



# FICAA22

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## FICAA22

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**Salivary Gland Mucoepidermoid Carcinoma –**  
Comparative Study of Immunohistochemistry and  
Postsurgical Radiation Therapy

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**Keywords:** Mucoepidermoid Carcinoma, Salivary  
Gland, Immunohistochemistry

**Introduction:** Mucoepidermoid carcinoma is the most common salivary gland carcinoma. This research review is a comparative study on Immunohistochemical markers such as sex hormone receptors, Human epidermal growth factor receptors and gene fusions as MECT1/MAML2 and CRCTC1/3-MAML2 which are playing vital role during diagnosis and prognosis of cancer. Immunohistochemistry has limelight due to its accuracy and interpretation of suitable treatment methods. Postoperative adjuvant radiation therapy in comparative analysis from published data shows its promising results in local containment of cancer and metastatic free survival rate.

**Aim:** Mucoepidermoid Carcinoma is the most vigorous and common malignancy of the salivary gland. Interpretation and evaluation of major Immunohistochemical markers for better prognosis should be done accurately to save patients' health from high grade metastatic transformation.

**Materials and methods:** This review article is a comparative evaluation of major markers for diagnosis and prognosis to understand the grade and required treatment measures, and efficacy of post-surgical adjuvant radiation therapy.

**Results:** From the published data, comparative analysis was that Androgen receptor expression was evenly distributed in patients with only high-grade tumour while progesterone and oestrogen receptor expression were inconsistent and negative in the clinical results. Human epidermal growth factor receptor proved its roles in inducing malignant transformation of the tumour, hence promising markers for high grade (stained clearly) and low grade (stained poorly) MEC tumour. Gene fusions and translocations are having an important role in progression and survival of the tumour cells, in which gene CRCTC1/3-MAML2 fusions are seen in 66% cases associated with better prognosis, RAS/PIK3CA gives worst prognosis and seen in 6.9%. Promising highly specific marker of MEC for diagnosis and prognosis is MECT1/MAML2 fusion which was seen in 66%. Post-surgical radiation therapy data monitoring 44 patients showed local control and disease-free survival.

**Conclusion:** Androgen receptors are expressed in high grade tumours. Researchers in future sheds the parallel target of diagnoses and treatment on HER2 receptors and MECT1/MAML2 fusions.

**Conflict of interests/Comments:** There are no conflict of interest to declare

**Chronic gastritis** - assessment in routine biopsy specimens - aren't we forgetting something?

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**Keywords:** Chronic gastritis, Pseudopyloric metaplasia, SPEM, Gastric cancer

**Aim:** Since the proposal of assessment of stage of the chronic gastritis in routine biopsy specimens and recognising its role in cancerogenesis of conventional adenocarcinoma, there're a few parameters we've come to readily diagnose - adenocarcinoma, dysplasia, Helicobacter pylori status, and - atrophy, both simple and metaplastic. Although in the whole spectrum of metaplasia general pathologists tend to notice only intestinal metaplasia(IM), regardless of its type. Although the role of IM in cancerogenesis is well established, another, non the less widespread type

of metaplasia, pseudopyloric/pyloric metaplasia, determined as antral-type glands in the oxyntic mucosa, a smaller subset of which expresses spasmolytic polypeptide (SPEM), associated with mucosal repair, is not widely considered.

**Materials and methods:** We analysed specimens from 35 patients obtained with standard OLGA biopsy protocol. In the properly oriented specimens of gastric oxyntic mucosa (C1,C2) antral-type glands were recognised, then randomly immunostained with spasmolytic polypeptide (TFF2 antibody) to assess the prevalence of the phenomenon.

**Results:** Out of 30 cases pseudopyloric metaplasia was identified in 12, in 4 cases foci of SPEM were recognised nearby type 1 intestinal metaplasia, 2 cases combined SPEM and low-grade dysplasia. The stage of chronic gastritis was significantly higher after including pseudopyloric/SPEM metaplasia into account.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### Determination of safe sites of intramuscular deltoid injections and its relevance to the community

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**Keywords:** Point, intramuscular, injection, nerve, axillary

Intramuscular injections in the arm are always administered 1 to 2 cm above deltoid insertion. However, certain researchers have proven that this site is not an ideal one. Hence this study was done to determine safety of alternative points of intramuscular injections in the arm in this population. A part of the study is being presented here. Total sample size allotted was 370 subjects. Testing at the proven alternative points of arm injection was done so far on 150 subjects who attended the clinic for injection or vaccination at AIIMS Bibinagar Hyderabad after obtaining ethical

clearance from the institute. Symptoms of axillary nerve compression were observed in them. So far it has been observed that the following points are safe - a point 1 cm above deltoid insertion, a point midway between acromion and deltoid insertion, a point between arm's midpoint and deltoid insertion and a bisection point between axillary folds and acromion line. The point located 5 cm below acromion is found to be unsafe in this study. Hence the authors decipher that this could be due to the erratic course of axillary nerve branches that has led to compression symptoms of axillary nerve in those patients who received arm injections at 5 cm below anterior acromion. Hence a geographical regional study has to be done in the population keeping in mind the deviant course of the anterior branches of the axillary nerve. The authors also observed that it is irrelevant to stick on to a particular site point for safe intramuscular arm injections

