authors, maternal age has a positive correlation with the incidence of Down syndrome in the study. Parity or the order of birth showed no statistical significant relationship with the incidence of Down syndrome in the studied population. Phenotypic expressions varied from race to race and the findings in the present study validate the same. The karyotyping results showed patterns and trends similar to studies conducted by other authors.

Discussion: Anthropometric measurements, history taking, clinical examination for phenotypic expressions are noted and karyotyping done. The results are analysed and compared to findings of previous studies.

25. Role of genetic analysis in disorders of sex development

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Introduction : Disorders of sexual differentiation (DSD) with or without ambiguous genitalia require medical attention to reach a definite diagnosis. To ensure that the affected individual has a high quality of life (a successful outcome), medical practitioners must quickly and correctly assign the individual's gender and effectively assuage the family's concerns and anxieties. A total of 08 cases of DSDs were referred for genetic analysis to Cytomolecular lab, Dept of Anatomy, AIIMS from May 2012 to Apr 2013. A karyotype was carried out in all patients with Polymerase Chain Reaction (PCR) for SRY gene in some depending on clinical correlation.

Methods: 5ml of venous blood was cultured for leucocytes and subsequently karyotyped using standard protocol of Trypsin Giemsa banding. The same sample was used for SRY gene amplification by (PCR) wherever required.

Results: Cytogenetic analysis of peripheral blood revealed normal male karyotype in 3 cases of Congenital Adrenal Hyperplasia, 46, XX and 47, XXY mosaic of varying percentage in 3 cases of Mixed Gonadal Dysgenesis and 46, XY in 2 female cases with Androgen Insensitivity Syndrome. The PCR for SRY gene showed presence of SRY gene in all cases of mixed gonadal dysgenesis.

Discussion: An early gender assessment in DSDs is of utmost importance for proper psychosocial development of child. Though phallic size is the single most important criteria for gender assessment, a multidisciplinary team of specialists in consultation with parents must assign sex of the child on basis of genitalia, gonads and genetic factors.

26. Comparative study of implantation rate in cleavage embryo transfer vs blastocyst transfer among couples undergoing in-vitro fertilization for treatment of infertility

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Introduction: In-vitro fertilization has conventionally involved transfer of 4 to 8 cell embryo (also called cleavage embryos) into the uterus. This was considered necessary because culture media and lab systems could not support further growth of embryo. However, new and advanced culture media and laboratory techniques now permit in vitro growth up to blastocyst stage. This has generated a healthy debate regarding optimum stage of transfer of embryos into the uterus post-IVF.

Results: The implantation rates in both groups were similar. The abortion rates were also similar. However, in cases where only one embryo was transferred, the implantation rate with blastocyst embryo was double that of the 4-8 cell stage embryo.

Discussion: Thus blastocyst transfer has the potential benefit of reducing incidence of multiple pregnancy frequently seen in IVF pregnancies.

27. Cytogenetic study in azoospermic & oligozoospermic infertile men

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Introduction: 131 infertile men with azoospermic & oligozoospermic history were referred from our reproductive biology lab to human molecular cytogenetic unit for chromosomal analysis. Of these 131 infertile males, 87 were oligozoospermic & 44 were azoospermic.

Method: Karyotyping was done in our cytogenetic lab of all 131 infertile males. Different types of chromosomal abnormalities were present in 13 of infertile cases (9.9%). Out of 13 abnormal karyotype, 7 cases were azoospermic & 6 cases were oligozoospermic.

Result: We found structural abnormality of Y chromosome (46, XY p-) in one patient. Autosomal structural abnormality (46, XY, 22p+) was present in three cases. We also found numerical aberration of sex chromosome in 9 subjects of which 8 subjects were 47 XXY karyotype (Klinefelter's Syndrome) and other one was oligospermic with karyotype 47, XYY.

Discussion: An overall incidence of 9.9% abnormality indicates that routine chromosome analysis of infertile men should be considered.

28. Classification of scapulae based on variations in shape and dimensions of suprascapular notch: A study on dried scapulae

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Introduction: 1. To study variation in shape and dimensions of suprascapular notch in dried scapulae. 2. To classify different types and subtypes of scapulae. 3. To measure the thickness of Transverse Scapular bar (ossified transverse scapular ligament) for assessing degree of compression of suprascapular nerve.

Methods: In the present study, suprascapular notch morphology and degree of transverse scapular bar were observed & studied in 328 dried scapulae. These scapulae were obtained from museum of All India Institute of Medical Sciences, Jodhpur, LLRM Medical College, Meerut (UP), Hamdard Institute of Medical Sciences & Research, Jamia Hamdard, New Delhi during period of 2010 to 2013. The age and sex of the bones were not known. Scapulae with suprascapular notch, with supra scapular foramen having varying degree of ossification in the form of transverse scapular bar were also included in the present study. Measurement of suprascapular notch and transverse scapular bar were taken using classic osteometry with the help of digital vernier calliper and these were recorded in millimetres. The data was analysed statistically.

Results: In the present study, the superior transverse diameter, inferior transverse diameter, depth, maximum thickness of suprascapular notch and thickness at lateral end of transverse scapular bar, thickness at medial end of transverse scapular bar, mean thickness of transverse scapular bar were recorded. According to variations in these diameters, scapulae were classified into 5 types. Type -1 scapulae (n= 11, 3.35 %) - with discrete shaped supra scapular notch. Type -2 (n=87, 26.52 %) -V shaped scapulae, Type -3(n=172, 52.43 %) -U shaped, Type -4 scapulae (n= 13, 3.96 %) -with inverted V Shaped supra scapular notch, Type -5 (n=3, 0.9%) -absent Supra scapular notch. Type 2 & Type 3 were again sub classified into subtypes (a, b, c, d). Scapulae with transverse scapular bar (n=42, 12.8%) classified according to variation in mean thickness of transverse scapular bar (MTSB).

Discussion: The present study concluded that majority of scapulae exhibit U shaped suprascapular notch (type 3, with STD ≈ ITD). Transverse suprascapular ligament ossification was present in 12.8 % scapulae, which can be related and could explain degree of severity of suprascapular nerve compression.

29. Morphological and morphometrical variations of malleus in human cadavers

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Introduction: In India, 5.9% of the population has a disabling hearing impairment which may be due to many reasons. Failure of transmission of sound from the ossicular chain to the inner ear causes an air-bone gap of 40db—db. Various middle ear pathologies may fix or disassociate the chain leading to conductive deafness. Bony fixation of the ossicles can occur as a sequelae to infection, surgical trauma, or temporal bone fracture or as a congenital anomaly. Infection is the most common and is usually associated with either cholesteatoma or chronic otitis media with granulation tissue. Isolated fixation of malleus is the most common manifestation. Reconstruction procedures for sound conduction in the middle ear have advanced and thus an otologic surgeon needs to be fully conversant with the anatomical details of middle ear prior to undertake surgical procedures. Aim of the study was to assess the morphological and morphometrical variations of malleus.

Methods: This study was conducted in 66 adult dry malleus after its removal from temporal bones of adult human cadavers in

S.M.S Medical College, Jaipur, Rajasthan. A sliding vernier caliper was used to measure different morphometrical parameters.

Results: The distal part of manubrium mallei showed variations in being curved anteriorly or being straight. Some mallei had no neck between head and manubrium. The average of morphometric parameters showed that the malleus was 8.53mm in total length, the manubrium mallei was 5.20mm, and the total length of head and neck was 4.72mm. No significant difference was found when we compared these 3 parameters of right and left side.

Discussion: The knowledge of the variations in malleus may be helpful during ear operations to improve hearing. The morphometrical and morphological parameters of malleus will also help in designing of implants and thereby managing to reproduce the transmission of sound energy.

30. Ultrasonographic measurement of spleen length of adults in our local environment

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Introduction: To determine the normal range of spleen length of healthy adults in our local environment by ultrasonography.

Methods: The present study was carried out in 164 individuals who attended the Radiology department, Regional Institute of Medical Sciences, Imphal, Manipur, INDIA, for abdominal ultrasonography. Permission from the concerned authority and approval from the Institutional Ethics Committee were taken prior to the study. Informed consent was also obtained. Splenic length was measured on longitudinal coronal image between the most superomedial and the most inferolateral point of the spleen through the hilum by using the model Medison SONOACE X8 ultrasound machine with a curvilinear 3.5 MHz transducer.

Results: There were 82 males and 82 females, age ranging from 20 to 60 years. The mean age for male was 44.05yrs (± 11.80 SD), mean height was 162.21cm (± 4.80 SD), mean weight was 60.20kg (± 4.97 SD), mean BMI 22.86 ± 1.78 , and mean spleen length was 9.49cm (± 1.06 SD). The mean age for female was 40.07yrs (± 12.15 SD), mean height was 156.41cm (± 4.97 SD), mean weight was 55.4kg (± 6.11 SD), mean BMI 22.62 (± 1.99 SD), and mean spleen length was 9.12cm (± 1.01 SD).

Discussion: The present study shows that spleen length in males is greater than females and it is also decreased with increase in age in both male and female. Our study will provide the spleen length for the Manipuri people which will be useful in assessing this organ for any pathological enlargement or reduction in clinical practice.

31. Morphological study of fossa ovalis

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Introduction: Patent foramen ovale (PFO) is not an uncommon condition, with a probe-patency in 15–% of the general population. Patent foramen ovale has been implicated in the aetiology of a number of different pathologies, including cryptogenic stroke, decompression sickness in divers, etc. It can act as a channel for paradoxical embolism.

The anatomico-functional characterization of interatrial septum seems to be of paramount importance for both ASD and PFO, not only for the device selection, but also for the evaluation of the outcome of this procedure.

Methods: This study has been conducted in fifty hearts available in department of anatomy in SAIMS. The shape of fossa ovalis was observed. The size was measured with the help of digital vernier caliper; the extent of limbus, and the redundancy or otherwise of fossa ovalis was noted; probe patency was confirmed. Interatrial septum was photographed from both its surfaces.

Result: In the majority FO was oval (82%); average Transverse diameter was 14.53 mm and Vertical 12.60 mm. In 90% the rim of the Annulus was raised and in 20% a recess was found deep to the margin of the annulus. 18% showed probe patency. The fossa ovalis (FO) varies in size and shape from heart to heart; the prominence of annulus fossa ovalis also varies. The entire fossa ovalis may be redundant and aneurysmal.

32. Morphological study of papillary muscle of right ventricle of human heart

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Introduction: To study the morphology of papillary muscle of right ventricle of human heart.

Methods: 30 formalin fixed human cadaveric heart were collected from Department of Forensic Medicine and Department of Anatomy of Gauhati Medical College after fulfilling all medico legal formalities. These were dissected to expose the papillary muscle.

Results: Variations in number and shape of papillary muscles were observed in a few cases. Cases with variations in numbers of papillary muscles in anterior wall, posterior wall and septal wall were 3, 2 and 3 respectively. Out of 30, in 4 cases there were absent septal papillary muscles. In remaining 26 cases, which had septal papillary muscles 2 headed were 3 in numbers. In anterior wall-papillary muscle- 3 headed was 1, 2 headed were 3 in numbers; Y-shaped in 3 cases, X-shaped in 1 case. In posterior wall 2 headed were in 6 cases; X-shaped in 1case, H-shaped in 1case.

Discussion: Papillary muscles have great functional importance in cardiac activity. It has been found that abnormal papillary muscle is frequently observed in hypertrophic cardiomyopathy along with sudden cardiac death. So knowledge of the prevalence of variations or abnormalities of the papillary muscle will aid in diagnosis of different cardiac conditions.

33. Variations in origin and insertion of biceps brachii muscle

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Introduction: To find variations of biceps brachii muscle for better understanding of different upper limb disorders parallel with enhancement of the anatomical knowledge.

Methods: During routine dissection of 18 cadavers for undergraduates since August 2012, variations in origin and insertions of biceps brachii were explored by the primary investigator and

were documented. After examining the topographic details of the muscle, length and thickness of the tendons were measured.

Results: A unilateral origin of biceps brachii with three heads in the right upper limb of a cadaver, 72 years old Indian male was noted. The third head was arising from the medial border and adjoining anteromedial surface of humerus distal to the insertion of coracobrachialis. Another unilateral variation of biceps brachii insertion by two tendons was noted in the right upper limb of a cadaver, 55 years old Indian male. An accessory tendon existed with the normal common belly of tendon, and was traced to continue as a narrow tendinous slip that inserted on the medial supracondylar ridge of humerus.

Discussion: Variations in biceps muscle are supposed to have an important role in the increased power of flexion and supination of the muscle. Variant biceps brachii may confuse a surgeon and traumatologists who performs procedures on the arm and might lead to iatrogenic injuries or cause unusual displacement of the bone fragments subsequent to fractures. So, there have been growing interests in the deviations of biceps brachii for optimizing knowledge and interventions of linked morbidities of the upper limb.

34. Study of foramen transversarium in first cervical vertebra

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Introduction: Foramen transversarium of the first cervical vertebra is known to display variations with regard to size and shape. There may be associated with accessory foramina, absent unilateral foramen transversarium or bony bridges with it. This study was aimed to determine the incidence, morphological and morphometrical variations of foramen transversarium in North Indian population.

Methods: Fifty atlas vertebrae were collected from osteology museum of Maulana Azad Medical College, New Delhi. Each vertebra was examined for the presence of foramen transversarium and their dimensions were measured. Results were statistically analysed for side and size variation.

Results: 96% of vertebrae displayed bilateral presence of complete foramen in transverse process. However, accessory foramina in conjunction with foramen transversarium exhibited an asymmetrical occurrence (incidence of 4%). Transverse foramen varied in shape with area ranging from 23.85 mm to 38.06 mm on right and 22.23 mm to 39.41 mm on left side. No significant side variation in measurements of transverse foramen was noticed. The dimensions of other accessory foramina were smaller as compared to transverse foramen.

Discussion: The knowledge of these variations in foramen transversarium may be of importance in surgical procedures. It suggests that vertebral artery may come across foramina and complete bridges on atlas predisposing to conditions like vertebral basilar insufficiency, Barre Liou and cervicogenic syndromes. The neurosurgeons should be aware of absence of transverse foramen as it will affect the trajectory of the vertebral artery.

35. Morphometric study of the styloid process of temporal bone

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Introduction: Styloid process of temporal bone is clinically important, because variations in length, as well as the angulations of styloid process are associated with the symptoms of stylalgia (Eagle's syndrome) and the surgical excision of the process could alleviate neck and cervicofacial pain in patients. This study was aimed to evaluate the length, angulation and distance between bases and tips of the styloid process.

Methods: We studied 114 dry skull bones with intact styloid processes. The length of styloid process and distance between bases and tips of the styloid process were measured with the help of vernier calipers. The angulation (anterior and medial angles) of the styloid process was measured directly from the digital images by the image analysis using Adobe Photoshop 7.0 and Image Tool 3.0 Program. A styloid process longer than 3 cm was identified as an elongated styloid process.

Results: The Means of length of styloid process, distance between bases and tips of styloid process were 2.58 cm, 6.80 cm and 4.65 cm respectively, while Means of anterior and medial angles were 62.45 degrees and 74.15 degrees, respectively. Significant statistical difference was seen in anterior angles between groups with normal and elongated styloid processes ($P > 0.001$).

Discussion: Anterior angulation and distance between bases and tips decreased in elongated styloid processes while medial angulation showed no significant change. Our findings highlight the importance of the examination of styloid process in patients with symptoms of stylalgia.

36. Craniometric study of the adult human skulls of North India

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Introduction: Metric observations have been the sheet anchor for the Anthropologists to categorize the skulls on the basis of racial and regional differences. When comparing skulls of different races and species, several cranial measurements and indices are made use of, in order to give numerical expression to certain features of skull, which may be difficult to describe otherwise.

Method: For this study, the calvarial part of skull was measured (with the help of Spreading Callipers) as follows:

Maximum Cranial length: from Glabella to Opisthocranium.

Maximum Cranial breadth: greatest breadth at right angles to the median plane.

Cephalic or cranial index = Max. Cranial length x 100.

Max. Cranial breadth.

The present study was undertaken to measure the cranial length and breadth and to calculate the Cranial index in the adult Human Skulls of North India. For this purpose, 1020 skulls were observed, belonging to the Anthropology Museum of Department of Anatomy, GSVM Medical College, Kanpur.

Result: Mean values of maximum cranial length, maximum cranial breadth and cranial index were observed to be 17.72 cm, 12.87 cm & 72.62 respectively. Out of 1020 skulls, 817 skulls (80.1%) belonged to Dolichocephalic group, 175 skulls (17.2%) were found to be Mesocephalic and 28 skulls (2.7 %) to be Brachycephalic.

Discussion: This study has a special usefulness in Forensic Practice, Anthropological studies and Plastic surgery.

37. Anatomical evaluation of unusual osseous passage in the xiphisternal articulation and clinical implications

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Introduction: Serious complications following sternal puncture for bone marrow biopsy or acupuncture have been reported in the literature. Fatal cardiac tamponade following sternal puncture in the inferior part of the sternum with a congenital sternal foramen poses a challenging situation for the present day physicians. Therefore, awareness of the presence of sternal variations and anomalies is important to prevent these fatal complications.

Methods: The present study was carried out using 50 dry sternal bones in the Department of Anatomy, Vardhman Mahavir Medical College & Safdarjung Hospital. Various kinds of sternal variations and anomalies were observed and documented. New Delhi

Result: During the course of scanning of bones in a pilot study of human sterna for xiphisternal variations in the osteological section of the department, we noticed an unusual osseous defect in the area of xiphisternal articulation. The osseous passage was guarded by a superior and inferior projection contributed by mesosternum and xiphisternum respectively. The superior projection was triangular with apex pointed anteriorly. The inferior projection displayed two tubercles anteriorly. When viewed from the side the osseous passage was pyriform in outline, narrow anteriorly and broader posteriorly.

Discussion: Sternal variations are not uncommon. A sound knowledge of sternal variations and anomalies is very important for medical practitioners, radiologists and acupuncturists.

38. High origin of radial artery—A comparative, anatomical & embryological consideration

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Introduction: Knowledge of neurovascular variations is important during vascular and reconstructive surgery and also in evaluation of angiographic images. Radial artery is one of the terminal branch of the brachial artery arising in the cubital fossa about 1 cm below the bend of the elbow. The present study was designed to establish the branching pattern of axillary & brachial artery and the prevalence of deviations from usual description.

Method: The present study was conducted in the Department of Anatomy at LLRM Medical College on 14 formalin fixed cadavers (10 male & 4 female) of adult age group i.e. 28 upper limbs. Axilla & arm was carefully dissected, axillary artery, brachial artery & its branches were cleared & documented.

Results: Radial artery took origin from the third part of the axillary artery in 3.57%. It arose 2 cm above the lower border of teres major, coursed superficial to median nerve in the arm and continued in the forearm as such. The brachial artery after giving its branches continued as ulnar artery in the forearm. In 96.43%, radial artery arose normally in cubital fossa.

Discussion: Unusual origin of the radial artery may cause transradial approach failures for percutaneous coronary procedures.

This type of anomaly is due to failure of formation of the communicating branch between superficial brachial artery & axial artery at level of elbow.

39. Absence of palmaris longus in living and its association with gender and body sides

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Introduction: Palmaris longus is often used in reconstructive plastic surgery. It may be absent unilaterally or bilaterally. Our aim was to determine frequency of unilateral or bilateral absence of Palmaris longus in living in relation to gender and body sides.

Method: Standard Schaeffer's test and other tests was done on 200 subjects of which 100 males and 100 females. The association was assessed using Chi Square test. Statistical significance was set at $P < 0.05$.

Result: Total 16% subjects had overall absence, out of which 10% presented unilateral and 6% presented bilateral absence. Amongst females 4.5% presented unilateral and 4% presented bilateral absence. Amongst males 5.5% presented unilateral and 2% presented bilateral absence.

Discussion: From this study it is concluded that:-

1. Unilateral absence is significantly more common than bilateral absence.
2. There is no statistical association between absence of Palmaris longus, gender and body sides.

40. Variations in the termination of hepatic artery proper encountered during dissection in Department Of Anatomy, Gauhati Medical College

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Introduction: To study the termination pattern of the hepatic artery proper.

Methods: 32 enblock specimens of liver, the extrahepatic biliary apparatus and duodenum were collected from the unclaimed human cadaver from the department of Anatomy and department of FSM, Gauhati Medical College after completing proper medico legal formalities. The specimens were then preserved in 10% formalin and dissection was carried out. Arteries were identified and variations noted.

Results: Out of the 32 specimens dissected in the Department Of Anatomy, Gauhati Medical College, a total of 4 variations (12.5%) were observed and identified in the past 6 months. Out of which, in 2 cases (6.25%), a third artery was given off from the right hepatic artery which supplied the liver along with the right and left hepatic arteries. In 2 cases (6.25%) the third hepatic artery arose from the junction of the bifurcation of the hepatic artery proper.

Discussion: An intact hepatic artery is the gateway to successful hepatobiliary surgery. Introduction of laparoscopic cholecystectomy and liver transplantation has made the knowledge of the

hepatic arterial system and its variation an absolutely necessity. Surgical mistakes from failing to appreciate hepatic artery anatomy can result in serious consequences to the patient, and with medico-legal implications.

41. A study of pulmonary vein variations and their drainage pattern into the left atrium

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Introduction: Pulmonary veins carry oxygenated blood from the lungs to the left atrium. Variations are quite common in the number and pattern of drainage. Clinically Pulmonary veins have been demonstrated to often play an important role in generating atrial fibrillation. The knowledge of variations is of importance in cardio-thoracic surgeries and radiological procedures. The present study was undertaken to evaluate the incidence of variation in the number of pulmonary veins and their drainage pattern into the left atrium.

Method: A total of 41 human hearts were studied irrespective of sex. The hearts were procured from formalin fixed adult cadavers from the dissection hall of SIMS, Hyderabad.

Result: Out of 41 specimen studied, variation in the no of pulmonary veins and the number of ostia was found in 12 (29.3%) cases. The normal pattern of drainage was observed in 32 (78.04%) hearts in right pulmonary veins and 34 (82.9%) in left pulmonary veins.

Discussion: Variations found in the present study helped us to come to a conclusion on an anatomical classification depending on the number and drainage pattern Pulmonary veins into the left atrium.

42. Cyclophosphamide induced changes in the liver of albino rat

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Introduction: The present study was conducted to evaluate and compare the histological changes in the liver of albino rats on administration of cyclophosphamide. Wistar albino rats were administered cyclophosphamide in a dose of 150 mg/kg body weight and normal saline in equal volume intraperitoneally in experimental and control groups respectively.

Method: The animals were weighed prior to and after the experiment in both the groups. The rats in both the groups were sacrificed under anaesthesia on day twenty one. The liver was dissected and observed grossly. Paraffin blocks were made and cut into 7 μ thick sections and stained with Haematoxylin and Eosin, Periodic Acid Schiff and Masson's Trichrome and observed under Zeiss light microscope.

Result: A statistically significant decrease ($p < 0.05$) in the mean body weight of experimental animals was observed. Grossly, the liver at sites showed few patches of hemorrhage. On light microscopy, subcapsular haemorrhage, disrupted cytoarchitecture, dilated and congested sinusoids compressing the hepatic cords were observed which was associated with collections of inflammatory cells. The cytoplasm showed an absence of glycogen granules with several vacuolations. In a few cells, these vacuolations

coalesced to form a large vacuole which compressed the nucleus towards one side. In others, extensive degenerative changes like karyolysis, karyorrhexis and pyknotic nuclei were seen. These observations are suggestive of interface and focal hepatitis.

Discussion: It is suggested that while using cyclophosphamide in various treatment regimens, close monitoring of the signs and symptoms along with serum enzyme levels should be done to assess its hepatocellular destructive effects.

43. Sucralose induced liver toxicity on albino rat

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Introduction: The effect of sucralose, a commonly used substitute for sugar, was studied on the liver of Wistar albino rat.

Method: The animals were divided into 2 groups, Group I, experimental and Group II, control. Group I rats were given sucralose orally by gavage in the dose of 3g/kg/day dissolved in distilled water for 30 days. The Group II control rats, received equal quantity of distilled water by the same route. The animals were sacrificed under ether anesthesia by injecting formal saline through the heart. The liver was removed and processed. Paraffin blocks were made and 5 μ thick sections were cut and mounted on glass slides. Every third section was stained with Hematoxylin and Eosin, Periodic Acid Schiff stain or Masson's trichrome stain.

Results: Hepatic toxicity was seen in the form of patchy degeneration of hepatocytes along with Kupffer cell hyperplasia, lymphocytic infiltration, sinusoidal dilatation and fibrosis.

Discussion: The commonly used non-lethal dose of sucralose induced toxic effects on the liver are alarming and should caution the public.

44. A study of the relationship between biophysical parameters and serum Osteoprotegerin levels in peri- & post-menopausal women

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Introduction: To establish the relationship between serum Osteoprotegerin (key regulator of bone homeostasis and vessel calcification) levels with biophysical parameters, lipid profile and menopausal status and to investigate its efficacy as a tool for detection and management of cardiovascular disease in women.

Method: A case-control study was conducted on 110 non-pregnant subjects consisting of three groups: 40 peri-menopausal, 40 post-menopausal women and 30 women in the reproductive age group. Waist-to-hip ratio (W:H) and body mass index (BMI) were calculated and levels of total serum Osteoprotegerin (OPG) were obtained by ELISA technique. Independent student's t-test and Karl Pearson's correlation coefficient were used to analyze the parameters under study. Receiver operating characteristic (ROC) curve analysis estimated the cut-off values of serum OPG for predicting cardiovascular disease risk in each study group.

Results: Mean serum Osteoprotegerin levels showed an increase with age and the OPG levels were significantly higher in the post-menopausal group (15.36 pmol/l). In post-menopausal women, highly significant positive correlations of OPG were found with BMI, W:H ratio and total cholesterol. OPG had significant correlations with total cholesterol and triglycerides in peri-menopausal women. Age-specific Cut off values of serum OPG levels had high sensitivity (80-100%) for predicting risk of cardiovascular disease. **Discussion:** Highly significant correlations of serum OPG levels with BMI and W:H ratio may serve as an important diagnostic marker of cardiovascular disease in post menopausal women. Rise of serum OPG levels with age, assumes importance in pathogenesis of osteoporosis and reflects a compensatory protective mechanism occurring in the oestrogen deficient state.

45. The study of clinical, obstetric and pathological parameters in the early and late onset preeclampsia

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Introduction: Preeclampsia is the pregnancy induced hypertension in which the symptoms appear after midgestation. Depending upon the onset of symptoms, preeclampsia can be classified as early onset (≤ 34 wks) or late onset (≥ 34 wks).

Methods: The study group included early onset (20 placentas), late onset (20 placentas) cases of preeclampsia, control group (20 placentas). The clinical and obstetric parameters were compared. For the placental pathological changes, hematoxylin and eosin staining, M30 immunostaining were used.

Results: As compared to control group, the maternal age, blood pressure and proteinuria were higher in both types of preeclamptic groups. The early onset preeclamptic group was associated with low placental weight and premature delivery of low birth weight babies having low APGAR score as compared to control and late onset preeclamptic group. The mode of delivery in most of the cases of early onset preeclamptic group was caesarean section. The placental villous and vascular morphology along with apoptotic indices were severely altered in early onset preeclamptic group.

Discussion: Between the two types of preeclampsia, the early onset preeclamptic group showed poor outcome of clinical, obstetric and pathological parameters suggesting its severity and bad prognosis.

46. Development of taste buds in human foetus

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Introduction: The present study assesses the development and morphological maturation of taste buds in the human foetus.

Methods: Aborted human foetuses of 14 to 38 weeks of gestation were procured from the department of Obstetrics and Gynaecology, LN Hospital after obtaining institutional ethical clearance. Gestational age was determined by using parameters, such as crown rump length, crown-heel length, bi-parietal diameter, weight and foot length. Sagittal sections of tongue and palate were fixed in 10% formalin, processed and embedded in paraffin and 7 μ

thick sections were generated using semiautomatic rotary microtome. These sections were then stained with haematoxylin and eosin stain and observed for surface epithelium, papillae and taste buds under BX61 computerized Olympus microscope.

Results: Primordium of taste bud was identified at 14 weeks of gestation. At 18 weeks, presumptive taste buds were identified. Morphologically mature taste buds with three different cell types were identified in both fungiform and circumvallate papillae at 22 weeks of gestation with gustatory pore closed. In foetus of highest gestation (38 weeks) tongue was full of mature papillae and highly differentiated taste bud profiles looked like adult taste buds in higher magnifications with open taste pores.

Discussion: Thus our results suggest that as the gestational age increases surface epithelium shows increased stratification, papillae increase in number and taste buds mature.

47. Morphology of fetal gall bladder and cystic duct

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Introduction: Fetal gall bladder (GB) has been studied by the various workers in the past. Attempts were made to correlate the growth of GB during gestational period.

Method: we have studied 30 GB in available fetuses ranging from 6.5cm CRL to 28cm CRL length of either sex. Various morphological measurements were recorded e.g. length, breadth of Gall bladder and length of cystic duct were also recorded. After measurements, the Gall bladder and cystic duct were subjected for histological studies.

Result: Histological study of GB revealed simple columnar epithelium, showing mucosal folds, Lamina propria was also noticed occupying adequate space as a supporting element. Musculature was thick at places in early case but shown a tendency to remain thin well organized in ascending gestational age of Gall bladder. Gradual increase in length of GB during increasing gestational period was also appreciable.

In some early gestational Gall bladder, we have also noticed that the luminal area of gall bladder is, being obliterated by the cellular proliferation of epithelium. Cystic duct revealed the presence of columnar epithelium and further supported by fibro muscular connective tissue covering, without any evidence of valvular mucosal fold. Cystic duct growth was observed as a zig zag pattern in early stages; however an increasing tendency of length towards higher gestation was seen.

Discussion: The growth of fetal gall bladder occurs in correlation with gestational age.

48. Morphological maturation of hippocampus during 2nd and 3rd trimester in human fetus: An immunocytochemistry study

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Introduction: Hippocampus is the important component of limbic cortex. It controls the activities necessary for survival of animals including procuring of food, eating and emotional behavior. In view of increasing incidence of various disorders like Alzheimer,

temporal lobe epilepsy and schizophrenia, the structure and development of this region was studied to see its morphological maturation.

Methods: In our study ten aborted fetuses from 14 to 30 weeks of gestation were procured from the department of Obstetrics and Gynecology, LN hospital after obtaining ethical clearance. For each gestation age the tissue was stained with cresyl violet and Haematoxylin and Eosin to see the normal morphology and immunostaining of the sections was done for the expression of NCAM (Neuronal cell adhesion molecule).

Results: Subparts of hippocampus were identified as early as 14 weeks of gestation. Various fetal zones including ventricular zone, intermediate zone, hippocampal plate and marginal zone were identified. At 20 weeks well differentiated pyramidal cells were seen in hippocampal plate region. At 22 weeks more differentiation of neuronal cells were observed in all the fetal zones. At 28 weeks of gestation hippocampus had attained almost mature appearance. NCAM expression was seen in all the fetal zones though staining intensity was more in ventricular zone and hippocampal plate.

Discussion: As the age advances ventricular zone thinning occurs, cells become more differentiated. More intense NCAM expression in ventricular zone and granule cell layer of dentate gyrus indicated more cell differentiation in those layers.

49. A nerve response to sharp injury—An experimental study in rabbit

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Introduction: To study the reactional changes after experimentally inflicted sharp injury to the sciatic nerve of rabbit.

Methods: The present study was carried on 12 adult rabbits of either sex aged between 12-15 months and weighing on average 1.5kg were included in this study. Under deep General Anaesthesia (GA) the right sciatic nerves were axotomised and 6 of them were sacrificed after one to one and half month and 6 of them were sacrificed and fixed by intracardiac perfusion method using either 10% buffered formalin or Karnovsky's fixative after three months post operatively. Lumbosacral plexus along with sciatic nerves of both sides were dissected out, observed grossly and photographed.

Results: 1) An end neuroma was found at the site of transection. 2) A 5-7cm long nerve sprout was formed at the site of transection and 3) the transected sciatic nerve appears thicker than control.

Discussion: It was concluded that apparent thickening of the nerve was due to the abnormal movements of the ions, followed by water movement across the membrane and associated tissue reactions. The obvious swelling at the proximal end of the sciatic nerve was indication of the formation of reactive neuroma in response to nerve injury and the nerve sprout from the proximal nerve stump was possibly a regenerative effort to establish the continuity of the nerve.

50. Comparative study of brain in human and sheep

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Introduction: The brain of the sheep is useful to study because its anatomy is more or less similar to human brain. There are few regions in the brain where it differs from human brain. The study throws more light in to the subject. Aim of the study is to compare the weight, volume, shape, variations in appearance of sulci & gyri lobes and any other internal special features of human brain with the sheep.

Methods: 10 Sheep heads were collected from the Slaughter house after sacrifice. Ten human brains were collected from the cadavers of the department of anatomy. External features were observed after taking the weight, volume, the shape and lobes of the brain. Internal features observed by taking the section in to three planes sagittal, horizontal, coronal sections. The orientation was given in relationship to the primitive neural tube.

Results: Human brain is round to oval, sheep brain is elongated. In sheep occipital lobe, temporal lobes are not well developed. Central sulcus is T shaped, tectum is a single mass and pineal gland is well developed in sheep.

Discussion: The comparative study of human brain with sheep brain is 10 times larger than human brain in most of the parameters. This study will be useful to all the research scholars and also for the veterinary surgeons.

51. “Map the journey, tag the lesion”—Excerpts from an interactive clinical neuroanatomy workshop in an integrated curriculum

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Introduction: To conduct a Clinical Neuroanatomy workshop in an Integrated curriculum

Specific objectives:

- to reinforce applications of neuroanatomical principles
- to strengthen reasoning, clinical and diagnostic skills.
- to refresh pre-existing knowledge of neuroanatomy

Method: An interactive clinical neuroanatomy workshop was conducted in the Department of Human and Clinical Anatomy, Sultan Qaboos University College of Medicine, Muscat, Oman for students in the 6th semester of Phase II of an integrated curriculum Senior students from Phase III (clinical) also voluntarily registered for the same. The workshop was held between 4-6 pm in the Anatomy dissection hall.

Students were divided randomly into 3 mixed groups of both senior and junior students. Group size ranged from 8-10/group. Relevant resource materials such as specimens, plastinated sections, and models, were made available.

Each group navigated through various question rounds:

- Clinical case scenarios: stimulated reasoning and analytical skills
- Rapid fire rounds : stimulated quick thinking and decision making ability
- Role-playing brought forth innovative skills and an element of fun
- Audio-visual rounds: tested their observational skills
- Funfacts :for infotainment

- Crossfire round : optional

Excerpts of the workshop were presented.

Results:

- 100 % felt it fostered learning in a relaxed environment
- Requested similar learning experiences, for other courses.

Discussion: Interactive workshops can enhance learning by

- Fostering team spirit
- Encouraging peer learning
- Providing a confidence building review before exams
- Refreshing knowledge, developing better application skills, and enhancing the ability to face competitive postgraduate exams

52. Comparative study of hypophysis cerebri in developing human fetuses from 15–40 weeks of gestational age

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Introduction: Hypophysis Cerebri lies in its fossa with the diaphragm sellae above it. It develops from two completely different parts, ectodermal outpocketing of the stomodeum and downward extension of the diencephalon. The Purpose of the study is to see the comparison between 15weeks to 40 weeks of Gestational ages in Hypophysis Cerebri of developing human fetuses.

Methods: Formalin fixed 16 fetuses brains (M-8, F-8) were dissected at Deptt. of Anatomy, RIMS, Imphal, after getting formal permission from Institutional Ethics Committee, RIMS, Imphal from the age group of 15 weeks to 40weeks and categorized into 3 groups, Group I- 15 -23 weeks, group II- 24-32 weeks, group III- 33- 40 weeks.

Results: Morphologically it was found that Transverse diameter was more than Anteroposterior diameter. Significance differences were observed in all the observed parameter among the groups ($p \leq .05$).

(Group1-Mean AP- 4.54mm, Tr- 6.37mm , weight- 0.1833gm, distance from optic chiasma - 4.53 mm; Group 2- Mean AP- 6.47mm, Tr- 8.35mm , weight- 0.3775gm, distance from optic chiasma - 7.05 mm; Group 3 - Mean AP- 8.72mm, Tr- 11.12mm , weight- 0.07617gm, distance from optic chiasma - 8.85mm.)

Discussion: The Hypophysis Cerebri occupies a central place in the general system of endocrine gland. Throughout the course of its development the transverse diameter was greater than the AP diameter. There was a constant increase in weight, transverse and AP diameter reflecting the growth of the gland.

53. A Study of morphology of sacral hiatus with its clinical importance

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Introduction: A Morphological study of sacral hiatus and its variations.

Methods: The study is done on 50 numbers of adult sacrum in the Department of Anatomy, Gauhati Medical College. Measurements were taken by using vernier caliper and measuring tape.

Results: Morphological study is based on various parameters. In 26 cases (58%), the apex of sacral hiatus is located at the level of 4th sacral vertebrae. In 22 cases (44%), length of sacral hiatus is found between 10mm to 20mm. In 31 cases (62%) the anteroposterior diameter of sacral canal at the level of apex is found between 4mm to 6mm. In 26 cases (52%), the distance between two sacral cornua is found between 10mm to 15mm. In 28 cases, (56%). Inverted U is the most common shape of sacral hiatus.

