

a range of 144.12–700 ml³, and mean placental diameter was 168.2 ± 13.23 mm with a range of 147–186 mm. Thickness in GDM was 23.69 ± 5.08 mm. The average number of placental cotyledons was 19.38 ± 3.4 in GDM, which was significantly higher, revealed its excessiveness. Feto-placental ratio was 5.96 ± 1.06 in GDM. Histological findings showed vascular hyperplasia, cytotrophoblast proliferation, calcification of villi, fibrinoid necrosis, hyalinisation, and thickening of basement membrane and wall of stem arteries.

Conclusion: Significant placental morphological and histological changes of GDM observed in the present study may be considered as a clinical importance. The impact of these changes may reflect on perinatal outcome of the pregnancy, resulting in macrosomia, congenital malformations and intrauterine growth retardation.

Conflicts of interest

The authors have none to declare.

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Hydrogen sulphide producing enzymes are decreased in preeclamptic placentae



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Introduction: Preeclampsia, a human pregnancy specific disorder is characterized by a poorly perfused, ischemic placenta which may release anti-angiogenic and pro-oxidant factors in maternal circulation causing endothelial dysfunction. Thus it becomes imperative to study the expression of compounds like hydrogen sulphide which recently have been shown to possess pro-angiogenic and anti-oxidant properties. In the present study, we aimed to compare the status of these hydrogen sulphide producing enzymes cystathionine-gamma-lyase (CSE) and cystathionine-beta-synthase (CBS) in placenta from preeclamptic as well as normotensive non-proteinuric (control) pregnant women.

Methods: The placentae from gestational and maternal age matched preeclamptic ($n = 20$), and normotensive, non-proteinuric controls ($n = 20$) were obtained from department of gynaecology after taking ethical clearance. The paraffin embedded placental tissues were processed for immunohistochemistry. The rabbit polyclonal primary antibodies were used to see the expression of CSE & CBS using streptavidin–biotin complex method. Images were captured using Nikon Ti-S microscope. The mean intensity was analysed using NIS elements advanced research software.

Results: The mean intensity of CSE and CBS in the chorionic villi was significantly lower in the placentae of preeclamptic (PE) as compared to the control placentae ($p < 0.01$). CBS was localized in syncytiotrophoblasts as well as blood vessels whereas CSE was present predominantly in fetal vessels.

Conclusion: Decrease in CBS and CSE in preeclamptic placentae as compared to normotensive placentae observed in the present study indicates down regulation of anti-oxidant substances which could result in increased oxidative stress in trophoblast cells during early gestation leading to the development of preeclampsia.

Conflicts of interest

The authors have none to declare.

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Cobbler's cut: A new modality for procuring ossicles



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Introduction: Temporal bone is one of the most complex bones in the human body and it serves a valuable source for learning anatomy of tympanic cavity housing ossicles. Methods for dissecting the middle ear, which were described in the text books of anatomy and ENT mainly involve the piece meal removal of the bone.

Material and methods: The present study was conducted on 250 temporal bones of 125 unidentified cadavers. Temporals were dissected and studied with the help of *Cobbler's cut technique*. This is a very simple technique which involves only a single chisel cut that quickly exposes the middle ear cavity and helps in easy procurement of ear ossicles.

Results: Bilateral temporal bones were evaluated for the efficacy of the technique. In 88% of cases a complete set of ear ossicles were retrieved easily and in 12% cases the complete set of bones could not be collected, as one or two bones were found to be broken or missing.

Conclusion: In contrast to the traditional methods of piece meal removal of bone for exploring the middle ear cavity, the Cobbler's cut technique proves to be the easier, less time consuming and least destructive method of dissection for procurement of ear ossicles.

Conflicts of interest

The authors have none to declare.

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A study of sexual dimorphism in permanent mandibular canines and its implication in forensic dentistry



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Aims and objective: To calculate mandibular canine index and sexual dimorphism methods for sex determination.

Material and methods: Present study was conducted on 180 adult subjects (90 males and 90 females) in age group 17–25 years who visited Govt. Dental College and private dental clinics for various complaints. Patients with carious teeth, periodontal diseases and malocclusions were ruled out. Mandibular arch width was measured intra-orally from tip of right canine to the tip of left canine. Mesiodistal Width of both Mandibular Canines was also calculated. Measurement is divided into two groups. Group A as male & Group B as female.

Method of study:

1. Mandibular canine index = $\frac{\text{mesiodistal own width of mandibular canine}}{\text{mandibular canine arch width}}$
2. Sexual dimorphism = $\frac{X_m}{X_f}$

X_m – mean value in males.

X_f – mean value in females.