**Conflict of interests/Comments:** There are no conflict of interest to declare

## Morphometric analysis of pterion and asterion in north Indian population

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**Keywords:** Pterion, Asterion, Suture, Mid-point of Zygomatic Arch

**Introduction:** The pterion is the weakest part of the skull and the most interesting neurosurgical and anthropometric landmark in craniofacial osteology. It is an H-shaped suture between frontal, parietal, greater wing of sphenoid and squamous temporal bone. It is situated 4.0cms above the zygomatic arch and 3.5cms behind the frontozygomatic suture. The asterion is a sutural convergence of the parietal, temporal and occipital bones, seen in normal occipitalis. It is also an important surgical landmark for the posterior cranial fossa, corresponding to the location of the transverse sinus. During surgical approaches, pterion and asterion should be given consideration to avoid injury to important neurovascular structures.

**Materials and methods:** The present study was done on hundred dry human skulls of unknown age

and sex, available in the Department of Anatomy of Santosh Medical College & Hospital, Government Institute of Medical Sciences, Greater Noida and other colleges of Northern Uttar Pradesh. The measurements were taken from the centre point of the pterion to superior edge of midpoint of zygomatic arch, postero-lateral aspect of fronto-zygomatic suture, antero-superior margin of auditory meatus and inferior margin of mastoid process and four type of pterion (Sphenoparietal, epipteretic, fronto-temporal and stellate) has been recorded. Measurement for asterion were taken from the centre of asterion to apex of mastoid, posterior end of zygomatic arch, external occipital protuberance and lambda and classified into two types (Type I and Type II) according to presence or absence of sutural bones.

**Results:** The pterion of Sphenoparietal type was found in 62% of skulls, epipteretic was found in 22% of skull, fronto-temporal was found in 4% and stellate type was found in 12% respectively. Asterion Type I was found in 21% of skulls while Type II was found in 79% of skull.

**Conclusion:** In our study we found that pterion was predominantly sphenoparietal type and asterion with Type II. Anatomical variations of the pterion and asterion which are of interest to anthropologists, forensic experts and surgeons, deserve further investigation in other populations from different geographical areas.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### **Morphology and morphometric study of talus in south Indian population**

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**Keywords:** Talus, Tarsus, Pes Cavus

**Introduction:** The Talus bone, or ankle bone is one of the group of foot bones known as "TARSUS". It carries the entire body weight. It is unique because of two important features, first its blood supply is retrograde and second, 70% of it is covered by articular cartilage. It forms the summit of the medial longitudinal arch at its superior surface and that of lateral longitudinal arch at its inferior surface. Thus, it plays a significant role in bony contour of both the arches and naturally becomes a key factor in various foot deformities like, Pes Cavus, Pes-Planus etc. The ankle joint of the human body is a complex load bearing joint. The talus articulates with the bones of leg as well as foot, thus making the design of talus implants very challenging. A clear understanding of complex ankle anatomy and morphology is essential for successful talar bone replacement. There is a paucity of morphometric data of human tali in

Indian population, and this study will be helpful for surgical interventions during the treatment of talar neck fractures, in designing talar body prostheses, and various other deformities. It is also useful for forensic anthropologists.

**Aim:** To study the morphometry of talus bone in South Indian population.

**Materials and methods:** The study was done for a period of 2 years in the department of Anatomy at Sri Ramachandra Medical College & Research Institute, Porur, Chennai. A total of 100 dry talus possessed by 1st year students of Sri Ramachandra Medical College & Research Institute, Chennai of 2014-2015 batch were evaluated.

**Results:** The parameters studied in 100 talus showed significant statistical differences. The value of this study was relatively lesser or higher when we compared it with other authors. All the parameters showed inter-relationship among all variables.

**Conclusion:** The data analysed in this study would be aid to understand the morphology of the talus, its load bearing patterns, and help in foot prosthesis, screw placements in fracture at related areas of foot. It will also be useful for orthopaedic surgeons to plan pre-operatively for any talus fracture surgeries.

**Conflict of interests/Comments:** There are no conflict of interest to declare



#FICAA'22\_AB\_6

Clinical Sciences - Applied Anatomy

### Effect of centrality of umbilical cord and vascular pattern of Chorionic Blood Vessels on foetal outcome.

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**Keywords:** Umbilical Cord, Centrality, Vascular Pattern

**Introduction:** Uteroplacental circulation is the main factor which influences foetal growth and development in intrauterine life. It depends on various factors like umbilical cord vessel diameter, site of attachment of umbilical cord on foetal surface of placenta and vascular pattern of chorionic blood vessels. Considering these factors we aimed to see the effect of the site of umbilical cord insertion and vascular pattern of chorionic blood vessels on foetal well-being.