Discussion: Knowledge of morphology of sacral hiatus is important in present surgical field. In present condition, surgeries chiefly obstetrical and orthopedic surgery are performed under caudal epidural anaesthesia . About 25% to 30% of failure in caudal epidural anaesthesia is contributed by inadequate knowledge of variation in morphology of sacral hiatus which can be avoided by such studies. Risk of dural puncture can also be avoided by accurate needle usage in epidural block which again depends on average diameter of sacral canal.

54. Analysis of the face – A baseline study

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Introduction: Photographic documentation for facial analysis in Indian population to provide guidelines for ENT surgeons for successful rhinoplasty and plastic surgeons for cosmetic surgeries.

Methods: Prospective study in which photographic vertical measurements and percent ratio of vertical facial height of 400 Indians (age group 18 to 45 yrs) were taken with 35 mm single lens –reflex camera and analyzed. This study was done in T. N.M.C And B.Y.L. Nair Hospital, Mumbai.

Result: The mean distance of nasion- subnasale (N-SN) is 25.84mm and subnasale-menton (SN-MN) is 27.09 mm and percent ratio of vertical facial height (N-MN) divided into middle facial height (nasion- subnasale) and lower facial height (subnasale-menton) is 48.7% (N-SN) and 51.3% (SN-MN) respectively in total population of study. The mean percent ratio of vertical facial height (N-MN) is 48.5%(N-SN) and 51.5 % (SN-MN) respectively in females and 49% (N-SN), 51 % (SN-MN) respectively in males. The mean values of the FA and NSA were $11.4^\circ \pm 8.8^\circ$ (range -20° to 36°) and $121.2^\circ \pm 6.2^\circ$ (range 93 to 136) respectively. No significant side differences in either of the two parameters were noted. There was a weak negative correlation ($\rho = -0.07$) between FA and NSA. There was good intra and inter observer reliability.

Discussion: It shows that length from subnasale (SN-MN) is slightly more than that from nasion- subnasale (N-SN) in total population of study. Lower third of face of study population is bigger than middle third of face. Middle third of face of males is slightly bigger while lower third of face is almost equal to that of females.

The average values of the FA and NSA in the present study are higher and lower respectively than previous Indian studies. Significant bilateral differences in the FA noted in previous studies were not observed.

55. Morphology of the portal venous system – A cadaveric study

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Introduction: The morphological data of the portal venous system is important, as regards portal hypertension and surgical aspects related to portacaval anastomosis. The study under consideration was undertaken to determine the approximate percentage incidence of major variations in the disposition of the portal vein and its tributaries. The basis for most of the variations has different reasons- genetic, metabolic, haemodynamic factors depending upon the type of variations.

Method: This study was conducted on thirty specimens in Government Medical College, Patiala.

Results: The portal vein had normal standard pattern in 30% cases, rest 70% showed variations in one or the other form. The splenic vein was variant in 76.6%. The superior mesenteric vein showed variations in 73.3% cases. The mode of termination of inferior mesenteric vein was variable in 60% of the cases.

Discussion: The incidence of variations in the portal venous system can be of prime surgical and radiological importance for portacaval shunts and to study haemodynamic flow radiologically.

56. Anthropometric study of proximal femur geometry and its clinical application in western Odisha population

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Introduction: The study aims to have detail information about proximal femur geometry in population of western Odisha and to compare these values with that of various ethnic groups. These values of observations are compared with implant designs commonly used in India.

Methods: A statistical study on 200 femurs was done by measuring the vertical, transverse diameter and circumference of the head of the femur with the help of osteometric board, sliding calliper, flexible measuring tape, goniometer and protractor. It was compared with the measurements of hip prosthesis of different sizes.

Results: The Head Vertical Diameter (HVD) varied from 34.20 to 49.45mm averaging 41.24mm. The Head Transverse Diameter (HTD) varied from 34.20 to 49.45mm, averaging 41.24mm. The Head Circumference (HC) varied from 108 to 153mm, averaging 128.82mm.

Discussion: Mean value of all parameters of femur in the present study showed significant difference with studies on western population proving racial variation in the femoral geometry. It was concluded from this study that the regional variations in the parameters measured do exist when the data of two different countries are compared and considered.

57. Morphometric study of nutrient foramina of humerus in North Indian population

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Introduction: The nutrient foramina in long bones of limbs are the largest foramina present on the shaft of a bone and admit nutrient arteries for nutrition of the bone. The role of nutrient artery in healing of fracture is well known. Knowledge of position, number and variation of nutrient foramina can be used in surgical procedure and medicolegal practices. Therefore the present study was done to determine the number, size, direction, site and location of nutrient foramina in human humerus.

Method: Total 107 dried macerated adult North Indian human humerus of both sexes were taken for morphometric study of nutrient foramina from the Department of Anatomy, K.G. Medical University, UP, Lucknow. The instruments used were osteometer, metallic calibrated wire of .5mm, 1mm, 1.5mm, 2mm and 2.5mm diameter, magnifying hand lens, measuring tape, scale and divider. Photography was done by Sony DSC-W35 digital camera.

Results: The number of nutrient foramina varied from one to two. Single foramen was present in 80.37% (n=86) and double foramina in 13.08% (n=14) while it was absent in 6.54% (n=7) of specimens. According to the size of foramina, small size foramina (<1mm) were present in 32.72% (n=35), medium size (1-2mm) in 67.28% (n=72) and large size (>2mm) in 0.93% (n=1). Majority of foramina were present on anteromedial surface and medial border of the shaft of the humerus. The direction of nutrient foramina was normal i.e. downward.

58. Extensions of lower end of iliotibial tract and its clinical significance

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Introduction: The anatomy of anterolateral aspect of the knee is complex and still remains controversial. Iliotibial tract (ITT) is a combination of fascia, muscles and ligament. It is present only in human beings. ITT stabilizes the knee both in extension and in partial flexion; and is, therefore, used constantly during walking and running.

Iliotibial Band Syndrome is a common thigh injury generally associated with running. Many Clinical studies have emphasized the role of the ITT on knee mechanics. Yet the effect of the ITT on tibiofemoral and patellofemoral mechanics remains speculative. A study of the anatomy and morphology of the extensions of lower end of ITT may help in understanding as to how it may act to stabilize the knee joint during flexion and extension.

Methods: Twenty lower limbs for this study were obtained from the department of anatomy. ITT was identified on anterolateral aspect of thigh. Its distal attachments were dissected to their sites of attachment on patella, tibia, fibula and its relation to biceps femoris muscle and its tendon were studied.

Results: We measured the width (2.7cm) and thickness (2.99 mm) of ITT at the level of upper border of patella. We also measured width (2 cm) and thickness (2.99 mm) of the slips going towards patella and Gerdy's tubercle (width = 1cm / thickness = 1.28 mm).

Discussion: The findings of the present work, besides, enhancing anatomical knowledge of the region will be of help to

orthopedicians and physiotherapists in the diagnosis and management of lateral knee pain.

59. Study of incidence of congenital anomalies in new born

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Introduction: In a developing country like India due to high incidence of infectious diseases, nutritional disorders and social stress, the developmental defects are often overshadowed, but the present scenario is changing rapidly.

Purpose of study is to find out the overall incidence of clinically detectable congenital anomalies in newborns in hospital deliveries and incidence of different congenital anomalies. Also we know immediate outcome in live born malformed babies for study of prognosis of various malformations.

Methods: In this study, four thousand four hundred and fifty six newborns delivered at obstetrics Dept. of civil hospital were examined at birth for congenital malformations over a period of one year.

Result: The overall incidence of malformations was 2.38%. The anomalies of central nervous system were most frequently followed by multiple Congenital anomalies and musculoskeletal system. The commonest major malformations were of neural tube defects.

60. A Study on growth pattern of height at different age of children of Dhulikhel, Nepal

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Introduction: A child's height is primarily determined by the length of his or her bones, and thus children grow taller because their bones grow longer. The bones grow longer because they contain growth plates. The purpose of this study was to evolve an easily applied formula to enable the assessment of children's height of different age group and to know about comparative differences between the growth of the boys and girls from certain parameters.

Methods: The present study consisted of 1726 children aged 3-16 years, out of which 945 were boys and 781 girls, from different Schools of Dhulikhel and Banepa, Kavreplanchowk, Nepal. Age and height of each child was taken and analyzed by Minitab 15 computer program.

Results: The mean height of boys during early ages was found to be higher than the girls. Girls were found to reach pubertal growth spurt earlier than boys, i.e. at the age of 12. Girls at this age were found to be taller than the boys of same age group. The boys were found to attain the pubertal growth spurt at the age of 13 years and after that the mean height of boys was found to be taller than the girls mean height.

Discussion: If a child's height is consistently or substantially different from the height of other children of the same age and

gender, it indicates that the child may have a medical condition and requires monitoring or treatment.

61. Placental changes induced by zidovudine in swiss albino mice

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Introduction: Zidovudine is a nucleoside reverse transcriptase inhibitor (NRTI) employed as a one of the component in Highly Active Anti Retroviral Therapy (HAART) for the treatment of HIV. It is also given to pregnant mothers to prevent mother to child transmission (MTCT). But its effect on placenta when it crosses the placental barrier is yet to be elucidated.

Methods: Zidovudine is given to pregnant Swiss albino mice in doses of 50 & 100 mg/kg from 6th to 15th day of gestation by oral gavage. Similarly, the controls were given distilled water by oral route. The mothers were sacrificed on 18th day by cervical dislocation and placenta and foetuses were dissected out.

Results: On gross examination there seemed to be no changes in the treated group. However on microscopic examination there seemed to be increase in thickness of placental barrier in treated mice in dose dependent manner. The placenta of treated mice also showed deposits of hyaline material, loss of spongiotrophoblast in basal zone, increase in cellular debris and pyknotic nucleus.

Discussion: Zidovudine causes increase in thickness of placental barrier and loss of cells in placenta thus hampering nutritional transfer from mother to foetus.

62. Morphometric study of normal foetal liver & comparison of its morphological variations with adult liver

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Introduction: To study variations in fetal and adult hepatic morphology & its clinical implications. To compare rate of growth of liver and its lobes in terms of length, breadth, thickness based on gestational age and CRL in human fetuses aged between 10-37 weeks.

Methods: The study was based on 150 human fetal livers taken out during routine fetal autopsy performed in department of anatomy, GMCH-32, CHD. Fetuses were divided to 4 age groups as 10-15, 15-20, 20-25, <25 wks.

In another study, Observation were made on 59 adult livers during 2011-2012 in AIMS, Kerala.

Surface variations of fetal and adult liver were compared. The length, breadth, thickness of fetal liver and its lobes were compared in all possible parameters.

Results: The observations were made regarding

- I. Gross variations in the presence/absence of various lobes and presence of abnormal fissures

- II. To correlate the morphometric parameters with gestational age and CRL.

As apparent, the growth of length, breadth, thickness of various lobes was directly proportional to the gestational age and CRL. However, during 4 gestational age groups under consideration, there were periods where growth was uniform and periods where there was a peak in growth.

Discussion:

- I. It was observed that the presence of accessory fissures were more in Right lobe, Left lobe and Quadrate lobe in fetal livers as compared to adults.
- II. Regarding morphometric parameters, the growth of liver was directly proportional to the gestational age and CRL. However the maximum growth of liver in terms of length, breadth, thickness was observed in the gestational age groups of 15+ - 25 wks.

63. Determination of gestational age by measurement of hand – A morphometric study in human foetuses

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Introduction: Determination of gestational age is important in civil and criminal cases. Though a reasonable assessment of gestational age can be made by measuring physical parameters such as crown-heel length, weight of foetus and by noting morphological features, organ development and appearance of ossification centres, an alternative parameter is desirable in some instances. In this study we directly correlate growth of different foetal hand parameters with gestational age.

Methods: 30 formalin fixed human foetuses were obtained from Museum of Department of Anatomy, Jawaharlal Nehru Medical College, Aligarh. Foetuses were divided into five groups (Group I : <17wks), (Group II : 17-20wks), (Group III : 21-25wks), (Group IV : 26-30wks), (Group V : >30wks). We measured the seven parameters in the foetal hand i.e. length of the hand, breadth of the hand and lengths of the thumb, index finger, middle finger, ring finger and little finger.

Results: It was concluded that foetal hand, thumb and middle finger lengths are significantly correlated with gestational age and therefore these parameters could be utilized to estimate gestational age.

Discussion: This is justifiable useful in the medico legal cases in which only hand or part of it is available for estimation of gestational age.

64. Effect of piracetam on valproic acid induced congenital malformations in mice

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Introduction: Valproic acid (VPA) is an antiepileptic drug which is widely used in humans and is a well known teratogenic agent when used during pregnancy. Piracetam is a nootropic or

cognitive enhancer drug used to treat cognitive impairment in aging, brain injuries as well as dementia. It has a cytoprotective, and antioxidant properties.

Methods: Thirty two pregnant mice were divided into four groups. Group I mice served as control and received distilled water, group II mice received VPA (400mg/kg), group III mice received VPA (400mg/kg) and piracetam (800 mg/kg) and group IV mice received piracetam only (800mg/kg) from GD 6-11. The fetuses were collected on GD 18 after uterotomy and observed for gross malformations if any.

Results: In group II severe malformations such as exencephaly, cranioschisis, hemorrhages, limb and tail deformities were observed while such malformations was not observed in groups I, III and IV. The resorption rate was significantly ($p < 0.001$) higher and fetal weight & CRL was significantly lower in group II ($p < 0.001$) as compared to control. The resorption was decreased and fetal weight & CRL was increased in group III as compared to group II.

Discussion: These findings suggest that Piracetam, if given in higher doses might protect against the teratogenic effects of VPA.

65. Variations in lobation of lung – Lower accessory lobes

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Introduction: In addition to the variations in the lobation, aberrant, accessory lobes and supernumerary lungs have been added to the pulmonary anomalies. The most important of these are the so-called tracheal lobes and lower accessory lobes (lower accessory lung or Lobes of Rokitansky). Debakey and his co-workers defined the Lower accessory lobes "as a tissue which is not connected with the normal bronchial tree" and thus would distinguish them from the type of "accessory lobe" defined by Leathy and Mac Callum.

Methods: A total 60 lungs were studied. Lungs containing inferior accessory lobes were separated and observed for the presence of any segmental bronchus by careful dissection.

Result: Out of 60 lungs, in 7 lungs we observed the presence of inferior accessory lobe and all the lungs belonged to left side. In those 7 lungs 3 lungs showed the presence of extra segmental bronchus to the accessory lobe.

Discussion: Accessory pulmonary tissue has a tendency to become cystic. The sequestered segment very frequently becomes infected and gives rise to symptoms of pneumonia. Arteriography is useful for diagnosis, and segmental resection or lobectomy is the indicated treatment.

66. Squatting facets of talus in the coastal population of Mangalore

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Introduction: The development of bipedal locomotion is one of the most significant adaptations of the hominin lineage and the foot is particularly specialized for this purpose. Talus is one of the most important members of the tarsal bones as it carries the weight in

stationary position and during movements. The articular morphology of the human skeleton can be subject to modification by stresses imposed upon it and habitual squatting alters the skeletal morphology of the lower limb.

Methods: This is a descriptive study done on 96 human dry tali of unknown age and sex obtained from the Department of Anatomy. Each talus was examined in detail for the presence of squatting facets and trochlear extensions.

Results: Squatting facets and trochlear extensions were observed in 55 (57.3%) tali and were more common on right tali (33, 70.2%). Majority of the tali were observed to have medial facet (33, 34.4%) and medial extension (28, 29.2%) alone and a combination of medial facet and medial extension was observed in 20 (20.8%) tali.

Discussion: Medial facet and medial extension both alone and in combination were frequently observed and were common on the right tali than left tali. Squatting facets and trochlear extensions were common in our study on Indians than the Europeans due to the habitual squatting position.

67. Study of mastoid canals and grooves in North Karnataka human skulls

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Introduction: This study was undertaken to observe the frequency of mastoid canals and grooves in north Karnataka dry human skulls. 100 dry human skulls of unknown age and sex from the department of Anatomy were selected and observed for the present study.

Methods: The mastoid regions of dry skulls were observed for the presence of mastoid canals and grooves, if any. A metallic wire was passed through the canal for its confirmation and then the length was measured.

Results: The Mastoid canals were present in 53% of the total 100 skulls observed either bilaterally or unilaterally. Mastoid grooves were present in 18% of the total skulls (100) observed. Double mastoid canal was found in 01% of total skull studied and both Mastoid canals & Mastoid grooves together were present in 02% of the total skulls (100) observed.

Discussion: The knowledge of mastoid canals and grooves is very important for otolaryngologists and neurosurgeons. Because they contain an arterial branch of occipital artery with its accompanying vein which is liable to injury resulting into severe bleeding.

68. Pressure effect of aberrant renal arteries on ureter

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Introduction: One of the causes for congenital pelvic hydronephrosis is aberrant renal artery. Causes have been attributed to defect in the pelvic ureteric junction. Anson et al (1936), reported that in their study about half of the accessory renal vessels which are from the aorta entered the hilum, while about half went to one or the other pole of the kidney. Lower polar vessels, which typically pass in front of the ureter, are associated with a relatively

high proportion of cases of hydronephrosis resulting from obstruction of the ureter in the ureteropelvic region and have been commonly held to be a cause of such obstruction.

Methods: A total 60 kidneys were studied. Kidneys containing accessory renal vessels were separated and observed for any accessory renal vessel crossing in front of the ureter and causing obstruction or dilatation of ureter.

Results: Out of 60 kidneys 21 kidneys had accessory renal arteries. In that 21 specimens two of them had accessory renal arteries crossing the ureter but the pelviureteric junction appeared normal.

In three of the specimens the aberrant renal artery entering the inferior pole of the kidney caused some pressure effect and the size of the ureter proximal to the level of crossing showed dilatation.

In five specimens there was congenital pelvic hydronephrosis. The proximal segment was grossly dilated along with dilatation of pelvis of ureter and also the ureter.

Discussion: Almost 50% of the cases having aberrant arteries had the pressure effect on the ureter, either in a mild form or in the gross form. This can lead to back pressure resulting in infection, calculi formation due to stasis, pelvic hydronephrosis and renal hypertension.

69. A study of vascular foramina of scaphoid and its clinical importance

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Introduction: The nutrient vascular foramina of scaphoid bone were observed and clinical interpretations were discussed.

Methods: The 100 dry scaphoid bones of adult age group irrespective of sex were studied.

Results: The vascular foramina distal to mid of waist were 1 to 2 in 16 % specimen and rest of 84% bones had more than 2 foramina. All the scaphoid distal to the mid of waist had vascular foramina but the proximal part to mid of waist of scaphoid are without vascular foramina in 8% cases, 1-2 vascular foramina in 20% and more than two in 72% cases. These observations indicate that there was rich blood supply in distal part of scaphoid in comparison of proximal part of scaphoid.

Discussion: The fracture and dislocation of scaphoid is very common in wrist trauma and avascular necrosis is directly connected with vascular pattern of scaphoid. We believe that the data obtained from the present study are important for the hand surgeons and radiologists. The details obtained will also be helpful for the morphologists and clinical anatomists.

70. Morphometric study of bony landmarks on adult skull base in western Maharashtra

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Introduction: Skull base has foramina and bony processes that bear anatomical and surgical importance. The aims of the study were: A) To evaluate the distances between the bony landmarks & facilitate the exposure of various foramina. B) To determine

differences between the right and the left side. C) To determine gender differences.

Methods: 100 dry adult human skulls were obtained from the Dept. of Anatomy and Forensic Medicine & Toxicology of medical college in Mumbai. A millimetric sliding vernier caliper was used to measure the distances. The statistical analysis was done using the statistical package Graph Pad Prism 5 software.

Results/Conclusions: Axial length of occipital condyles was greater on left side (22.86 ± 2.19 mm) than the right (22.72 ± 2.21 mm) but the difference was not statistically significant. $p=0.65$. The measurements were greater in the male skulls than female skulls. The difference was statistically significant on the right ($p<0.0001$) and the left ($p<0.0001$). The average anteroposterior and transverse diameter of the foramen magnum in the total sample was 34.13 ± 2.73 mm and 27.82 ± 3.32 mm respectively. The anteroposterior diameter was greater in the male skulls, not significant ($p=0.63$). The transverse diameter was greater in the female skulls, not statistically significant ($p=0.45$). Further parameters related to jugular foramen, foramen magnum and mastoid process were also measured and compared.

71. Museum technique: Model making using alginate moulds

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Introduction: The history of anatomy is characterized by continual development in understanding the functions of the organs and structures of the human body. About 20 years ago, life-casters began experimenting with alginate for moulding the human form. Compared to other flexible mould materials alginate has definite advantages.

Methods: Heart mould using alginate powder and heart models using dental powder were made in the Department of Anatomy.

Results: Mould is a hollow form for shaping fluid or semi solid substance which can be made from different variety of materials like alginate powder, latex, plaster of Paris powder, steel, iron and bronze. Alginate is a flexible mould and impression-making material widely used in reproducing figurines which is safe in direct contact with skin and sets very rapidly, making it preferable material for mould making. Dental powder is an ideal restorative material, identical to natural tooth structure, strength, adherence and appearance suitable for model making. Other materials used for model making are wax, ceramic and latex.

Discussion: Anatomy has evolved and changed over years with demands of medical profession. Reduction in cadavers coupled with rising student number has contributed to shortage of material available for anatomical studies. To overcome this, anatomical models came into play, thus making it a useful tool in anatomical teaching.

72. 3-D of epitympanic folds and spaces-in middle ear

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Introduction: Middle ear anatomy is really complex and challenging for Anatomists & Otologists. The topic is discussed in the embryology. A 3-D visualization of epitympanic folds & spaces has relevance in the etiopathogenesis, spread of Cholesteatoma in middle ear cleft & its surgery. However it is not an easily accessible & demonstrable area with traditional temporal bone dissection. Standard text books and literature give only minimal descriptions & diagrams.

Methods: The available literature with minimal figures & micro-endoscopic photographs are studied. The ear ossicles are fixed inside a six sided Perspex box. Tympanic membrane and various folds shaped in thick transparent colored glass sheets are fixed in the anatomical position.

Results: A 3-D-Model of the middle ear was successfully made — clearly showing from all the sides -the tympanic diaphragm-ie -the attic, the tympanic folds & ligaments running between the surrounding bony cavity and the ear ossicles, the Prussak's space, the anterior & posterior tympanic isthmuses.

Discussion: The Anatomy & ENT PG students can comprehend this most cost effective model - demonstrating the most complicated structure. This would be of immense help in middle ear surgery, especially in the upcoming endoscopic approach. This teaching aid will definitely arouse interest in the budding Anatomists to study this area in detail to decipher a complicated bit of Anatomy.

73. Morphological analysis of normal formalin fixed human mitral valve

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Introduction: To examine component parts and to provide the background for a better understanding of the mitral valve complex in formalin fixed hearts.

Method: The present study was conducted on 50 formalin fixed human adult hearts of both sexes obtained from Department of Anatomy, Gandhi Medical College, Bhopal. Hearts showing any indication of valvular disease were excluded. Circumference of valve orifice, commissural height and width, height and width of individual valve cusps of mitral valve were measured along with number of scallops in posterior cusp of mitral valve. Records were made about other additional findings.

Result: Circumference of MV orifice in formalin fixed hearts is $7.65\text{cm} \pm 0.75$ (in males) & $7.12\text{cm} \pm 0.57$ (in females). No accessory cusps were seen in MV. AML is not divided into scallops. Width of PML is more ($3.75\text{cm} \pm 0.55$ in males & $3.45\text{cm} \pm 0.49$ in females) than AML ($2.25\text{cm} \pm 0.36$ in males & $2.04\text{cm} \pm 0.44$ in females). Posterior cusp may have 2 —4 scallop.

Discussion: Measurements of various parameters are found to be less in fixed hearts as compared to normal individuals. These parameters will help cardiothoracic surgeons in various mitral valve surgeries. Formalin causes some amount of shrinkage of tissues.

74. A prospective study of ultrasonographic measurement of splenic length in relation with body surface area in adults of Bihar

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Introduction: The spleen, 'Haemo-Lymph organ' composed of lymphoid tissue is the largest 'Ductless gland' in the body. In a variety of Clinical conditions the spleen enlarges. The estimation of splenic size in vivo is often important in the diagnosis, treatment and prognosis of variety of disorders. The precise measurement of spleen by palpation is not reliable. Several prior studies have sought to develop standards for splenic size such as CT. Scan, Scintigraphy, MRI and Sonography.

Methods: The present study was done to determine the normal range of length of spleen in correlation with the body surface area of adult male and female subjects. 80 male & 80 female subjects aged between 20-60 yrs coming to the Dept. of Anatomy and Radiology of Darbhanga Medical College and Hospital, Darbhanga, Bihar were selected. Splenic length was determined by Ultrasonography and body surface area was calculated with help of Mosteller formula.

Results: It was discovered that length of spleen increased with increase in body surface area in both males and females. The dimension was less in female than that of male with corresponding group of the body surface area.

75. Plastination by melamyne at room temperature

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Introduction: To develop cost effective plastination technique by use of Melamyne as compared to Standard S10 technique for preparation of plastinated specimens used for teaching.

Materials: Formalin, Acetone, Xylene, Melamyne, Hardener, Paint brush, Acetometer, and glass jars.

Method: Biological specimens were fixed in formalin, dehydrated in acetone, degreased in xylene, and finally impregnated with melamyne with its hardener and finally dried and painted at room temperature.

Result: Dry, odorless, aesthetically pleasing, non-toxic, portable and durable specimens are produced which are used for teaching.

Discussion: Cost of plastination using standard S10 technique is high so by using indigenous chemicals it is possible to build a library of real specimen for normal, exotic and pathological anatomy at much lower cost.

76. A tomographic study of midline cavities of brain

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Introduction: During intrauterine life, 3 potential midline cavities occur and they regress between 7th month of intrauterine life to 2nd year of postnatal life. Persistence of these cavities in septum pellucidum has been widely regarded in clinical neurology or autopsy series as incidental finding of little clinical importance.

But many previous studies have established relation between presence of cavum septum pellucidum, cavum vergae & cavum veli interpositi with abnormalities of limbic system and schizophrenia.

Methods: 700 computerized tomographies in axial plane from department of radiology were examined.

Results: Among the 700 cases 51 showed midline cavities (7.3%) with a Male: Female ratio of 1.4:1. Age of the patients ranged from 14 -77 years with a mean age 30years. Cavum septum pellucidum, cavum vergae & cavum veli interpositi were observed in 13(25.4%), 3(5.8%), 2(3.9%) respectively. Cavum septum pellucidum and cavum vergae were seen in 8 (15%) cases. A combination of cavum septum pellucidum and cavum veli interpositi were observed in 16(31%) cases. All three were seen in 9(17%) cases.

Discussion: In this retrospective study, the individual incidence of Cavum septum pellucidum, cavum vergae & cavum veli interpositi was lower than the previous studies. But the occurrence of combination of cavities is higher in this study. Among these 700 cases only a negligible proportion of patients were referred from psychiatry department and all others were only incidental finding making this study significant.

77. Histochemical study of mucins in normal human prostate glands and its clinical correlation

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Introduction: To analyze normal mucin distribution and type in human prostate gland and its applied aspects in pathological diagnosis and surgical management of prostate tumours.

Methods: Fifteen normal human prostate glands were collected from autopsy and fixed in 2% calcium acetate in 10% formalin for a week. The glands were subjected to routine histological processing. Sections of 4 –5 micrometer thickness were cut and stained with Hematoxylin and eosin and special stains for mucins.

Results: Periodic Acid Schiff's stain showed that normal prostate contains neutral mucins. This was confirmed by other mucin stains that is AB pH –1 & 2.5,AF, combined AB , combined AF- AB.

Discussion: Normal prostate contains neutral mucins. These mucins change in case of malignant changes in the prostate gland. Hence study of mucins helps in early diagnosis of carcinomatous changes in prostate gland.

78. Assessment of DNA damage in carcinoma breast patients on chemotherapy using comet assay

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Introduction: Generalized genomic instability is reported in cancers with accumulating mutations, in genes controlling cell cycle check points and mutations in genes responsible for DNA repair mechanisms, transforming normal cells to clonally proliferate. BRCA1 mutation, by weakening DNA repair mechanism, is

implicated in familial breast cancer. Multi- treatment strategies use a combination of chemotherapy, surgery, radiotherapy and hormones. Of interest here are the chemotherapeutic drugs acting via DNA damage mechanisms to control the disease. An attempt is made here to study this damage using Comet Assay, an electrophoretic technique; the comet tail lengths a measure of DNA damage.

Methods: Fifteen cases of carcinoma breast, 38 to 76 years age, were randomly chosen for this study. Nine of them newly detected with it formed our controls. Six of them receiving their cycles of neo- adjuvant chemotherapy formed our cases. Lymphocytes from these subjects were subjected to comet assay. The tail lengths of 2250 comets of these groups were reported in ocular units (1 OU = 2µm).

Results: Comparing the mean comet tail length of cases post neo- adjuvant chemotherapy (56.75 + 3.43) to that of controls (41.72 + 1.57) it was found to be statistically significant (P < 0.001).

Discussion: Comets in controls reflect the generalized genomic derangement. We conclude that extra DNA damage in cases has been caused by the chemotherapeutic agents adding to already existing DNA damage. This damage, in time; and hence requiring follow up studies; is amenable to repair, though there is impairment of the repair mechanism due to the malignant process per se.

Abbr: BRCA1- Breast Cancer 1 gene

79. Dermatoglyphic pattern in congenital cataract

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Introduction: Congenital cataract is a significant cause of visual impairment in childhood. Since the congenital cataract is a hereditary disease and dermatoglyphic patterns are decided by genetic constitution of an individual, this study is an attempt to find the dermatoglyphic patterns in congenital cataract of patients as well as their parents.

Aim was to study the dermatoglyphic patterns associated with congenital cataract, identify the statistically significant findings in dermatoglyphic patterns. Identify if there are any similar dermatoglyphic patterns of the patients and their available 1st degree relatives.

Methods: Prints of the hands & the digits were taken separately on the same paper after proper cleansing. Once dermatoglyphic prints of the hands were obtained, they were scanned on the flatbed scanner and stored in the desktop computer and then the patterns were studied.

Results: It was concluded that the following dermatoglyphic findings can be used for screening & counselling purposes as they are seen in both patients & parents.

- Absent 'atd' angle in both hands.
- In the left hand:
 - Lower incidence of simple arches.
 - Lower incidence of total number of arches.
 - Lower incidence of radial loops.
- In the right hand:
 - Lower incidence of ulnar loops.

- Lower incidence of total number of loops.
- Higher incidence of whorls in the right hand.

80. Morphological study of placenta in pregnancy with hypertension

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Introduction: The aim of my study is to compare the morphological changes of placenta in preeclampsia with that of normal placenta and to analyze placental changes in the pregnancy induced hypertension. These changes serve as a guide to the duration and severity of disease.

Methods: The material consisted of fifty term placenta collected from the labour room and operation theatre of the department of obstetrics and gynaecology, V.S.S. Medical College Hospital, Burla, after the normal or induced delivery of women clinically diagnosed as pre-eclampsia, severe pre-eclampsia, eclampsia, pre-eclampsia superimposed on essential hypertension and normal uncomplicated pregnancies as control. The weight, diameter, thickness of centre, infraction, calcification, retroplacental hematoma is observed.

Results:

- 1) The weight, diameter, thickness of placenta, in study group appears to be towards lower side in comparison to the controls.
- 2) There is higher incidence of marginal insertion of cord in study group in comparison to controls.
- 3) Retroplacental hematoma, multifocal and central infraction observed in study group.

Discussion: This study will help in understanding of the specific aetiologies of adverse outcome which will lead to specific treatment and preventive measures for those with risk for recurrence in subsequent pregnancies, specifically in pre-eclampsia and eclampsia cases.

81. Infertility, recurrent spontaneous abortions, congenital malformation and cancer – Points of common causality

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Introduction: Sperm DNA integrity is vital for birth of a healthy offspring. Sperm DNA damage has been closely associated with disorders of reproductive health including fertilization failure, poor embryo quality, recurrent spontaneous abortion (RSA), congenital malformations (CM) and childhood cancers and autism. Further the persistence of sperm DNA damage is indicative of deficiency of the DNA repair mechanisms. Therefore this

study was planned to analyze sperm factors which may be the underlying aetiology in infertility, CM, RSA and cancer.

Study design: Retrospective study.

Methods: In the ongoing study, 500 cases of idiopathic male infertility, 86 couples with RSA, 27 couples having children with congenital malformation, 30 males who fathered an offspring with non familial childhood cancer and 300 fertile controls were enrolled. The reactive oxygen species (ROS) levels in semen was investigated by chemiluminescence and sperm DNA damage (DNA fragmentation index: DFI) was investigated by sperm chromatin structure assay (SCSA) using flow cytometry. All cases had no identifiable causes of infertility, RSA, CM and cancer by comprehensive clinical and laboratory examination. Both the parents had normal karyotype and parents of children with cancer had no somatic mutations in retinoblastoma gene or presence of BCR-ABL fusion oncogene.

Results: The ROS levels in the infertile males (47.RLU/sec/million), in males partners of couples with recurrent spontaneous abortions (38 RLU/sec/million), in congenital malformation category (24.16 RLU/sec/million) and in fathers of children with non familial childhood cancer (32.8 RLU/sec/million) was significantly higher than the controls. Similarly the sperm DNA damage in all these categories was also higher as compared to controls ($p < 0.005$).

Discussion: The findings suggest that oxidative stress and sperm DNA damage are an important aetiological factor in these conditions. Oxidative DNA damage leads to production of mutagenic bases, single stranded and double stranded breaks and preferentially leads to telomeric loss and may cause loss of genomic integrity, chromosomal instability and cancer. Counseling such males to adopt lifestyle interventions as moderate physical exercise, yoga, meditation, eating plenty of fruits and vegetables, antioxidant supplementation will help to reduce oxidative stress and DNA damage. Such cases should also be advised to delay the second child till DNA quality shows significant improvement. Thus this study is very important and has immense clinical implications and the findings and interpretation may help such couples to have a healthy offspring.

82. A comparative study of quantitative estimation of calcium content of human placenta

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Introduction: For proper mineralization and growth of the foetus calcium is one of the important essential element. Foetus receives calcium through syncytiotrophoblast by an active process.

Method: A quantitative study of calcium content of placenta of various groups like early (8-20) weeks of gestation, normal, hypertensive and diabetic groups were made. Calcification with various other factors like maternal age, parity, period of gestation and weight of the baby were co-related. Fifty placenta were collected from labour room, membranes removed and cut into small pieces and grinded in a mixer and grinder to get a homogenous mass from which a small amount was taken with a spatula in a crucible weighed and charred in a electric heater for about one hour. Then it was ashed in a Muffle furnace at 500 for 2-3 hours. Aliquot was prepared and sample of aliquot was taken for AAS (Atomic absorption spectrophotometric analysis) Earliest noted calcification was at 8 weeks of gestation by chemical estimation.

Results: The calcium was traceable from the gestation period of 8 weeks which gradually increased up to term period of gestation.

Discussion: Comparative study indicated negligible difference of calcium content in the different groups of placenta.

83. A comparative study of dermatoglyphic patterns in patients with primary glaucoma and control group

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Introduction: Dermatoglyphics are the dermal ridge configurations on the digits, palms and soles. They are permanent and inherited. A comparative study of the dermatoglyphic patterns of patients with primary glaucoma and general healthy population was made to ascertain the value of dermatoglyphics as a diagnostic tool for primary glaucoma.

Methods: Fifty-seven primary glaucoma patients (24 males, 33 females) and fifty normal healthy persons (25 males, 25 females) participated in this study. In the present study primary glaucoma subjects were examined in terms of dermatoglyphic characteristics and compared with that of controls.

Results: Frequency of loops was decreased but that of whorls and arch was increased in primary glaucoma patients. Deviation was also observed in a-b ridge count and atd angle. In general tfr and afrc were also increased.

Discussion: These can be considered useful as a supportive investigation and to some extent for knowing the prediction for primary glaucoma.

84. Dermatoglyphic study in hands of type II diabetes mellitus patients of Mewar region

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Introduction: To study dermatoglyphic patterns in hands of type II diabetes mellitus patients and compare them with normal persons. To evaluate dermatoglyphics as an effective and economical screening method for diabetes mellitus type II.

Methods: Dermatoglyphic patterns were recorded by Cummins ink method. Material consisted of dermatoglyphic patterns of both hands of 200 persons, i.e, 100 each of patients and normal persons. Each group was divided into two sub groups, male and female. Both groups were from Mewar region of Rajasthan (districts of Udaipur, Pratapgarh, Bhilwara, Chittorgarh and Rajasamand) to avoid any regional variations. Controls were carefully selected to be free from any disease as disease could influence the dermatoglyphic pattern. The patient group was pre-diagnosed to be of diabetes mellitus type II by Endocrinology Department.

Dermatoglyphic patterns in both hands were compared between control and diabetics of same age group and gender. Observations were tabulated to find out distribution of finger-tip

patterns, Total and Absolute Finger Ridge Count, atd angle, tad angle, tda angle, deviation of t, C-Line patterns, t' and t''.

Results and Conclusions: Increase in whorls and decrease in loops was observed on II, III and IV digit, increase in TFRC and AFRC values, rise in mean atd angle, rise in mean tda angle and rise in t' and t'' was found to be statistically significant in both genders as compared to controls. C-Main line pattern was radial in diabetic patients while absent in controls.