Result: The intra-Oral Canine Index was calculated to be 0.28 in right mandibular canine; and 0.28 in left mandibular canine among

males. It was found to be 0.27 in right mandibular canine; and 0.27 in left mandibular canine among females.

Sexual dimorphism for right mandibular canine was calculated as 7.954%; and for left canine, it was 8.891%.

Conclusion: From my study it can be concluded that diagnostic efficacy of mandibular canine index and sexual dimorphism method is important for sexual dimorphism, by these methods we can easily determined the role of mandibular canines in sexual dimorphism the relevant values always higher in males as compare in females.

Conflicts of interest

The authors have none to declare.

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Age estimation from epiphyseal union degrees of medial end of clavicle



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Introduction: Age estimation in cadavers, human remains and living individuals is important because it clarifies issues with significant legal and social ramifications. Clavicle displays longest growth period as compared to any other long bone in the body and the fusion of medial epiphyseal cartilage of clavicle has proved to be useful in estimating the skeletal age in young adults.

Materials and methods: The present study was done in the Department of Anatomy in collaboration with the Department of Forensic Medicine, Pt. B.D. Sharma PGIMS, and Rohtak. 50 pairs of autopsied clavicles of age group 18–28 years were retrieved. The bones were cleaned and dried. Epiphyseal union was analysed in terms of 4 stages: (1) non-union, (2) beginning of union, (3) active union, and (4) complete union.

Results: In both the sexes, when union is in stage 1, the age was certainly estimated to be less than 18 years old and in stage 4, it was more than 23 years old. The minimum age of beginning of fusion was 21 years in females and 18 years in males. The minimum age of complete union was 23 years in females and 24 years in males.

Conclusion: In females, the union of medial epiphyseal cartilage of clavicle appears to proceed faster in comparison to males.

Conflicts of interest

The authors have none to declare.

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Porta hepatis in normal liver



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Introduction: Hepatic surgery requires comprehensive knowledge of structures passing through porta hepatis. This fact prompted us to undertake the study of porta hepatis. Our aim was to find out the dimensions and shape of porta hepatis and the numerical variations of structures passing through it.

Material and methods: This study was carried out on 25 adult cadaveric formalin preserved human liver. The porta hepatis was identified and its transverse diameter, maximum anteroposterior diameter, various parts of liver contributing in its formation and total circumference were measured using Digital Sliding Vernier Caliper, thread and scale. Number of arteries, veins and ducts passing through it were observed.

Observations: The mean transverse diameter, anteroposterior diameter and total circumference of porta hepatis was 3.80 ± 1.03 cm, 1.79 ± 0.43 cm and 13.61 ± 1.92 cm respectively. Maximum contribution to the circumference was by caudate process (2.26 ± 0.83 cm) and minimum by fossa for gall bladder (1.56 ± 0.42 cm). 32% (maximum) cases showed presence of 2 arteries, 1 vein and 1 duct at porta hepatis. Maximum number of arteries, veins and ducts passing through it were 5 (4% cases), 3 (4%) and 3 (4%) respectively. In most of the cases the shape of porta hepatis was triangular.

Conclusion: From the above study we conclude that dimensions and shape of porta hepatis; arrangement and number of structures at it is highly variable and hence its knowledge can be of great importance to hepatobiliary surgeons.

Conflicts of interest

The author has none to declare.

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A study of diaphyseal nutrient foramina in human tibia



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Introduction: The nutrient artery is the major source of blood supply to the long bones. It enters through a nutrient foramen which runs obliquely and usually directed away from the growing end. The nutrient artery of tibia is the largest nutrient artery of the body. The knowledge of presence, number, location and direction of nutrient foramen has clinical significance in orthopaedic procedures. The present study analysed the presence, number, location and direction of nutrient foramina in 100 dry tibia bones taken from Department of Anatomy, RIMS.

Materials and methods: The present study was conducted on 100 dry adult tibia bones (49 right, 51 left) of unknown sex and origin from the Department of Anatomy, Regional Institute of Medical Sciences, Imphal, Manipur. The lengths of tibia were measured using an osteometric board. For the purpose of study, the tibia was divided into three equal segments. The presence, number, location and direction of nutrient foramen were noted.

Results: The nutrient foramen was located in upper third of tibia in 67.3%, in middle third in 32.7% of tibia and no nutrient were found in lower third. Out of 100 bones, 91% of tibia has single foramina, 8% has double nutrient foramina and 1% has triple nutrient foramina. Most of the nutrient foramina was located on the posterior surface (96.3%) compared to medial and anterior surfaces. Out of 110 nutrient foramina, 3 were seen directing towards proximal end (defying ossification law).

Conclusion: The study will provide the essential data for nutrient foramen which will be helpful in surgical orthopaedic procedures.