**Materials and methods:** One hundred full term pregnant ladies from GIMS, Greater Noida, aged between 18-45 years, without any medical illness, with singleton foetus were considered for the study. The site of insertion of umbilical cord (central, eccentric, marginal and velamentous), vascular pattern of chorionic blood vessels (magistral and diapsal), foetal birth weight and Apgar score were recorded.

**Results:** The site of insertion of umbilical cord was central in 50% and eccentric in 50%. Marginal and velamentous insertion was not found in any case. In 90% of cases, the magistral type of vascular pattern of chorionic blood vessels was noted. It was noted that average foetal weight was almost the same in both types of site of insertion of umbilical cord. Apgar score also had no correlation with site of attachments of umbilical cord and vascular pattern of chorionic blood vessels.

**Conclusion:** The eccentric and central type of umbilical cord insertion are equally common with more incidence of magistral type vascular pattern. Secondly, these factors did not influence foetal growth and development.

**Conflict of interests/Comments:** There are no conflict of interest to declare



#FICAA'22\_AB\_7

## Clinical Sciences - Applied Anatomy

### Inter-thalamic adhesions' prevalence, position, dimensions and its clinical insinuation: corpse brain analysis

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**Keywords:** Brain, Cadaver, Histological Techniques, Neuroanatomy, Schizophrenia, Thalamus, Third Ventricle

**Introduction:** An inter-thalamic adhesion (ITA) is a midplane rod-like neuroanatomical mass connecting two thalami over the cavity of the third ventricle. It is present in approximately 70–80% of healthy humans. The absence of an ITA has been considered as a midline defect of the brain associated with schizophrenia. The present study aimed to determine the prevalence, location, and dimensions of the ITA in South Asian brains.

**Materials and methods:** We studied 50 adults cadaveric brains sectioned in the midsagittal plane

for the presence or absence of ITAs, their location about the lateral wall of the third ventricle, and their dimensions.

**Results:** ITA was found in 43 of the 50 brains (86%). In one case (3.03%), it was double. There was no significant relationship between the incidence of ITAs and sex ( $p > 0.05$ ). The ITA was most commonly located in the anterosuperior quadrant. The horizontal diameter was  $4.61 \pm 1.17$  mm, and the vertical diameter was  $3.10 \pm 0.78$  mm. In all cases, the horizontal diameter was longer than the vertical. The average area of the ITA was significantly larger in females ( $17.56 \pm 5.26$  mm<sup>2</sup>) than males ( $13.62 \pm 5.22$  mm<sup>2</sup>) ( $p = 0.025$ ).

**Conclusion:** We conclude that the ITA is not uncommon in South Asian brains. The absence of ITA is more common in females than in males. When present, it is usually located in the anterosuperior quadrant of the lateral wall of the third ventricle with a significantly larger cross-sectional area in females. Our findings confirm that the size of the ITA does not depend on the size of the third ventricle.

**Conflict of interests/Comments:** There are no conflict of interest to declare

#FICAA'22\_AB\_8

Clinical Sciences - Oncology

### Frequency and severity of PD-1/ PD-L1 immune checkpoints inhibitors adverse effects

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**Keywords:** Immunotherapy; Angiogenesis; metastasis; Checkpoint; Cancer

**Introduction:** An impaired immune response, particularly cytotoxic T cell activity, is the hallmark of cancer progression. Immunotherapy has recently been recruited to combat cancer. However, immunotherapy is not without cost; several unfavourable autoimmune adverse reactions usually develop (eg, anaemia, pneumonitis, hepatitis, colitis, etc.).

**Aim:** The study sought to determine the potential side effects and severity of PD-1/PD-L1 inhibitors in cancer patients.

**Materials and methods:** 28 patients were enrolled and each has one of the following tumours; non-small cell lung cancer patients, small cell lung cancer, nodular sclerosis Hodgkin lymphoma, classic Hodgkin's lymphoma, gastric cancer, renal cell carcinoma, caecal carcinoma, buccal mucosa

carcinoma, nasopharyngeal carcinoma, laryngopharynx cancer, bladder cancer, cervical cancer, and melanoma. The study data was collected from the electronic archive of Mordovian oncological dispensaries from the period January 2019 to November 2020 then analysed randomly. The patients were followed for the same treatment period that included (Atezolizumab; 1200 mg Pembrolizumab; 200mg, and Nivolumab; 240 mg or 3 mg/kg) every 21 or 14 days, receiving an IV infusion of PD-1 and/or PD-L1 inhibitors. The patients received the immunotherapy after ineffective chemotherapy and metastasis.

**Results:** Two (7.14%) of the studied patients developed adverse reactions that ranged from mild biochemical test deviation to moderate anaemia.

**Conclusion:** Our results suggested a moderate risk of developing life-threatening adverse reactions after the administration of PD-1 / PD-L1. PD-1 seems to have less severe adverse effects than PD-L1. Severity of adverse effects associated with cancer type, treatment doses, treatment period, and patient's immune state.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### Changes in some parameters of homeostasis in the post-COVID period; prospective cohort control study

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**Keywords:** Homeostasis; Haemostasis; Myocardial Infarction; Complication; COVID-19

**Introduction:** Coronavirus infection (COVID-19) is accompanied by post-recovery complications. The post-COVID period has an ambiguous and heterogeneous change on various organs and systems that make it difficult to diagnose.