85. A study on anatomical variations in formation and branching pattern of lumbar plexus

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Introduction: Review of literature shows that the variations in the formation and branching pattern of lumbar plexus is not uncommon thus the study is undertaken to know the formation and branching pattern of lumbar plexus in cadavers.

Methods: Adult human cadavers from Department of Anatomy SRM Medical College, Chennai. Adult cadavers in the dissection hall of Anatomy Department, SRM MCH Chennai were observed meticulously after following simple dissecting procedure and the data recorded.

Discussion: The knowledge from the study will be of great value not only to anatomists that also to radiologists, anaesthesiologists and surgeons.

86. Morphometric study of humerus – A study in central Rajasthan population

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Introduction: Humerus is a long bone in the arm, connecting the shoulder to elbow. Anthropometry measurements are useful to estimate stature and bone length, general body size and stature estimated from the human skeletal remains have an important role in identification of missing persons into medicolegal investigations and orthopedic surgeons for the treatment of proximal and distal humerus fractures and reconstruction. The aim of present study is to determine the mean values of humerus segments in population of central Rajasthan and compare the findings with other populations to assist in forensic and archeological cases.

Method: 104 dry adult human humerus constituted the material for the present study in central Rajasthan for their segmental morphometric analysis and following measurements were obtained by osteometrical board and analogical caliper.

- Maximum length
- Mean distances between articular segment of humeral head and greater tuberosity
- Mean distance between proximal and distal point of olecranon
- Mean distance between distal part of olecranon process and trochlea

- Mean distance between proximal edge of olecranon fossa and proximal part of trochlea

Result: Results indicate the existence of shape differences. 54% have a relatively squared distal epiphysis, while 46% exhibit a more rectangular shape. Shape differences for the cross-validated data, give slightly better classification results in proximal humerus compared with distal humerus. Size alone performed better. As anticipated, the classification accuracy improves when both size and shape are combined.

87. Study of branching pattern of arch of aorta in embalmed human cadavers

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Introduction: The aim of this study is to provide an anatomical basis to assist surgeons in performing vascular surgical procedures involving the arch of aorta and its branches. **Methods:** In this study, branching pattern of arch of aorta was studied by dissection in 20 embalmed human cadavers irrespective of sex during routine dissection of undergraduate students.

Results: The usual three branch pattern was found in 16 cadavers (80%); variations were found in 4 cadavers (20%); 10% presented with common trunk for brachiocephalic trunk and left common carotid artery; 10% presented with left vertebral artery arising from arch of aorta.

Discussion: The knowledge of anatomical and morphological variations of the arch of aorta and its branches is significant for vascular surgical procedures of head, neck, brain and upper limbs and for diagnostic procedures before planning an aortic arch surgery or endovascular interventions.

88. Arteria profunda brachii and its variations

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Introduction: Arteria profunda brachii accompanies the radial nerve in the radial groove. It is very much in contact with the humerus the branches profunda brachii are take part in anastomosis around the elbow joint. These facts are important in the fracture of humerus and supra condylar fracture and hence detailed study of profunda brachii artery was undertaken.

Methods: In 40 upper limb specimen the origin of the artery was observed by careful dissection.

Result: In 40 specimens dissected, profunda brachii artery arose from the posteromedial side of the brachial artery in 35/40 (87.5%) specimens distal to the teres major tendon and followed the radial nerve closely and it passed downwards and outward between the medial and long head of the triceps and reached posterior surface of the humerus. In 2/40 specimens the profunda brachii artery and superior ulnar collateral artery arose from a common trunk, In 1/40 specimen arose from the posterior circumflex artery, In 1/40 specimen arose from the axillary artery, In 1/40 specimen profunda brachii artery arose as two separate branches and both followed the course of the radial nerve.

Discussion: The knowledge about origin of profunda brachii artery and its variations will be helpful and useful to the clinicians of their respected fields.

89. A study of topography of nutrient foramen in human fibulae

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Introduction: Nutrient foramen is an opening in the shaft of bone which gives passage to the nutrient artery. The knowledge of location of nutrient foramen is important in surgical procedures like bone grafting, microsurgical vascularised bone transplantation, open reduction of fracture etc. The study aimed to determine the position, location and number of the nutrient foramen of the fibula.

Methods: 100 human dried fibulae obtained from the Department of Anatomy, Seth G.S.M.C & KEM hospital, Mumbai were studied. A magnifying hand lens and a thin stiff wire to confirm the number and direction of nutrient foramen were used.

Results: In 17.24% of fibulae the foramen was directed towards the growing end. In 7% of fibulae there was no foramen, 23% fibulae were having two foramina, and 70% were having one foramen. The nutrient foramen was located maximally on the posterior surface of fibula (84.48%) and in the middle 1/3rd (81.03%).

Discussion: This study has provided information on the topography of nutrient foramen of fibula. This knowledge will be useful in certain surgical procedures to preserve the vascularity of fibula.

90. A study of morphological variations in lungs

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Introduction: The Present study was performed to find variations in lungs with respect to the 1) morphology of fissures 2) lobes 3) cardiac notch 4) ligula.

To note the variations, to compare them with previous studies and to find their clinical implications.

Methods: 12 pairs of lungs used for the study were from formalin-fixed adult Indian cadavers. Lungs from tuberculosis affected cadavers were excluded. The lung specimens were meticulously observed for the patterns of lobes, fissures, cardiac notch, ligula. The variations were noted and specimens were photographed. The study was performed in cadavers from western Maharashtra population.

Results: We found specimens of right side lungs, two specimens with two lobes, one with inferior accessory lobe. In left side lung specimens one specimen without any fissure and two without cardiac notch, in one specimen oblique fissure passes above ligula.

Discussion: The results and their comparison with the previous works show that there is a wide range of difference in occurrence of lobes, fissures, cardiac notch & ligula. Frequency of occurrence of variations in lungs in a particular population might help the radiologist and clinician to make correct diagnosis, plan, execute and modify a surgical procedure depending on the merit of the case.

91. Anatomy of rotator cuff of shoulder and its clinical significance

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Introduction: Injuries to rotator cuff vary from supraspinatus tendinitis to partial and complete tears of the tendons that form the rotator cuff. Variable anatomical factors predispose to such injuries.

Methods: Twenty one shoulders from 11 cadavers were dissected meticulously and the widths of supraspinatus, infraspinatus, teres minor and subscapularis tendons were measured. Total length of rotator cuff and the length and width of coracoacromial ligament were also measured.

Results: The mean width of supraspinatus tendon was 1.99 cm; the mean width of infraspinatus tendon was 2.4 cm. The mean width of teres minor tendon was 2.02 cm and the mean width of subscapularis tendon was 3.61 cm. The average length of rotator cuff was 14.72 cm. The mean length of coracoacromial ligament was 2.26 cm and its mean width was 1.87 cm. Subdeltoid bursa was present in all 21 specimens and subacromial bursa was present in only 19 specimens.

Discussions: Tears of rotator cuff tendons are usually investigated by Magnetic Resonance Imaging [MRI] and treated arthroscopically or by open surgery. Knowledge of anatomical parameters like the widths of various rotator cuff tendons and the coracoacromial ligament will help the surgeons in their quest.

92. Morphometric study of proximal femur in dry bone

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Introduction: Fractures of proximal femur involving the neck and trochanters are most common. Internal fixation of these fractures with implants is mandatory for early mobilization and rehabilitation of the patients. These implants have been designed according to the dimensions of proximal femur. The purpose of present study to direct measurements in dry femur is to record morphometric parameters and enlightens the orthopedic surgeons, biomechanical engineers about the proximal femur morphometry. The usage of the over sized implants adversely affects the functional end results of surgery.

Methods: The 100 femurs collected from the department of anatomy, Seth G.S. Medical College Mumbai were used for study. The parameters were studied using goniometer and vernier calipers as per guidelines. The results were recorded and worked out statistically.

Results: The average neck shaft angle in the present study was found to be 124.55 degrees. The mean neck length was found to be 3.36 cm and the mean width was 2.72 cm.

Discussion: The present study concludes that the dimensions of currently available western orthopedics implants do not match the dimensions of the proximal femora of Indians and stresses the need for modification of the same.

93. An anthropometric study for measurement of stature from arm-span among adult male khasi tribe of Meghalaya

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Introduction: To determine whether there is any correlation between the stature and arm-span.

Methods: 69 khasi healthy male subjects of age group 25-50 years were studied. Their height was measured from crown to heel with standard height measuring instrument in Frankfurt's plane with bare foot and their arm span was measured with flexible steel measuring tape using standard procedure.

Results: The regression analysis was carried out to find the strength of relationship of arm-span with body height and the following equation was formulated:-

$$Y = mx + c$$

where Y= arm-span, x= height, c=intercept/constant, m=Regression Coefficient.

In our study following values were obtained $m=1.038$ and $c=0.499$ so equation becomes $Y=1.038x+0.499$ and $r^2 = 0.96$ and $r=0.98$ which suggests strong positive correlation between height and arm-span of the individuals. All the findings will be discussed in details during presentation.

Discussion: By using the arm-span measurement we can calculate the height of a khasi male individual of Meghalaya.

94. Segmental variations of rectus abdominis muscle by tendinous intersections

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Introduction: The rectus abdominis muscle is a long strap muscle that extends along the whole length of the anterior abdominal wall. It is broader above and lies close to the midline being separated from its fellow by the linea alba.

Methods: The anterior abdominal wall was carefully dissected in twenty nine cadavers. Fifty eight rectus sheaths were exposed and the tendinous intersections of rectus abdominis muscles were observed.

Results: The number of tendinous intersections of the rectus abdominis muscle was between 2 to 4. The following were the findings on the right and left rectus abdominis in 29 cadavers. Right side 4 intersections in 11 cadavers - 38%, 3 intersections in 16 cadavers - 55 % and 2 intersections in 2 cadavers - 7 %. On left side 4 intersections in 8 cadavers - 27.5 % , 3 intersections in 19 cadavers —65.5 % and 2 intersections in 2 cadavers - 7 % **Discussion:** According to S.Meenakshi and K.Y. Manjunath, the number of the tendinous intersections of the rectus abdominis were studied in 41 cadavers (82 recti). The number of tendinous intersections varied from one to four and their frequency of occurrence was four tendinous intersections (21.95%); three tendinous intersections (60.97 %); two tendinous intersections (14.63%) and with only one in (2.44%). In the present study we observed 3 intersections in 60%, four intersections in 33% and two intersections in 7% and presence of one intersection was not observed in our study.

Discussion: The tendinous intersections are observed more commonly at and above the level of umbilicus, than below the level of the umbilicus. This might be a reason for the weaker lower abdominal wall to be more prone for hernias. The attachment of the intersections to the posterior wall of the rectus sheath may be thought of to provide additional strength to the anterior abdominal wall.

95. A study of the cutaneous perforating arteries derived from the posterior tibial artery

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Introduction: The present study attempts to study the cutaneous perforating arteries derived from the posterior tibial artery. These branches extend from the knee to the ankle, and emerge through the calf muscles and fascial plains as fascio-cutaneous and musculo-cutaneous arteries.

Methods: Detailed dissections of the soft tissue of the leg were done in 10 cadavers to display the above mentioned perforating arteries. The number and position of these perforators were noted.

Results: A total of 103 perforating arteries were found. The average numbers of perforator in each leg were 3 to 7 (average 5.2) and they were distributed in groups in the upper, middle and lower thirds of the leg.

Discussion: Knowledge of the perforating arteries derived from the posterior tibial artery will be of great help in vascularised flap reconstruction in soft tissue injuries of the leg and will benefit the discipline of orthopedics, traumatology and plastic surgery.

96. Morphologic and morphometric analysis of glenoid cavity of scapula

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Introduction: The present study aimed at calculating three dimensions, vertical diameter, horizontal diameter of the upper segment and horizontal diameter of the lower segment of the glenoid cavity and describing the incidence of its different shapes.

Methods: In a total of 100 dried unpaired scapula, the above mentioned three diameters are measured using Vernier calipers and the mean dimensions are calculated, morphological variations are studied and the incidence of different shapes is noted.

Results: Average vertical, horizontal diameter and shape of glenoid cavity has been measured and the measurements will be discussed in presentation.

Discussion: Dimensions and shape of glenoid cavity are associated with osteoarthritis and recurrent dislocation of the joint, the knowledge of the above said variations of Glenoid cavity is important in manufacturing the Glenoid component of shoulder prosthesis, repair of Bankart's lesion, procedures like Posterior glenoid osteomy.

97. Histological study of thyroid gland at different weeks of gestation

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Introduction: In human beings, the thyroid gland is one of the earliest endocrine organs to differentiate. It has an important hormonal role in embryonic development.

Methods: 50 still born, normal fetuses 30 male, 20 female were obtained. These fetuses included the spontaneous abortuses and stillborns. Fetuses were obtained within 4-5 hrs of birth avoid post-mortem changes. Fetuses were carefully dissected, infra-hyoid muscles were separated and the thyroid gland was removed. After fixation of tissue the block was prepared for section cutting and staining. The line of micrometer scale coinciding with line of micrometer eyepiece was observed and the value of equidistant line is decided. On calculation, 1 division of micrometer eye piece was 4µm. By using this scale diameters of follicles were calculated at 10xs by 40xs. Size of the thyroid follicles was measured. Histological structure were observed from early to late fetal period —Nature of epithelium, appearance and amount of colloid content and capsular and vascular development was studied in fetuses of different gestational age.

Result: The size of follicles increased gradually 12wks to 24 wks, and increase in the colloid

Discussion: Assize of follicles and colloid increases which increase the weight of thyroid gland in human fetuses seems to be directly proportional to the Increase in the body weight, crown-rump length and estimated gestational age of fetuses. The weight of thyroid at 12th week was 0.0717gms. It increased gradually up to 0.517gms at 28th week of gestation. The weight at 38th week gestation was 1.25 gms.

98. Study of the histological structure of kidney of hatched chicken exposed to vapours of standardized and experimental embalming fluid during hatching.

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Introduction: The study aimed at observation of any teratogenic /adverse effects upon histology of the chick kidney when exposed to two different concentrations of vapours of formalin containing embalming fluids throughout the incubation period of 21 days.

Methods: 100 freshly fertilized broilers eggs were taken keeping 20 as control group (Group I), not exposed to any embalming fluid but allowed to incubate and hatch in normal conditions. Next group of 40 eggs being exposed to vapours of embalming fluid containing higher concentration (106 m mol/lit) of formalin (Group II) and the remaining 40 eggs were exposed to the vapours of embalming fluid containing lower concentration i.e half the concentration (53 m mol/lit) of formalin (Group III).

Results: The hatchability rate of Group I, II and III was 60%, 42.5% and 52.5% respectively i.e hatch rate was maximum in control group or group 1, and least in group 2. On dissecting the kidney of all 3 groups, no changes in the gross appearance of the kidney were seen. When seen under light microscope for histological changes following changes were observed glomerular enlargement, glomerular congestion, mesangial proliferation and increased bowman's space were maximum in group II followed by Group III and Group I. Similarly cystic dilatation and cloudy swelling in PCT was maximally seen in Group II (17.64% and 41.17% respectively) followed by Group III and least in Group other changes like infiltration by Lymphocytes basophilic mass

formation, lymphoid follicle formation, blood vessel congestion, necrosis of nephron, degeneration DCT, PCT changes, ischemic/toxic injury were also seen.

99. Administration of dilantin sodium causes teratogenic effect on developing mice and its histological study

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Introduction: The term teratology is broadly used to include the study of any abnormality arising in the course of development. An increased incidence of congenital anomaly in the children of epileptic women has been suggested due to use of phenytoin, this includes cleft lip and palate, cataract, anencephaly, cardiac and multiple other anomalies.

Methods: The present experiment was carried on 40 Swiss albino mice of 10-12 weeks old weighing 40gm, 30 were treated with Dilantin and 10 were controls. After 19th day of gestation animals were sacrificed and the litters were examined for any gross malformation. Viscera of treated and control groups were examined after dissection and some viscera like heart, brain, liver, kidney with corresponding controls were processed for histological examination. No abnormality detected in the litters of control group. The litters of dilantin treated group on 10th & 12th day showed no anomaly, while litters treated on 11th day observed and showed foetal mortality, reduction in weight as well as various congenital malformations. Foetal mortality was much more in treated group i.e. 26.05% as compared to control group of 4.59%. Average weight in treated litters was only 1.2gms, whereas in controls it was 2.9gms.

Result: Malformations thus induced in mice litters treated with Dilantin, indicates that the drug injected is a teratogenic agent.

Discussion: The effect of maternal drug ingestion on the foetus and neonates has become an increasing concern to physicians during recent years due to teratogenic effects. Hence this study was done.

100. Chronic exposure of mice to 900-1900 MHz radiation from cell phone resulting in microscopic changes in the kidney

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Introduction: The aim of our study was to evaluate the possible effects of chronic exposure to 900-1900 MHz (ultra high frequency) radiation emitted from 2G cell phone on kidney of mice at the histological level.

Methods: Our animal study was approved by institutional animal ethics committee. In our study, we used 45 litters containing both male and female mice for each control and experimental groups. We exposed the experimental group animals to 2G (900-1900MHz) ultra-high frequency radiations, 48 minutes per day for a period of 30 to 180 days. We kept the sham control group under similar conditions without 2G exposure. We sacrificed the animals, procured kidney and processed for histomorphometric study. We measured size, weight and

volume of kidneys and analyzed sections under microscope to study structural changes and morphometric data like cell volume, cell density and number etc. We compared the findings of both groups statistically.

Results: Kidneys of 2G exposed group had the following findings in comparison to sham control group (P value <0.05): increased glomerular size, dilated capillaries and increased urinary space. Proximal convoluted tubule showed wider lumen with reduced cell size, brush border interrupted at places and vacuolated cytoplasm and pyknotic nuclei. Wider lumen with reduced cell size and marked basal striations were found in the distal convoluted tubule. Other parameters did not have significant difference.

Discussion: The present study indicated that chronic exposure of ultrahigh frequency radiation emitted from 2G cell phone could cause microscopic changes in glomerulus, proximal and distal convoluted tubules of kidney.

101. Effect of Febuxostat in albino-wistar rat liver

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Introduction: The study aims to evaluate the microscopic changes in liver of adult Albino-Wistar rats administered with oral Febuxostat.

Methods: 1. 12 adult male Albino-Wistar rats weighing 180-220 g. 2. Dimethyl Sulphoxide as solvent of the drug. 3. Drug Febuxostat. 4. Orogastric tube. 5. Distilled water.

Methodology: Group A -Control group comprising of 6 rats were given 10% Dimethyl Sulphoxide for 60 days. Group B -Experimental group comprising of 6 rats were given 10 mg/kg Febuxostat orally for 60 days dissolved in 10% Dimethyl Sulphoxide.

Group A and Group B animals were sacrificed after 60 days by cervical dislocation.

The liver tissues were preserved in formalin, processed and stained with hematoxylin and eosin stain.

The slides were examined under Olympus light microscope and the histological changes were seen.

The slides were photographed using 6.1 Megapixel Nikon digital Camera.

Results: The histological changes in the liver of rats administered with drug Febuxostat were sinusoidal dilatation, central vein dilatation, parenchymal lymphocytic infiltration and haemorrhage and hepatocyte degeneration.

Discussion: Hence the drug Febuxostat should be used carefully in those patients who have liver impairment before giving treatment for gout.

102. Role of alpha lipoic acid (ALA) induced up-regulation of synaptic proteins on sodium arsenite (NaAsO₂) induced neurotoxicity in developing rat cerebellum

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Introduction: To evaluate the effects of exogenous ALA on sodium arsenite (NaAsO₂) induced neurotoxicity in the developing rat cerebellum.

Methods: Mother reared Wistar rat pups were maintained according to CPCSEA guidelines. The day of birth of pups was designated as postnatal day zero (PND 0). The animals were divided into: control (normal, sham) and experimental groups receiving NaAsO₂ alone or along with ALA via intraperitoneal route from PND 1 to 21. Motor coordination of animals was assessed by Rotarod test. Unfixed cerebellar tissues were processed for estimation of levels of arsenic while status of oxidative damage was measured in terms of levels of reduced glutathione (GSH) and malondialdehyde (MDA). Expression of synaptic proteins (Synaptophysin and PSD95) was evaluated by immunohistochemical localization along with Western blotting.

Results: Co-administration of ALA with arsenic resulted in improvement in motor coordination. Also, increase in the GSH levels, decrease in MDA levels along with up-regulation of Synaptophysin and PSD95 expression in the cerebella of these animals was observed.

Discussion: The present study demonstrates the mechanistic approach of ALA in amelioration of arsenic induced neurotoxicity.

103. Morphometric study of brain ventricles by neuroimaging meta-analysis

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Introduction: The ventricles of the brain are a communicating network of cavities filled with cerebrospinal fluid (CSF), comprising of 2 lateral ventricles, the third ventricle, cerebral aqueduct, and fourth ventricle. The Choroid plexuses located in the ventricles produce CSF, which fills the ventricles and sub-arachnoid space, following a cycle of constant production and reabsorption.

Method: Multivariate meta-analysis was performed on fifteen studies of ventricular size in normal appearing CT-scans without obvious pathologies. Random effect regression analysis was used to examine the influence of gender on effect size.

Result: Left lateral ventricle was found to be larger than the right in both sexes; both lateral ventricles were larger in the males. The linear measurements of the lateral ventricles demonstrated positive correlation to cranial size, while width of the third ventricle and of the hemispheric sulci was independent of the skull size. Analysis showed that dimensions of third ventricle and fourth ventricle are larger in males than in females. The dimensions of third ventricle increases with age in both males and females.

Discussion: Total ventricle volume to total brain volume ratio was found to be 2% in normal subjects in these studies, and can be significant marker in diseases like: Hydrocephalus, Alzheimer, schizophrenia, neurodegenerative disorders.

104. Surgical vulnerability of facial nerve

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Introduction: It is a well known fact that facial nerve is the most important nerve for ear surgeons since it is under risk of getting damaged in mastoid surgeries for chronic otitis media which are one of the most commonly performed surgeries by them. It has however not been reported in literature that which portion of its intratympanic course is under threat most of the times. The purpose of this study is to find out the most vulnerable portion of facial nerve during mastoid surgery so as to caution the new ear surgeons.

Methods: Hospital data from six different medical schools for last 1200 cases of mastoid surgeries was collected on the basis of questionnaire designed by the author and compared statistically.

Results: It was found that all surgeons had reportedly almost similar rate of cases in which facial nerve was affected or damaged. Neuropraxia was the most common form of injury and second genu of the intratympanic course was found to be the most anatomically vulnerable site of facial injury.

Discussion: Facial nerve is most vulnerable at the point of second genu followed by the vertical portion in the intratympanic course.

105. Level of division of sciatic nerve in fetuses

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Introduction: Sciatic nerve is the largest branch of sacral plexus (L4-S3) that is formed within the pelvis before its exit into the gluteal region through the greater sciatic foramen below the piriformis and descends along the back of the thigh and usually divides into common peroneal and tibial nerve just proximal to the knee. The present study aims to study the level of division of the sciatic nerve in fetuses.

Methods: This study was carried out in 25 fetuses of 27 weeks to 40 weeks of gestation obtained from the Department of Obstetrics and gynaecology, RIMS, Imphal. The lower limbs of the 25 fetuses were dissected bilaterally and the sciatic nerve was traced up to the level of popliteal fossa.

Results: In the present study, least incidence of sciatic nerve division was found in the gluteal region 2%. In 12% of the fetuses the sciatic nerve was found to divide in the pelvic cavity before it enters into the gluteal region. The highest incidence of sciatic nerve division was found in the popliteal fossa (86%).

Discussion: Various possible variations of sciatic nerve should be kept in mind during surgical procedure or at the time of giving anaesthesia to avoid any unwanted event. High level of division of sciatic nerve into common peroneal nerve and tibial nerve may result in neuropathy.

106. Accessory prominence on the medial wall of occipital horn of lateral ventricle and its neurosurgical importance

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Introduction: The normal anatomy & variation of occipital horn is important to neurosurgeons because of its close relation with the basal cistern, the pineal gland & the tail of hippocampus. The variation in the size & shape of the occipital horn & its bilateral asymmetry has been well studied. The present study reports the

frequency of a less studied third prominence on its medial wall. The aim of present study is

- to introduce a less discussed entity, a third prominence on the medial wall of Occipital horn,
- to discuss the cause of the prominence &
- to initiate a discussion on its clinical significance.

Method: Study was conducted in 40 formalin fixed cadaveric cerebral hemispheres (16 whole brain & 8 hemispheres) collected from Anatomy dissection hall & Dept of Forensic Medicine. Posterior horn was studied by gross dissection. Depth of calcarine sulcus and its correlation with the type of prominence were examined.

Result: The third indentation was present in 23 out of 40 specimens, inferior to the calcar avis. It started between the tail of the hippocampus and the bulb of Occipital horn. It was seen in 60% (5/8) of hemispheres and bilaterally in 56% (9/16) of whole brains. Prominence varied according to the depth of calcarine sulcus.

Discussion: A third intraventricular prominence on the medial wall of posterior horn is a feature rather than a variation, but less studied in contrast to the bulb of posterior horn & the calcar avis. The awareness of such a prominence is important during neurosurgical endoscopic procedures.

107. Morphometric analysis of lateral masses of axis vertebrae in North Indians

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Introduction: The axis, second cervical vertebra, forms a pivot on which the atlas rotates, carrying the head to allow greater range of motion at the atlantoaxial joints. The lateral masses of axis are found to have good cancellous bone quality beneath the articular surface of facets that makes this area a good site for the insertion of an internal fixation device but the superior facets of axis are different from the facets of other vertebrae, that make this region prone to vertebral artery injury during screw fixation. Thus it would be essential for the clinicians and surgeons to have a proper orientation of the anatomy, dimensions and special features of this unique vertebra.

Methods: 60 dry axis vertebrae were obtained for anatomic evaluation focused on pedicle, pedicle axis, superior articular facet, inferior articular facet and vertebral foramen. All the measurements were made using a vernier caliper and a protractor. Based upon linear and angular parameters the mean, range and standard deviation was calculated. The statistical analysis of the measurements of right and left sides was also done.

Results: The mean length of the pedicle was 21.61+2.37mm (16.00-25.15), height 5.63+2.06mm (3.20-13.95) and width 8.82+2.43mm (3.60-12.55). The mean superior angle of pedicle was 23.3 degree and the mean median angle of pedicle was 32.2 degree. The mean superior articular facet length, width, external and internal height was found to be 16.34+1.56mm (13.90-20.70), 14.35+1.75mm (11.40-17.70) 8.98+1.36mm (5.8-12.05) & 4.23+0.81 mm (2.40-6.60). Depth of vertebral artery was found to be 4.72+0.83mm (2.40-6.05). Mean length of inferior articular facet was 11.13+1.43mm (8.80-

14.50), and width was 7.89+1.30mm (6.70-10.20). The mean foramen transversarium length and width was 5.11+0.91mm (2.75-6.50) & 5.06+1.23 mm (3.25-8.00).

Discussion: The study may provide information for the surgeons to determine the safe site of entry and trajectory for the screw implantation and also to avoid injuries to vital structures while operating around axis.

108. A study on the palmar digital formulae among an artisan and tribal group in Nashik District of Maharashtra

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Introduction: Opposable thumb, differences in the digital length and many other structural changes have made the human hand a unique one. The relative lengths of the digits with their specific and proportionate differences have attracted the attention of many scientists, probing the causes for such variations. A specific formula presents the relative length of 2nd and 4th digits in relation to the middle finger which is the longest among the human beings. This digital formula expressed as $2 < 4$, $2 > 4$ or $2 = 4$ presents significant association with gender. Thus, the $2 < 4$ is more often observed among the males while $2 > 4$ is predominant among the females and $2 = 4$ maintaining more or less equal proportion among both the sexes. This observable trait is considered as "Sex influenced" trait, and its occurrence varies with populations.

Methods: In all 1009 people belonging to Kumbhar caste group and "Adivasi" were subjected for their digital formulae, with adult males and females in almost equal proportion. Adequate standards and precautions were used while collecting the data. χ^2 test was used to observe the statistical significance.

Results: Although the bilateral and group variations were not significant for the digital formulae, the bisexual comparisons yielded highly significant values.

Discussion: These results would go a long way in understanding the gender variations with reference to digital formulae, in the field of Archeology and many other areas of research where only the bone materials are available.

109. Morphological study of clavicle with its clinical significance in south Indian population

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Introduction: Morphology of clavicle varies according to race, nutrition status and geographic distribution of the population chosen for study. An in-depth knowledge of morphological appearance of clavicle is must in designing fixative devices for displaced fractures of clavicle as well as for radiologists and physicians as variations in costoclavicular ligament bears resemblance with some pathological conditions. The present study aims to describe the morphology of clavicle in relation to rhomboid impression and to examine the cross sectional profile at various points on the clavicle in South Indian population.

Method: Eighty adult dry human clavicles of unknown sex and gender were used for the study. Various patterns of attachment of costoclavicular ligament to clavicle were studied and the distance between medial end of clavicle and the medial most point of attachment of costoclavicular ligament was measured by using a vernier caliper. The cross sectional morphology in the shape of the shaft of clavicle was assessed along with cross sectional morphology of its sternal and acromial end by visual inspection.

Results: The cross sectional morphology showed a transition from quadrilateral shape on medial side to transversely flat on lateral side. The mean distance of medial end of clavicle from attachment for costoclavicular ligament was 8.33 mm. The most common type of pattern of rhomboid impression was elevated and rough, found in 28.75% of cases.

Discussion: The data collected from the present study will help the medical fraternity in reporting of fractures and to plan for adequate fixative devices.

110. Numerical aberrations of foramen transversaria – Its morphological and clinical significance

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Introduction: The present study was undertaken to assess the incidence of numerical aberrations of foramen transversaria of human cervical vertebrae and to discuss its genesis and clinical relevance.

Method: A total of 50 cervical vertebrae were collected from the Department of Anatomy of Santosh Medical College and taken up for the present study. The foramen transversaria of each cervical vertebra was observed bilaterally for its presence, absence, formation of bony spicule and duplication/multiplication.

Results: The presence of foramen transversaria was a constant feature in all the vertebrae studied. The duplication of foramen was seen in 4 vertebrae of which 2 skulls had duplication on the right side, 1 skull had duplication on the left side and 1 skull had bilateral duplication. However, a tendency of duplication of foramen in form of a spicule like elevation was observed on right side in 1 skull and on the left side in 1 skull.

Discussion: The duplication of foramen transversaria in upper cervical vertebrae could be responsible for the variation in vertebrobasilar system of vessels which may be of great neurological significance in assessment of Vertebrobasilar artery syndrome. The duplication in lower cervical vertebrae probably occurred due to variation in the vertebral system of vessels.

111. Morphological variations in lumbricals of upper limb -A cadaveric study

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Introduction: The hand is a prehensile organ; it is endowed with grasping and precision movements for skilled work, and act as a tactile apparatus. The lumbricals play a significant role to play in

intrinsic movement of the fingers by producing flexion at the metacarpo-phalangeal joints and extension at the inter phalangeal joints, helps in precision work like writing, painting, and stitching, thus the human hand is represents revolution in evolution.

Method: The study was conducted on 30 cadavers of both the sexes, in the department of Anatomy Sri B M Patil Medical College Bijapur.

Result: To check for the variations in the origin insertion and innervations, most of the Lumbricals showed the normal morphology and remaining showed split insertions, (3rd&4th Lumbricals) bifid, & hypertrophied (1st lumbrical); bipennate, additional muscle belly, & absence (2nd lumbrical).

Discussion: These unusual variations assume wide range of clinical implications. Hand surgeons and clinicians should be aware of enormous variations in lumbrical during various surgical procedures of hand.

112. Anatomy of terminal ends of femoral flexion facets

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Introduction: Total knee replacement surgeries are on the rise probably due to changing lifestyles and increased surgical expertise. It is a well documented fact that there exists a difference in sizes of medial and lateral condyles of tibia. The medial condylar articular area of tibia is longer in antero-posterior extent than the lateral condylar articular area. However no mention of differences in morphology of femoral condylar articular areas, which articulate with these tibial condylar areas in flexion, can be seen. This information is important because complex rotational and gliding movements occur at the extremes of motion in the tibiofemoral joint. The study aims to determine the differences in morphology of terminal ends (posterior condylar areas) of medial and lateral flexion facets of femur.

Methods: One hundred and four femurs were included in the study. A specially designed osteometric board was used for morphometric assessment. The differences in morphology of posterior condylar areas was observed. Posterior condylar area was defined as part of condylar articular area lying anterior to an imaginary horizontal line. The surface area of posterior condylar areas on the medial and lateral condyles was calculated using a digital planimeter. Another measurement to be taken is extension of medial condylar area beyond the posterior most edge of lateral posterior condylar area.

Results: Statistically highly significant difference was found between the posterior condylar areas on the medial and the lateral side; however the difference between the right and the left side was not significant. The extension of medial posterior condylar area measured 0.5 mm – 2mm beyond the lateral condylar area.

113. Gestational Age related histogenesis of human suprarenal gland

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Introduction: To study gestational age related histogenesis in human adrenal glands.

Methods: A total of 61 aborted and apparently normal human fetuses of 13-40 weeks gestational age and both sexes were dissected and suprarenal glands were collected and preserved in 10 % formalin. They were subjected to tissue processing and sections were stained in H&E and reticulin stains. Representative Fields of slides were photographed and results were analyzed.

Results: The fetuses were divided into trimester wise and representative sample of histological sections in each trimester-wise group were observed under 4x, 10x, 40x objectives of microscope.

2nd trimester: 13 weeks, 17 weeks, 24 weeks slides were observed. 13 weeks sample showed thick capsule and peripheral narrowed and darker definitive zone with inner wider and lighter fetal zone.

3rd trimester: 25 weeks, 32 weeks and 38 weeks were observed. Slides show very thick, vascular and well differentiated capsule at 25 weeks, clear demarcation of cortex and medulla with a large central vein. Cells of fetal zone were well differentiated when compared to 2nd trimester.

Discussion: Observations on age related changes in microscopic structure of prenatal suprarenal sections forms the basis for understanding structural changes and a data base for local population.

114. A histological study of placenta in hypertensive pregnancy in normal term deliveries

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Introduction: Histological study for comparison of placental architecture in both normal and hypertensive mothers. Aim was to study the relationship of fetal outcome with placental histology.

Methods: The study was conducted in Department of Anatomy, Gauhati Medical College, Guwahati, Assam. The placentae were collected from the Department of Obstetrics & Gynaecology of the same institution. Pregnant women between 18 to 35 years of age with gestational age of 37 to 42 weeks were examined. Normotensive women and women with pregnancy induced hypertension without having any other systemic diseases were selected for the study.

Result: Out of 103 placentae examined, 32 placentae were taken from normotensive mothers and the rest were from hypertensive mothers. The placenta collected from hypertensive mothers showed a significant histological changes like increased syncytial knots, stromal fibrosis, fibrin deposition etc. as compared to normotensive mothers. There was also correlation between severity of hypertension, placental changes and birth weight of baby.

Discussion: The effect of maternal hypertension on placenta and its relation to birth weight have been studied with emphasis on histological parameters. There were more histological changes in placenta of women with hypertensive disease; the number of histological changes correlated with severity of hypertension.

115. A microscopic study of bald scalp in men

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Introduction: The scalp differs from the skin covering the rest of the body by the abundance of large hair follicles and sebaceous glands. This study was done.

- To find out the histological changes in human bald scalp.
- To delineate the changes in various age groups.

Methods: Thirty adult male scalp skin between the ages of 20 to 80 years were taken from autopsy specimens from the frontal and vertex regions. The tissues were processed for histological study using Haematoxylin and Eosin, Orcein Van-gieson and Mallory's Aniline blue stains.

Results: Under light microscopy, the following were observed:

- Marked thinning of epidermis with loss of papillae.
- Increased dermal collagen with decreased elastic fibres.
- Degenerated hair follicles.
- Atrophied sebaceous glands, sweat glands with shifting towards the surface.
- All these changes were more marked in 30 to 50 years of age. In > 60 years of age, the major finding was fatty infiltration of dermis.

Discussion: Now a days with the easy availability of many options for correcting baldness, this study throws light on underlying changes that may influence the outcome.

116. Myenteric plexes in the wall of appendix

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Introduction: The preganglionic parasympathetic fibres entering the colon forms synapses in ganglia clustered in the muscle coats. The myenteric plexus are larger and progressively more numerous towards the rectum. Histological preparations have shown numerous and intricate connections between postganglionic fibres of adjacent myenteric and submucosal ganglia. Ganglion cells of the myenteric plexus of Aurebach reach the colon in the seventh week and innervations appears to be completed by the twelfth week. The aim of present study is to study the myenteric plexes in the muscular coat of the appendix in its inflammatory condition.

Methods: Slides prepared from the biopsy specimen of 200 cases of appendicitis sent to the department of pathology were studied in detail.

Results: In 44 cases of appendicitis ganglionic cells were prominent in the myenteric plexus. Of these 32 belonged to chronic appendicitis, 4 were acute on chronic appendicitis and 8 cases were acute appendicitis. In 12 cases ganglionic cells were very prominent and all of them were due to chronic appendicitis.