**Aim:** The study sought to assess the post-COVID period changes in the blood system and the electrical activity of the heart due to COVID-19 infection severity.

**Materials and methods:** thirty patients were divided into two groups by severity (n1=17: mild COVID-19: n2=13: moderate COVID-19). The patients observed in the outpatient department of the MRKB named after. S.V. Katkov, Saransk and followed up for 1 to 3 months after the infection. Ten healthy volunteers participated as a control. The groups were matched for age and gender. All patients underwent a general and biochemical blood test, ECG, and pulse oximetry. For statistical

analysis, the U test and correlation analysis (SPSS Statistics 13) were used.

**Results:** The second group CBC showed an increase in haematocrit and thrombocytopenia. These indicators differed from the result of the first group by 8.32 (13.30%;  $p < 0.05$ ), and from the norm by 7.14 (14.02%;  $p < 0.05$ ). Non-statistically significant changes in the erythrocyte levels of patients' groups and the control group. Changes in the number of leukocytes in the patients were multidirectional, regardless of the severity of the disease, the mean value was  $5.35 \pm 1.79$  in the first group patients and  $4.92 \pm 1.12$  in the second group patients. In both groups, cases of leukopenia and leucocytosis were recorded. On ECG, the RR intervals in the second group were prolonged compared to the first group, but statically they were not significant. Conduction disorders in the second group were 33.9% more common than in the first group. Alanine transaminase (ALT) increased more than norm by 11.2% ( $p < 0.05$ ), but did not differ significantly from the values of group 1. Correlation analysis revealed a significant correlation ( $r = -0.58 - 0.62$ ) between the platelets number and length of the RR interval.

**Conclusion:** Patients with moderate COVID-19 experienced thrombocytopenia, elevated haematocrit, signs of ventricular conduction disturbance, and an increase in liver ALT activity in post-COVID period (up to 3 months). All results were compared to the local laboratory reference results.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### **Morphometric study of cochlea in dry foetal temporal bones in western region of Maharashtra**

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**Keywords:** Cochlea, hearing impairment

**Introduction:** The internal ear which is concerned with the reception of sound & with balancing has two parts, the bony labyrinth containing cochlea, vestibule and semi-circular canals and the membranous labyrinth which contains cochlear duct, saccule, utricle. The cochlea and its anatomic details are difficult to study due to its minute size and remote location. Congenital inner ear abnormality is a major cause of sensorineural hearing loss. At present, imaging technologies are employed routinely for diagnostic preoperative assessment for cochlear implants. There is radiological evidence that size of cochlea presents some degree of variation. Hence, raised awareness regarding cochlear size is a prerequisite to develop the next generation of implants.

**Aim:** To provide data for verifying cochlear measurements.

**Materials and methods:** 30 petrous temporal bones of foetuses were studied. Foetuses of gestational age ranging from 4th to 7th lunar months with no malformations were included. Cochlear length, breadth, height were measured.

**Results:** In present study, we observed it in 4 groups. Cochlear length  $8.4 \pm 0.07$ mm on left side &  $8.6 \pm 0.06$ mm on right side. After applying post hoc multiple comparisons, we got a significant increase in lengths when Group I, II,III compared to Group IV. obtained regression equation is as follows-  
CR length=  $230.746 + 175.467 (R = 32.5\%, R^2 = 10.5\%)$

**Conclusion:** A thorough knowledge of normal range of variation of anatomy of cochlea is necessary for accurate interpretation of radiographs and CT scans. Hence, it can guide otolaryngologists, ENT surgeons in the management of hearing impairments.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### **Correlation of serum Vascular Endothelial growth factor (VEGF ) and cardiovascular risk factors on collateral formation in patients with Acute coronary artery syndrome**

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**Keywords:** Arteriogenesis, Collateralization, shear Stress

**Introduction:** Coronary artery diseases are those caused by narrowing of coronary arteries which prevent adequate blood supply to the heart muscles resulting in Acute coronary syndrome. Coronary collaterals serve as an alternative source of conduct for blood flow in obstructive coronary heart disease. Acute collateral recruitment can be done as a remedy for this adverse cardiac event. Myocardial Ischemia can be a sufficient stimulus to induce coronary collateral development through the release of various Angiogenic growth factors which include Vascular Endothelial growth factor (VEGF). Cardiovascular risk factors strongly associated with Coronary artery disease include Age, Gender, Elevated serum cholesterol, Disturbed carbohydrate metabolism, and Elevated blood pressure.

**Aim:** A better understanding of the effects of these cardiovascular risk factors on collateral recruitment and serum VEGF is necessary for a better prognosis in coronary artery diseases and new insight for further therapeutic promotion of coronary collaterals.