Discussion: Clinicians recognize that patients deprived of extrinsic parasympathetic innervations as after truncal vago thoracolumbar sympathectomy usually maintain essentially normal intestinal function. Conversely patients lacking myenteric and submucosal plexuses congenitally as in Hirschsprung's anomaly or as an acquired aftermath of Chagas' disease exhibit strikingly impaired intestinal motor activity. Hypertrophy of ganglion cells may suggest recurrent increased motility of appendix as seen in inflammation.

117. A histological and immuno-histochemical analysis of human post-menopausal ovary

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Introduction: To study the histological and immuno-histochemical analysis of human post-menopausal ovary and to locate the presence of estrogen receptors.

Methods: Ovaries of both sides were collected from 36 subjects at the time of surgery for benign conditions. The specimens were obtained with informed consent after their post-menopausal statuses were confirmed. Both halves were processed for light microscopy and immuno-histochemical analysis. To locate the foci of hormonal activity in the postmenopausal ovary, the antibodies against the ER were used.

Results: The ovary under light microscope was covered by the surface epithelium. Papillary projections were seen arising from the surface of the ovary. Epithelial inclusion glands/cysts were seen from the cortical invaginations of the surface epithelium. Spindle shaped stromal cells along with small irregular areas of cortical fibrosis were also seen. The medullary stroma of the post-menopausal ovaries was difficult to demarcate from the cortical stroma. Antibodies against the estrogen receptor were found to be intensely positive in the surface epithelial cells, hyperplastic epithelial cells, epithelial inclusion glands/ cysts and focal and weak positivity in the stromal cells of cortex.

Discussion: The presence of estrogen receptors in the surface epithelial cells proves that; in the presence of estrogen, the estrogen receptors might activate the cell activity. Hence, it warrants careful monitoring during the administration of replacement estrogen therapy.

118. Bisphenol A: A toxic chemical released from plastic produces histological features in kidneys of rats

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Introduction: Bisphenol A (BPA), an endocrine disruptor, is commonly used in the manufacturing of plastics. BPA is lipid soluble compound and has been reported to produce a number of reproductive defects. Further, BPA has been closely associated with heart disease, diabetes and high level of liver enzymes. Our daily exposure to BPA is increasing with enormous use of plastics in our day to day life. However, there are no direct evidences showing the toxic effects of plastics on our body. Therefore, the present study was undertaken to study the histological changes produced by BPA at tissue level on the kidneys in adult albino female rats of Charles Foster strain.

Methods: The study was divided into 3 groups (n=8; each group). In group I (control group), the rats were allowed to drink tap water ad libitum for 30 days. Rats of group II were given BPA (2 g/kg body weight/day) filled food pellets orally and the rats in group III were allowed to drink plastic boiled water ad libitum for 30 days. After 30 days, the rats were anaesthetized with urethane (1.5 gm/kg bw,

i.p.) and the kidneys were excised out, processed and examined for the histological changes.

Results: The histological study of kidneys showed a significant decrease in the number and size of glomeruli. Further these changes were accompanied by hyaline deposits and lymphocytic infiltration in both BPA treated and plastic boiled water treated groups.

Discussion: Hence the present study demonstrates the direct toxic effects of chronic exposure to BPA on the kidneys.

119. Estimation of time after death by histological changes in the kidney

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Introduction: To observe, histological changes in the kidney after death.

Method: In the present study 50 cases studied histologicay in which different sex and age. In each case tissue sample were taken from varies site, prepared of tissue under histological technique, staining with haemotoxylin eosin, special stain and slide were examined under light microscope for studying in the various histological changes take place in kidney at different temperature, time interval after death.

Result: On histological study kidney reveal the various changes which are follows

In first 12 hrs temperature 10 -20°C, 6 cases shows mild to moderate degenerative changes. In 12- 24 hrs increasing temperature, 10 -20°C nine case show mild to moderate, 20-30°C. 11 case show moderate to severe, 30-40°C 6 cases shows moderate to severe and 40- 50°C 5 cases shows moderate to very severe changes. In 24-36 hrs with increasing temperature upto 30- 40 and 40-50°C, 8 cases shows moderate to very severe. In 36-48 hrs with further increasing temperature 30-40°C, 4 cases shows severe to very severe. In 48- 60 hrs increasing temperature one case show very severe change was seen.

Discussion: In this study it is observed that the rate of microscopic changes increased as the temperature and duration increased up to 52.30 hrs and ^{44-450C}.

120. A study of variations of origin and branching pattern of external carotid artery

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Introduction: External carotid artery is the chief artery of head and neck region. It begins lateral to upper border of thyroid cartilage. It has eight named branches-superior thyroid artery, lingual artery, facial artery, ascending pharyngeal artery, posterior auricular artery, occipital artery, maxillary artery and superficial temporal artery.

Methods: The present study was done in 15 adult cadavers of both sexes (30 sides) during routine educational dissection for three consecutive years (2007-2009) in our department of anatomy. The study was done under the following protocol: 1) origin of external carotid artery 2) position of external carotid and internal carotid

arteries at carotid bifurcation 3) branching pattern of external carotid artery.

Results: The origin of external carotid artery in this study is from the common carotid artery varying in levels with the level of upper border of thyroid cartilage. The branches observed at carotid bifurcation were- occipital artery (6.3%) and both occipital and ascending pharyngeal artery (3.3%).The external carotid was posterolateral in position to internal carotid artery in 3.3%.The combined trunks- thyrolingual trunk(3.3%), linguofacial trunk (12.3%), thyrolinguofacio pharyngeal trunk (3.3%), occipito posterior auricular trunk (3.3%) were observed in the present study. The ascending pharyngeal arising from occipital artery was observed in (9.3%). The ascending pharyngeal artery had dual origin both from occipital and internal carotid artery in 3.3%.

Discussion: Anatomical knowledge of variations in branching pattern of external carotid artery is useful in angiographic studies, transcatheter embolization procedures and in surgical procedures of the head and neck region.

121. To clinch a point for injection of a botulinum toxin for aesthetic smile

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Introduction: Smile is the most recognized expression and most effective positive note of social interaction in the world. Gummy smile is a curse. We has done this study to propose a safe pre-selected point for injection of botulinum toxin-A in treatment of it.

Method: 20 specimen of hemi faces from 10 cadavers were used for this study. Topographic relations of three Lip Elevator Muscles, levator labii superioris, levator labii superioris alaeque nasi and zygomaticus minor were seen. Direction of all the muscles are noticed. The reliable injection point in the middle of a triangle formed by the vectors of the levator labii superioris, levator labii superioris alaeque nasi, and zygomaticus minor are calculated and after the distance of the center of the triangle from the ala and the lip line was measured.

Result: The mean horizontal distance from the ala to the point was 10.2 mm and mean vertical distance from the lip line was 32.1 mm. This study identified a safe and effective injection point for patients with excessive gingival display.

Discussion: An injection point can be found out through which a single injection of botulinum toxin may be a favorable treatment in hyperfunction of upper lip muscles.

122. Estimation of stature from head length

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Introduction: Estimation of stature from head length is considered as an important parameter in medico-legal and forensic examinations. When highly decomposed and mutilated dead bodies with fragmentary remains are brought for postmortem examination, it becomes difficult to identify the deceased. In this study an attempt has been made to derive a linear regression equation for estimation of stature from the length of head.

Method: The present study is conducted on 506 medical students 255 male and 251 female of age group between 18 - 25 years, was conducted at Index medical college hospital and research center Indore.

Results: The measurements were taken by using standard anthropometric instruments. The observed data was subjected to statistical analysis like 't' test for correlation coefficient. The value of 't' was found to be statistically significant.

Discussion: Simple linear regression equation derived has been used for estimation of height. This may be an important parameter to estimate the stature of an individual during forensic investigations.

123. A study of coronary arteries and its variations

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Introduction: Rate of coronary artery disease is increasing by leaps and bounds in modern times. The anatomy of coronary artery has recently been re-emphasized in association with the use of coronary arteriography. The advances made in coronary arterial bypass surgeries and modern methods of myocardial revascularisation make sound and complete knowledge of normal and variant anatomy of coronary artery indispensable.

Method: The study was undertaken in the department of anatomy on 12 adult cadaveric hearts. The aim of the study is to observe the origin, branches of right and left coronary arteries and their termination, dominance including the level and diameter of coronary ostia. The other parameters of the study included are incidence of myocardial bridges and the diameter of the arteries near the bridges.

Results: Out of 12 specimens the ostia of left coronary artery in one specimen is at aorto-sinus junction while remaining show below the junction. The right coronary ostia of all specimens is below the junction. Mean diameter of right coronary ostia is 5.59mm(4.3-6.8mm) while left ostia is 4.95mm(3.4-6.4mm). Left dominance is observed in three specimens while remaining show right dominance. Myocardial bridges are present over anterior interventricular artery in two specimens. Mean diameter of coronary artery before the bridge is 2.25mm under the bridge is 1.5mm after the bridge 2.0mm.

Discussion: The awareness of myocardial bridge is necessary for clinicians as myocardial ischaemia produced by myocardial bridges has been confirmed by perfusion scintigraphy.

124. Morphometric study of tricuspid valve annulus in human heart

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Introduction: To measure the dimension and circumference of tricuspid valve annulus in human hearts.

Methods: The study was carried out on 51 (29 male and 22 female) formalin fixed human hearts in the department of Anatomy, Gauhati Medical College, Guwahati. Specimens were collected from department of Anatomy and Department of Forensic Medicine, Gauhati Medical College, Guwahati. Dissection was performed according to the method used in our department. The measurements were recorded using a vernier calliper. The circumference of the valve along with the frontal and sagittal dimensions was measured. The specimens are collected without

any socio-economic status, religion, educational or pathological basis. The hearts are studied in three age groups: group "A" (20 to 39 years), group "B" (40 to 59 years) and group "C" (60 to 80 years).

Results: The mean value \pm S.D. of frontal and sagittal dimensions and circumference of tricuspid valve annulus in male and female specimens in group "A" are 2.53 ± 0.330 and 2.287 ± 0.339 , 1.76 ± 0.195 and 1.587 ± 0.180 , 9.36 ± 1.17 and 9.1 ± 1.03 respectively. In group "B" these values are 2.891 ± 0.247 and 2.566 ± 0.229 , 2.036 ± 0.359 and 1.778 ± 0.233 , 10.7 ± 0.684 and 10.1 ± 0.686 respectively. In group "C" these values are 3.025 ± 0.198 and 2.82 ± 0.192 , 2.137 ± 0.219 and 1.98 ± 0.238 , 11.48 ± 0.216 and 11.18 ± 0.192 respectively.

Discussion: The present study revealed that the frontal and sagittal dimensions and circumference of tricuspid valve annulus increased with age in both sexes.

125. Variations in the branching pattern of abdominal aorta – A cadaveric study

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Introduction: The abdominal aorta and its major branches supply oxygenated blood to all the organs in the abdominal cavity. The aim of the present study is to increase the awareness of anatomical arrangements which are important for clinicians dealing with surgical and radiological procedures in this region.

Methods: During a study of 20 cadavers, multiple variations in the branching pattern of abdominal aorta were found in a male cadaver.

Results: We found that the inferior suprarenal artery originated directly from abdominal aorta bilaterally. It showed bilateral presence of accessory renal artery for the respective kidneys. Anomalous origin of the left testicular artery from the left renal artery was also present. All other branches of abdominal aorta showed normal origin and course.

Discussion: The embryogenesis of such a combination of anomalies, its anatomic consequences and clinical implications are of great significance.

126. Foot parameters in right footed adults

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Introduction: Quantitative analysis of foot anthropometry is important to the study of ergonomics, forensic science and anthropology. This present study is aimed at providing anthropometric values for foot length, width and height in right footed individuals and establishing a reference standard for 300 young adults.

Methods: The study was carried out in Maharishi Markandeshwar institute of Medical Sciences and Research, Mullana, Ambala, India on 300 medical students (150 male and 150 female) age 18 and above using an osteometric board and vernier calipers. Footedness was analyzed by using the criterion, kicking the ball.

Results and Discussion: Of the 300 subjects, 90% (270) were found to be right footed. Of the 150 males 93.33% (140) and of the 150 females 86.67% (130) preferred their right foot to kick the ball. Left foot measurements of right foot preference group were interestingly higher than those of the right side. The mean foot height and

mean foot length were significantly higher on left side in right footed males. The mean foot breadth was significantly more on the left side in right footed females.

127. Internal derangement of temporomandibular joints and its correlation with clinical findings

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Introduction: To evaluate the position of the articular disc by MRI and correlate it with the clinical signs and symptoms.

Methods: The study was based on bilateral temporomandibular joint Magnetic Resonance Images of 30 patients with clinical signs and symptoms of TMJ disorders suggestive of internal derangement, with age range of 20-49yrs with a mean age of 31.39yrs± 9.82yrs, Out of 30 patients 16 were female and 14 were male. All these patients were subjected for MRI of the right and left TMJ with a 0.2 tesla scanner. Sagittal and coronal sections were planned by using axial plane. The interpretation of the resultant images were carried out by experienced senior radiologist.

Results: Out of 30 patients 19 patients were clinically diagnosed as anterior disc displacement with reduction and 11 patients were diagnosed as anterior disc displacement without reduction. Total sixty (60) Joints were examined in 30 patients. Out of these 31 joints were Painful (51.6%), Fifty two(52) joints exhibited Clicking (85%).Thirty one(31) joints exhibited Tenderness (51.6%) and Ten(10) joints exhibited Deviation (16.6%).On Magnetic resonance imaging out of 60 joints ,34 joints shows positive findings. Out of 34 joints 19(55.88%) showed anterior disc displacement with reduction, 11 joints (32.35%) showed anterior disc displacement without reduction,4 joints(11.76%) showed posterior disc displacement and 26 joints (43.33%) showed normal disc position.

Discussion: Internal derangement of TMJ can be diagnosed clinically, but type of disc displacement can not be diagnosed clinically. This suggests that clinical diagnosis is highly unreliable in estimating the disc position.

128. Anatomical variations of sphenoid sinus and its related structures: CT study

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Introduction: To determine the presence and prevalence of variations of the sphenoid sinus and their relation with adjacent neurovascular structures.

Methods: A cross-sectional study was conducted on 50 patients in Era's Lucknow Medical College & Hospital, Lucknow. Coronal and axial CT sections were taken and assessed for various parameters like pneumatization of greater wing of sphenoid, pterygoid process, anterior clinoid process and protrusion of internal carotid artery, optic nerve, maxillary nerve and Vidian nerve.

Results: Pneumatization of greater wing of sphenoid, pterygoid process and anterior clinoid process were seen in decreasing order of frequency. Protrusion of internal carotid artery, optic nerve, maxillary nerve and Vidian nerve were also noticed in many subjects. Varying degree of pneumatization, their frequency and clinical implications, will be discussed in detail at the time of presentation.

Discussion: Sphenoid sinus is a highly variable structure. Preoperative C T evaluation of sphenoid sinus should be mandatory to minimize neural and vascular injuries during surgery.

129. Morphological study of cervical spinal canal content using MRI in western Maharashtra region

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Introduction: To study morphology of the dural sac, spinal cord & subarachnoid space using MRI.

To define the inner geometrical dimensions of spinal canal content that confine the maneuver of an endoscope inserted in cervical spine. To have comprehensive knowledge of the anatomy of cervical spinal canal.

Method: Based on MRI images of the spine from 60 normal patients of age between 25-60 years, the dimensions of spinal cord, dural sac & subarachnoid space were measured at mid-vertebral & intervertebral level from C1-C7 vertebrae. The parameters measured were transverse, sagittal diameter of spinal cord & dural sac. The subarachnoid space was measured as anterior, posterior, right, left distance between spinal cord and dura mater.

Results: It was found that at each selected transverse level, the subarachnoid space tends to be symmetrical on the right and left sides of the cord, and measures 3.38 mm on an average. However, the anterior and posterior segments, measured on the mid-sagittal plane, are generally asymmetric & varies greatly in size ranging 1mm to 6mm with mean 2.57 of anterior & 2.59 of posterior. These measurements match those found in previous studies. The coefficient of variance for the dimensions of the subarachnoid space is as high as 36.16%, while that for the dimensions of the spinal cord (transverse & sagittal) are 11.08% & 13.28% respectively.

Discussion: The findings presented here, expand our knowledge of morphology of spinal canal and show that an endoscope (for subarachnoid endoscopy) must be smaller than 3.38 mm in diameter.

130. Anatomical variations of intrahepatic bile ducts in the adult population of hilly state of North India

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Introduction: Determination of normal anatomical variations in branching pattern of intrahepatic bile duct (IHBD) in hilly population of north India.

Method: The present study was conducted on 100 adult patients who were routinely assessed for MR abdomen. Anatomical

variation in IHDs was classified according to the branching pattern of the right anterior and right posterior segmental duct (RASD and RPSD, respectively), and left hepatic duct (LHD).

Results: The anatomy of the intrahepatic bile ducts was typical in 63% of 100 cases. Total 37 % frequency of atypical configuration was due to 18% of A2, 9 % A3, 8% A4 and 0% of A5 types. Whereas, 2% of patients had other types of biliary configuration. On comparing the values belonging to females and males, it was found that incidence of atypical patterns was significantly more in males, and vice versa was true for typical pattern. The same was found to be true when comparison was done between 33 females and 23 males without any detectable pathologies.

Discussion: The difference in branching pattern of typical and atypical pattern in males and females seem to be important in surgical managements.

131. A study to see the diagnostic performance of Doppler sonography on umbilical artery for prediction of suspected intrauterine growth retardation (IUGR).

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Introduction: To determine the diagnostic performance of Doppler sonography on umbilical artery (UA) for prediction of adverse perinatal outcome in suspected intrauterine growth retardation (IUGR).

Methods: The proposed study was done in the Dept. of Gynaecology and Obstetrics and in the Dept. of Radiology, Gauhati Medical College, Guwahati. For the study, 40 singleton pregnancies beyond 30 weeks of gestation complicated by intrauterine growth restriction were prospectively examined with Doppler Sonography on the umbilical artery.

Results: 22 patients of the 40 included in the study population had at least one major or minor adverse outcome. Major adverse outcome criteria included perinatal deaths - including intrauterine and early neonatal deaths, hypoxic ischemic encephalopathy, intraventricular haemorrhage, periventricular leukomalacia, pulmonary haemorrhage and necrotizing enterocolitis. Minor outcomes included caesarean delivery for fetal distress, APGAR score below 7 at 5 minutes, admission to neonatal intensive care unit (NICU) for treatment.

Discussion: Umbilical artery S/D ratio is the most sensitive index (66.6%) in predicting any adverse perinatal outcome i.e. including both major and minor outcome. Doppler investigation of the fetal circulation may play an important role in monitoring the redistributing growth restricted fetus. Hence the authors conclude that Doppler studies of umbilical artery in the fetoplacental circulation can help in the monitoring of compromised fetus and can help us predicting neonatal morbidity. This may be helpful in determining the optimal time of delivery in complicated pregnancies. It therefore has an important role to play in the management of the growth-restricted fetus.

132. Morphometric study of the pituitary gland on MRI

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Introduction: Morphometric analysis of pituitary gland. To study the pituitary gland dimorphism related to age and gender.

Methods: For the study high field MR images at 1.5 T of 160 living subjects (76 females and 84 males) of all ages were used to characterize the effect of age and sex on pituitary size and shape. The antero-posterior, vertical and transverse dimensions of pituitary gland and stalk were measured using mid sagittal and axial MR images. As we have not found a report with regards to dimensions specifically of the anterior and posterior lobes in Indians; hence all three parameters of both anterior and posterior lobes were noted separately.

Results: The data were statistically evaluated in various age groups (0-10, 11-20, 21-50, >51 years) in both the genders. The total antero-posterior diameter of gland 7.88mm in females and 6.97 mm in males was noted in 0-10yrs age group. A gradual increase was noted in all age group of both sexes except in females it decreased in age group >51 years. The height of pituitary was 4.83 mm at 0-10 years age group of females, which was steadily increased upto 21-50 years group while later age group decreased in height was noted statistically significant. A convex upper margin was more common in females and younger subjects.

Discussion: The study confirmed that the pituitary gland shows age and gender specific changes. The data provided by study is facilitator for evaluating the gland in various neuroendocrinological disorders.

133. A radiographic study of carrying angle of elbow in normal adults of eastern Odisha

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Introduction: To assess the Carrying Angle in an attempt to determine its values in both sex proposing a simple and reliable method.

Methods: The study was carried out by taking simple radiographs (on a fully extended and supinated forearm) of the antero-posterior view of the elbow joint in normal adults of Eastern Odisha, aged above 18years. A total of 90 elbow radiographs were taken, out of which there were 45 males and 45 females. Deformities, fractures, tumours, surgical conditions were excluded. The measurements were carried out by placing each radiographs on a sheet of transparent tracing paper and by drawing lines to measure the carrying angle.

Results: Statistical data using standard deviation, mean and p values of the outcome shows mean carrying angle was 11.7 in case of male and 15.6 in case of female.

Discussion: The carrying angle in any given population varies and it shows sexual dimorphism irrespective of the method of study, being significantly greater in females than in males.

134. Use of images for comprehension of anatomical terms

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Introduction: Medical students and practitioners learn and use a vocabulary originating almost entirely from Latin and Greek languages. Understanding Latin or Greek helps students to learn and

practitioners to recall otherwise foreign terminology. Even if we know what is the meaning of that term it is difficult to imagine/visualize it. The aim of present study is to improve the comprehension of the anatomical terms and to make anatomy terminology meaningful by use of images depicting the meaning. **Methods:** A pre test on anatomical terminology was conducted to assess the comprehension of anatomical terms. Following which a lecture on the same topic with related images using powerpoint presentation was taken. A post test was conducted and results were noted down. A prevalidated questionnaire was administered to the students.

Results: The result indicated a remarkable improvement in the understanding of the terms with the use of images in the post test in comparison to the results of the pre test. The results of the questionnaire showed that students appreciated the method of teaching anatomical terms with help of images.

Discussion: Use of real images is effective for proper comprehension of anatomical terms.

135. Voluntary body donation drive in Mumbai and role of Anatomy Department, Grant Government Medical College, Mumbai In It.

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Introduction: Aim of the study is to analyze the collected data of male and female donated bodies, to study the body donation of most common age group and to study the effect of body donation awareness programme.

Methods: Data was collected from Anatomy Department, Grant Government Medical College, Mumbai. Number of bodies which were registered and actually donated noted down. This data was divided on the basis of year, sex, age, region, institutional and non-institutional deaths.

Results: It was found that body donation registrations as well as actual receptions are increasing year by year in both sexes. Donors are majority from Mumbai region and of age group 70-90yrs. Details of the result will be discussed later in the conference.

Discussion: Multi-sectorial approach (e.g. electronic and print media, religious scholars, doctors and teachers) was used to promote awareness and it changed the attitude and response of people towards voluntary body donation.

136. Review of 3D anatomy: Implication for teachers

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Introduction: Advances in technology have gone far beyond what was possible with cadaveric material. Virtual surgery can be carried out so that surgeons can practise new techniques and see the outcome before bringing it to the patient. Anatomy teaching has progressed with the use of 3d technology to new heights However it is time to introspect. These techniques are very cost intensive in the short term. Are they worth it long term? What implications do they have for us as anatomy teachers?

Methods: In this paper we review the experiences of teachers using 3D methods over past few years. Various methods have

been utilized; 3D graphic models, 3D Arthroscopy, 3D ultrasound, 3D videography, web-based 3D platform etc.

Results: The objective results seem to be equivocal when the results are considered en solatario. However, when considered en toto are very clear. 3D Anatomy HAS a definite place as teaching technology in the teacher's arsenal, along with other techniques including CHALKBOARD. But in all in these articles the subjective report by the students has been that the teaching-learning experience is more satisfactory using technology. This is in this day of tech savvy students.

Discussion: We teachers have to rise to the challenge so that we do not fall behind the technological tide so that we are not swept aside by younger persons in technical fields.

137. 3D view of splenic artery to demonstration the origin, course and division of the artery to use silicon gel cast in class room

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Introduction: The human spleen is a lymphatic organ and it is highly vascular. Its blood supply by a Splenic artery it is a branch of coeliac trunk. It is Tortuous and It is end artery. The Knowledge of variational anatomy of splenic artery is importance for surgeons in splenectomy, splenomegaly, splenic infraction. The Aim of the present study is to view 3d image and identify the origin, course and segmental branches of splenic artery.

Methods: In this technic silicon gel is use. It is odourless, non irritate chemical. So it is no harmful effect on student and easily seen 3d imagination of specimen. This study done 180 first year MBBS student of Government Medical College Baroda. The student were divided into two group, 90 in each group. The first group of student along with conventional leacture and second group same class taught by convention lecture and demonstration of specimens. Finally a test was conducted for both the group and mark obtained the student was analyzed by using 'Chi-Square' test.

Result: The X2 Calculated value is 8.192 and X2 Table value is 5.99 for degree of freedom at 2. Hence $X2C > X2TH0$ hypothesis is accepted when the calculated X2 (chi-square) (X2c) is more than the tabulated X2 (X2T) value at degree of freedom at 0.05 Probability thus H0 is accepted.

Discussion: The lecture and demonstration of these specimens is effective method of teaching.

138. Introduction and evaluation of an integrated teaching module in knee arthroplasty (surgical approach)

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Introduction: Surgical Anatomy which has varied application in surgical branches is an interesting dimension of medical education. Surgical Anatomy has a promising future in surgical training. Young budding surgeons do not need to dissect a cadaver or study a prosection in order to practice, but it can improve their understanding of what they do and why they do it. Integration of newer teaching modalities and modern technology will encourage interest and retention of anatomical knowledge and its clinical relevance.

With this intention we designed a video aided integrated surgical anatomy module in knee arthroplasty showing surgical approach.

Methods: The module was prepared in three segments where in, the videos were edited by inserting labels, photographs and voice dubbing of subject experts to elaborate on the contents. This module was then shown to first and second year residents of Anatomy and Orthopaedics.

Results: The feedback analysis indicates that integrated teaching needs to be embedded in curriculum of medical education. 75% of residents graded the module excellent in terms of content. It also helped them significantly in understanding and grasping of the topic.

Discussion: The challenge of time constrain in training of residents can be resolved by having organised and optimum use of integrated approaches. The present study is unique in its first segment to have a review of related anatomy. This marks an innovation used in the present module.

139. Analysis of current histology practical sessions – Medical students perception

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Introduction: The MCI Vision 2015 has proposed modifications in the existing curriculum to improve the quality of training of the total 650 hours allotted for anatomy practicals 60 hours is consumed by histology. A committed teacher focuses on educational needs of the students, and creates a learning environment that stimulates students to achieve success. Studies have shown that student-centred methods of teaching are superior to the traditional anatomical teaching-learning method. This highlights the importance of students' feed back which the anatomy teachers should be aware of. The aim of present study is to assess students' perception of the present method of learning anatomy in histology practical labs and to get suggestions about more effective utilization of histology hours.

Method: A cross sectional study was conducted among medical students of Government medical college, Thrissur, Kerala. Students were asked to fill up a self administered questionnaire which consisted of duration of histology practical session, how they spend the practical hours, guidance from the faculty, and suggestions to improve. Data collected was compiled and analysed using proportions.

Results and Discussion: Students pointed out that histology learning is not that easy, but at the same time not difficult. Most of the time is spent for record correction of previous class' diagrams and for drawing. Time spent on studying tissues is 5 minutes or less. The students are of the opinion that histology learning can be made easy if the present utilization of lab hours for record correction is changed to more hours of tissue study coupled with faculty guidance.

140. Inter-relationship between difficulty index, discriminating index and distractor effectiveness in single best – Answer stem type multiple choice questions

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Introduction: Multiple-choice questions (MCQs) are used in continuous assessment or as comprehensive Examinations at the end of an academic session. Single best-answer multiple-choice questions (MCQs) consist of a question (the stem), two or more choices from which examinees must choose the correct option (the distractors) and one correct or best response (the key). Item analysis is the process of collecting, summarizing and using information from students' responses to assess the quality of test items. Classical test theory for item analysis is most followed method to determine the reliability by calculating Difficulty Index (P score) and Discriminating Index (D score) and Distractor effectiveness. This Study aimed to calculate P score, D Score, and distractor effectiveness to find out relationship between P score, D Score, and distractor effectiveness.

Methods: In this Cross Sectional study 65 items responded by 120 first year M.B.B.S Students were studied for Item Analysis, Difficulty Index, Discriminating Index and Distractor Effectiveness were calculated for each items. Distractors were identified and classified as Functioning and Non- functioning distractor. Inter-relationship between P Score, D Score and Distractor Effectiveness was calculated and analyzed by MS excel 2007, and Epinfo TM 7 softwares.

Results and Discussion: Study found Items with two functioning distractors were more difficult than that of others. Mean discriminating index was excellent (? 0.35) for items with functioning distractors two or three in numbers. Item Discriminating Power is Higher for items with difficulty Index in Range 31-60% (p value =0.016)

141. Assessment of approach and perception of 1st MBBS students towards anatomy

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Introduction: Anatomy is the base for various subjects in medical science. By assessing, approach and perception of the 1st MBBS students regarding various aspects of anatomy and its teaching, necessary correction can be made for better teaching and understanding of the subject. The aim of present study is to assess the approach and perception of 1st year MBBS students towards anatomy.

Method: Students of 1st MBBS were distributed a structured, anonymously prepared questionnaire; responses obtained were analysed.

Results: 129 completed questionnaire of 55 male and 74 female respondents were obtained and analysed. 63.56% students study more than 3 hours/day; 41.08% found Anatomy most difficult of all the 3 subjects of 1st MBBS; 65.12% found histology most difficult aspect of anatomy; an average 42.38% of the study time was given to anatomy reading; 31.39% to physiology (p<0.001) and 24.13% to biochemistry (p<0.001). Only 26.35% studied regularly; 79% did exam based reading; 60% practiced diagrams. 84.49% students used dissection manual, 65.89% preferred self dissection; 39.53% used Atlas during dissection. Only 7.75 % of students come with prior preparation of next topic. 51.16% preferred PowerPoint presentation in lectures. Results with respect to male and female in all the aspects shall be discussed at conference.

Discussion: Most students had an exam based approach, preferred self dissection, had difficulty in understanding histology

and did not come with prior preparation of next topic. There was absence of habit of regular studies. Statistically significant difference was observed in amount of time given to physiology and biochemistry with respect to anatomy.

142. The study of lip prints

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Introduction: With the aim of use of lip prints in personal identification & forensic investigation, a study of lip print with 100 individual students from J.N.M.C. Sawangi (M), Wardha, including 50 males & 50 females of age group between 17 to 25 years were taken. The lip prints were studied with the help of a magnifying lens using Suzuki & Tsuchihashi classification.

Method: A dark colour lipstick was applied with a single stroke evenly on the vermilion border. The subjects were asked to rub both the lips to spread the applied lipstick. After about two minutes a folded white paper inserted between the lips and asked to press on it. Then a paper was taken out and unfolds it to study the print with the help of magnifying glass.

The study revealed that, no individual had single type of lip prints in all 4 compartments and no two or more individuals has similar type of lip print pattern.

When the overall pattern was evaluated among the entire lip compartments of the individuals it was found that, type II lip pattern was most common in both males and females. No change was observed in lip pattern in consecutive 2 years of same individuals were taken. So it is concluded that lip prints are different in every individual and do not change with time so it can be used for personal identification and in forensic investigation.

Result: A study sample of 100 individuals comprising 50 males & 50 female students of 1st M.B.B.S. in age group of 18 to 25 yrs were in this study. The lip prints analysed and found out that, no two lip prints identical. When the overall pattern was evaluated among all the four compartments of the study subjects (400), it was found that intersecting pattern is most common both among males & females having 41.2% and 39.5% respectively. No change was observed in lip pattern in consecutive 2 years of same individuals when were taken.

Discussion: So it is concluded that lip prints are different in every individual and do not change with time so it can be used for personal identification and in forensic investigation.

143. A study on visceral abnormalities during cadaveric dissection

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Introduction: During routine dissection classes of first MBBS students variations in different viscera were observed frequently. Hence the present study was undertaken to highlight these salient features so as to improve the knowledge of anatomists and enable them to explain these variations to surgeons and radiologists.

Methods: 32 cadavers used for routine dissection from the year 2009-10 to 2012-13 were included in our study. The various visceral abnormalities were noted. The embryological basis and clinical significance was studied.

Result: During these four years we came across variations in kidney, lungs, liver and thyroid gland in the form of abnormal position of hilum of kidney (2 cases), presence of accessory fissures in right lung (3 cases), rudimentary left lobe of liver (1 case) and absence of isthmus of thyroid gland (1 case).

Discussion: This study will be helpful for the clinicians in planning and executing surgical and radiological interventions.

144. Morphometry of glenoid cavity

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Introduction: The Glenoid cavity regarded as the head of the scapula has important clinical implications in the prognosis and treatment of various orthopedic pathologies like primary glenohumeral osteoarthritis, glenohumeral instability and the like. Similarly dimensions of the glenoid cavity are important in designing and fitting of glenoid components for total shoulder arthroplasty. Thus thorough understanding of the variations in its normal anatomy is essential for accurate diagnosis and treatment.

Methods: The study was conducted in the Department of Anatomy, GMC, Aurangabad, Maharashtra, on 101 dry, unpaired adult human scapulae of unknown sexes, free from any pathology. Damaged scapulae were excluded from this study. Three glenoid diameters superior-inferior, anterior-posterior diameter of the lower half and anterior-posterior diameter of the upper half of the glenoid were measured. Similarly variations in the shape of the glenoid cavity were noted and classified into three different types. **Results and Discussion:** The study showed the glenoid cavity to be pear shaped most commonly. The measurements of the glenoid obtained using digital vernier calipers were found to be in the normal range which correlated with the other studies.

145. Study of pronator quadratus muscle: A cadaveric study

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Introduction: A pronator quadratus is a flat, quadrangular muscle which covers the distal 25% of palmar surface of radius and ulna. It plays an important role in movement and stabilization of radius and ulna in distal radio-ulnar joint. Also, it is used as flab in traumatic injuries of the distal part of forearm. Standard textbook describes this as single headed muscle but recently few researchers described that it has two heads superficial and deep. Sometimes it is inserted on the carpal or metacarpal or may insert into a thenar muscle. Considering its functional and clinical significance we studied the morphology of pronator quadratus muscle.

Methods: Present work was carried on 60 adult cadaveric limbs (rt-30; lt-30) of unknown sex which were free from any deformity, fracture and pathology. After careful dissection we measured extent of radial and ulnar attachments, width of proximal and distal borders, and any other attachment of insertion and different heads of pronator quadratus muscle.

Results: Pronator quadratus was single headed in 38.33%, double headed in 58.33% and three headed in 3.33%. Extents of its radial

and ulnar attachments were 45.1 and 45.4 mm respectively. Width of proximal and distal borders of pronator quadratus were 28.6mm and 30.2mm respectively. We observed additional attachment of pronator quadratus on brachioradialis, carpal bones and capsule of DRUJ in 7 %, 11.66% cases.

Discussion: Anatomical knowledge of pronator quadratus attachments and variations may be beneficial for hand and orthopedic surgeons.

146. Morphometric study of nutrient foramina of lower limb long bones

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Introduction: Nutrient arteries, the main blood supply to long bones, are particularly important during the active growth period, as well as during the early phases of ossification. In the present study, 260 adult human long bones of lower limb (90 femur, 90 tibia & 80 fibulae) were analysed to determine the number and location of nutrient foramen.

Methods: Total length of long bones and distance of nutrient foramina from the proximal end of lower limb long bones were measured. For each bone, Foraminal index was calculated using the location of the nutrient foramen in relation to its proximal end.

Results: Mean length of femur is 41.82 ± 2.31 cms and Foraminal index is 0.46 ± 0.11 . Mean length of tibia is 35.58 ± 1.9 cms and Foraminal index is 0.34 ± 0.07 . Mean length of fibula is 32.58 ± 3.21 cms and Foraminal index is 0.49 ± 0.11 .

Discussion: Most of the nutrient foramina are located on posterior surface of lower limb long bones. This study provides additional and relevant information on the location and number of nutrient foramina in the lower limb long bones of South Indian population.

147. A Study of neurovascular foramina of the human fibula and their clinical significance

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Introduction: To study the morphology and topography of nutrient foramina index of the Fibula.

Methods: The number and position of the nutrient foramen were determined. The distance of the nutrient foramen from the styloid process of the head and the total length of the fibula was measured using standard measuring tape. The data obtained was analyzed using MS Excel 2007. The range of mean and standard deviation has been calculated.

Results: Out of 65 fibulas 2 were not having nutrient foramen. Nutrient foramen was found in the medial surface in 36 bones and in posterior surface in 29 bones. The average total length of the fibula is 35.51 cm.(maximum length = 40.2 cm Minimum length = 31.2 cm) .The average distance of the nutrient foramen from the styloid process of the Fibula is 17.37 cm.(maximum length = 26.2 cm& minimum length = 11.8 cm). The foraminal index is calculated, average foraminal index is 49.24.

Discussion: These data will help to preserve the nutrient foramen, especially in vascular bone graft surgeries.

148. Observation of the carotid arteries in cases of hanging

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Introduction: Hanging has been a common cause of unnatural death since antiquity and is the most common form of violent asphyxial death be it suicidal, homicidal or accidental. Present work is an attempt to study the gross and histo - pathological changes in the carotid arteries in cases of hanging.

Method: Specimens of carotid arteries were collected from 54 cases of hanging which were brought to the Department of Forensic Medicine and Toxicology, RIMS, Ranchi for the post-mortem examination. The collected specimens were subjected to gross external and histo - pathological study. Out of 54 cases 30 were male and 24 were female. Most of them were in the age group of 21-30 years.

Result: Typical hanging was seen in 13% cases and atypical hanging in 87% of cases. Out of 54 cases studied only one case showed significant finding in which the external carotid artery showed tear of intima. The ligature material used in this case was a thin nylon rope where as in most of the cases the ligature material constituted of soft materials like cloth such as saree, dupatta and bedsheet.

Discussion: In the present study it has been concluded that the tear of intima of the carotid arteries in cases of hanging is a rare finding.

149. Variation of sinuatrial nodal artery: A cadaveric study

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Introduction: Purpose of study to analyse variation, especially in number and origin of sinuatrial nodal artery in human heart.

Method: Normal heart of 25 cadavers (8 female, 17 male) whose aged varied range between 50 to 70 year belonging to Gujarat region studied. During routine dissection in Department of anatomy of Smt. N.H.L.Municipal Medical College, Ahmedabad.

Result: Single SA nodal artery found in 88 % (n=22) and dual supply found in 12 % (n=3). SA nodal artery originating from right coronary artery in 64 % (n=16) and from circumflex branch of left coronary artery in 24 % (n=6) cases. The Mean+SD diameter of SAN artery, branch of right coronary artery $1.7+0.42$ mm and branch of circumflex branch of left coronary artery was $1.29+0.30$ mm.

Discussion: Awareness regarding variation of SA nodal artery is important for cardiologist and cardiac surgeon for safe approach during percutaneous and surgical coronary and atrial intervention.

150 Morphology of accessory drainage system of pancreas

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Introduction: The knowledge of normal and variant anatomy of the pancreatic duct system is an increasingly vital component from the anatomical, surgical and radiological point of view. The present study was undertaken to know:

- The formation and mode of termination of Accessory pancreatic duct.
- The duct pattern of accessory pancreatic duct.

Methods: Forty specimens were collected during routine dissection practical. The specimens were studied by dissection method.

Results: The accessory duct started in the head and presented all three types of course. Long type was present in 50% cases, short type in 22.5% and ansa pancreatica type in 22.5%. The accessory duct opened on to minor papilla in 95% cases and in 5% of cases it terminated within the substance of the gland itself. It was patent in 52.5% cases and communicated with the main duct in all the specimens studied. The minor papilla was situated anterosuperior to major papilla in 85%.

Discussion: The long type was the most common variety of accessory duct in this study. The accessory duct can act as a safety valve in cases of occlusion of major papilla and so the occurrence of higher incidence of patency of it in this study is clinically significant.

151. Morphological study of condyle of mandible

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Introduction: Temporomandibular joint is one of the commonest joint prone for dislocation. It is a freely movable joint, articulates between squamous part of temporal bone at the base of the skull and condyle of mandible. The shape of condyle varies depending on age groups and individuals. The mandibular condyle are categorized into five types namely, flattened, convex, angled, round and concave.

Methods: 100 dry specimens of the mandible were collected. These mandibles were studied in the Department of Anatomy, Bangalore Medical College and Research Institute, Bangalore. The various shapes and sizes of mandible were noted. The size was measured using measuring tape.

Results: Out of the 100 mandibles, there were 20 (20%) mandibles with flattened condyles, 21 (21%) with convex condyles, 46 (46%) with rounded condyles, 13 (13%) with angled condyles. There were no mandibles with concave condyles. The male mandibles were larger when compared to female mandibles.

Discussion: Mandibular condyle can be considered as a valuable tool in the treatment of various diseases, syndromes, developmental disorders and fractures and dislocation. So thorough knowledge of the mandibular condyle is very important for physicians, orthognathists, plastic surgeons and anthropologists for diagnosis and treatment of various diseases or fixation of implants to the mandible to restore the aesthetics of face.

152. Morphometric study of sacral hiatus in Maharashtra population

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Introduction: Morphometric study of sacral hiatus for caudal epidural approach

Methods: This study is framed on 100 dry, male and female human sacra, which includes following parameters, a) appearance of sacral hiatus, b) measuring height of sacral hiatus, c) distance from sacral apex to the level of S2 & S3 foraminae, d) anteroposterior diameter of sacral hiatus at apex, e) distance between the two superolateral sacral crests, f) distance between right and left superolateral sacral crest and sacral apex, also its angle formed by them. Each linear reading was taken with a vernier caliper (0.01mm).

Result: Most common shape of hiatus was inverted "v" in both the sexes. Statistically significant differences were found for sacral hiatus height. In males 21.87mm and females 16.57mm. Mean anteroposterior diameter at the Apex of sacral hiatus was 4.26mm in males and 4.08mm in females. Distance between the Apex to S2 in males was 8.5-40.28mm and in females was 8.94-44.3mm. Minimum length from the apex to S2 foramina was 7.63mm. In 14% males and 20% females anteroposterior diameter was less than 3mm.

Discussion: In this study we found the distance between the Apex to S2 foramina was 7mm, which would be the safety limit for caudal puncture. Normally Tuohy needle used for caudal anaesthesia has a bore of 1.65 to 1.27 mm. In this study Mean anteroposterior diameter of the sacral hiatus at the Apex was 4.0mm. Which suggest that wider bore Tuohy needle could be used for administrating aqueous drugs.

153. Study of the division of radial nerve

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Introduction: To study the division of radial nerve in 100 embalmed upper extremities.

Method: 50 (100 specimens of superior extremities) embalmed donated cadavers (45 males & 5 females) were dissected to document the division of radial nerve.

Results: Out of 100 specimens studied, 22 specimens showed the division of radial nerve into three branches i.e. superficial branch, posterior interosseous nerve and nerve to the extensor carpi radialis brevis.

Discussion: The awareness of the division of radial nerve is clinically important for surgeons dealing with tennis elbow or compressive neuropathies, orthopaedicians operating on the fractures of the lower end of the humerus, and physiotherapist doing electromyography for evaluating and recording the electrical activity produced by skeletal muscles.

154. Protective role of alpha lipoic acid (ALA) on arsenic (iAs) induced toxicity in developing rat kidney

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Introduction: To determine the role of antioxidant supplementation on sodium arsenite (NaAsO₂) induced toxicity in rat kidney.

Methods: The study was carried out on rat pups randomly divided into three groups with the control group (Gr. I) receiving distilled water by intraperitoneal (i.p) route and the experimental groups receiving either sodium arsenite (NaAsO₂) alone (Gr. II) or alpha lipoic acid (ALA) along with NaAsO₂ (Gr. III) from Postnatal day (PND) 1 to 28. At the end of the experimental period (PND 29), fresh kidney tissue was processed for estimation of MDH whereas tissue obtained from perfusion fixed animals was processed either for paraffin sectioning or cryosectioning. H&E stained paraffin sections were observed for morphology & morphometry and cryosections were used for localizing 8-ODG expression.

Results: Simultaneous administration of ALA with NaAsO₂ (Gr. III) resulted in decrease in MDH levels and 8-OHdG expression as compared to arsenic alone treated group. Also, preserved renal cytoarchitecture and maintained morphometric features in these animals were suggestive of ameliorating role of ALA in iAs induced toxicity.

Discussion: The observations are suggestive of protective role of ALA in arsenic induced nephrotoxicity.

155. Study of the deleterious effects of carbamate pesticide "carbaryl" on testis of albino rats – A histomorphological study

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Introduction: Carbaryl, a broad-spectrum contact pesticide is being widely used for control of over 100 major pests responsible for vector-borne diseases and destruction of crops. Carbaryl causes many adverse effects on the reproductive system of human beings and mammals as reported in the existing literature which has motivated us to compare the dose-related effect of carbaryl on the histomorphological characteristics of testis in albino rats.

Methods: The present study was carried out on 40 laboratory bred male Wistar albino rats weighing between 50-80 grams. The rats were divided into four groups. Three experimental groups were given 50,100,200 mg/kg body weight of carbaryl respectively daily for 2 months. Controls of the same weight were maintained. The rats were sacrificed within 24 hours of the last injection. The testis was dissected out and processed into paraffin sections of 5-7 μm thickness and stained with Haematoxylin and Eosin stain.

Results: The shape of the seminiferous tubules of testis showed distortion and sloughing of the germinal cells from the basement membrane. Some seminiferous tubules presented accumulation of degenerated spermatids in the lumen. Interstitial spaces exhibited oedematous changes. Mild to moderate degenerative changes in spermatogenic and Leydig cells were seen. Dilated blood capillaries were observed in focal areas in the interstitium. Focal cell necrosis was seen especially towards the lumen of the tubules.

Discussion: The indiscriminate damage to the testicular tissue increases with increase in dosage of the drug.

156. Increased expression of glial fibrillary acidic protein and connexin-43 in the rat dorsal root ganglia following surgery: An immunohistochemical study

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Introduction: Neurons of dorsal root ganglia (DRG) transmit sensations like pain. The cell bodies of these neurons are presumed not to be involved in the generation or transmission of action potentials. It was hypothesized that these cell bodies could actively modulate the afferent impulses being transmitted to the spinal cord. Gap junctions are intercellular communicating channels which facilitate the spread of neuronal excitability. Its role in pain transmission following surgery was investigated in the present study.

Methods: Sprague-Dawley rats (n=24) were divided into two groups (1) morphometric study of cell diameters after Cresyl violet staining and (2) immunohistochemical study for expression of peripherin, glial fibrillary acidic protein (GFAP) and Connexin-43. Pain, which was induced by the "Plantar Incision" method on the right hindpaw, was evaluated by Hargreaves method. DRG of Lumbar 4 spinal nerve was removed after perfusion-fixation with 4% paraformaldehyde. Cryostat sections of the DRG were processed for immunohistochemistry.

Results: Plantar incision led to shorter latency of withdrawal of the operated paw. DRG neurons surrounded by satellite cells were present in clusters. Peripherin staining was limited to neurons upto 40 μm size. Increased GFAP staining was noted in the satellite cells. Similarly, increased staining for Connexin-43 was observed between neurons and satellite cells.

Discussion: Higher GFAP staining implies activation of satellite cells belonging to both large and small neurons. Increase in gap junctions could alter neuronal excitability. These changes directly suggest neuronal and glial involvement within the DRG during pain.

157. Comparative study of histological changes in umbilical cord from normal and pregnancy induced hypertensive patients

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Introduction: Study to understand and compare the different histological changes of umbilical cord from normal and pregnancy induced hypertensive patients, so as to enable the practitioners to interpret the vascular changes affecting the development of a child.

Method: The study was done on 50 umbilical cord samples. 25 samples from PIH mothers and 25 samples from normotensives mothers (control group). Samples of umbilical cord of about 2 cm were achieved both from placental and fetal side. Histological slides were prepared from the samples and stain by Hematoxylin - Eosin method. The prepared slides were studied under light microscope. The main Morphometric and Histological parameters for comparative analysis were cord's diameter, cord's total area, the muscular area in arteries, and thickness of the vascular endothelium, the arterial and venous caliber.

Results: The diameter, total area and total Wharton's jelly area, the total vessel area and lumen area of umbilical cord are reduced in PIH group than in normal group. Arterial and venous caliber is reduced in PIH group. Vascular endothelium is thickened in PIH group.

Discussion: The morphological and histological changes of the umbilical cord in the PIH represent a marker of some important

postnatal and fetal hemodynamic deficiencies. A good quantification of the morphological and histological changes of the umbilical cord in PIH provides an informational support to the practitioners concerning the baby's neurological development.

158. Histological study of human uterine cervix in different age groups

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Introduction: To study the mucosa, the squamocolumnar junction, muscle layer, serosal layer and measure the mucosal thickness in human cervix in different age groups.

Methods: Thirty whole human uteri of different age groups were collected from the Department of Forensic Medicine and Department of Obstetrics & Gynaecology, Gauhati Medical College for the study. The specimens (uteri) were collected from unclaimed human cadavers after fulfilling all medico-legal formalities. The specimens were grouped into three categories, Group A (20 to 35 years), Group B (36 to 49 years) and Group C (50 years and above). For studying the histology, the cervix was dissected out from rest of the uterus. From different dissected specimen 3 - 5 mm pieces were made and fixed in 10% formalin for 24 - 48 hours. The fixed tissue were processed for embedding in paraffin and sectioned at 5 μ m. thickness in "rotatory microtome" and sectioned of the tissue were stained by routine Haematoxylin and Eosin. Mucosal thicknesses were measured by using calibrated scale by adjusting ocular grid and stage micrometer.

Results: The mucosal thickness in Group A is 2.91 μ m, Group B 2.74 μ m, and in Group C 1.82 μ m.

Discussion: The present study revealed that the mucosal thickness is more in reproductive age group and less in post-menopausal age group.

159. Study of mucin histochemistry of normal and malignant endocervical glands

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Introduction: To correlate and find out difference of mucin distribution in normal and malignant lesions to help in early clinical diagnosis.

Methods: Staining of histologically proven specimen of normal and malignant lesions with H and E, special stains like PAS, PAS-D, PAS-PH, AB-PAS, AB-PH2.5 and 1, AF and AF-AB was carried out and results were interpreted. Normal endocervical specimens were used as controls with carcinoma of endocervix as test.

Result: All the results were tabulated according to colour intensity into different grades ranging from + to +++++. Mucin histochemistry of normal endocervical glands showed mixture of mucosubstances. The epithelium and glands showed mixture of both neutral and acidic mucins. Acidic mucins are more in amount than neutral. In acidic mucins, sialomucins are predominantly seen. Mucin histochemistry of malignant endocervical glands, showed very few mucins. A mixture of both neutral and acidic are found. Neutral mucins are in trace amount. In acidic no

sialomucins but few sulphomucins are seen. So there is a shift in mucin pattern as compared to normal. Neutral mucins are almost disappearing. Sulphomucins alone are in trace amount.

Discussion: In the present study mucin histochemistry of normal endocervical lesions diagnosed as moderately or poorly differentiated squamous cell carcinomas on H & E stain may turn out to be squamous cell carcinoma with mucin secretion, adenocarcinoma or adenosquamous carcinoma after staining with mucin stains depending upon the amount of mucin present. This emphasizes the importance of mucin stain as a routine for diagnostic of cervical carcinoma. Mucin content and type of mucin present can be regarded as an important prognostic indicator and early diagnosis may help in reducing the mortality regarding endocervical malignancies.

160. Study of cephalic index in Nepalese medical students

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Introduction: From the time of start of the 20th century in several countries, studies to determine the anthropometric characteristics of a population are being carried out. Anthropometry is useful to find measurements of living subjects for identifying stature, age and various dimensions related to particular individual or a race. Cephalic index is a key factor for deciding race and sex of an individual whose identity is unknown. Head shape and cephalic index are significantly affected by age, sex, racial, and geographical factors. The aim of present study is to measure cephalic index (CI) of medical students of either gender and to categorize them as having dolichocephalic, mesocephalic and brachycephalic skull.

Method: This cross sectional study was carried out by including 114 healthy medical students of either gender aged 18-22 years in the department of Anatomy, B.P. Koirala Institute of Health Sciences, Dharan. Head length, head breadths were measured and cephalic index was calculated.

Result: Males had mean cephalic index of 77.94 and as a group was mesocephalic while females had mean cephalic index of 80.06 and were brachycephalic. The comparison was found to be statistically significant.

Discussion: The data from this study may be important in genetics, forensic medicine and anthropology.

161. Localization of mandibular foramen in relation to different landmarks of mandible

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Introduction: To evaluate existing bony landmarks and investigate new bony landmarks in relation to mandibular foramen for doing inferior alveolar nerve block in oral, and dental surgeries

Methods: A total of 30 dry mandibles available in the department of Anatomy were examined which included 26 dentulous and 4 edentulous bones. Exact age and sex was not known for any bone. The Measurements were taken and recorded in millimetres, from the mandibular foramen to the 6 landmarks ie, anterior border, posterior border, superior border, Inferior border, condyle and internal oblique ridge. Observations were analysed after calculating mean and SD.

Results: Mandibular foramen was found to be located at a mean distance of 16 mm (SD 3.5 and SE 6.4), 10.21 mm (SD 2.34 and SE 0.43), 20.48 mm (SD 3.89 and SE 0.71), 24.15 mm (SD 4.97 and SE 0.91), 33.46 mm (SD 6.08 SE 1.1) and 12.31 mm (SD 4.88 SE 0.9) respectively from anterior border, posterior border, superior border, inferior border, condyle and internal oblique ridge on right side. Pair 't' test was performed to test the hypothesis of no difference in measurement between left and right sided distance of mandibular foramen from all landmarks. No evidence was found against the NULL hypothesis. So the difference on two sides was insignificant.

Discussion: Condyle is also a good landmark in addition to borders of ramus for designing different techniques of IANB.

162. Study of correlation between personal height and length of hand in east Singhbhum District of Jharkhand region

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Introduction: The objective of the present study was an attempt to investigate the relationship between height and hand length in males and females and to derive linear regression equations. The hand length can be used to predict height and establish personal identity where only fragmentary or mutilated remains of an unknown person are recovered.

Methods: The study was conducted on 186 (92 males and 94 females) asymptomatic and healthy medical and paramedical students of M.G.M. Medical college, Jamshedpur in the age group of 20-25 years. The height was measured in centimetres by stadiometer in standing posture with barefoot and head oriented in Frankfurt plane. The hand length was measured in centimetres as the linear distance between the proximal crease of the wrist and the distal end of most anterior projecting point of the middle finger by using sliding callipers on both right and left side.

Result: A positive correlation between height and hand length was observed in both males and females and was statistically significant. $r = 0.614$, $p < 0.001$ in males and $r = 0.506$, $p < 0.001$ in females on right side. $r = 0.611$, $p < 0.001$ in males and $r = 0.539$, $p < 0.001$ in females on left side. Regression equations derived was found to be $y = 91.22 + 3.95x$ for right side and $y = 90.33 + 4x$ for left side in males. For females, $y = 87.59 + 3.88x$ for right side and $y = 87.37 + 3.89x$ for left side, where y represents height and x represents hand length of respective side.

Discussion: Significant positive correlation and regression formula derived will be useful for anatomist and in medico-legal cases in establishing identity of unknown individuals.

163. Correlation between annulo-papillary distance and the coronary sulcus circumference

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Introduction: To establish the correlation between annulo-papillary distance and the coronary sulcus circumference. The annulo-papillary muscle distance (D-value) is defined as the

distance between apex of papillary muscle and mitral annulus. The annulo-papillary continuity is provided by chordae tendineae and is important for mitral valve integrity and left ventricular function.

Method: Fifty autopsy hearts were included in the present study. The coronary sulcus circumference was measured and correlated with the annulo-papillary muscle distance for the mitral valve in four different directions (D-10, D-8, D-2, and D-4) - from apex of the anterior or posterior papillary muscle to four predetermined points on the annulus of the mitral valve.

Result: D-10 (distance from the apex of anterior papillary muscle to left fibrous trigone) was determined to be 24.42 ± 4.42 mm. D-8 (from apex of anterior papillary muscle to the junction between anterior and middle scallop of the posterior leaflet of mitral valve) was 19.78 ± 4.53 mm. D-2 (from apex of posterior papillary muscle to the right fibrous trigone) was 27.64 ± 3.076 mm. D-4 (from apex of posterior papillary muscle to the junction between middle and posterior scallop of posterior leaflet) was 22.6 ± 4.06 mm. The Coronary Sulcus circumference had an average value of 216.48 ± 24.402 mm.

Discussion: The coronary sulcus circumference was significantly correlated with all D-values, for D-10, p-value was 0.001; for D-8 it was 0.003; for D-2 and D-4 it was 0.014 and 0.011 respectively.

164. Prevalence and location of maxillary sinus septa in dentate and edentulous maxillae

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Introduction: Osseointegrated implants are increasingly used to restore functional dentition. However, the placement of endosseous implants in posterior maxilla is complicated by the existence of atrophic or excessively pneumatized edentulous posterior maxilla and the presence of anatomic variations with in maxillary sinus, such as septa. The purpose of this study is to investigate the prevalence, location and height of antral septa and to offer the clinician, through an accurate morphometric anatomy of maxillary sinus region, some information to prevent complications when carrying out sinus lift procedures.

Methods: The study consisted of 120 sinuses from 60 human cadavers with an age range from 49 to 90 years. Only septa measuring 3.0 mm or greater were considered in our analysis.

Result: The maxillae were edentulous in 18 (15%) specimens whereas all teeth were present in 102 maxilla i.e 85%. A total of 26 incomplete septa were found showing incidence of 21.6%; 14 on right side and 12 on left side. Septae were bilaterally present in only 2 cases (0.8%). Two separate septa were found in one antrum in 5 cases (4.1%). The anterior superior alveolar nerve was seen in the septa in 8 cases which constituted almost 30% in antero-superior wall. These findings along with measurements of maxillary sinus septa will be discussed.

Discussion: A sound knowledge of the maxillary sinus anatomy and of the possible anatomic variations is essential to prevent complications in surgical intervention involving this region.

165. Study of diaphyseal nutrient foramina in human typical lower limb long bones

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Introduction: The nutrient artery is the principal source of blood supply to a long bone and is particularly important during its active growth period in the embryo and fetus, as well as during the early phase of ossification the aim of present study is To study the diaphyseal nutrient foramina in relation with number, size and direction in human typical lower limb long bones.

Method: The present study was carried out on bones which were available at Government Medical College Miraj Maharashtra, 60 Femora, 60 Tibiae and 60 Fibulae. To see the size of foramina , 24 No. hypodermic needle (0.56 mm in diameter) was used. Nutrient foramina equal or larger than the size of 24 hypodermic needle were accepted as being dominant nutrient foramina (D.F), while smaller were considered as being secondary nutrient foramina (S.F).

Result: Of the 60 femora, tibiae & fibulae dominant foramina were 66(84.62%), 23(38.33%) & 10(16.67%) respectively and secondary foramina were 12(15.38%), 37(61.67%) & 50(83.33%) respectively. The direction of nutrient foramina followed the growing end theory. The results of the present study were compared with previous study. Details will be discussed at the time of conference.

Discussion: This study provided important information which was of clinical significance to orthopaedic surgeons so as to avoid damage to the nutrient vessels during surgical procedures.

166. Comparative study on cephalic index of mentally retarded children with normal children in southern Odisha

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Introduction: Mental retardation is associated with deformities of head shape. The ranges head length and head breadth were indicative of "Microcephalisation" of subjects with mental retardation. The study was undertaken to compare the cephalic index of mentally retarded children with apparently normal children, in south Odisha.

Method: This study was carried out on 150 children of age ranging from 8 - 16 yrs. Of which 75 were normal and 75 were mentally retarded children who were taken from "MONOVIKAS KENDRA", Berhampur (A school of mentally handicapped children). Maximum head length and maximum head breadth were recorded using the spreading callipers. Cephalic indices of both normal and mentally retarded children were calculated using the formula (Maximal Head Breadth/ Maximal Head Length) X100. Basing these indices the head shapes were classified as dolicocephalic, mesocephalic and brachycephalic.

Results: From this study it was observed that 40% of normal subjects were mesocephaly and 74% mentally retarded children were dolicocephaly. There was a significant ($p < 0.001$) association between low cephalic index with mentally retarded children when compared with normal group.

Discussion: The main cephalic index points to dolicocephaly amongst with mentally retarded children while mesocephaly amongst normal children. On the basis of anthropometric measurements, it was possible to conclude that mentally retarded children have a specific and recognizable anthropometric pattern with significantly expressed deviations from normal control group.

167. A study of high arched palate with morphometry

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Introduction: The variations of hard palate will lead to improper palatolingual contact resulting in defective articulation of speech. High arched palate is seen in 23% of the individual as per literature. In individuals with high arched palate, hard palate is narrow, constricted shorter and relatively higher and associated with malocclusion of teeth, mandibular hypoplasia, retardation of eruption time of teeth and large fissured tongue and may be associated with abnormalities in tone, cranial index, stature.

Methods: Present study was undertaken at GDCH, Vijayawada with the help of dental doctors the hard palate of patients attending op has been examined. The dentopalatine impressions of 15 high arched palate and 15 normal hard palate were taken through the prepared cast. The dental cast prepared and morphometry was done with dental impression material, impression trays, plaster stone, scale, digital calliper and modeling wax. From the prepared cast, measurements were taken between two molars, two premolars, canines and incisors i.e., average linear width, average curvilinear width, average height, average anteroposterior length and average palatine arch length. Mean and mean differences of each parameter were measured.

Results: As per study, in high arched palate all measurements were found to be decreased compared to normal palate except average height which is increased.

Discussion: There is significant difference of mean value between normal and high arched palate with respect to average palatine height is observed.

168. Prevalence and mophometry of Os peroneum amongst central Indians and its functional significance

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Introduction: Sesamoid bones are small osseous elements which serve to protect the tendon from damage and, in some cases, increase the efficiency or mechanical advantage of their associated muscles.

Os peroneum (OP) is round or oval shaped accessory ossicle within the substance of the Peroneus longus tendon located near the cuboid bone.

The present study is done to ascertain the incidence of OP and to measure the variability in its size and articulation. As there is paucity of data on Indian population and due to its clinical significance in the form of painful Os peroneum syndrome (POPS) which includes OP fracture or a diastasis of multipartite OP, this study has been undertaken.

Method: In the present study twenty five cadavers were dissected bilaterally. Measurements of OP and articular surfaces of cuboid (calcaneum) were taken by the Digital Vernier Caliper.

Results And Discussion: The deep surface of OP was concave, smooth and shiny; sometimes divided into two parts. There was well defined convex articular facet on the cuboid, which in a few cases extended onto the calcaneum. The Present study suggests that Right OP is larger than the Left. Average length of OP was 14.42mm (right-14.76mm, left-14.09mm). Average breadth of OP was 9.29mm (right-9.32mm, left-9.27mm). Average thickness of OP was 4.22mm (right-4.28mm, left-4.17mm). A flattened oval OP was found in all the tendons

examined; incidence of double facets was more on the right side (27.2%) than the left (9.6%).

169. Morphological And morphometrical study of sacral hiatus

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Introduction: Sacral hiatus is an important landmark during caudal epidural block. The purpose of the present study was to clarify the morphometric characteristics of the sacral hiatus in human Indian dry sacra.

Methods: The present study was done on 250 human adult Indian dry sacra of unknown sex which were devoid of any deformity and damage. Sacral hiatus was evaluated in each sacrum according to its shape, level of its apex, and base according to sacral and coccygeal vertebrae, length, anteroposterior (AP) diameter at its apex, and transverse width at its base.

Results: Various types of sacral hiatus were inverted 'U' (44%), inverted 'V' (24.4%), irregular (16.8), elongated (5.2%) and dumbbell (9.6 %). Apex of sacral hiatus extended between lower 1/3rd of 2nd sacral vertebra and upper 1/3rd of 5th sacral vertebra. Base of sacral hiatus was present between the middle of 4th sacral segment to the level of 1st piece of coccyx. Length of hiatus ranged from 5 mm to 51.5 mm. (mean 21.57mm), anteroposterior diameter ranged between 2 to 10 mm (Mean 6.18mm) and transverse width at the base of hiatus ranged between 4.8mm and 20 mm.(mean 12.62mm).

Discussion: Sacral hiatus showed morphometric variations in adult Indians. This knowledge is important while administration of caudal epidural anesthesia.

170. Effects of orlistat on caecum of albino rats administered for acute and subacute durations – A histological study

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Introduction: Orlistat is a widely used anti-obesity drug. It is a potent irreversible inhibitor of gastric, pancreatic and carboxylester lipase. It promotes loss of weight by blocking the action of these lipases, thus preventing the breakup and absorption of dietary fat in food. The present study was carried out to see the histopathological effects of Orlistat on the Caecum of albino rats.

Methods: 60 Albino rats were divided into two groups: Control and Experimental. Orlistat was administered orally to the experimental group in single (5.14mg) and double doses (10.28mg) for a period of 1week and 3weeks, while the control group was given an equal amount of vehicle (normal saline) for the same period. At the end of treatment period, rats were sacrificed after ether anesthesia. Tissues were processed, stained

with H&E and PAS stains and observed under the light microscope.

Results: An increase in the thickness of epithelium, Type I & II Aberrant crypts and multilobed crypts were observed.

Discussion: Orlistat leads to deleterious changes in the mucosa of caecum of the albino rats. Thus a further reassessment and long term trial of the drug is essential.

171. Age related changes in stellate cells and ductular system of the pancreas

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Introduction: Age associated progressive fibrosis may be a major causative factor which affects major organs like liver, kidney, lung and pancreas and can lead to organ dysfunction. Activated pancreatic stellate cells (SMA positive) play a major role in fibrogenesis in chronic pancreatitis, pancreatic cancer and type 2 diabetes, affecting cytoarchitecture and functioning of pancreas.

This study dealt with age related fibrotic changes in the ductular system, of different regions (tail and body) of pancreas as well as morphology of pancreatic stellate cells.

Methods: Pancreatic tissues (n=36) from cadavers aged 20-80 years without any known pancreatic disease were collected from mortuary and processed for paraffin sectioning. Masson's trichrome staining was performed to observe and fibrosis was quantified using adobe photoshop and image J softwares. Pancreatic stellate cells (?-SMA positive cells) were quantified stereologically around periacinar, periductular, perivascular areas. Hierarchical clustering was done.

Result: Three duct populations were identified in clustering. Area and corresponding lumen of these ducts showed a significant increase with progressive decades (p < 0.001). An increased fibrosis was noted in body and tail regions of the pancreas with increasing age. The periacinar, perivascular, periductular SMA positive cells increased significantly from decade four to seven (p = 0.002, 0.004 and 0.002 respectively).

Discussion: The pancreatic stellate cells may be important contributor to the increased fibrosis in the pancreas. The classification of pancreatic ducts into three clusters may serve as a useful tool in studies on pathological processes that affect some sub-populations of ducts than others.

172. Effect of silver nanoparticle on kidney of swiss albino mice and their foetus

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Introduction: The present work is aimed to estimate the toxicity of silver nanoparticle (11-20nm) on maternal and foetal kidney of Swiss albino mice and their offspring.

Methods: Pregnant mice were given AgNPs at dose of 5mg and 10 mg/kg body wt. from GD 7 to GD 9. Sixty foetuses were collected on GD 18 after successful exteriorization of both horn of uterus of 15 pregnant mice of both groups as well as control. Following dissection right and left kidney samples were collected from mothers and foetuses and processed for histological study.

Predominant microscopic toxicity was statistically estimated by SPSS version 17 software with the application of one way ANOVA.

Result: In kidney tissue of dams and their foetus treated with 10 mg AgNps severe congestion in both cortex and medulla, inflammation of renal corpuscle, glomerular atrophy, glomerular necrosis and tubular damage with medullar interstitial haemorrhages was observed. While the intensity of such damage was slightly less in those treated with 5 mg AgNps.

Discussion: Silver nanoparticle causes extreme toxicity in cortex and medulla of kidney of mother and foetus when it was introduced orally in pregnant mice so called induced and transferred toxicity.

173. A comparative histological study of human placenta obtained from mothers with PIH and mothers with normal blood pressure

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Introduction: The present study was performed to evaluate the histological changes in placenta obtained from patients with history of pregnancy induced hypertension (PIH) and compare them with placenta obtained from patients who had normal blood pressure in pregnancy.

Methods: 100 placenta were obtained from the labor room and operating theatres of Sanjay Gandhi Memorial Hospital, Rewa. 50 placenta were from patients who had pregnancy induced hypertension (study group) and 50 were from normotensive pregnant women (control group).

Results: On comparison of histological examination of placenta obtained from hypertensive mothers with normal placenta, it was noted that in the former there was three times more incidence of syncytial knot areas, two times more incidence of fibrinoid necrosis, and cytotrophoblastic proliferation. Presence of areas of hyalinized villi was six times more common in study group.

The difference in histological examination of placenta was more significant if patients had hypertension, 140/100 mm Hg. This also correlated with the birth weight of babies born. The mean weight of babies born to hypertensive mothers was 1.97 kg while it was 2.68 kg in normotensive mothers.

Discussion: The study has shown that in moderate to severe hypertension there are a number of histological changes in the placenta which may be responsible for the occurrence of complications associated with it.

174. Ultrastructural demonstration of antigen presenting cells in human uterine tube

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Introduction: Antigen presenting cells (APC) are the cells that process and present antigens to the T lymphocytes. Dendritic cells (DCs) are the professional APCs that display foreign antigen complexes with major histocompatibility complex molecules to T

cells. They are vital in the activation of lymphocytes to produce an immune response. Other APCs include macrophages, B cells, M cells and vascular endothelial cells. In the female reproductive tract, the lining epithelium acts as a mechanical barrier for the entry of pathogens. In addition to this, defense at mucosal surface is mediated through humoral and cell-mediated immunity. APCs play a vital role in the host defense mechanism. The aim of the present study was to demonstrate the morphology and distribution of dendritic cells in the normal and postpartum human uterine tube by electron microscopy.

Methods: Two normal uterine tubes obtained from patients who underwent abdominal hysterectomy for fibroid uterus and three postpartum uterine tubes obtained from patients who underwent puerperal sterilization were processed for electron microscopy and viewed under Philips EM 201C electron microscope at 40KV.

Results: The epithelium of the normal and postpartum uterine tube varied from simple ciliated columnar epithelium to stratified ciliated columnar epithelium. Among the ciliated and secretory cells, DCs could be identified in the epithelium. The dendritic process displayed the unique Birbeck granules in the cytoplasm. The close association of the DCs with the intraepithelial lymphocytes was noted. In addition to this, there were M cells in the epithelium of normal uterine tube. In the subepithelium, DCs were seen in close association to the endothelial cells of the capillaries. A few high endothelial venules (HEVs) were present in the subepithelium of postpartum uterine tube.

Discussion: The presence of DCs, M cells and HEVs in the uterine tube indicates that the uterine tube is an integral part of mucosa associated lymphoid tissue.

175. Vascular Endothelial Growth Factor: A tool to diagnose chronic obstructive pulmonary disease

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Introduction: To correlate the Serum Vascular Endothelial Growth Factor (VEGF) levels and Functional Dyspnoea Indices in Chronic Obstructive Pulmonary Disease patients and healthy individuals in the Indian scenario and establish the relationship between VEGF and Functional Dyspnoea Indices.

Methods: The study comprised of hundred subjects within the age group of twenty and sixty. Group A comprised of fifty healthy subjects and Group B of fifty known cases of COPD from the out-patient department of the Pulmonary Unit of the Department of Medicine. A detailed history was taken, Pulmonary Function Test, Chest X-ray and routine blood investigations which included Enzyme Linked Immunosorbent Assay for VEGF were done.

Results: S.VEGF levels were statistically very highly significant between the controls and the cases of COPD (p value < 0.001) A cut-off value of 122.5pg/ml was established. At this point it had a sensitivity of 78% and a specificity of 32%. The correlation between S.VEGF and Maximum Voluntary Ventilation was statistically significant (p value < 0.001)

Discussion: Levels of S.VEGF were more in COPD and showed a gradual increase with the severity of the disease. A value above the cut-off level can be considered to be a case of COPD. VEGF can be used as a biomarker to detect early onset of COPD in population studies.

176. Rare variation of the external carotid artery

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Introduction: The arterial pattern of the human body is one of the systems that show large number of variations. The carotid arterial system constitutes the principal supply of Head, Neck, and Brain. Variation in the origin and branches of the external carotid artery is well known and documented.

Methods: 50 cadavers were taken for study from the Department of Anatomy, Narayana medical college over a period of 3 yrs, and the method was simple dissection method.

Results: Many variations were observed in the origin and branches of External carotid artery. One such variation is the division of left external carotid artery into three branches. (1) The superior thyroid artery arose from the common carotid artery at the level of the thyroid cartilage below the level of bifurcation into external and internal carotid arteries. Among the three branches mentioned the (2) Lingual, Facial, Maxillary arteries arose as one common trunk from the medial branch. (3) Superficial temporal artery and Occipital artery. (4) Posterior auricular and Ascending pharyngeal artery arise from one common lateral branch. (5) External carotid artery gave one muscular branch to sternocleidomastoid muscle above the level of bifurcation of common carotid artery.

Discussion: Variations in the origin and branching pattern of the carotid system of vessels is of utmost importance. This important variation could lead to severe complications when radiographic evaluation or surgical proceedings are done in the neck without prior knowledge.

177. Andrographis peniculata ameliorates cisplatin induced hepatotoxicity in pregnant mice by altering the expression of NO synthase

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Introduction: In the present study, it was aimed to investigate the effect of medicinal plant *Andrographis peniculata* (AP) on Cis-diamminedichloroplatinum (Cisplatin, CP) induced hepatotoxicity in pregnant mice.

Methods: Swiss female and male mice were caged overnight in the ratio of 2:1. Presence of vaginal plug was taken as day "zero" of pregnancy. A total of 20 pregnant mice were randomly divided into four groups: control (received distilled water), CP (6 mg/kg body weight on day 10 of gestation), AP (50 mg/ kg of body weight from day 10 to day 17 of gestation) and CP+AP (in equivalent dose). All experimental mice were sacrificed on day 18 of gestation. Liver of pregnant mice were collected and examined for stress parameters: ROS (reactive oxygen species), NO (reactive nitrogen species), antioxidant parameter: SOD, liver marker enzymes: AST, ALT and immunohistochemistry of i-NOS.