**Materials and methods:** 250 consecutive patients who had undergone coronary Angiography with a mean age of 60 ±15 were selected for the analysis. 2ml of blood was taken after getting consent. The blood serum VEGF concentration was quantified via the ELISA method. HbA1c level of the blood was analysed. Angiograms and other clinical reports were collected. Blood pressure and cholesterol level are noted from the clinical report of the patients. Significant coronary artery disease was diagnosed for those with ≥ 70 % of stenosis in at least one of the major coronary arteries. The angiograms were examined in different planes and the data was documented. The coronary collateral pathway in these angiograms was also observed and documented. The collateral grading was done according to the Rentrop Scoring system. The level of serum vascular endothelial growth factor is correlated with the collateral score and cardiovascular risk factors like age, gender, Type II diabetes, Blood pressure, and cholesterol level.

**Results:** A significant association was founded between the collateral score and serum VEGF level in patients with cardiovascular risk factors like Diabetes and Hypertension. No significant association was found between VEGF level and collateral score when correlated with Cardiovascular Risk factors like Age, Gender, and Hyperlipidaemia.

**Conclusion:** Cardiovascular risk factors like Diabetes and Hypertension have a negative synergistic effect on the serum VEGF level of the blood which in turn affect collateral development. Old age, Female gender have no significant association with serum VEGF levels in patients with Acute Coronary artery syndrome.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### Morphometric analysis of foramen ovale and its clinical implications

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**Keywords:** Foramen ovale, Morphometry, Skull, Sphenoid bone, clinical implications, dry adult human skull

**Introduction:** The cerebral surface of each greater wing of sphenoid bone forms part of the middle cranial fossa of the skull containing numerous foramina and fissure, which accommodate several vessels and nerves. Foramen ovale is an important foramen of the middle cranial fossa. The foramen ovale is present in sphenoid bone which transmits the mandibular nerve, accessory meningeal artery, emissary vein and lesser petrosal nerve. The foramen ovale is situated at the transition zone between intracranial and extracranial structures. Normally it is oval in shape, but its shape and size are quite variable.

**Aim:** To study the morphological variations and morphometric details of foramen ovale and its clinical implications in dry adult human skulls.

**Materials and methods:** 100 dry adult human skulls of unknown sex and of Indian origin were obtained from Santosh medical college & hospital, Ghaziabad, GS medical college, Hapur and various other colleges in NCR regions. Maximum length and width of foramen ovale was measured by using a pair of dividers. The variations in shape also recorded.

**Results:** The mean length of foramen ovale was  $7.22 \pm 1.19$ mm (right) and  $7.38 \pm 1.12$ mm (left). The mean width of the foramen ovale was  $4.8 \pm 0.98$ mm (right) and  $5.4 \pm 0.82$ mm (left). The shape of the foramen ovale was typically oval in most of the skull. There is no statistically significant difference between the two sides in length and width.

**Conclusion:** Information on foramina variants of the human skull gives insight into associations between neurovascular anatomy and the cranial morphology. Foramen ovale is used for various invasive surgical as well as diagnostic procedures. Proper knowledge on the location, dimensions and variations of foramen ovale will be providing guidance to neurosurgeons while performing various procedures through foramen ovale.

**Conflict of interests/Comments:** There are no conflict of interest to declare

### **Anatomical variation and morphometric study of optic canal and parasellar region with its clinical relevance**

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**Keywords:** Optic canal, anterior clinoid process, optic strut, caroticoclinoid foramen, morphometry, variations.

**Introduction:** The structure in the parasellar region is closely related to the optic nerve, ophthalmic artery, internal carotid artery, cavernous sinus and pituitary gland. So, it is important for the neurosurgeons to assess their dimension and variations. The aim is to study the morphometry of the optic canal and structures present in the parasellar region and observe variation.

**Materials and methods:** A cross-sectional study has been done on 55 adult human dry skulls. The height and width of optic canal (OC), distance between optic canal to apex of petrous temporal bone, distance between optic canal to anterior clinoid process (ACP), distance between both optic canal, length and width of anterior clinoid process were measured using digital vernier calliper. The position of optic strut (OS) was observed in relation

to the prechiasmatic sulcus as pre-sulcal, sulcal and post-sulcal. The presence of carotico-clinoid foramen was noted. The data was tabulated and statistically analysed.

**Results:** The mean height and width of OC on the right side were  $4.14 \pm 1.40$ ,  $4.14 \pm 1.31$  and on the left side  $4.02 \pm 1.26$ ,  $3.97 \pm 1.46$ . Mean distance between OC to petrous temporal apex on right and left side were  $24.35 \pm 2.72$  and  $24.51 \pm 2.69$ , mean distance between OC to ACP on right and left side were  $10.06 \pm 1.73$  and  $10.24 \pm 1.72$ , mean distance between both OC were  $15.24 \pm 2.73$ . The length and width of ACP on the right side were  $10.64 \pm 1.88$  and  $9.50 \pm 1.76$  whereas on the left side were  $10.75 \pm 1.98$  and  $9.54 \pm 1.89$  respectively. Morphometry of the right and left side of the optic canal and parasellar region were statistically insignificant. The common position of optic strut was sulcal (60%). The carotico-clinoid foramen was present in 30.90% of cases on the right side and 34.54% of cases on the left side and the most common type was Incomplete in both sides.