Results: In the liver of CP group elevated ROS and reduced SOD were detected along with decreased NO level and i-NOS immuno-reactivity which showed hepato-toxicity compared to control, AP and CP+AP groups. CP+AP group showed hepato-protection in terms of decrease in ROS and increase in SOD,

NO level as well as i-NOS immuno-reactivity compared to CP and AP groups.

Discussion: *Andrographis peniculata* extract ameliorate cisplatin induced inhibition in NO production as well as i-NOS expression, maintaining an optimum NO level, required for normal liver physiology and relieves the oxidative and nitrosative stress.

178. Morphometry of head of ulna

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Introduction: Detailed anatomical knowledge of head of ulna plays a major role in understanding and treating post injury instability, painful conditions of distal radio-ulnar joint and for designing prosthesis, hence the present study was taken up.

Methods: Cross sectional observational study was carried out on 100 dried cadaveric ulnae (50 right, 50 left). The following parameters were measured with digital vernier callipers of 0.01mm accuracy and results analysed using SPSS software version 16.

- (i) To estimate the following parameters: The maximum height of seat (SH); The maximum width of pole (PW); The maximum width of fovea in transverse axis (FW); The length of styloid process (LS).
- (ii) To estimate the difference in above parameters between right and left ulnae.

Results: The following results were obtained

LEFT:SH-5.75±0.7 mm, PW-4.93±0.94 mm, FW-5.17±0.69 mm, LS-4.5±0.74 mm

RIGHT:SH-6.06±0.7 mm, PW-4.92±0.7 mm, FW-5.42±0.7 mm, LS-4.89±0.7 mm

Discussion: Significant differences for seat height ($P=0.042$) and length of styloid ($P=0.08$) between right and left side was noticed. These parameters could be considered before reconstruction of the joint.

179. Variations in the origin of upper and lower subscapular nerves-A cadaveric study

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Introduction: Review of literature shows that variations in the origin of upper and lower subscapular nerves is not uncommon. Thus this study is undertaken to know the origin of upper and lower subscapular nerves in cadavers.

Methods: The perinatal cadavers from the Department of Obstetrics & Gynaecology, AMCH, Dibrugarh, and adult cadavers in the dissection hall of Anatomy Dept. were dissected following simple dissecting procedure. Origins of both the subscapular nerves were observed, photographed and data recorded.

Result: During dissection we found that the upper subscapular nerve originate from posterior cord, posterior division of upper trunk and also from the posterior division of upper and middle trunk. We also found that lower subscapular nerve originate from posterior cord and axillary nerve. Detail would be discussed at the time of presentation.

Discussion: This study will provide valuable information about the origin of upper and lower subscapular nerve. The knowledge gathered from of this study would be useful to anatomists, radiologists, anaesthesiologists and surgeons.

180. Morphological analysis of occipital condyle and its surgical implication

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Introduction: Occipital condyle is an important landmark for transcondylar approach of surgeries in case of lesions ventral to brainstem and craniovertebral junctional anomalies. To go through this approach in case of lesion ventral to brainstem and craniovertebral junction one should have an extensive knowledge of occipital condyle.

Methods: The study was performed in adult skulls of unknown age and sex. Various morphological and Metric data were collected from specimen.

Result: Average length, width and height of the occipital condyle were found to be 22.44mm, 11.88mm, 8.99mm. Intracranial orifices of hypoglossal canal were found to be present against the junction of 2nd and 3rd quarter or against the 3rd quarter of occipital condyle. Extracranial orifices of hypoglossal canal were found to be present against the junction of 1st and 2nd quarter or against the 2nd quarter of occipital condyle.

Discussion: The safest area to be drilled in occipital condyle is the 4th quarter as no important structure is located against this region.

181. Morphological study of the bony projections on sigmoid sulcus

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Introduction: The sigmoid sulcus that is present in posterior cranial fossa between petrous temporal bone and occipital bone, where it lodges sigmoid sinus, is area of interest for anatomist, surgeons and radiologists. Various anomalous bony growths are seen in relation to sigmoid sulcus like bony bridges, crests, and plates etc. These anomalies may be attributed to dural ossification or intracranial calcifications.

Methods: This study was carried out on 50 dry human skulls of unknown sex, and origin, which were collected from Osteology lab of Anatomy Department of K.G. Medical University, Lucknow and U.P. Each skull was closely observed for presence of crest, plate and bars like bony projections over sigmoid sulcus. The bridges, if present, were subtyped into complete and incomplete bony bar.

Results: Out of 50 skulls, crests were present in 52% skulls on left side and 44% on right side. Plates were present in 36% on left side and 26% on right side. Only one skull showed (0.5%) complete bony bridge and one skull (0.5%) was with incomplete bridge.

Discussion: As the presence of bony projections in sigmoid sulcus is quite high so surgeons who are dealing with cerebello pontine angle should be aware of this finding.

182. A qualitative study of the morphology of Thebesian valve

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Introduction: To study the morphology of Thebesian valve qualitatively.

Methods: A total of 40 adult cadaveric human hearts, procured from routine autopsies and from dissections conducted in the anatomy department were studied. Hearts with congenital anomalies, gross pathology or with previous cardiac surgeries were excluded from the study. The hearts were removed intact, together with the proximal portion of the great vessels and were fixed in 10% formalin after thorough washing. The Thebesian valve was studied qualitatively, with respect to its form, dimensions and variations. By visual inspection it was ascertained whether it covered more than or less than half of the coronary sinus ostium.

Results: The valve of the coronary sinus was present in 92.5% (37/40) of the hearts. In 7.5% (3/40) hearts, no valve was seen at the ostium. Various forms of the valve were observed ranging from a well developed semilunar valve to a completely absent valve.

Discussion: The results of the study will be of help during cannulation of coronary sinus for various cardiological interventions.

183. Radiological evidence of coraco-clavicular joint: Its prevalence & significance

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Introduction: Coracoclavicular joint, a synovial joint, present between conoid tubercle of clavicle and coracoid process of scapula, is a known anomalous joint with an incidence of 0.8-9.8% in various populations. Like other synovial joints, this particular joint can also develop osteoarthritic changes and is said to be a predisposing factor for the degenerative changes of neighbouring joints. A few osteological studies have been done in India to observe the prevalence of this joint but no radiological study has been conducted till date. The present study was undertaken to see its prevalence in UP region.

Methods: In the present study 245 digital chest X-ray films in PA view and 120 CT scout films were observed to study the prevalence of coracoclavicular joint in UP region.

Result & Discussion: The coracoclavicular joint was noted in 0.55% individuals, all were male and the joint was found on the left side only. The prevalence in the present study is quite less than that observed in previous osteological studies (9.7%).

184. A new embalming fluid, effective and cost effective at SDM Medical College Dharwad

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Introduction: Embalming using conventional methods is not cost effective in India. To date many studies have been conducted regarding the effectiveness and safety of embalming fluids, but few studies have examined the economy of embalming fluids. The main objective of present study is to provide a composition of embalming fluid which is effective, safe, and cost-effective.

Methods: This study was carried out in the Department of Anatomy, SDM College of Medical Sciences and Hospital, Dharwad. A total of 20 cadavers were embalmed with the new embalming fluid.

Results: The cadavers embalmed with new embalming fluid were free from fungus, easy to get the plane of dissection, well preserved, less irritating and the cost of embalming fluids is less compared to standard conventional embalming fluids.

Discussion: The new embalming fluid used in our study is equally effective and more cost effective compared to standard embalming fluids.

185. MRI study of prevalence of Schmorl's nodules in thoraco-lumbar spine

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Introduction: Although Schmorl's nodes are common in normal adult population, their prevalence is controversial & etiology is still debatable. Objective of this study is to find out the prevalence of Schmorl's node in normal asymptomatic population.

Method: This is a retrospective study done in Era's Lucknow Medical College & Hospital, Lucknow in collaboration with Dept of Radiology. M R I scans of thoraco-lumbar region of 50 patients were assessed for various anatomical parameters.

Results: Out of 50 cases 6(12%) were found to have Schmorl's nodule. No independent association of Schmorl's node with back pain was identified.

Discussion: Schmorl's node is common in elderly population with frequency similar to that in young population. Presence of Schmorl's nodule is not always associated with pain. Its prevalence and clinical symptoms if present will be discussed in the presentation.

186. Prevalence of various anomalies of costo-transverse bar at cervico-thoracic junction in Uttar Pradesh

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Introduction: Rib abnormalities at the upper end of thoracic cage are due to errors in segmentation of costo-transverse bar during development. The anomalies at cervico-thoracic region may include elongated transverse process of 7th cervical vertebra, complete or incomplete cervical rib, rudimentary 1st rib terminating in a synostosis or pseudoarthrosis with second rib,

bifurcated first rib etc. These developmental defects may present as thoracic outlet syndrome. The ribs are too often overlooked at chest radiography, although they are usually easy to evaluate with this modality. The present study was conducted to observe the prevalence of various anomalies at cervico-thoracic junction in Uttar Pradesh region.

Methods: In the present cross sectional hospital based observational study, 252 digital X-rays of cervico thoracic region in PA view were studied carefully to document the prevalence of cervical rib, anomalous first rib and elongated transverse process of 7th cervical vertebra.

Results: A total prevalence of 3.17% of various anomalies was noted. Out of these anomalies in 2.38% cases cervical rib, 0.79% cases elongated transverse process of 7th cervical vertebra and in 0.39% cases rudimentary 1st rib was observed.

187. CT scan evaluation of anatomical variations of sphenoid sinus in North Karnataka population – A cross sectional study

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Introduction: Multiplanar computerized tomographic (CT) scanning has dramatically improved the imaging of paranasal sinus anatomy as compared to sinus radiographs. Preoperative evaluation of the anatomy of the sphenoid sinus by computed tomography (CT) scan and magnetic resonance imaging (MRI) is a routine procedure and can direct the surgical decision. This work determines to find out the incidence of the different anatomical variations of the sphenoid sinus as well as the variable relationships between the sinus and related neurovascular structures as detected by CT scan.

Methods: We studied retrospectively multiplanar CT scan of 150 patients regarding the different anatomical variations of the sphenoid sinus like degree of pneumatization, septation pattern, termination of intersinus septum, presence or absence of accessory septum and relation of surrounding neurovascular structure.

Result: There was 2 cases with conchal, 29 cases with pre-sellar, 47 cases with sellar and 72 cases with post-sellar pneumatization. We noticed protrusion of optic nerve in 37 cases, maxillary nerve in 49 cases and vidian nerve in 48 cases. Inter-sinus septum (ISS) situated in the midline we found in 36 cases while ISS terminate on bony wall covering internal carotid artery in 24 cases and optic nerve in 16 cases.

Discussion: The surgeon should be aware of different anatomical configurations of the sphenoid sinus preoperatively to reach the sella safely and effectively. This study indicates the possibility of anatomical variation of the sphenoid sinus in the North Karnataka population.

188. Teaching of peritoneum for undergraduate medical students

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Introduction: The study aims to improve the understanding of the peritoneum by undergraduate medical students employing different teaching steps.

Methods: First professional M.B.B.S. students of Gauhati Medical College were given a questionnaire after the completion of lecture classes and before starting dissection of cadavers. Many students did not understand the peritoneum even after completion of demonstration classes which were taught by conventional class room teaching method. These students were again taught with the help of 3 (three) dimensional models and selective diagrams showing embryological basis of peritoneum before they started dissection and again there was a revision of the same.

Results: During the year 2007-2010 students were seen having problems in understanding. During the year 2011-2012 students opined better understanding following the use of 3 (three) dimensional models and selective diagrams.

Discussion: Students remarked model study is more helpful in the one year M.B.B.S course and every student can study such models in any time, at any place outside the institution and diagrams shown in the classes if taken from the textbooks what they usually read.

189. Are we using learning resources to enhance teaching & learning?

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Introduction: Changes in undergraduate education have emphasised learner-centred education, problem solving and the acquisition of clinical and communication skills. Large group teaching within the formal environment of a lecture theatre is a particular skill which needs to be taught and practiced. A survey has been designed to get a feedback from most of the teaching staff of Anatomy throughout the state of Andhra Pradesh on their performance & how best they are utilizing the learning resources to enhance their teaching & learning.

Methods: A survey has been designed to get a feedback from most of the teaching staff (80) of Anatomy throughout the state of Andhra Pradesh on their performance. Medical teachers of anatomy are Professors, Associate and Assistant Professors and the staff with M. Sc Medical Anatomy. The responses for the questionnaire have been analyzed and conclusions are drawn.

Results: 99% of teachers opted anatomy during Post graduate selections as there is no option. 100% of teachers stated that they never took photographs or video clippings of their own departmental dissection cadavers or histology slides.

Discussions: Earlier, it was a teacher centered strategy with very little participation by the students and interaction with the students. The students should be encouraged to evaluate the performance of their teachers. Thus, a feedback questionnaire will provide better information to further improve the existing system. Creating relevant teaching aids and employing methods would make the learning process an enjoyable experience.

190. Evaluation of various methods of teaching human anatomy

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Introduction: Anatomical knowledge of students influenced by various effective methods of teaching.

Method: A questionnaire was prepared for the students of MBBS. **Results:** Different methods of teaching were evaluated through questionnaire given to first MBBS students, it was found that combined medical teaching (classical black board based & audio-visual assisted teaching) was the most effective method, particularly for embryology classes use of 3D animations were very helpful in understanding the subject.

Discussion: Anatomy education should be made as effective as possible, as no one can deny that medical students cannot do without anatomical knowledge. Because of promising findings in the areas of teaching in context, vertical integration and assessment strategies, it is recommended that future research into anatomy education should focus on these factors.

191. Evaluating effectiveness of a faculty development program in medical teaching technology

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Introduction: Evaluation of the effectiveness of medical teaching technology program or for that matter any faculty development program (FDP) is crucial to provide assessment of the existing program and to yield valid recommendations for designing future programs that better address the needs of individual faculty members and the affected institutions. The aim of the present study is to evaluate effectiveness of a faculty development program in medical teaching technology.

Methods: The methodology adopted for evaluation was based on the validated Kirkpatrick's model with four levels of program outcomes (satisfaction data, learning data, performing data, and career change) which was suitably tailored to the medical teachers training program conducted by the college.

Results and Discussion: Resistance to change is inherent in any organization. Resistance is linked with lack of awareness or involvement in a given activity. The participants of the medical teachers training program by virtue of clear perception of the advantages of educational strategies are likely to act as "change agents". Some issues that need to be addressed are the long-term impact of such faculty development programs on participants' academic productivity and professional careers

192. 'Body Donation Awareness' seems the only solution for the scarcity of cadavers in medical education in India.

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'Body donation' is the donation of the whole body after death for medical research and education. Medical institutes use cadavers to teach anatomy by corpse dissection. Cadavers are a scarcity with mushrooming of medical institutions in our country and opening new medical institutes is must to balance the doctor-population ratio. Presently it is a daunting task to make students well-versed with the anatomy due to lack of cadavers and students are being taught by software and prepared models. Under Anatomy Act of India, unclaimed bodies have limitations and mostly they are not

useful; and the practice of burial or cremation of corpse is a trend in India, so only source of cadavers is the donated bodies but there is paucity of awareness regarding this gracious and ideal act of body donation. Present work simply tried to assess the views, thoughts and awareness of the public of various field about the concept of body donation by a questionnaire; analysed and concluded that the books and computer cannot replicate the hands on method of teaching human anatomy and cannot replace human body dissection. Availability of cadavers is must for delivering excellence in teaching anatomy and for research in field of medicine. Encouraging/motivating body donation and bringing 'body donation awareness' in people seem to be the only solution to fulfill scarcity of cadavers. Although some NGOs have come front to make solution of this situation but still bringing 'Body Donation Awareness' by public campaigns, exhibitions etc. in large scale is the uttermost necessity.

193. To study the sexual dimorphism of adult human spleen in North-Indian population

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Introduction: Spleen, the largest unit of lymphoid tissue in the body is a soft purple organ about the size of a fist in the left hypochondrium.

Methods: The present study is based on the sexual dimorphism in morphometry of 30 male and 30 female spleens obtained from cadavers in age group of 16- 70 years; belonging to Haryana region of North India. Weight of the spleen was recorded. Length, breadth and thickness was also noted. Areas of various surfaces were calculated after wrapping each surface in butter paper and cutting neatly from the borders; they were outlined on the graph paper. Counting of the squares within the outline gave the surface area.

Results: Sexual dimorphism was significant in weight, length and total surface area of spleen but was not significant in breadth and thickness. The data was analysed by Student t test and compared with number of earlier studies.

Discussion: This data will serve as a databank for the populations in Haryana under unusual circumstances to determine the sex of the individual when any spleen was obtained. The results of the present study will be useful for Anthropologists and Forensic Medicine Experts.

194. Sacrum with an extra pair of sacral foramina - A study in dry human sacra

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Introduction: In the sacrococcygeal region, anatomical variation with change in the number of sacral foramina by union of first coccygeal vertebra with sacrum which will show five pairs of sacral foramina instead of four foramina is known as sacralization of coccygeal vertebrae. This causes difficulty in marking the landmark during caudal epidural block and this may lead to caudal block failure. Due to this variant there may be insufficient analgesia. This study is done to know the prevalence of sacralization of coccygeal vertebra in South Indian population.

Method: The present study of sacralisation of coccygeal vertebra was carried out on 30 dry human sacra of South Indian origin from Department of Anatomy, Bangalore Medical College and Research Institute, Bangalore in the year 2012-2013.

Result: In this study we came across 9 out of 30 sacra i.e 30% (4 female, 5 male) showing sacralization of coccygeal vertebra. Sex determination was done using sacral index.

Discussion: Clinically, the sacralisation of coccygeal vertebra is of paramount importance to surgeons, especially pediatric surgeons and obstetricians as it is a less known variant. Thus knowledge of its prevalence would improve the final outcome of caudal epidural anesthesia.

195. A study on the pattern of arterial segmentation in human spleen

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Introduction: To study the pattern of arterial segmentation in human spleen and any anatomical variation of the splenic artery or variation in any of its branches as per availability of number of cases to be studied, aiming to use this knowledge in partial splenectomy.

Methods: 31 human spleens were studied in the Department of Anatomy, Gauhati Medical College, Guwahati. Each spleen was dissected carefully by piece-meal dissection. The splenic artery and its branches were cleaned and traced. Any variation in the form of the number of the segmental branches and intersegmental anastomosis, if present, was noted. Other branches of the splenic artery which were not supplying the spleen were not taken into consideration.

Results: In 66.73% of the spleens with two terminal divisions (bifurcation) of splenic artery and in 33.26% three terminal divisions (trifurcation) were observed. Superior polar artery, inferior polar artery, both superior and inferior polar arteries and absent polar artery were found in 27.92%, 49.72%, 13.68% and 8.68% of the total spleen respectively. The parts of the spleen which were supplied by these segmental branches were separated by an avascular zone, except in 3.23% spleens in which an inter-arterial anastomosis was found between the arteries of the adjacent segments.

Discussion: The findings of this study are useful for surgeons especially in partial splenectomy. This will also give reliable information to the anatomists for learning and also for teaching splenic anatomy.

196. Sex determination of patella of North Indian population

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Introduction: The estimation of sex is more reliable if complete skeleton is available for analysis but in forensic cases, human skeletal remains are often incomplete or damaged. The purpose of the paper is to consider the reliability of determining sex from patella parameters during non-availability of metric bones as well as we are aware that pattern of sexual dimorphism vary among populations. As very few published data are available on patella,

dimension to estimate sex from North Indian population is attempted.

Methods: 30 male and 30 female patella of both sides from bone collection of our department were utilized and analyzed for the above study. Seven measurements were considered for the study using vernier caliper graduated at 0.5mm. The measurements are maximum height of bone, maximum breadth of bone, maximum thickness, height of internal facet, width of internal facet, height of external facet and width of external facet.

Results: The results of descriptive statistical analysis showing mean, variance, standard deviation and distance between sex means were tabulated. The major finding revealed that maximum height is the measurement with greatest sex difference among all other parameters. These values are subjected to Discriminant Function Analysis (DFA).

Discussion: The DFA carried out by statistical analysis on patella of North Indian population may aid the forensic anthropologist when no other human skeletal remains suitable for sex determination.

197. Anthropometric study of growth status of gond tribe boys and non-tribe boys of Patharia block, Mungeli District of Chhattisgarh State (age group 5– 18 years)

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Introduction: A cross sectional study of the growth status and other anthropometric measurement was carried out on 550 boys, aged 5+ to 18+ years in Patharia block, Mungeli district of Chhattisgarh. The study was aimed to find out the growth status of the Gond tribe boys of Patharia block, which is a semi-tribal area, and was compared with the Non-tribe boys of same block.

Methods: Anthropometric measurements taken into consideration are stature, body weight, sitting height, biacromial diameter, biiliocrisital diameter, upper arm length, upper arm circumference, calf circumference, head circumference, chest circumference, chest breadth, chest length, nose length & breadth.

Result & Discussion: All anthropometric measurements show increasing trend with age in both groups, but it is not uniform in all the ages. However, comparison revealed that, the Gond boys' show lower values for almost all the anthropometric measurements in most of the ages, but the head and nose variables exhibited inconsistent scores for both Gond tribe boys and non-tribe boys. When height and weight of the gond tribes and Non-tribe boys were compared with all India (ICMR) boys, the gond tribes and Non-tribe boys are observed to be shorter and lighter than the all India boys at all ages.

198. Influence of non-metric osteogenetic traits on the cranial architecture of North Indian crania (predominantly Haryanavi)

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Introduction: Visual judgments are popularly known as non-metric traits. They explain the structural pattern, size and shape of

skeleton. Among the earlier workers, there are some who worked on non-metric traits to study human cranial morphology. These traits are directly responsible for appearance of individual identification in forensic medicine studies. These are also helpful largely in recognizing pathological and structural abnormalities. In addition to this, these traits are also responsible in segregating various populations according to their ethnic affinities. Genetic factors and the usefulness of non-metric traits in population studies were conducted by many workers. The current investigations on the human crania will focus on the non-metric traits.

Methods: For the study of non-metric traits, 150 complete skulls (115 males, 35 females) were used. These bones were retrieved and available in the department of Anatomy, Pt. B. D. Sharma PGIMS Rohtak. Skulls showing obvious pathological deformities were excluded from the study. In the present study 80 non-metric traits were studied which include fissures, sutures, ridges, projections, depressions, shape and size of some of the structures in crania. These structures (traits) were studied according to the methods proposed by Larnach and Machintosh.

Results: Out of 80 non-metric traits studied in crania of this region some of the traits were found in more than 90% of cases. Only these traits will be discussed. Anterior nasal spine was found pointed in 95.30% case. Some degree of development of external occipital protuberance was seen in 94.83% cases. Narrow constricted middle part of nose was seen in 94.66%. Shape of external auditory meatus was oval/ellipse type in 93.51% cases. Posterior nasal spine was slight to medium in 92.69% cases. Precondylar tubercle was found absent in 92% cases. Prominence of glabella was less prominent (1,2 grade) in 91.08% cases. Ossicles in frontonasal articulation were seen in 90.54% case.

Discussion: Above traits will help forensic people to describe cranial architecture of this place.

199. Nutrient artery of humerus: Location in south Indian population & clinical significance

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Introduction: To record the location and number of Nutrient Foramen (NF) in the human humeri

Methods: 82 intact dry humeri (33 Right & 49 Left) of unknown age & gender were chosen and its side determined first. Lengths of all bones were measured from superior aspect of head to most distal aspect of trochlea with an osteometric board. The NF was identified with a hand lens, its distance from superior aspect of head was measured & its relation to 3 surfaces of bone determined.

Results: The mean length of the bones studied was 30.4 cm. Double NF was seen in 3 bones with the rest having only a single foramen. The NF was located on the anteromedial surface (70.73%), though it was also seen on the medial border (25.61%) and anterior border (3.66%) of the humeri. The NF were located mostly in the 3/5th part (56.09%) with some also being on 4/5th (39.02%) & 2/5th (1.21%) part of the bone.

Discussion: The present study may be important in joint replacement therapy, free vascular bone grafting in fracture repair and vascularized bone microsurgery. Injury to nutrient artery at the time of fracture or at subsequent manipulation may be a significant factor predisposing to faulty union. An accurate knowledge of the location of the nutrient foramina should help

prevent such intraoperative injuries. Preoperative planning is vital for all such surgical interventions.

200. Correlation of percutaneous length of Tibia with body height and estimation of stature in living North Indian males

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Introduction: Stature is defined as "height of body in standing position". Identification becomes complex in situations where only parts of body or dismembered and fragmented remains are available specially in mass disasters. In such situations identification is difficult by routine methods and only part of body that can help in identification is skeleton. Tibia is the second largest bone of human body and landmarks on it are easily available. Hence percutaneous measurement of tibia was taken to correlate length of right and left tibia with body height of subject aged 18 to 24 years and thus estimate stature by derived Regression formula in male.

Method: The present study was conducted in the Department of Anatomy, G.S.V.M. Medical College, Kanpur taking 150 male students of MBBS within the age group of 18 to 24 years. The height and tibial length was measured in centimeters with the help of stadiometer and spreading vernier caliper respectively by marking two points on tibia with the help of skin marking pencil and measuring distance between them.

Results & Discussion: A positive Correlation was found between length of tibia and stature. Height of subjects ranged between 151-190 cm with the mean length of tibia on right side as 37.23 cm and on left side as 37.33 cm. A Regression formula was derived after applying various statistical tools which is as follows :

$$y_1 = 80.03 + 2.37 x_1 \text{ (Right side)}$$

$$y_2 = 79.26 + 2.39 x_2 \text{ (Left side)}$$

where x_1 and x_2 is the percutaneous tibial length in cm and y_1 and y_2 are estimated stature in cm.

201. Study of sphenoidal sinus ostia in adult human cadavers

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Introduction: Sphenoidal sinuses and their ostia are highly variable in their configuration. Usually the sphenoidal sinus opens into the nasal cavity through a single opening seen in the sphenoid recess superior to superior turbinate. The knowledge of the location of sphenoidal sinus opening is essential for the surgeons to do nasal endoscopic surgeries and also transphenoidal approach to structures like pituitary. The aim of present study is to determine the location of sphenoidal sinus ostia in relation to various parameters.

Methods: The study was carried out in the Department of Anatomy, KMC Manipal on 40 sagittal head and neck sections (20 right and 20 left) of adult formalin fixed cadavers. The sphenoidal sinus

ostia(SO) were located and the distance from the choana to the SO, anterior end of superior turbinate to the SO, Nasion to the SO, Midpoint of anterior wall of sphenoid sinus to the SO, base of sphenoid to the SO were measured.

Results: Majority of the sphenoidal sinuses were sellar type (90%). The shape of the sphenoidal sinus ostia were noted as slit, oval or round. The mean distances obtained were - choana to the SO- 0.6cm, anterior end of superior turbinate to the SO- 1.6cm, Nasion to the SO- 5.1cm, of anterior wall of sphenoid sinus to the SO- 0.3cm, base of sphenoid to the SO- 4.7cm.

Discussion: The knowledge of sphenoidal sinus ostia is very essential in all endoscopic sinus surgeries and in trans sphenoidal approaches in neurosurgery.

202. Study of variation in origin of superior laryngeal artery and its clinical significance

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Introduction: The Superior laryngeal artery (SLA) is the dominant arterial supply of the laryngeal muscles, mucosa and glands. Normally it is a branch of Superior thyroid artery (STA). Knowledge of variation in origin of SLA is important to achieve bloodless field of surgery during partial laryngectomy, radical neck dissection and other neck surgeries.

Method: Study was carried out on 15 formalin fixed human cadavers which were dissected in the Department of Anatomy, Bangalore Medical College and Research Institute, Bangalore in the year 2012-2013 and origin of SLA were traced in 30 heminecks. **Result:** In this study, out of 30 heminecks 27(90%) of SLA originated from STA, 3(10%) originated from External carotid artery.

Discussion: SLA showed great variability in its origin so precise anatomical knowledge is essential for minimizing complications during laryngeal surgeries, laryngeal transplantation and for selective intra- arterial chemotherapy for laryngeal cancers.

203. An Autopsy study of cranial index and cranial circumference in the population of Rajasthan

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Introduction: The cranial index has been widely used by anthropologists to categorize human population. Racial differences have been reported in cranial circumference. There is no published literature on cranial index and cranial circumference in the population of Rajasthan. Hence, this study was aimed to document these cranial dimensions in the population of Rajasthan.

Method: An autopsy study was done on total of 170 cases (138 males and 32 females) above the age of 20 and up to 90 years.

Result: The result showed that all the dimensions are higher in males than in females. Mean cranial circumference in males and females was 57.26 cm & 56.23 cm respectively. Mean cranial length was 202.67 mm in males and 198.16 mm in females. Mean cranial breadth was 150.62 mm in males and 145.66 mm in

females. Mean cranial index was 74.41 in males and 73.57 in females. Majority of the cases i.e 78.82% (112 males and 22 females) had fallen into dolichocephalic category, followed by 20.59% (26males and 9 females) having mesocephalic skull. Only one female i.e. 0.59% of all cases had brachycephalic skull.

Discussion: This is of importance to anthropologist, forensic experts and geneticists.

204. Studies on embryonic and teratogenic effects of imidacloprid on chick embryo brain

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Introduction: To observe the embryonic and teratogenic effects of imidacloprid on chick embryo brain.

Methods: The present study was performed in department of Anatomy Govt. Medical College, Ambedkar Nagar and Santosh Medical College Ghaziabad U.P. on 240 fertile eggs of white leghorn chicken obtained from government poultry farm after taking permission from animal ethical committee. Chicken eggs after having been exposed to Imidacloprid with doses of 12.5µg, 25µg, 50µg, and 100µg in a volume of 12.5µl, 25µl, 50µl and 100µl respectively and control same as test group. The embryos were terminated on 18th, 19th and 21st days, egg shell broken with a scalpel and embryos removed. Gross morphological abnormality observed and recorded in all embryos and histological processing done.

Results: The results show that experimental group had comparatively more cases of delayed and growth retardation resulting into failure of retraction of yolk sac, neural tube defects as compared to the controls. Comparatively higher doses proved more toxic and also caused many developmental defects on brain.

Discussion: Imidacloprid exposure increases the risks of developmental defects with increasing embryonic age. Imidacloprid caused developmental delays and defects on nervous system.

205. Clinical anatomy of recurrent laryngeal nerve in relation to surgically relevant structures in the neck: A fetal study

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Introduction: Various landmarks followed by surgeons to identify recurrent laryngeal nerve during thyroid and parathyroid surgeries to avoid vocal cord palsy include relations to inferior thyroid artery, to tracheo esophageal groove, to ligament of Berry, and to Zuckerkandl's tuberculum. Of these, relation to inferior thyroid artery is the most significant landmark. Aim of the study was to find out the relative importance of various landmarks to identify the nerve.

Method: The study was done on fetuses available in the Department of Anatomy, Government Medical College, Thrissur. Relation of recurrent laryngeal nerve to tracheo esophageal groove just below the cricothyroid joint, relation to branches of inferior

thyroid artery, level of branching of recurrent laryngeal nerve were the parameters studied.

Results: In the present study, on right side, the nerve passed in between the branches of inferior thyroid artery in majority of cases and on left side, the nerve passed posterior to the branches of the artery. With regard to tracheo esophageal groove, on both sides, the nerves were within the groove in majority of cases. The level of branching of the nerve on right side was at the lower border of the gland and just before the nerve entered the larynx in equal proportion of cases. On left side, the nerve branched just before it entered the larynx, in most of the cases.

Discussion: Incidence of vocal cord palsy during neck surgeries can be minimized, if surgeons consider relation to inferior thyroid artery as the most important parameter to identify the nerve.

206. Branching pattern of aortic arch – Fetal study

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Introduction: Aortic arch located in superior mediastinum, gives three classical branches from convex aspect- Brachiocephalic trunk (BT), Left Common Carotid Artery (LCC), Left Subclavian Artery (LSA). Increasing activity in the field of cardiovascular surgery has revived interest in the developmental anatomy of aortic arches. Variations are important for endovascular interventionists and diagnostic radiologists. Most of the anomalies of arch of aorta are as a result of altered development of primitive aortic arches. Variations are usually associated with abnormalities of heart and persistent fetal conditions. The aim was to study variations in the branching pattern of Aortic arch and its surgical and embryological implications.

Methods: Fetuses available in the home department were subjected to median sternotomy and aortic arch was studied.

Result: Variations in aortic arch branching pattern noticed include:

- Left LCC originating from BT,
- BT, LCC, LSA originating individually from arch of aorta,
- Left vertebral artery (LVA) arising between LCC and LSA with LVA entering foramen transversarium of C4 vertebra.

Discussion: Analysis of embryological aspect of Right Common Trunk (CT) ie (BT+LCC) occurs due to proximal part of 3rd aortic arch being absorbed to right horn of aortic sac. Origin of vertebral artery from aorta suggest that part of aortic arch arise from left 7th cervical intersegmental artery or there was increased absorption of part of embryonic tissue of LSA between origin of aortic arch and vertebral artery. Lack of awareness of variations may cause surgical complications during procedures in the superior mediastinum and root of neck.

207. Possible mechanism involved in causing oligohydramnios following ACEI & guldaudi extract administration in mice

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Introduction: Various plant products which are known to contain ACEI like activity. The Chrysanthemum indicum species, a Compositae family plant, is also known to contain ace inhibitor like activity in their flowers and used to treat the hypertension; therefore it was conceived to work on this topic to find out teratogenic effect of lisinopril as ACE inhibitor and Chrysanthemum Indicum during the pregnancy.

Methods: A total of 18 Swiss Albino female mice were used for this study. Mice were obtained from the central animal house of Institute of Medical Sciences, Banaras Hindu University. The first group was control and other two groups were exposed continuously, from day zero of pregnancy till parturition, to 2 mg/100 g dose of ACE inhibitor (lisinopril) and 50mg/100g Guldaudi extract. There were 5 female mice in the control group, and 6 female mice in 2 mg dose group of lisinopril and 7 female mice in Guldaudi extract dose group of 50mg/100g.

Results: In the present study, when fetal weight was recorded after collection, on day 18 of gestation, showed stunting in the size of pups. The control group fetuses had a mean weight of 1.36 gm, and the mean weight of the fetuses was recorded less than the control, in the treated groups i.e. 1.05 gm in (2 mg /100 gm) of lisinopril group and 1.12 gm in 50 mg /100 gm Guldaudi extract group respectively. Mean Crown-Rump length on day 18 of gestation, was 2.40 cm in the control group and in the treated groups i.e. in (2mg/100g) of lisinopril was 2.19 cm and in 50 mg/100 g Guldaudi extract group was 2.11 cm respectively. This confirms that the ACE inhibitors (lisinopril and Guldaudi extract) are teratogenic in terms of reducing body weight and size. However, these doses are not lethal. Observations other than the above were micrognathia, deformities of the limbs like malrotation, amputation at different levels of limbs.

It can be concluded that both lisinopril and Guldaudi due to ACEI effect causes renal structural changes and dysfunction. The kidneys fail to develop to normal size and amount of urine excreted becomes less. The resultant oligohydramnios causes various teratogenicities

208. A study of undescended testis

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Introduction: Undescended testis is the most common congenital anomaly of the male genitalia. The risk for this anomaly increases with decreasing birth weight. Cryptorchidism is significantly more prevalent in premature and low birth weight babies. Patients with this anomaly have associated congenital defects of GI tract, urogenital tract and cardiovascular system.

Introduction: To study the association of undescended testis with low birth weight and prematurity. To study the presence of congenital anomalies associated with undescended testis.

Methods: The study was carried out in the department of Anatomy Gauhati Medical College taking 100 perinatal male cadavers as sample size that were collected from the department of obstetrics and gynaecology. The cadavers were meticulously dissected and results were noted.

Results: The study revealed that undescended testes occurred in 30% cases. Abdominal testes - 20%, inguinal - 51% and sub inguinal -29%. Low birth weight babies showed 60% undescended testes whereas normal birth weight babies showed 40%. Undescended testes was noted in 20% of term cases and 32.5% of pre-term cases. Congenital anomalies were noted in 6.67% cases. Testicular anomalies were noted in 1% case.

Discussion: The study showed that an undescended testis has a significant association with low birth weight and prematurity which has been proved statistically. The study also recorded the presence of congenital and testicular anomalies associated with undescended testis.

209. Variations of fissures and lobes in human foetal lung

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Introduction: To study the morphological variation of foetal lung.

Introduction: Lung is the vital organ of respiration. The human right lung is divided by a horizontal and oblique fissure into superior, middle and lower lobes. The left lung is divided into superior and inferior lobe by an oblique fissure. Present study was performed to examine lung specimen with respect to the morphology of fissures and lobes, to note the variations like incomplete fissure, accessory lobes. Knowledge of such variation might explain bizarre presentation of certain clinical cases relating to lung pathologies. The occurrence of a variant fissure might help radiologist and clinicians to make correct diagnosis and to surgeons to perform various operative procedures like lobectomy, abscess drainage to prevent postoperative complications.

Methods: The study was conducted in the Department of Anatomy, Assam Medical College, Dibrugarh in 25 specimens collected from the perinatal cadavers received from the department of O&G.

Results: Two right-sided lungs showed incomplete oblique fissure. One right-sided lung had incomplete horizontal fissure. One left sided lung had incomplete oblique fissure.

210. A comparative morphometric analysis of the tricuspid valve in human and pig hearts

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Introduction: Valve replacement is used for patients with badly scarred valves, severe regurgitation or valvular stenosis. Swine is widely used in the research because they are easily available and being mammalian animals share similar features to humans. This study aims to compare tricuspid valve anatomy of human and pig hearts.

Method: This study was conducted in the Department of Anatomy, DMCH, Ludhiana after approval from the Hospital Ethics Committee. For the study, thirty hearts were taken, out of which fifteen were human cadaveric hearts and fifteen were pig

hearts (from slaughter house). The total annular length of the tricuspid valve, the annular length and height of each leaflet was measured after gross dissection of the hearts and statistical analysis was done.

Results: The total annular length of the tricuspid valve of human and pig hearts was comparable with p value = 0.127 (non-significant), the annular length of anterior leaflet, posterior and septal leaflet of human and pig hearts was comparable with p value = 0.931, 0.127, 0.154 (non-significant) respectively and, the annular height of anterior leaflet, posterior and septal leaflet of human and pig hearts was comparable with p value = 0.423, 0.423, 0.101 (non-significant) respectively.

Discussions: The present study suggests that the morphology of human and porcine tricuspid valve is similar.

211. Anatomical study of dorsalis pedis artery

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Introduction: Dorsalis pedis artery is the continuation of the anterior tibial artery opposite the midpoint between the lateral and medial malleolus and passes forward to the proximal part of the first intermetatarsal space. In its further course, the artery ends by joining with deep branch of lateral plantar artery forming the plantar arch. It is often examined, by physicians while assessing peripheral vascular disease. Knowledge about the anatomy of this artery is essential, as it forms the stem for one of the major myocutaneous flaps, in plastic and reconstructive surgeries. Present study was carried out to evaluate variations in course and branching pattern of dorsalis pedis artery.

Method: Study was carried out in the department of Anatomy, Assam Medical College & Hospital. Total 100 lower limbs of both sexes were dissected to explore the dorsalis pedis artery to look for its course and branching pattern. All findings were carefully documented and analyzed.

Result: In 68% of cases the artery had a normal course. The variations observed were, duplication of the artery, variation in the course and pattern of the artery.

Discussion: Variation in dorsalis pedis artery is not very uncommon. These variations are of great significance from clinical point of view. Hence it is essential to have a sound knowledge about the artery. Observations from present study will add to knowledge pertaining to the dorsalis pedis artery.

212. Fissures in human lung: A cadaveric study

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Introduction: A pair of lungs is situated in the thoracic cavity. Fissures divide these lungs into lobes. They in aid inspiration by causing a uniform expansion. The right lung usually has two fissures, one oblique and one horizontal and left has only one oblique fissure. Variation has been reported in occurrence and extent of these fissures. Variation in the fissure of the lung has clinical and surgical relevance.

Aim and objective of the study was to find out the variation in fissures of lung and incidence of these variations. A comparison of

the incidence of various fissures between right and left sides and between adult and fetal lung was done.

Method: Hundred and thirty lungs of adult human cadavers dissected by medical students, preserved by formalin fixation and stored over a period of four years were studied and thirteen formalin fixed fetal cadavers were dissected to obtain twenty six lungs.

Result: Oblique fissure of right lung was complete in 60% cases and incomplete in 38%. Oblique fissure was found to be absent 2% of right lung. One right lung (1.2%) showed double oblique fissure. In 6% cases, right lung showed an obliterated horizontal fissure. Horizontal fissure of right lung was complete in 38% and incomplete 53% of cases. Horizontal fissure was found to be absent in 9% of right lungs.

Oblique fissure of left lungs was complete in 57.8% and incomplete 42.1% of cases. Only one left lung showed presence of horizontal fissure. Accessory fissures were present in 12.66% of right lungs and 18.75% of left lungs.

Variation in fetal cadavers: Complete oblique fissure was found in 84% and incomplete in 15.3% of right side fetal lungs. Complete oblique fissure was found in 69.0% and incomplete in 30.7% of left lungs. Complete Horizontal fissure was found in 46% and incomplete in 53.8% of right lung. Accessory fissure was found in 15.38% of right lungs and 46.15% of left lungs.

213. Estimation of stature from hand and foot dimensions in Chhattisgarh region

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Introduction: Ascertaining sex and estimation of stature from incomplete skeletal and decomposing bodies is a recurring theme in physical anthropology and forensic science. This has become useful in recent times due to mass disasters like plane crash, mass suicide, tsunamis, forest fires, earth quakes. The present investigation was conducted to study hand lengths, widths, height, stature ratio and indices for bilateral differences.

Method: Data for the study was obtained from 140 students with mean age of 18.95 ± 1.15 yrs from Pt. J.N.M. Medical College Raipur. Height of subject, length and width of hand and foot were measured following standard protocols using vernier calliper and measuring tape.

Result: In all anthropometric parameters measured or calculated males were significantly ($P < 0.001$) higher. Multiple linear regression analysis of hand and foot lengths generated predictive equations with statistical significant ($P < 0.001$) ability for height prediction.

$$1. H = 8.78 \text{ RHL}$$

$$2. H = 17.76 \text{ RHW}$$

$$3. H = 6.6 \text{ RFL}$$

$$4. H = 16.8 \text{ RFW}$$

$$5. FL = 1.32 \text{ HL}$$

Where (H - Height of person, RHL- Right hand length, RHW - Right hand width).

Discussion: The results showed a significant correlation between hand length and foot length. Height could be accurately predicted from a combination of right and left hand and foot lengths which will be useful in forensic investigation, medico-legal cases for the identification of body parts as well as in cosmetic surgery.

214. Study of caroticoclinoid foramen in dry human skulls

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Introduction: To study the incidence, morphometry and laterality of the caroticoclinoid foramen and to classify them into complete, incomplete and contact type.

Methods: Study was carried out on 75 dry human skulls obtained from the department of anatomy, KIMS Bangalore. Sex of the skull was determined. The caroticoclinoid foramen was observed and the parameters were noted. Major diameter of the foramen was measured using a manual calliper.

Result: The caroticoclinoid foramen was present in 40 skulls with an incidence of 53.3%. Complete foramen was found in 4 skulls (2 right, 2 left). Incomplete foramen in 30 skulls (9 right, 10 left, 11 b/l). Combination of two different types was found in 6 skulls (complete with incomplete -2, complete with contact-2, incomplete with contact-2). Mean diameter of complete foramen was found to be 4.07mm.

Discussion: The anterior and middle clinoid processes of the sphenoid bone are sometimes connected by an ossified ligament or dural folds which extend between them to form the caroticoclinoid foramen. Presence of this foramen may cause compression of the clinoidal segment of internal carotid artery and lead to headache. The caroticoclinoid ring is closely related to important structures such as cavernous sinus, sphenoidal air sinus, pituitary gland, optic canal and their contents. Hence a thorough anatomical knowledge of this foramen is essential for the neurosurgeons operating in this region.

215. Nutrient foramen of human tibial shaft – Topographical anatomy and clinical relevance

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Introduction: An understanding of the number and position of nutrient foramina in adult human tibiae is important in relevant orthopedic procedures such as joint replacement, fracture management, bone grafts and vascularized bone microsurgery.

Methods: The present study was conducted in the department of Anatomy, Govt. Medical College Amritsar. The study group comprised of 100 adult human tibiae conforming within normal morphological attributes, randomly obtained from 50 male and 50 female cadavers. With the help of metallic scale, the distance of nutrient foramina from upper and lower ends of tibia were recorded and analysed for significance using student's t-test.

Results: All the bones of the present study depicted single nutrient foramen situated in the upper one third of the shaft and were

directed downwards. In majority of the bones, it was located lateral to the vertical line on the posterior surface of tibial shaft. The mean distances of nutrient foramen from the upper and lower ends of tibia were found to be greater in males on both the sides. Also, these measurements illustrated higher values in the right sided bones.

Discussion: Precise knowledge of the location of the nutrient foramina in long bones is helpful in preventing intra-operative injuries in orthopedic as well as in plastic and reconstructive surgery apart from being relevant in medicolegal practice.

216. Unusual array of neural communications in the infratemporal fossa

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Introduction: It is well known that variations in the branching pattern of the mandibular nerve frequently account for the failure to obtain adequate local anesthesia in routine oral and dental procedures, and also for the unexpected injury to branches of the nerves during surgery. Detailed information of the neurovascular relationships of the infratemporal region is also relevant in odontostomatology practice.

Method: The region of infratemporal fossa was carefully dissected to expose and delineate the disposition of nerves. We explored the possibility of neural communication between the branches of posterior division of mandibular nerve in 25 cadavers (50 sides).

Results: In majority of specimens (98%), no neural communications were found between branches of posterior division of mandibular nerve. In one case, neural communications were encountered in the left infratemporal fossa. A neural communication was noted between the lingual and inferior alveolar nerve close to their origin. Another neural twig was similarly observed connecting mylohyoid nerve and lingual nerve close to submandibular ganglion. The mylohyoid nerve originated as usual from inferior alveolar nerve proximal to its entrance into the mandibular canal. The mylohyoid nerve and its communication with the lingual nerve were almost of same thickness. Distal to this neural communication, the mylohyoid nerve displayed normal course and distribution.

Discussion: The communicating branch between the mylohyoid nerve and lingual nerve might also innervate the tongue and surgeons should be aware of this variation to avoid unexpected findings after oral nerve surgeries. Thus awareness about disposition of neural structures of infratemporal region and variations therein may prove beneficial to clinicians, especially to oral and maxillofacial surgeons.

217. Asymmetry In Gonial Angles of dry human mandibles

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Introduction: This study is an attempt to compare the Gonial Angle of the both side of dry human mandibles (male & female) in Uttarakhand region.

Method: Total 60 dry human mandibles collected from Departments of Anatomy and Forensic Medicine & Toxicology SGRRIM&HS, Patel Nagar Dehradun, Uttarakhand. Out of 60 dry human mandibles, 30 were of female and 30 were of male. Mandibulometer was used to measure gonial angle.

Results: Overall Mean Gonial Angle of Right side is 115.00 degree with SD ± 8.29 & SE= 1.07 whereas overall Mean Gonial Angle of Left side is 113.77 degree with SD ± 10.31 & SE= 1.33. Test applied was independent "t" test.

Discussion: There is a significant difference ($p < 0.05$) in measurements of left sided mean gonial angles of male and female dry human mandibles. No significant difference ($p > 0.05$) was found between the measurements of right sided mean gonial angles of male and female mandibles. Metric parameters of human mandible are useful in diagnosis and treatment of dento-facial condition. The degree of the gonial angle has association with the proportion between facial height and ramus height. Anthropological features along with other metric traits put more weight in identification of sex and race.

218. A quantitative perspective on dimorphic profile of talus in North Indians

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Introduction: The talus is the keystone of human tarsus and is the second largest in size. This weight bearing bone exhibits dimorphism in size and weight amongst all populations. This dense bone is often recovered intact and so is vital for sex, race, age and stature determination. The present study intends to address the problem of sex and race identification using metric attributes for the talus.

Methods: The study was conducted on 200 dry tali (100 males; 100 females) of known sex with intent to establish sexual dimorphism for North Indian population.

Results: The results indicate:

- (i) A definite statistically significant dimorphism exists for talar morphology in North Indians. Except for right breadth (.068) the parameters as measured are statistically significant ($p < 0.001$).
- (ii) The correlation coefficient values are partially positive for some pairs (length males+.048) and partially negative (height males -.088) for others. These indicate that it is improbable to predict a parameter on one side when same parameter on the other side is known.
- (iii) Stepwise discriminant function analysis indicates that when all eight variables from both sides are taken into consideration the percentage accuracy of sex determination reaches a maximum level of 100%.
- (iv) The cross validation values for sample functions were determined (left stepwise-98%; right stepwise-86%; left and right stepwise-100%).

Discussion: These predictive validity values indicate that classification functions are a useful diagnostic tool to identify sex of Northern Indian individuals.

219. Morphometry of suprascapular notch and the incidence of its various types in the population of Assam

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Introduction: The variation in the anatomy of the suprascapular nerve is a concern in accurately assessing the suprascapular nerve in various conditions like suprascapular nerve entrapment syndrome. The objective of the study was to assess the various types of suprascapular notch present and their incidences in the population of Assam.

Method: This is an observational study done in the Department of Anatomy, Gauhati Medical College. 80 dry human scapulae were collected and observed.

Result: The percentage of notches is found to be highest in type II (35%), type I 4%, type III 24%, type IV 13%, type VI 4%. Type V was not found.

Discussion: Knowing the variations in the suprascapular notch will help in understanding the source of suprascapular nerve entrapment. It will be of some help for the clinicians to correlate suprascapular nerve entrapment with a specific type of notch.

220. Variations in the formation and branching pattern of brachial plexus

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Introduction: Brachial plexus has a complex anatomical structure. Variations in brachial plexus are important since it has close relation to important structures. **Method:** 50 upper limbs were studied from the adult cadavers of which 44 from male and 6 from female cadavers.

Result: In 20% of the limbs musculocutaneous nerve did not pierce the coracobrachialis muscle. Communication between the median nerve and musculocutaneous nerve was found in 2% of the limbs. In 4% of cases axillary nerve supplied the long head of triceps. In one limb there was an unusual formation of long thoracic nerve from C6 & C7 and no contribution from C5. In the same limb formation of posterior trunk was different. Most of the variations were unilateral.

Discussion: Knowledge of the variations in the brachial plexus is important for the anatomist, radiologist, surgeons, and anaesthesiologist.

221. Anatomic study of localization of foramen ovale, carotid canal, jugular foramen using Henle's spine as landmark

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Introduction: Henle's spine (HS) is a small bony prominence, anterior to the supramastoid pit, at the postero superior margin of the external acoustic meatus. This landmark is considered as an acceptable guide to temporal bone surgeries.

The aim of present study is to determine the location & difference between the two sides of the of skull base foramen by HS.

Methods: Twenty nine (58 sides) adult skulls with prominent HS were studied. Distance from tip of HS to anterior margin & posterior margin of foramen ovale (HS -AMFO, HS - PMFO); poster lateral & medial jugular foramen (HS-PLJF, HS-PMJF); lateral & medial margin of carotid canal (HS-LMCC, HS-MMCC) were measured by digital caliper. Appropriate statistical test was applied to determine the bilateral variability.

Results: Mean values of distance from HS-AMFO are 35.96 ± 2.05 mm, HS-PMFO is 42.57 ± 2.38 mm HS -PLJF 22.82 ± 2.12 mm, HS-PMJF is 34.08 ± 2.48 mm; HS-LMCC is 26.68 ± 1.95 mm, HS-MMCC is 32.27 ± 2.22 mm. Significant difference between right and left jugular foramen was observed.

Discussion: Henle's spine can be used as a reliable land mark to locate the deeper structures of skull base. Possibility of side difference should be kept in mind prior to surgery

222. Hepatic changes after Ethephon administration in albino rat

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Introduction: Ethephon, 2-chloroethylphosphonic acid, has been recognized as one of the most widely used plant growth regulator. Currently it is used on fruits, vegetables, cereals, for promoting pre-harvest and post-harvest ripening and has become one of the major health concerns as we are exposed to this constantly. Liver plays an important role in the first pass metabolism of Ethephon and is known to cause various disturbances in the liver enzymes.

Methods: The present study was done to study the histomorphometric changes it caused in the histology of liver in adult Wistar albino rats. The experimental rats were administered 200mg/kg bodyweight by oral gavage for fourteen days. Controls were maintained. Animals of both groups were sacrificed within twenty four hours of the last dose; liver was dissected and processed for light microscopy. Haematoxylin and eosin stained sections were studied using an image pro-express analyzer. The data obtained from control and experimental groups was tabulated and statistically analyzed.

Results: The mean body weight of the experimental rats was found to be statistically significantly decreased. The liver capsule was thickened and infiltrated with inflammatory and red blood cells. The orderly arrangement of hepatocytes was disrupted and was replaced by blood filled large sinusoids. At sites hepatocytes appeared to be degenerated. Councilman bodies with pyknotic nuclei and inflammatory infiltrations were observed. The hepatocytes were 29.53 ± 10.65 and 44.18 ± 10.31 per unit area in the experimental and control groups respectively. The decrease of cells per unit area was statistically significant. The kupffer cell count was 25.12 ± 4.41 in experimental and 13.05 ± 6.5 in the control rats per unit area. The increase of these cells was found to be statistically significant.

Discussion: The changes observed in the liver suggest that Ethephon possesses a hepatotoxic potential.

223. Effect of monosodium glutamate on testis of adult wistar albino rat

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Introduction: Monosodium Glutamate (MSG), is a sodium salt of glutamic acid, commonly used as a flavour enhancer throughout the world. It stimulates olfactory receptors and improves the palatability of meals. Glutamic acid under certain circumstances, along with other acidic amino acids may act as a neurotoxin and has toxic effects on various organs of the body. The present study was conducted to evaluate the histological effects of monosodium glutamate on the testis of adult albino rat.

Methods: The animals were divided into two groups consisting of ten animals each. The experimental group was given 4mg/g body weight of monosodium glutamate intraperitoneally for seven days. The controls were maintained. All the animals were sacrificed after thirty days of the last dose, their testes sections were stained with haematoxylin and eosin (H&E), Periodic Acid Schiff (PAS) and Massons Trichrome and histological examination was done under Zeiss light microscope.

Results: Atrophic and degenerative changes in the seminiferous tubules with disorganization of the germinal epithelium were observed in the sections of testes. Necrosis in the form of pyknotic nuclei, karyorrhexis and karyolysis was also noticed.

Discussion: This study concludes that MSG has certain detrimental effects on the structure of testes as demonstrated by the histological changes produced. Since nowadays people are more commonly dependent on processed food, which contain MSG, therefore it is suggested that processed food should be consumed cautiously as its frequent consumption can lead to infertility and reproductive disorders.

224. Reliability of age estimation by Gustafson's method among North Indians

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Introduction: Forensic odontology plays an important part in identification purposes. Age estimation by Gustafson's method is based on six regressive (Attrition, Secondary dentine, Dentine transparency, Root resorption, Cementum apposition and Periodontal Disease) changes in teeth. The present research was aimed to establish the reliability of Gustafson's method among north Indians.

Methods: 196 single rooted extracted teeth were collected from Department of Oral Health Sciences, PGIMER, Chandigarh. Before extraction periodontal score of each tooth was noted. Labiolingual sections were then prepared and examined under light microscope for remaining regressive changes. Each parameter was scored using Gustafson's 3 point score system and total score was calculated. Age was estimated using linear regression analysis. Estimated age was compared with actual age on the basis of absolute mean error.

Results: In pooled data, good correlation ($r=0.8$) was observed between total score and actual age. Total score generated an

absolute mean error of ± 7.8 years which was comparatively smaller than that of all the parameters separately (approx. 11.5 years). Statistically no significant difference was observed in absolute mean error of age in two sexes ($p > 0.05$).

Discussion: Gustafson's method which is based on total score of six parameters was found to be more promising than individual parameter in estimating the age.

225. The effect of different embalming fluid vapours on the histological changes in developing liver of chick embryo

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Introduction: Formaldehyde is most commonly used preservative in Anatomy. The present study was conducted to document the effect of standard and modified embalming fluid vapours on the development and histological changes in liver of chick embryo.

Methods: For this 100 fresh fertilized broiler eggs were taken. These 100 eggs were divided into three groups. Group 1 having 20 eggs hatched normally and was control group. Group 2 had 40 eggs was exposed to fumes of standard embalming fluid. Group 3 constituted 40 eggs and was exposed to modified fluid (it has less amount of formalin). On 21st day when the eggs hatched one chick from each group was sacrificed and liver dissected and fixed in 10 % formalin for 24 hours. The cleared specimen was impregnated in wax and wax blocks were made. 7-10 micron sections were made and stained with haematoxylin and eosin.

Results: Under light microscope various changes were noticed in standard embalming fluid exposure which included changes in parenchyma of liver cells, loss of their nuclei and shape, signs of degeneration, cellular infiltration, blood sinusoids were dilated and many hemorrhagic area were observed. The modified embalming fluid showed the changes like hemorrhagic areas in liver cells, few hepatocytes with no nuclei. The sinusoids observed slit like and distended, no clear demarcation of portal triad.

Discussion: The statistical analysis revealed that all these changes were more significant in standard embalming fluid as compared to modified and control group.

226. A morphometric study of thoracic vertebral pedicles in relation with vertebral body dimensions

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Introduction: The majority of morphometric studies highlight the importance in development of vertebral column instrumentation and within the same population the anatomical variations can be observed in the pedicle shape, size and angulations. The parameters measured in the present study were selected considering the growing interest in the thoracic spine instrumentation.

Method: 20 sets of vertebral columns were obtained from the dissected cadavers in department of anatomy, S. P. Medical College, Bikaner. A total 240 thoracic vertebrae were measured for various parameters by vernier caliper and goniometer.

Result: The Mid-Pedicle width of pedicles decreases from T1 to T5 and then increases to T12. The mean of Pedicle height was

maximum at T12 level (16.0 mm). The minimum Pedicle height was recorded at T1 level (8.7 mm). The Pedicle length was slightly increasing throughout the thoracic spine after T9 becomes constant and smallest at T1 pedicle (8.5mm). The vertebral canal width remains constant but compressed antero-posterior from T1-T9 thereafter slightly increases. The Pedicle angle in transverse plain decreases to become medially directed at T12 (-1.3°). The maximum mean value of Pedicle angle in transverse plain was recorded as 32.6° at T1.

Discussion: Pedicle height is correlated to vertebral height where as mid-pedicle width is correlated with vertebral body width. Thereby knowledge of thoracic vertebral morphology is essential for pedicle screw use.

227. Morphometric study of ethmoidal foramina and its clinical significance

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Introduction: To describe the morphometric relationship of the ethmoidal foramina and optic canal from the midpoint of anterior lacrimal crest.

Methods: One hundred orbits from 50 adult dried skulls were used from Department of Anatomy, Vinayaka mission Medical College, and Salem. The shallowest and deepest ethmoidal foramina are defined as the anterior and posterior ethmoidal foramina, respectively and intermediate foramina are defined as accessory foramina. Morphometric measurements were taken as average distances in millimeters from the anterior lacrimal crest (ALC) to the anterior ethmoidal foramen (AEF) and optic canal (OC) and posterior ethmoidal foramen (PEF) to optic canal using Vernier calliper and geometric values were calculated.

Results: The average distances from ALC to AEF and OC on right side were 28.5 ± 0.30 mm, 47.1 ± 0.04 mm and PEF to OC was 16.1 ± 0.03 mm respectively. The average distance s from ALC to AEF and OC on left side was 25.9 ± 0.04 mm, 44.3 ± 0.04 mm and PEF to OC was 13.46 ± 0.032 mm, respectively. Accessory ethmoidal foramina were detected in 9 orbits (5 right and 4 left side orbit). The accessory or middle ethmoidal foramina were located 33.2mm and 33.3 mm posterior to the anterior lacrimal crest on both sides respectively.

Discussion: The arteries in the orbit are potential source of haemorrhage during deep orbital surgeries hence surgeons should be aware of the anatomy of the arteries during operation on the medial orbital wall and in endonasal microsurgies of ethmoidal region.

228. The variations of inferior gluteal nerve; A sole motor supply to gluteus maximus muscle

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Introduction: There is scanty information regarding course and relationship of inferior gluteal nerve with piriformis muscle. The inferior gluteal nerve, branch of sacral plexus leaves the pelvis via greater sciatic foramen below the piriformis and divides into

branches that enter the deep surface of gluteus maximus. The variations of inferior gluteal nerve if unattended may result in injury to the nerve specially during posterior approach to hip.

Method: This study was carried on 60 gluteal regions belonging to 30 embalmed adult human cadavers in the dept. of anatomy, GMC Patiala.

Results: The inferior gluteal nerve emerged at the inferior border of piriformis in close association with posterior cutaneous nerve of thigh and medial to sciatic nerve in 54 specimens (90%), whereas in 6 (10%) specimens 2 types of variations were found. In type 1, seen in 5 specimens inferior gluteal nerve was emerging through the piriformis. This was associated with variations of sciatic nerve. The common peroneal nerve was emerging along with inferior gluteal nerve through the piriformis, whereas dorsal ramus of posterior cutaneous nerve of thigh was also emerging through the piriformis in 3 specimens only. In type 2, seen in 1 specimen the inferior gluteal nerve along with common peroneal nerve and dorsal ramus of posterior cutaneous nerve of thigh was emerging at the superior border of piriformis.

Discussion: The variations of inferior gluteal nerve along with high division of sciatic nerve are of great clinical and surgical importance. The course of inferior gluteal nerve through the piriformis could be related to gluteal atrophy observed in patients with piriformis syndrome which is a sole motor supply to gluteus maximus.

229. Persistent eustachian valve in adults- A cadaveric study

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Introduction: The blood flow through the inferior vena cava is guarded by a valve called as the Eustachian valve. The Eustachian valve (EV) (valvula venae cavae inferioris) is a remnant of the embryonic right valve of the sinus venosus. Embryologically, the EV directs oxygenated blood from the inferior vena cava across the patent foramen ovale (PFO) into the systemic circulation.

Methods: 30 hearts were dissected from formalin fixed adult human cadavers and were studied for the presence of persistent Eustachian valve.

Results: It was observed that only 1 out of 30 heart specimens showed the presence of a persistent Eustachian valve.

Discussion: Transthoracic echocardiography shows the Eustachian valve in the majority of newborns, but the prevalence of Eustachian valve in adults studied with transesophageal echocardiography is unknown. Failure of Eustachian valve to regress may simulate a mass or result in a heart disease such as infective endocarditis or a thrombus. Rarely a myxoma may develop in the persistent inferior vena caval valve.

230. A CT scan study of lumbar pedicle

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Introduction: The aim of this study was to measure the lumbar pedicle dimensions and its angulations for the development of

techniques and devices for spinal instrumentation on computed tomography (CT) scan.

Method: 50 CT scans of lumbar vertebral column of patients belonging to North West Indian population were randomly selected. Various morphometric parameters were recorded using software.

Result: The transverse pedicle angle increased from L1 to L5 in both males and females. In males it was maximum at L5 (25.7°) and minimum at L1 (7.5°). In females it was maximum at L5 (24.0°) and minimum at L1 (7.4°). The chord length in males was maximum at L5 (51.3 mm) and minimum at L1 (48.1 mm). In female chord length was maximum at L2 (51.1 mm) and minimum at L4 (47.6) on right side and on left side it was maximum at L3 (50.9 mm) and minimum at L1 (46.7 mm).

Discussion: A screw of 40 mm length appeared to be safe at all lumbar levels as all the vertebrae studied had a chord length well in excess of 40 mm. The length of the pedicular screw need to be substantially smaller for Indian population than those mentioned in western literature. At the lower lumbar levels, greater lateral inclination of the pedicle should be kept in mind otherwise it may lead to the breach of the medial cortex of the pedicle with resultant risk to the neural tissues.

231. CT scan and dry bone study of foramina transversaria of typical cervical vertebrae

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Introduction: Detailed knowledge of morphometry of foramina transversaria (FT) is critical for understanding the pathology of certain diseases and for proper preoperative planning.

Material: The current study was conducted on 160, 100 and 120 foramina transversaria on CT scans, dry bone and cadaveric cervical spines (C3-C6).

Results: The mean anteroposterior and transverse diameter of foramina transversaria on both sides was 3.8 ± 1.04 mm and 3.28 ± 0.96 mm, and 4.33 ± 1.26 mm and 4.18 ± 0.98 mm, respectively. It was less than 2 mm in 4.38% of the cases at C3, C4 vertebral levels. Anteroposterior and transverse diameter of vertebral artery were observed to be varying from 1.5 mm -5.14 mm and 2.6 mm - 5.9 mm, respectively. 44.37%, 40% and 15.62% of the foramina were dolicomorph, brachymorph and mesomorph, respectively. Brachymorph foramina were common among C6 vertebrae. Interforamina distance ranged from 4.0 - 10.4 mm. Incidence of accessory foramina was observed to be 18%.

Discussion: FT is a key determinant of VA diameter, irrespective of vascular risk factors. Furthermore, left VA was found to be larger than right VA in the current study which is in line with similar asymmetry of FT. Since, FT is a direct determinant of VA; we should emphasize simultaneous evaluation of both VA and FT for difference between other VA pathologies and VA hypoplasia. It can be interpreted that changes in shapes of FT can manifest as pathological changes of the movements of cervical spine.

232. Correlation of liver size with bi-parietal diameter for fetal gestational age assessment: An ultrasonographic study

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Introduction: To assess the fetal gestational age by ultrasonography, measuring liver size and bi-parietal diameter & to correlate liver size with bi-parietal diameter in estimation of fetal gestational age.

Methods: Present study was carried out in the department of Anatomy and Obstetrics & Gynaecology, SMC. Study included 191 pregnant females who were divided in 5 groups and minimum of 30 participants were included in each group. A detailed history & Sonographic findings were recorded on performa. Data was analysed using SPSS software.

Results: It was observed in the study that with increasing gestational age mean liver size & bi-parietal diameter increases significantly. In present study correlation of mean (SD) of liver size with bi-parietal diameter was close to 1 & had significant correlation between them.

Discussion: In the present study it was concluded that bi-parietal diameter which is an established criteria of estimating fetal gestational age, but in some circumstances is difficult to elicit like in abnormal head shape and in third trimester when fetal head is low in pelvis. This criteria is correlated in our study with fetal liver length which is easily reproducible & can be measured easily even in late trimester & correlate well with gestational age. Thus fetal liver length can be used to ascertain fetal gestational age alone or with other parameters.

233. A study of variations in origin of obturator artery

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Introduction: Obturator artery is usually arising from anterior division of internal iliac artery, although variations have been reported. The variable course of obturator artery is responsible for vascular injury during laparoscopic herniorrhaphy and other pelvic surgery.

Methods: 30 adult specimen containing pelvic halves irrespective of gender were dissected in the department of anatomy, MIMS, Mandya and origin of the obturator artery were noted.

Result: Out of 30 specimens, obturator artery has following variation in origin - 66.6% from anterior division, 30% from posterior division, 20% from external iliac artery, 3% from inferior gluteal artery.

Discussion: Knowledge about these kinds of variation of origin of obturator artery will help the surgeons to avoid injury during vascular surgery and radiologist interpreting angiograms of the pelvic region. Knowledge of normal lumbar intervertebral disc space can be helpful to design appropriate size IV disc space devices and during surgical reconstruction of lumbar spine.

234. Correlation of carotid intima media thickness with extent and severity of coronary artery disease

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Introduction: Carotid intima media thickness is a non invasive, inexpensive and a reliable tool for early diagnosis of the coronary

artery disease. In present study measure the thickness of IMT of carotid artery to investigate the correlation of carotid intima media thickness with extent and severity of coronary artery disease.

Method: Two hundred patients aged 30 to 75 who had undergone for coronary angiography also underwent for carotid doppler ultrasound. The IMT thickness at CCA and its bifurcation measured at far wall in both right and left artery.

Result: Mean values of common carotid right found 0.58mm for single vascular disease, 0.71mm for double and .93mm for the triple vascular disease where as the values were 0.58mm, 0.71mm and 0.81mm for left common carotid artery. While mean values of right and left CCA were 0.46mm and 0.45mm in control group. Mean values of common carotid arteries of both side as well as bulb were not significant in male and female patients.

Discussion: The thickness of the intima media of common carotid artery and at its bifurcation is increased with age. Also the thickness increases with the severity of the lesion.

235. A comparison of effects of cadaver dissection versus computer stimulated dissection program on students' knowledge of human anatomy and attitude towards dissection

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Introduction: With the advent of computer and smart classes which have now been introduced into the education system right from the nursery and the primary level in schools and the availability of virtual dissection software, the new generation of students seem to be inclined towards the hi-tech teaching modalities. The purpose of this study was to compare the effectiveness of computer-simulated dissection with the effectiveness of true dissection as analyzed through students' achievement and attitude. The students' response were analyzed to find out whether virtual dissection can prove itself superior to, equivalent or inferior to the conventional cadaveric dissection. Students' attitudes were measured by attitude surveys by a set of questionnaire.

Methods: The sample consisted of 50 MBBS 1st year students of AIIMS, Rishikesh who took dissection classes for at least 2 months through a computer simulated dissection schedule before performing the actual dissection on cadavers. The students' performance in the part completion tests after the virtual dissection and after the actual dissection were analyzed using t-tests for independent means.

Results: indicated that students who participated in the true dissection scored significantly higher on both the post and delayed post-dissection achievement tests. The academic achievements were consistent across gender, grade level of class 12th and their ranks in the MBBS entrance test. Results indicated differences in attitudes of students in the true dissection versus the computer-simulated dissection.

Discussion: On analysis of the survey questionnaire it was observed that virtual dissection can be a very important complementary tool to the actual dissection, if not it's alternative.

236. Perception of medical students towards artificial bones and pop models of organs

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Introduction: Human bones are very important for study purpose for medical students. Now a day, original bones are not easily available, for study, to the medical students. Students study the original organs during dissection of abdomen and at the time of revision schedule. As organs are important for theory and practical understanding, we prepared POP models of organs like cerebral hemispheres, heart, spleen, kidney, urinary bladder, liver along with artificial bones and made available for study during revision schedule. In this study, we found out the utility of artificial bones and POP models of organs for medical students.

Method: For this purpose, we had prepared a questionnaire related to study of osteology and POP models of organs prepared in the department. At the time of final practical exam few original bones, artificial bones (prepared in the department) and POP models of organs (prepared in the department) were shown to the 150 students of 1st year M.B.B.S. and then the questionnaire were given.

Results & Discussion: Very few students were using bones for study, out of which maximum numbers were using artificial bones. Even many students were unaware of where to purchase the bone set. Most of the students accepted that POP models of organs will be helpful for studying anatomical position and relations of organs.

237. Departmental exercise based on principle and application of microteaching

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Introduction: To improve one particular teaching skill of postgraduate students in the Department of Anatomy.

Method: 4 postgraduate students in the Department of Anatomy were told to prepare a micro session on a topic of their choice. Time allotted was 10 minutes. Teaching skill to be used was blackboard, chalk and duster. Checklists to assess their teaching skills were given to 6 teachers in the department. At the end of each micro session, feedback was provided to each presenter. The presenters were told to repeat their micro sessions after incorporating the suggestions in the feedback. Time allotted was 1 day.

Result: Organized practice teaching brought about notable improvements in the teaching skills of the four postgraduate students. **Discussion:** Microteaching is a scaled down teaching practice in class size and time and is a valuable tool to measure the degree of progress of an upcoming teacher.

238. Jobs made easy

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Introduction: Neuroanatomy is the most difficult part to understand with its clinical correlations by the students. As a first year post graduate student in the department of anatomy, Lady Hardinge Medical College, New Delhi, the most challenging task was to take neuroanatomy demonstrations.

Methods: I complimented the neuroanatomy table teaching (a batch of 25 students) using the "3D Brain" application from my ipad, of certain fields in Neuroanatomy teaching, to take this

challenge. It was found that the "3D Brain" app actually made the orientation of morphological features ,their location ,the effect of injury to that area which will be seen as a symptom in patients presenting in the day today clinical practice.

This helped the first year under graduate students understand the subject with reasoning, which I confirmed with a small one page questionnaire related to neuroanatomy learning with and without the app.

Results: Twenty three students (90%) responded positively by showing their enthusiasm by asking questions and Two students (10%)found it difficult to use the application as they did not have their personal gadgets.

Discussion: The 3D Brain app essentially presents a thorough analysis of the brain with the help of three-dimensional graphics, informative text, detailed diagrams and helpful links. The best part is that it makes learning enjoyable by employing state-of-the-art graphics, easy-to-access text listings, thereby making jobs easier. It truly adds a new dimension to one's learning and education by harnessing some nifty elements.

239. Identification of academically 'at risk' students during preclinical years: A predictive model

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Introduction: Identifying the students who are academically weak early enough and supporting them in their course is an integral responsibility of the faculty and an essential part of medical education. The present study, carried out in the only self-financing medical school in the Sultanate of Oman, analyses factors which could influence the academic performance of preclinical students in an effort to identify students who are academically 'at risk'.

Methods: Using regression analysis on the data on previous academic records during the premedical courses, a risk prediction model was developed. Programmed intervention in the form of counseling was organized to help them in improving their academic performance.

Results: Cumulative GPA and previous failures were identified as significant macro-level predictors of performance. The risk prediction model was a valid indicator of performance, with 88% of the students identified as being 'at risk' not managing to progress to the following year. This study has shown that depending on the academic content of courses and the need for the development of transferable skills it is possible to predict academic performance of students with reasonable accuracy.

Discussions: This programme of academic auditing helps to identify students 'at risk' and to support them in their learning process, resulting in reduction in the failure rates in examinations. Feasibility of implementing a similar programme in our present day medical education scenario in India is analysed.

240. Present teaching system of anatomy: A comparative study of opinions of teachers of different age group and students

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Introduction: To compare the opinions of teachers, holding different teaching experience, and students, regarding the present status of teaching and learning anatomy, and to assess the flaws and difficulties faced by them in the process of imparting and gaining knowledge.

Method: The methodology being used for the study is in form of written questionnaire, which the teachers of varied experiences and the taught answered. The teachers were divided into three groups- senior teachers of > 25 years experience, junior teachers with > 5 to <25 years of experience and budding teachers of ? 5 years of experience. The opinions expressed and suggestions given by teachers of all three groups and the students were compared and discussed.

Results: There were many similarities as well as differences between all three groups of teachers and students. However in majority of the cases the opinions of budding teachers matched those of students.