**Conclusion:** Knowledge pertaining to the morphometry of the parasellar region and presence of variance related to optic strut and carotico-clinoid foramen helps the neurosurgeons for better planning of surgeries around the parasellar region.

**Conflict of interests/Comments:** There are no conflict of interest to declare



## Reappraising the clinical significance of the Kaplan's cardinal line as a reliable surface marker for the superficial palmar arch during carpal tunnel release

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**Keywords:** Carpal tunnel, Kaplan's Cardinal Line, Hand surgery, Palmar Arch, Surface anatomy

**Introduction:** Kaplan's cardinal line (KCL) provides a more accurate reference point to the superficial palmar arterial arch. The primary aim was to determine the KCL-SPA distances and their relationship with forearm length. Secondary aim was to determine the distal limit of the incision made during carpal tunnel release (CTR).

**Materials and methods:** Sixty hands (30 cadavers) were dissected after Kaplan's original description was drawn on each hand using standard methods. The distance from KCL to the SPA was measured along the radial and ulnar

borders of the ring finger and recorded as radial and ulnar KCL-SPA distances respectively. Correlation analysis was done between the forearm length and KCL-SPA distance for each limb. The ratios between the radial and ulnar KCL-SPA distance and forearm length were calculated and mentioned as radial and ulnar Kaplan index respectively.

**Results:** The KCL-SPA distance was  $8.47 \pm 4.05$  mm along the radial border and  $8.48 \pm 3.48$  mm along ulnar border of the ring finger. The mean of forearm length was 29.48 cm. The means of radial and ulnar Kaplan indices were 0.28 and 0.29 respectively. Significant correlation was found between forearm length and both the KCL-SPA distances.

**Conclusion:** Clinically, KCL can be appraised as a predictable surface landmark in limiting the distal most extent of incision during CTR and protecting SPA from transection. The SPA was found to lie at variable distance from the KCL. The minimum KCL-SPA distance was found to be 1.50 mm. So, this should be considered as the maximum permissible extension of CTR incision beyond KCL.

**Conflict of interests/Comments:** There are no conflict of interest to declare

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## Non-Clinical Sciences - Anatomy

### A different approach for preparation of a mummy

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**Keywords:** Mummification, Mummy, Embalming, Preservation

**Introduction:** Mummies have an old history. Natural mummies were found well back in 3000 B.C. in many parts of Egypt, China & Mexico cities. The extreme climate in these cities favoured the formation of natural mummies. The traditional way of preparing a mummy involves the removal of internal organs like GIT, Liver, Spleen, Lungs and Brain because these organs start decomposing very fast. Mummification is a process that involves permanent and complete preservation of the dead body due to evaporation of moisture which makes it resistant to decomposition. Mummification can be natural (accidental) or artificial (man-made).

**Aim:**

1. The study aims to preserve the corpse for scientific & research purposes.
2. And to establish the modern scientific way of making Mummy.

**Materials and methods:** One unclaimed dead body was brought to the department of anatomy, S.S. Medical College, Rewa from associated Hospital and preserved by arterial embalming resulted in the fixation of body tissues. Procedures include drying of corpse & application of a mixture of chemicals like Formalin, antifungal, anti-mite and antimicrobial agents, mustard and turpentine oils were applied for the next four months (from 14th October 2009 to 24th February 2010) at regular intervals.

**Results:** More than 12 years have passed still no sign of decomposition, infection, putrefaction, disfiguration or maggot formation has been noticed although periodic maintenance includes cleaning & painting with the same mixture of chemicals have been exercised. That shows that the procedure adopted is successful. The mummy is kept in the departmental museum & is open for display.

**Conclusion:** In contrast to the older method of mummification, the modern scientific way is a very economical, easy and faster technique. In this method a mixture of chemicals was applied so, there is no need to remove organs like GIT, Liver, Spleen, Lungs and Brain as was necessary in ancient times.

**Conflict of interests/Comments:** There are no conflict of interest to declare

## The study of Internal Acoustic Meatus (IAM) by using 3D CT Scan Head and Neck region

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**Keywords:** Internal Acoustic Meatus, Temporal bone, Vestibular Apparatus, Acoustic Neuroma, Saccusendolymphaticus, CT scan

**Introduction:** The Internal Acoustic Meatus is a bony canal within the petrous portion of the temporal bone that transmits nerves and vessels from within the posterior cranial fossa to the auditory and vestibular apparatus.