Discussion: Experience and knowledge of the senior teachers, Energy and Guidance of junior teachers and Friendly attitude and Capability to understand students better of the budding teacher if combined together can make drastic changes in the teaching system of anatomy.

241. A Study of retromolar foramen

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Introduction: The lower third molar region is an area of great importance in the dental practice. Most of the surgical procedures are performed by the dentist in the maxillofacial surgery area. Also many people require the removal of third molar tooth. In this area an accessory foramen; retromolar foramen has seldom been studied. Therefore a study was planned to study its incidence. This anatomical information will be of use to dental surgeons, anaesthetists in achieving complete nerve blocks and to avoid injury to neurovascular structures passing through them.

Methods: Fifty dried adult human mandibles of Indian origin were scrutinized in a regular manner with a magnifying glass. The retomolar foramina were noted. Their position was also observed.

Results: The retromolar foramen was observed in 18% cases. The nerve in the retromolar canal was a branch from the trunk of inferior alveolar nerve and supplied the third mandibular molar, the mucosa of retromolar triangle, the buccal mucosa, and the buccal gingiva of the mandibular premolar and molar region.

Discussion: These elements may be injured in the dieresis procedures, flap lifting, bone tissue for autologous bonegrafts, osteotomy for the surgical extraction of lower third molars, placement of osseointegrated implants for orthodontic or during the division of the mandibular ramus in the sagittal split osteotomy surgery.

242. Variations of sacrum-An osteological study

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Introduction: To study the variations of sacrum in the dry bones.

Methods: (Parameters of measurement)

1. Sacralization of lumbar vertebrae
2. Sacralization of coccygeal vertebrae
3. Lumbarisation of S1 vertebrae
4. Non-union of transverse process of L1 with S1
5. Non-union of body of L1 with S1
6. Non-union of lamina of L5 with S1
7. Foramen/Cleft at the lamina of sacralized lumbar vertebrae
8. Spina bifida
9. Variations in shapes of sacral hiatus
10. Number of sacral foramina

Results: Examination of 155 dry human sacrum revealed that-

1. Normal-83(53.54%)
2. Sacralization of lumbar vertebrae-36(23.22%)
3. Sacralization of coccygeal vertebrae-33(21.29%)
4. Lumbarisation of S1 vertebra-3(1.93%)
5. Non-union of transverse process of L1 with S1-a)Unilateral-Right-5(3.22%),Left-0 b)Bilateral-3(1.93%)
6. Non-union of body of L5 with S1-12(7.74%)
7. Non-union of lamina of L5 with S1-14(9.03%)
8. Foramen/Cleft at the lamina of sacralized lumbar vertebra-Foramen-6(3.87%),Cleft-8(5.16%)
9. Spina bifida-8(5.16%)
10. Variations in shapes of sacral hiatus-V-26(16.77%),U-61(39.35%),Irregular-38(24.51%),Dumbell shape-11 (7.09%), Absent-9(5.80%),Hiatus become foramina-1(0.64%)
11. No of sacral foramina-a)5 pairs-49(31.61%) b)4 pairs-86(55.48%) c)3 pairs-3(1.93%)

Discussion: Knowledge of the posterior pelvic anatomy, its variations, and related imaging is important for diagnostic and therapeutic purposes in low back pain, spinal surgery and for interventional procedures like spinal anaesthesia and lumbar puncture.

243. Study of aggressive behavior of an individual from ratio of index & ring fingers' length

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Introduction: To report the aggressive behavior from ratio of index and ring fingers' length of Nepalese students in Kathmandu University School of Medical Sciences (KUSMS) where individuals from different ethnic background of varied Nepali population enrolls for the purpose of study. To determine aggression from the length of index and ring fingers of Nepalese students in Kathmandu University School of Medical Sciences (KUSMS).

Methods: The present study is carried out from 150 students of Kathmandu University School of Medical Sciences (KUSMS) between the age group 18-25 years. The length of index and ring

finger are measured by using digital Vernier Calliper. Finger length is taken from the midpoint of proximal crease to the tip of finger. Buss and Perry aggression questionnaire is provided to each student.

Results: The aggression score and digit length ratio is statistically analyzed to determine their correlation.

Discussions: The present study will be helpful to determine the aggressive nature of an individual by observing his/her finger ratio.

244. Sex determination of human hip bones by discriminant function analysis

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Introduction: The discriminant functions derived will provide a useful tool for the assessment of human remains in the forensic and archaeological context. So sex determination of human hip bones by discriminant function analysis was undertaken for the present study.

Method: Study was conducted in the department of Anatomy, S.P. Medical College, Bikaner on 110 unknown sex dry adult human hip bones. By subjective rating based on morphological features hip bones were divided in to three categories as male (50), female (10) and unknown(50). Total twelve morphometric measurements were taken and discriminant function analysis applied.

Results: Six parameters acetabular height, pubic angle, minimum width of ischio-pubic ramus, index4, ischial length and minimum pubic width were highly predictive with low wilk's lambda score with significance at P-value <0.000. After the stepwise discriminant function analysis we found that out of 50 male bones 34(68%), 50 unknown sex 40(80%) and 10 female bones 10(100%) were correctly classified. Over all by Discriminant function analysis 76.4% of hip bones were correctly classified.

Discussion: Acetabular height, pubic angle, minimum width of ischio-pubic ramus, index4, ischial length and minimum pubic width showed very high significance difference between male and female bones. Therefore it can be concluded that the pubic part of the hip bone showed extreme sexual differentiation and discriminant function analysis is very effective tool for sexing of hip bones.

245. Incidence of Os Incae

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Introduction: Wormian or sutural bones are small, irregular bones that occur most often in lamboidal suture. Os Incae - feature of reptile & mammalian skulls. Thomas Bartholin termed Os wormianum to intercalated bones in honour of Danish anatomist Olaus Wormius. Normal variants- determined genetically in certain population. Incidence of anomaly is 5-23% in Inca skulls. The presence of Wormian bones may be the marker-certain diseases, skeletal dysplasias-osteogenesis imperfecta, cleidocranial dysplasia, congenital hypothyroidism & hypophostatasia. May wrongly, suggest fracture of bones.

Methods: Two hundred dry human adult skulls were collected from the students of Dr B R Ambedkar Medical College, Bengaluru, for metric & non metric features.

Results: Four skulls had os Inca (Wormian bones) with an incidence of 2%. Two had single Wormian bone, one had four Wormian bones, and one had five Wormian bones.

246. Thoracic part of sympathetic chain and its branching pattern variations

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Introduction: To study the thoracic part of sympathetic chain and its connection in detail as it is useful for sympathectomy of upper limb and for thoraco lumbar sympathectomies.

Methods: The study is made in 31 cadavers at the time of dissection of posterior mediastinum by careful affiliation dissection. The number of sympathetic ganglia and its connections are explored by careful dissection and meticulous care was taken to observe the number of ganglia, the greater, lesser and least splanchnic nerves and rami communicantes.

Results: Stellate ganglion was present bilaterally in 4 cadavers and unilaterally in 15 cadavers. The highest origin of the greater splanchnic nerve from the fourth thoracic ganglion and the lowest origin from the eleventh ganglion were observed. Lesser splanchnic nerves were present bilaterally in 12 cadavers. Least splanchnic nerve was present unilaterally in 14 cadavers.

Discussion: Information on the variability of the anatomy of the thoracic part of sympathetic chain and splanchnic nerves may be important for the success of subdiaphragmatic neuroablative surgical approaches to pain control.

247. A study of nutrient foramina in dry human fibulae

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Introduction: Fibula is the most commonly used bone for obtaining bone graft. For the graft to be successful, harvesting should include its blood supply. The main source of blood supply to the fibula is from the nutrient artery, which is a branch of the peroneal artery. Nutrient artery enters fibula through nutrient foramen. The knowledge about nutrient foramen will help to improve our understanding of blood supply to fibula and will be useful to the surgeons in vascularized bone grafting procedures. Aim of the study was to study the morphometry and topography of nutrient foramen in fibula and compare it with previous studies.

Methods: 100 dry fibulae were selected and following characters were studied. Parameters measured included: Side identification, number of nutrient foramina, location, direction of foramen, distance of foramen from proximal end of bone and total length of the bone. Foraminal index was calculated from above measurements. The obtained data were analyzed by using appropriate statistical tests.

Results: Out of 100 fibulae examined, 2 had no foramina, 97% of the foramina were present on posterior surface and middle third

of the bone that correlates with the segment of bone used for grafting as reported in literature.

Discussion: The knowledge of exact location of nutrient foramen on fibula will help the surgeons to take microvascular fibular bone graft during reconstructive procedures.

248. Unraveling of ventricular myocardium in pig and human hearts – An unconventional anatomical perspective

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Introduction: To know the concept of ventricular myocardium in pigs, and compare it with that of humans for its usage in transgenic technology. **Methods:** Total 35 hearts were bluntly dissected. Out of which, 30 were of pigs (from slaughter house) and 5 were of human. Each heart was dissected after boiling for one to one and a half hour.

Result: Ventricular myocardium could be unraveled as a single sheet without disturbing the cavities.

Discussion: There is not enough anatomical study on this concept of unraveling of ventricular myocardium as a single sheet and keeping in mind, the latest trend of xenotransplantation, we aimed at this study.

249. Spatial relationship of coronary sinus – Great cardiac vein with mitral valve annulus, left circumflex coronary artery, obtuse marginal arteries and ramus intermedius

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Introduction: Knowledge of the anatomy of coronary venous system and its relationship with mitral valve annulus (MVA) and coronary arteries is a key element for successful percutaneous mitral annuloplasty (PMA) device implantation for treating patients with severe mitral regurgitation.

Methods: Dimensions and spatial relationship of Coronary Sinus-Great Cardiac Vein (CS-GCV) with MVA, left circumflex coronary artery (LCx) and its branches was studied in 120 formalin fixed adult human cadaveric hearts.

Results: Length of CS-GCV ranged from 4-9.1 cm. Diameter of CS-GCV was found to be 2.88±0.58 mm, 4.32±1.0 mm and 5.05±0.97 mm at the beginning, middle and termination respectively. In the initial part of its course CS-GCV coursed along and parallel to the plane of MVA in 90.8% cases and crossed MVA obliquely in 9.2% cases. LCx crossed deep and superficial to CS-GCV in 83.33% and 10.83% cases respectively. In remaining 5.8% cases artery does not accompany CS-GCV along MVA. Obtuse marginal arteries and ramus intermedius were seen coursing deep to CS-GCV in 33.3% and 27.6% cases respectively.

Discussions: Practicality and efficacy of PMA is limited in cases with CS-GCV crossing oblique to posterior mitral annulus at one point towards posterior wall of left atrium (9.2% cases); LCx, obtuse marginal arteries and ramus intermedius coursing deep to CS-GCV (83.33% cases, 33.3% cases and 27.6% cases respectively).

250. Surgical importance of position of greater palatine artery in palatoplasty

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Introduction: Cleft palate is one of the common congenital anomalies occurring at birth. The surgical correction of cleft palate is based on arterial pedicle flap. The surgical incisions made at the alveolar margin might pose a risk to greater palatine artery which is the major artery of the flap reconstruction. Despite the need for the knowledge, there is a paucity of information about the location of greater palatine artery in foetus with normal and cleft palate. Our study was to describe the position of greater palatine arteries in still born foetus with normal and cleft palate. **Methods:** 30 still born foetus of varying gestations with both cleft and normal palate formed the study. The arteries supplying the hard palate were injected with medium according to modified Rees and Taylor and studied under dissecting microscope.

Results: The greater palatine artery was found to originate from greater palatine foramen, located within 3-5mm from the lateral alveolar margin and 3mm from the posterior margin of horizontal plate in the normal foetus whereas in the bilateral complete cleft palate its position shifted anteriorly.

Discussions: In bilateral complete cleft palate, poor development of horizontal palatine shelves and anterior attachment of soft palate muscles might cause the greater palatine foramen and arteries to shift anteriorly as compared to the normal palate.

251. Study of correlation between human height and foot length in North East Karnataka population

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Introduction: Even though the forensic value of the correlation between foot length and human height has been studied, there is a lack of studies regarding this subject. Interrelationships among different body measurements may be used to estimate one from another in case of missing body parts. The present study was carried out to establish correlation between individual's height and mean foot length. It was conducted on 150 students of age group 14 to 24 years.

Aim of present was to analyse the correlation between foot length and height in north Karnataka population.

Method: present study was done in 150 individuals residing in Gulbarga and Bidar. height was measured using standiometer and foot length using distance between great toe curvature and that of heel marked with pencil on wooden board.

Results: the average of mean foot length in males was 25.58 cms and that in females was 23.44 cms. Height was found to be nearly 6.6 to 7 times of foot length.

252. Study of dermatoglyphic pattern in schizophrenia patients

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Introduction: 1. To study the palmar dermatoglyphic patterns in schizophrenia patients. 2. To compare the dermatoglyphic patterns of study group & control group. 3. To find out if the specific dermatoglyphic traits exist in schizophrenia patients & whether it is significant.

Method: The present study was carried out in the Department of Psychiatry, Chengelpet Government medical College & Hospital, TN. Sample size of 100 schizophrenia patients & 100 age matched controls was taken. Dermatoglyphic prints were taken by ink method described by Cummins & Midlo.

Results: Loop, whorl and arch patterns, atd angle, total finger ridge count, absolute finger ridge count, a-b ridge count etc were observed & measured, findings of which will be detailed in the presentation.

Discussion: From the present study, it appears that there exist variations in dermatoglyphic patterns in schizophrenia patients. This makes it a simple & economical method for mass screening to predict & segregate schizophrenia patients in an early age.

253. Genetic evaluation of patients with primary amenorrhoea

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Introduction: Objectives of the study are to find out abnormal karyotypes in patients with primary amenorrhoea.

Methods: Total 83 referred patients from Gynecology departments of Sir J.J. Group of hospitals were studied. These patients are investigated for barr body and karyotypes. The hormonal and ultrasonographic study was also taken into consideration.

Results: Out of 83 patients, 63 patients revealed normal female karyotype i.e 46XX. 8 patients showed male karyotype i.e 46XY. Numerical abnormalities were observed in 9 patients and 3 patients showed structural abnormalities.

254. Sperm acrosome reaction in male infertility

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Introduction: To study the acrosome reaction in the semen of diagnosed cases of male infertility by simple gelatinolytic technique.

Methods: The study was carried out on 30 infertile males who were classified according to sperm count as azoospermic (nil or < 2 x 10⁶) or severe oligozoospermic (< 5 x 10⁶). They were tested for acrosome reaction by gelatinolytic technique. Acrosome solution (preprepared) was added to liquefied semen sample, a drop of the above mixture was put on the gelatin coated slide in which methylene blue was already added and a smear was made. The slides were then placed in a moist humid chamber, incubated and air dried. Presence of acrosome reaction was on the basis of halo-formation around the sperm head which was assessed qualitatively under the microscope.

Results: The acrosin released from the acrosome after spontaneous acrosome reaction caused lysis of gelatin. This caused formation of a clear area which appeared like a halo around the sperm head. In severe oligospermic cases few sperm heads showed halo formation which indicated presence of acrosome reaction. In azoospermic cases there was absence of sperms and only cell debris was seen.

Discussion: from this study we can conclude that acrosomal morphology may be used for predicting the fertilizing ability of a semen sample in cases of male infertility. This can form one of the parameters to evaluate the quality sperms for assisted reproduction in severe oligospermic patients.

255. Palmar main line termination and position of 't' triradius in primary epilepsy

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Introduction: Epilepsy is a common worldwide health problem with several personal, familial and social impacts. It has a worldwide incidence of 0.3 to 0.5%. The cause of epilepsy is not known and 70% belonged to Idiopathic variety.

This study examines the Palmar Main line terminations and position of 't' triradius among individuals with Primary epilepsy in comparison with the controls.

Methods: The study included sixty established cases of primary epilepsy in the age group 05-12yrs who were compared with 60 healthy children of the same age group. The palmar prints were taken using Ink-pad method described by Cummins and Midlo. Inverted T pad, ink slab made of plain glass, white paper & cyclostyling ink were used for obtaining prints. Various parameters for palm including termination of main lines (D,C,B and A) and position of T were studied. The results were compared with those of controls.

Results and Discussion: The analysis of data showed a statistically significant difference in termination of A- line between patients controls ($X^2 = 6.66$; d.f.2). The differences observed in D,C and B line terminations were statistically nonsignificant. No significant difference was observed in number and position of 't' ($X^2 = 1.83$; d.f.2) and 'atd' angle ($X^2 = 0.11$; d.f.1). Very few studies using similar parameters are available now hence there is a need for a study with larger sample size for confirming the results.

256. Correlation of first digit dactylography with retinal vascular patterns

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Introduction: The blood vessels in the retina have a characteristic radiating pattern while there exists a significant variation dependent on the individual and/or medical condition. The retina is a unique site where the in vivo microvasculature can be directly visualized and monitored repeatedly over time, thus allowing direct noninvasive observation of the circulation. The branching patterns of the retinal circulation barely changes but is vulnerable to organ-specific and systemic diseases. It also plays a key role in

screening of individuals because of its uniqueness of the blood vessel pattern allowing quick identification. First digit dactylography has also been proved to be unique in each individual as it is used for identification purposes. Any correlation between the two can increase the efficacy of their use as biometric. Therefore present study has been conducted to evaluate correlation if any between retinal vasculature patterns and first digit print patterns. **Method:** 80 subjects aged 18 to 30 year were taken. The fundii of both the eyes were photographed with fundus camera the retinal vasculature analysed and compared with their first digit prints. **Result:** We observed that in whorls patterns, in case of females more arteries were found in superonasal quadrant as compared to males in which superotemporal quadrant had more arteries. Whereas in ulnarloop patterns, in case of females more arteries were found in inferonasal quadrant and in males, superonasal had more number of arteries

257. Fertility effect of *Cycas circinalis* on alcohol induced sterility of male wister albino rats

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Introduction: Alcohol abuse is well known to impair reproductive performance in experimental animals and human. Alcoholics are often found having fertility abnormalities with low sperm count and impaired sperm motility. Chronic alcohol intake in men cause impaired testosterone production and testicular atrophy. There is no effective treatment for alcohol induced infertility and testicular damage. Many natural non-toxic herbs in Siddha medicine were found to enhance the fertility in male. The present study involves the effect of *Cycas circinalis* L. in improving the fertility of alcohol induced sterility in male albino rats.

Methods: A total of 24 healthy young male albino rats (10-12weeks) were selected, divided into 4 groups and 3 groups were administered 1.6 gm of ethanol/kg body weight/day for 4 weeks, orally except the normal control rats (n=6). Ionidium extract 200mg/kg body weight were administered orally to the experimental albino rats E (n=6) and compared to the positive control albino rats C-1 (n=6) administered testosterone 10µg/kg body weight subcutaneously, biweekly with that of the alcohol induced sterile rats C-2 (n=6) and using various parameters such as sexual behaviour, weight of animals, dimension of testes, testosterone hormone and semen analysis, histological and histomorphometric analysis of testes, the drug's efficacy was proved by the restitution of fertility by comparing with the normal fertile controls C-3 (n=6).

Results and Discussion: The administration of the drug showed significant improvement in all the parameters in experimental rats when compared to control rats. The herb was found to be effective on the gonads of alcohol induced sterile male albino rats.

258. The classification of hepatic artery based on its anatomy at the origin and hilum of the liver

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Introduction: The aim of the present study was to find out the variations of hepatic artery (HA) at its origin & its extrahepatic branching at the hilum, appreciation of which is useful for general hepatobiliary surgery & liver transplantation.

Methods: The study was conducted in 100 enbloc liver specimens. Origin of HA was recorded according to the Michels description and hilar anatomy was classified according to the number of right & left hepatic arterial pedicles entering their respective hemilivers. Single right & left arterial pedicle entering their respective hemilivers was considered normal. An alternate classification was constituted by forming 4 possible combinations of normal (N) or variable (V) origin / branching of HA. Each type was further categorized into 3 subtypes.

Results: Normal origin & branching of HA (Type 1 N/N) was observed in 51% of specimens. In 17% of livers, origin of HA was normal but branching was variant resulting in multiple arterial pedicles entering right or left hemiliver (Type 2 N/V). A marked variety of branching pattern of HA was observed after its normal origin from CT leading to multiple arterial pedicles entering right or left hemiliver. In 14% of livers, origin of one of the arteries supplying the liver was variable but single right & left hepatic arterial pedicles entered into their respective hemilivers (Type 3 V/N). In another 14% livers, both origin as well as branching pattern of HA was variable (Type 4 V/V).

Discussions: The new nomenclature system enabled us to describe the detailed anatomy of all observed variations of the present study including the non reported ones. The present classification would make this anatomy more accessible for clinical application to the hepatic surgeon.

259. Duplication of hypoglossal canal – Its clinical significance

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Introduction: The hypoglossal canal is a constant feature of human skull, providing passage to the 12th cranial nerve, a meningeal branch of ascending pharyngeal artery and a venous plexus connecting the inferior petrosal sinus, condylar vein, jugular vein and paravertebral veins. Various anatomical variations of hypoglossal canal have been defined by number of researchers in the past. The present study was undertaken in a large number of specimens to observe the variations in hypoglossal canal in North Indian human skulls, to substantiate and authenticate the findings of earlier workers and to further elaborate its clinical significance.

Method: The Six hundred and twenty five skulls studied included skulls from departments of Anatomy of GSVM Medical College, Kanpur, Santosh Medical College, Ghaziabad and School of Medical Sciences & Research, Greater Noida.

Results: The single canal was observed in 90.2% of skulls on right sides and 84.5% of skulls on the left sides. The duplication of hypoglossal canal was seen in 6.2% of skulls on the right and in 12% of skulls on the left. There were 3.5% of skulls with bilateral duplication of hypoglossal canal.

Discussion: The bridging/duplication of the canal is considered to be an important epigenetic variant. The duplication of the canal is not only of racial and regional significance but also suggests the variation in venous drainage of posterior cranial fossa that may be

of immense value to interventional neuroradiologists and neurosurgeons.

260. Effect of malunited fractured distal end of radius on the morphometric parameters of distal radioulnar joint

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Introduction: 1. To identify normal radiographic morphometry reference values and variations due to age and sex of distal radioulnar joint in north Indian. These might be useful in clinical practice for the evaluation of surgical management and follow up of the wrist abnormalities including the malunited distal radius.

2. To determine the correlation between radiological finding of malunion and clinical outcome.

Method: Prospective cross sectional study for which we will use plain radiograph (P-A and Lateral /Roentgen gram) of normal and malunited wrist in patient with unilateral malunion. Men and women of diff. age group i.e. middle age group 20-40 years and old age groups >40-60 years) were considered for study. Clinical eligibility included a history of a unilateral distal radius fracture, without fracture of the sigmoid notch, treated by closed reduction and casting. Then after six week of injury x-ray of injured wrist compared with the radiograph of the uninjured contra lateral wrist and the difference in Palmer tilt, radial inclination, ulnar variance and radial length are measured.

Results: The final fracture union radiographs were analyzed for their morphometric parameters and for functional outcome. There were variations in all parameter measurements for those X ray films showing severe malunion. In our study loss of palmar angle and radial angle up to 10 degree does not affect the final functional outcome. However altered dorsal tilt and changes in radial length in malunited distal end radius in our study affects the clinical outcome.

Discussion: Malunion of the distal radius is the most commonly reported complication of closed treatment for distal radius fractures. The radiological end-result of distal radius fractures does not always correlate to the functional outcome.

261. A Study on double foramen transversarium in cervical vertebra

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Introduction: Cervical Vertebrae are readily identified by the presence of Foramen Transversarium. This Foramen transmits the vertebral artery, vertebral vein and sympathetic fibers from the inferior cervical ganglion. The aim of this study is to investigate the variations of Foramen Transversarium and to point out the importance of double foramen transversarium in human anatomy.

Methods: Cervical Vertebra collected from the department of anatomy from Medical & Homeopathy college. Cervical vertebra, camera with 12 pixel.

Result: 257 cervical vertebrae are taken for study. Out of it double foramen transversarium is found unilaterally in 42 (16.34%) cervical vertebrae & bilaterally in 30 (11.67%) cervical vertebrae.

Discussion: The study will categorize the variations in foramen transversarium of numerous cervical vertebrae which will help clinicians for proper interpretation to report scans & x-rays.

262. Sexual dimorphism in craniometric parameters of North Indian adults

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Introduction: It is commonly observed that in dealing with crania of different racial types, an impression of racial affinity and differences may often be introduced. Measurements play an important role in skeletal morphology. Cranial measurements have typically been used to describe individuals and to correlate various ethnic and facial groups. Samuel George Morton claimed that he could judge the intellectual capacity of a race by cranial Capacity which is the measurement of the volume of the interior of skull. Cephalic parameter is an important parameter for deciding the race and sex of an individual whose identity is unknown. The present study was conducted on 600 humans comprising of equal number of males and females. Within the age group of 18 years and above and of North Indian origin. The purpose of study was to access the head length, head width and to find out the relationship of these parameters with each other.

Methods: Cephalic Index was calculated with the help of above measurements.

Results: The data so obtained was compiled and analyzed statistically to observe baseline data and then compared with previous available data. This data can be useful for experts in Anatomy and to see variations in different populations. The average head breadth and head length found in study were 139.51 mm, 186. 88 mm respectively in males and 136.19mm, 177.74mm respectively in females.

Discussion: On the basis of this study it was concluded that North Indian males have dolichocephalic type of head and females have mesocephalic type of head.

263. A study of morphology and relations of ilio-cava junction to aortic bifurcation and lumbosacral vertebrae

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Introduction: To determine vertebral level, height and width of aortic bifurcation.

- To determine vertebral level, height, and width of ilio-cava junction.
- To measure width of right and left common iliac veins.
- To measure interiliac angle, angles made by right and left common iliac veins with inferior vena cava.
- To determine number of tributaries opening into ilio-cava junction and common iliac veins.

Methods:

- Dissection on embalmed cadavers.
- Instruments: Measuring tape, Goniometer.
- Dissection by anterior approach
- Retroperitoneal tissue dissection
- Exposure of aortic bifurcation and ilio-cava junction Measurement of parameters

Results : Site of ilio-cava junction varied from L4 body to L5-S1 disc. The average width of inferior vena cava was maximum at the level of junction i.e. 28mm (2.96). Width was found decreasing on measuring 2 centimetres to 4 centimetres successively. No significant difference was found in width of right and left common iliac veins. Left common iliac vein - shows variations commonly. Interiliac angle was 65 degrees to 100 degrees. Average number of tributaries opening in left common iliac vein was 3 (\pm 0.41). Tributaries opening in IVC and right common iliac vein were 0-3.

Discussion: Clear delineation of vascular anatomy and its relations to disc space provides useful information to surgeons

264. Potential compressive neuropathy of posterior interosseous nerve – An anatomical perspective

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Introduction: Posterior interosseous nerve (PIN) compression occurs when there is pressure from surrounding structures that may lead to paresis or paralysis of forearm extensors according to degree of compression. This nerve may be compressed by various local factors such as fractured upper end of radius, vascular factor (leash of Henry), adjacent muscular factors or adhesive fibrous bands or extraneous compression. But the most important single compressive factor is arcade of Frohse (AOF), while the nerve passes through it. Compression is aggravated by predisposing factors like repeated supination and pronation or local inflammation of posterior compartment of forearm or pressure due to fibrous bands. Thus this study was planned to determine the anatomical factors that may cause compression of posterior interosseous nerve.

Methods: 100 embalmed cadaveric upper limbs were carefully dissected to study potential compressive factors of PIN.

Results: Out of 100 limbs dissected, tendinous AOF was found in 92% cases and membranous AOF was seen in 8% cases. Other factors which may cause compression, as noted were - Muscular factor (97%), Vascular factor (90%). Also compressive factors were found marginally more on right side than left. No fibrous bands were found which may lead to compression.

Discussion: On the basis of the anatomical investigation carried out it is suggested that normal anatomical factors may lead to compression of posterior interosseous nerve; more so in presence of predisposing factors. A high index of suspicion must be exercised to diagnose a potential compressive neuropathy of PIN.

265. Variations in gonadal vessels

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Introduction: Gonadal arteries are paired vessels that usually arise from the abdominal aorta. Left gonadal vein drains into left renal vein and right gonadal vein drains into inferior vena cava. The knowledge of variations of these vessels could be of paramount importance to vascular surgeons and urologists during surgery in the retroperitoneal region.

Method: Variations were observed during routine dissection of cadavers in department of Anatomy of various medical colleges in Maharashtra. The origin and course of gonadal vessels must be carefully identified.

Results: In 75 cadavers, gonadal vessels were studied and 18 of them were found to have variations. The variations were more commonly found in male than the female cadavers and on the right side rather than the left. Variations for gonadal artery were high origin, origin from renal artery, curving renal vein, situated behind inferior vena cava. That for gonadal vein included draining in right renal vein.

Discussion: The awareness of these variations is particular interest in developmental biology and surgical anatomy. A reduction in gonadal blood flow may lead to varicocele. The left testicular trunk arching over the left renal vein must be considered when dealing with nutcracker syndrome.

266. Morphometric analysis of the angle of the patellar facet

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Introduction: The shape of the patellar facet is an important factor in the patellofemoral congruence. An abnormally shallow sulcus has been reported to be an important factor in patellar instability. The morphometry of patellar facet angle was taken to correlate this with other variable factors such as: length, width at the midpoint of the femur, inclination angle, distance between condyles and patellar facet depth.

Methods: 200 dry femurs 95 from right and 105 from left side were selected of unknown sex and ages with no deformity. Patellar facet angles were photographed at three positions at the start, mid and at end of the patellar facet.

Results: The difference between mean values of right and left side of all femoral parameters were found insignificant except inclination angle. Mean length and width of the femoral shaft was found 40.20cm and 2.60cm. Mean angle for Start, Mid and End levels of the patellar facet were 142.85°, 131.48° and 131.57° respectively. Mean values of distance between condyles (46.60 mm), depth of the patellar facet (7.07 mm) and condylar depth index (6.83) were observed.

Discussion: The angle of the femoral sulcus decreased from the start of the patellar facet to its end, and its variability was weakly influenced by the length, width, femur inclination angle and side as analysed by correlation test. But then the mid patellar facet angle was found inversely correlated to patellar facet depth at significant level. (P.0005).

267. Study on variations of median nerve

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Introduction: To study the variations of median nerve which are common and yet diverse. The nerve has been studied in all aspects.

Methods: Sixty dissected upper limbs of right and left sides from cadavers and disarticulated specimens of irrespective age and sex were studied. The level of formation of median nerve and origin of anterior interosseous nerve with respect to acromion process and medial epicondyle respectively were measured using a scale and a non-stretchable thread. Statistical analysis of data was done.

Results: The level of union of the two roots ranged from 9 to 20 cm with respect to acromion process. The origin of anterior interosseous nerve ranged from 4.7 to 10 cm with respect to medial epicondyle. In 3.33% of specimens, the muscles in anterior compartment of arm were innervated by branches of median nerve. Communications between musculocutaneous and median nerve were noticed in 25 % of the limbs.

Discussion: The variations have to be brought to the knowledge of anatomists and surgeons. During surgeries involving axilla as in deep seated abscess or fractures of limbs, care has to be taken not to injure the nerve and its branches as injury can result in paralysis of the muscles which will ultimately result in restricted mobility and loss of sensation over its cutaneous regions of supply.

268. The morphology and incidence of foramen meningo – orbitale in dry human skull – A study

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Introduction: The meningo-orbital foramen is an opening which may be present in the posterosuperior part of the lateral wall of orbit, lateral to superior orbital fissure. If present it connects middle cranial fossa and orbit. The characteristics of meningo-orbital foramen was described differently in different studies.. The foramen represents the remnant of an embryonic conduit for the supraorbital division of the middle meningeal artery en route to the orbit and the developing ophthalmic artery.

Methods: We studied 50 dried human skulls of both sexes from Department of Anatomy and Department of Forensic Medicine, Mandya institute of Medical Sciences, Mandya, in which meningo-orbital foramen was observed in 35 skulls (70%).

Results: In 11 orbits this foramen was two in number (6 right orbit, 5 left orbit). Unilateral meningo-orbital foramen was found in 24 orbits (11 right orbits and 13 left orbits). Incidence of foramen as whole was 70%. In 4%, it was present bilaterally.

Discussion: The knowledge of this foramen and the structures related with it has a great significance for ophthalmologist and neurosurgeons for surgeries in the orbit and cranial fossa.

269. A study of branching pattern of lateral cord of brachial plexus

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Introduction: The anatomical variations in different parts of the brachial plexus have been described in the literature. The knowledge of anatomical variations of brachial plexus is essential because these nerves could be injured during the surgical procedures. The present study is aimed at assessing the branching pattern of the lateral cord of brachial plexus.

Methods: The present descriptive study was carried out by dissecting 50 upper limbs in 25 cadavers in the department of anatomy, M.S.Ramaiah Medical College, Bangalore. The formation and the branching pattern of the lateral cord were studied, any variations found were noted and photographs were taken.

Results: Out of 50 upper limbs studied, the following observations were noted- 1) fusion of ventral division of all the three trunks was detected in 1 limb (2%), 2) variations in branches of lateral cord were detected in 5 upper limbs (10%), 3) In the remaining limbs, normal formation and branching of lateral cord was seen. The details will be presented in the conference.

Discussion: The knowledge of branching pattern of the lateral cord of brachial plexus is of importance not only to the anatomists, but also to the anesthetists, orthopaedicians, neurosurgeons, plastic and reconstructive surgeons during surgical procedures involving the axilla in order to prevent inadvertent injuries.

270. Analysis of perforator free zone near the bifurcation of internal carotid artery and M1 segment of middle cerebral artery

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Introduction: Perforator free zone near the bifurcation of internal carotid artery and M1 segment of middle cerebral artery are important during temporary clipping of these vessels during aneurysm surgery and other surgical procedures involving these arteries.

Method: Sixty formalin fixed cerebral hemispheres without any evidence of brain pathology and trauma were selected for the study. Selected specimens were dissected to remove the arachnoids mater under the magnoscope to expose the M1 segment of MCA. Area near the bifurcation of ICA and M1 segment of MCA was dissected carefully avoiding injury to the thin perforators. Then the artery was visualized under the OT microscope and length, outer diameter, pattern of division of M1 segment, total number, length, outer diameter, course, origin of perforators, distance of origin of first perforator from ICA bifurcation were measured with the help of digital calliper.

Results: First perforator arising from the M1 segment of MCA was of average distance of 2.07 mm (ranging from 3.74mm to 0.30 mm). Mean outer diameter is of 3.04 mm and mean length of M1 segment was 28.13mm± 3.40mm. Average length of bifurcation of M1 was 20.36mm± 4.9mm. Bifurcation found in 83% cases and pseudo trifurcation was found in 10% cases and true trifurcation was found in 7% cases.

Discussion: A detailed knowledge regarding the arterial diameter and length as well as topography of vessels are important when planning and performing cerebrovascular or interventional procedures and also during performing aneurysms surgery.

271. An anatomical study of pterygospinous bar and foramen of civinini

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Introduction: Posterior free margin of lateral pterygoid plate presents a small spine known as spine of Civinini from which extends the pterygospinous ligament till the spine of sphenoid. The ligament may ossify partly or completely leading to formation of pterygospinous bar. Complete ossification of the ligament results in formation of foramen of Civinini. Complete or incomplete pterygospinous bar may lead to difficulty in passing the needle during anaesthesia for trigeminal neuralgia or the bar may also compress the mandibular nerve and its branches to cause lingual numbness, pain and speech impairment.

Methods: 55 dried adult skulls and 20 sphenoid bones were studied for the presence of complete or incomplete pterygospinous bar and foramen of Civinini.

Results: A bilateral incomplete pterygospinous bar was observed in 3 skulls and 1 sphenoid bone while 2 skulls had unilateral incomplete pterygospinous bar. One of the skulls showed the presence of bilateral complete pterygospinous bar.

Discussion: Incomplete or complete ossification of the pterygospinous ligament is uncommon. The presence of these variations must be considered in the therapeutic procedures that are performed in the infratemporal region, in assessing pain affecting the territory innervated by the mandibular nerve.

272. Study of vascular segments of the kidney by vascular injection method

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Introduction: The various objectives of this study are listed as below:

1. To study the branching pattern of the renal artery and its segments.
2. To study the variations of the renal artery and its branching pattern.

Methodology:

Study design: Cadaveric study

Study population: Cadavers of Indian origin
Selection Criteria: Kidneys of cadavers with no renal pathology

Proposed intervention: Injection of the RTV 116 into the renal artery

Results: This study did not identify accessory renal arteries. Accessory renal arterial patterns have been reported in various studies done by Verma et al, Kher et al and Raghavendra. This study shows the presence of renal arterial segments. Variations in the segmental arteries were observed at various levels beginning from origin, course and termination. The presence of renal segments is constant and this is emphasized by the present study.

Discussion: Anatomical knowledge plays an exceptional role in operative surgery. In this era of constructive urological surgeries it is mandatory for a surgeon to have a thorough knowledge of the renal segmental arterial pattern. Every single viable fragment has to be preserved. A viable fragment should contain a renal arterial component, a venous component and collecting system. The study of the branching pattern of renal artery has increased the success rate of renal transplants and vascular reconstruction in urological surgeries. It would be of greater use to radiologists while performing angiography or arteriography or surgeons to perform renal transplantation, interventional radiological procedures, and renal vascular operations more safely and efficiently.