Understanding the anatomy of IAM is important during many surgeries to avoid injury to vital structures in its proximity like jugular bulb and saccusendolymphaticus as it is a chief landmark in various neuro-otological surgeries like removal of acoustic neuroma, temporal bone fractures and certain congenital anomalies

### **Aim:**

The purpose of this study was to characterize the morphology of the internal auditory canal (IAC) during development using high resolution

computed tomography (CT) and to analyse its dimensions, which will be determined by measuring the nearby areas and structures using a system of digital image processing

**Materials and methods:** The study was carried out at Narayana Medical College, Andhra Pradesh. CT images of the IAM of 100 normal subjects aged 1 to 84 years of both genders were reviewed to determine the shape, area, opening width (OW), longitudinal length (LL) and vertical diameter (VD). The data was analysed statistically using SPSS version 17 software

**Results:** Shapes observed in right and left IAM were funnel (45% & 47% respectively), bud (28% & 31% respectively) and circular (27% & 22% respectively).

CT scan measurements of right and left IAC were OW (7.925mm and 8.237mm respectively), LL (11.715mm and 10.063mm respectively) and VD (4.368mm and 4.227mm respectively).

**Conclusion:** A thorough knowledge of the normal anatomy of the temporal bone and the anomalies that affect it are important for interpreting radiographs, as it improves the quality of the results and allows development of a new diagnostic criterion.

**Conflict of interests/Comments:** There are no conflict of interest to declare

## Morphological variations of the lung fissures and lobes with its applied significance

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**Keywords:** Accessory, Fissure, Lobes, Lung, Variation

**Introduction:** Lungs are essential organs of respiration. Variations in lobes and fissures of lungs are clinically significant. Awareness of these variations is essential during lobar resections of lung and radiological interpretation. This study is conducted to study the completeness of fissures, presence of accessory fissures and accessory lobes of lungs.

**Materials and methods:** 100 lungs from embalmed cadavers and autopsied bodies were studied for the presence of normal fissures, its variations, number of lobes, accessory lobes and accessory fissures.

**Results:** The right lung had complete oblique fissure and complete horizontal fissure in 68%

and 30% respectively. The left lung had complete oblique fissure 62 %. Oblique fissure was incomplete in 30 % of the right lung and in 38% of left lung. Oblique fissure was absent in 2% of the right lung. Horizontal fissure was incomplete in 52 % and absent in 18%. 73.3% of incomplete oblique fissure of the right lung showed incompleteness posteriorly. In the left lung oblique fissure showed incompleteness anteriorly in 26.3%, in the middle in 21.1% and posteriorly in 52.6%. Horizontal fissure of right lung was incomplete anteriorly in 96.2%.

Accessory fissures were present in 4% and accessory lobes were present in 1%.

**Conclusion:** The fissures in normal lungs enhance uniform expansion of lobes. Absence of fissures and its variations can affect lung expansion and may also alter the spread of disease within the lung. Present study unfolds that parenchymal fusion of various extent is a very common entity of oblique fissure of lung. So, more lung parenchyma has to be dissected to reach the bronchi and pulmonary arteries during partial lung resection which naturally might lead to perioperative haemorrhage and more postoperative complications. This knowledge of anatomy in fissures of lung and its variations are important as it may mislead while interpreting in radiology.

**Conflict of interests/Comments:** There are no conflict of interest to declare

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**Clinical Sciences - Applied Anatomy**

**Morphometric study of greater palatine foramen and its clinical relevance in Oro maxillofacial surgeries: a cross-sectional study**

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**Keywords:** Greater Palatine foramen; Hard palate; Third molar tooth; Oromaxillofacial surgery

**Aim:** The aim of our research was to study the anatomy of greater palatine foramen (GPF) in respect to different anatomical landmarks present in bony hard palates in eastern region of India.

**Materials and methods:** forty-nine adult dry skulls were examined and vertical distance from the centre of GPF to the post margin of hard palate, distance between the incisive fossa and GPF and transverse distance between mid-sagittal plane and GPF was measured with the help of digital vernier callipers. Location of greater palatine

foramen in respect to the maxillary molar tooth and its direction of opening was noted. All the data was tabulated and statistically analysed.

**Results:** Centre of GPF was  $3.53 \pm 1.09$  mm and  $3.73 \pm 1.25$  mm anterior to posterior margin of hard palate on right and left side respectively. The Mean distance of GPF from incisive fossa was  $37.59 \pm 2.69$  mm on right side and  $37.81 \pm 2.72$  mm on left side and from mid-sagittal plane was  $15.41 \pm 1.73$  mm on right side and  $14.99 \pm 1.63$  mm on left side. Most common type of location of GPF was medial to the third molar tooth and the commonest direction of opening was anteromedial.

**Conclusion:** Greater palatine foramen (GPF) represents the lower end of the greater palatine canal which transmits the greater palatine vessels and nerves. These data on position of greater palatine foramen help the surgeon for better evaluation of greater palatine nerve and vessels in Oro maxillofacial surgeries

**Conflict of interests/Comments:** There are no conflict of interest to declare

## A study on pterional morphology and morphometry with its clinical significance

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**Keywords:** Pterion, neurosurgeons

### Aim:

To note the different types of pterion and measure its distance from adjacent important bony landmarks.

**Materials and methods:** This study was performed on 77 dry adult human skulls of unknown age and sex. The pterion (Pt) was observed bilaterally for its types and the distance between its midpoint and the following bony landmarks was noted using a digital vernier calliper. i) The posterolateral margin of fronto-zygomatic suture (FZS) ii) The midpoint of superior border of zygomatic arch (ZA) iii) The nearest point along anterior superior margin of the external acoustic meatus (EAM) iv) The tip of

mastoid process v) Zygomatic angle vi) Glabella and vii) Asterion.

**Results:** The commonest type of pterion was sphenoparietal followed by epiptheric, stellate and frontotemporal. The mean distance of the midpoint of pterion from adjacent bony landmarks was as follow (Table):

Parameters	Measurements (mm)	
	Mean $\pm$ SD	
	Right	Left
Pt-FZS	29.06 $\pm$ 4.87	28.10 $\pm$ 5.45
Pt-ZA	38.30 $\pm$ 4.05	38.12 $\pm$ 3.36
Pt-EAM	52.11 $\pm$ 3.79	52.05 $\pm$ 3.92
Pt- MS	79.99 $\pm$ 5.72	80.60 $\pm$ 5.73
Pt- Z angle	39.28 $\pm$ 5.40	38.08 $\pm$ 5.12
Pt- Glabella	74.75 $\pm$ 5.29	72.78 $\pm$ 7.21
Pt- Asterion	87.95 $\pm$ 6.95	87.28 $\pm$ 7.22

**Conclusion:** The knowledge of epiptheric type of pterion will help the radiologist to differentiate it from a fracture line. The measurements of this study will be useful for neurosurgeons to locate pterion in various surgical procedures.

**Conflict of interests/Comments:** There are no conflict of interest to declare

**Morphological variations of the styloid process by using 3-d CT scans in south Andhra population**

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**Keywords:** Styloid process, Morphology, temporal bone, 3-D CT Scans

**Aim:** Present study was carried out to evaluate the morphological variations of the styloid process from CT scans

**Materials and methods:** Three dimensional CT scans of 100 individuals of both sexes from the

radiology department were analysed for morphological variations in styloid process

**Results:** Among the types of styloid process, type 1 was the most common type present on both right and left side

**Conclusion:** Knowledge of morphological variations of the styloid process useful for physicians as panoramic radiographs is a routine radiograph. Present study adding important information to the existing literature about the styloid process diversity, which may help to neurologists, radiologists, otorhinolaryngologists, dentists in their clinical practice and treatment of Eagle's syndrome.

**Conflict of interests/Comments:** There are no conflict of interest to declare



### Features of intravital topographic anatomy of the tracheal bifurcation

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**Keywords:** Trachea, Tracheal bifurcation, Topographical anatomy

**Aim:** Establishing the features of intravital topographic anatomy of tracheal bifurcation depending on gender, age and type of constitution.

**Materials and methods:** The features of intravital topographic anatomy of the tracheal bifurcation were studied on computed tomograms of 59 patients (spiral computed tomography General electric light speed 16) without pathology of the chest cavity. 27 (45.8%) men and 32 (54.2%) women were included in the study. The mean age was  $57.4 \pm 13.0$  years (median 60.0). The location level of the tracheal bifurcation, its displacement, angle, distance to the skin of anterior chest wall and vertebral bodies, and the angles of origin of the main bronchi were measured. Statistical data processing was carried out using the Statistica 10 software package.

**Results and Conclusion:** The most common location of tracheal bifurcation in women was Th6

(in 75.0% of cases), while in men it was Th7 (in 44.4% of cases),  $p=0.01$ . In women, the tracheal bifurcation angle was slightly larger than in men ( $72.9 \pm 20.5^\circ$  and  $80.9 \pm 18.7^\circ$ , respectively in men and women,  $p=0.18$ ), while in men, the distance from the tracheal carina to the skin of the anterior chest wall was greater than in women ( $114.5 \pm 18.9$  mm and  $102.9 \pm 23.4$  mm, respectively in men and women,  $p=0.07$ ). Increasing of the distance from the tracheal carina to the skin of the anterior chest wall ( $112.7 \pm 16.6$  mm and  $102.8 \pm 28.0$  mm,  $p=0.06$ ) and to the vertebral bodies ( $25.3 \pm 17.3$  mm and  $18.8 \pm 7.8$  mm,  $p=0.16$ ) was associated with the increasing of the age of the patients. The influence of the body type on the topography of the tracheal bifurcation concerned only the value of the left tracheobronchial angle, which was significantly less in persons of the mesomorphic body type than in persons of the dolichomorphic type of constitution ( $142.2 \pm 12.2^\circ$  and  $154.7 \pm 23.7^\circ$ ,  $\chi^2=0.02$ ). The relationship of other features of the topography of the tracheal bifurcation with gender, age and body type was not revealed. When planning surgical interventions on the tracheal bifurcation, one should take into account the features of its topographic anatomy, depending on gender and type of constitution.

**Conflict of interests/Comments:** There are no conflict of interest to declare