

ratio and physiological measures of fertility remain rare. Recent studies have found contradicting facts about relationship of ratio with recalled age at menarche.

**Methods:** We addressed this question in urban resident first year MBBS & nursing students of same age group. Digit ratio was calculated with the help of electronic vernier caliper and age at menarche was noted by verbal recall.

**Results:** We found non-significant correlation between right or left or combined digit ratio and recalled age at menarche.

**Conclusion:** No detectable association of between digit ratio and age at menarche is present.

#### Conflicts of interest

The authors have none to declare.

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#### An anatomical study and clinical co-relations of mandibular foramen in dry adult human mandibles of north Indian origin



Israr Khan

*Jawaharlal Nehru Medical College, Aligarh Muslim University, India*

**Introduction:** The mandibular foramen is located on the medial surface of ramus of mandible. It transmits inferior alveolar nerve. Inferior alveolar nerve block is a common procedure done by dental practitioners while doing various surgeries on mandible. The aim of this study is to determine the position of mandibular foramen in respect to various landmarks present on the mandible.

**Methods:** 30 adult human dry mandibles of north Indian origin were studied. The position of mandibular foramen from various landmarks was measured on both sides of the ramus. All the measurements were taken with the help of a digital caliper as per standard anthropological conventions.

**Results:** In our study we found the mean distance from mandibular foramen to anterior border of ramus was  $16.06 \pm 1.99$  mm and  $16.13 \pm 2.10$  mm on the right and left sides respectively and from mandibular foramen to posterior border of ramus was  $12.02 \pm 1.99$  mm and  $11.10 \pm 1.95$  mm on the right and left sides respectively. The Mandibular foramen is positioned at a mean distance of  $18.79 \pm 2.79$  mm on the right side and  $18.71 \pm 2.77$  mm on the left side, from the mandibular notch.

**Conclusion:** In the present study the localization of mandibular foramen presented great variation. However if we keep these anatomical landmarks in our mind we can accurately locate the position of mandibular foramen and this will help us to create successful anesthesia and to perform good surgeries on the mandible.

#### Conflicts of interest

The author has none to declare.

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#### Variations in the external morphology of gall bladder: A cadaveric study in south coastal population



Madala Venkateswara Rao\*, Lattupalli Hema

*Narayana Medical College, Nellore, India*

**Background:** Variations in the pattern of the extra hepatic biliary tract are usual and are commonly encountered during some radiological investigations or in operation theatres. Such variations of the morphology of gall bladder have been well documented in the literature for many years but a detail morphological study of variations of the gall bladder and its incidence is very rare. In this era of quick results, increasing use of diagnostic and interventional procedures makes it important to study variations of gall bladder morphology. Most of the interventional procedures in this modern era are done laparoscopically and there is tremendous increase in the number of laparoscopic cholecystectomies. So, sound knowledge of possible variations in morphology of gall bladder is important.

**Materials and methods:** This study was undertaken on 90 cadaveric liver and gall bladder specimens in terms of length, maximum transverse diameter, and shape, external variations of gall bladder, interior and length of gall bladder below the inferior border of the liver.

**Results:** Gall bladder had length ranging between 3 and 10 cm, transverse diameter between 2.0 and 5.0 cm. The commonest shape observed in this study was pear shaped in 82.22% of cases. The length of gall bladder below the inferior border of liver varied between 0.4 and 2.5 cm.

**Conclusion:** The growing importance of such variations, lie not only from the point of biliary disease but also with respect to the various invasive techniques in the diagnosis and treatment of gall bladder and extra hepatic bile duct disease.

#### Conflicts of interest

The authors have none to declare.

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#### Anatomical study of supratrochlear foramen of humerus and its clinical significance



Meghana Joshi\*, Divya Chavda, V.H. Vaniya, Ila Sutterwala

*Government Medical College Baroda, Gujarat, India*

**Introduction:** Supratrochlear foramen (STF) is located on the bony septum that separates the olecranon fossa, at the lower end of humerus. The present study is aimed to observe STF, along with the morphometric study of its shape, transverse and vertical diameter of foramina.

**Material and method:** Dried human 250 bones of unknown age and sex, free from pathological changes obtained from the bone store of the Department of Anatomy, Medical College Baroda. The presence of STF and its shape was observed, further classified into round and oval. The transverse and vertical diameter were measured by the digital vernier caliper and obtained data were analyzed statistically.

**Result:** Out of the 250 humerus STF was found in 81 bones, showed total incidence of 32.4%, on right side 26.4% (33 out of 125) and on left side 38.4% (48 out of 125). The round and oval shape

were found in 25 and 56 number respectively. With the incidence of right and left side mean transverse diameter were 5.16 mm and 5.15 mm respectively. The vertical diameter on right and left side measured 3.54 mm and 3.72 mm respectively.

**Conclusion:** The present study suggested oval shape was more common and more seen on left side than round. Clinically supracondylar fracture is common in pediatric patient and presence of STF makes it more difficult to plan out proper surgical procedure. Study is also helpful to anthropologist, orthopedic and to the radiologist.

#### Conflicts of interest

The authors have none to declare.

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#### Is the sulcus angle of knee joint, a predictor of future patellofemoral arthritis? – A magnetic resonance imaging study



N. Vinaykumar

Government medical college, Palakkad, Kerala, India

**Introduction:** Knee pain can commonly be due to patellofemoral arthritis, which occurs due to anatomic and biomechanical causes of damage to the patellofemoral joint, such as shear and compressive forces, abnormal patellar tracking, and patella subluxation and tilting. Previous literature observed this condition in varied incidence with female preponderance. The sulcus angle and trochlear morphology are among the determinants of the normal patellofemoral joint biomechanics. Any alteration in this determinant will result in patellofemoral pathology. And so this study was done to find out the trochlear morphology and sulcus angle in normal patients.

**Methodology:** Magnetic resonance imaging of knee region in 60 adults of both gender were studied from the archives of radiology department. The cases were selected after excluding those with osteoarthritis, gross pathology of the knee region and known case of patellofemoral arthritis. The trochlear morphology was studied and classified. The sulcus angle was measured using RADIANT DICOM viewer. The measurements were analysed.

**Result:** The overall average sulcus angle is 140°, 136° in females and males respectively. The sulcus angle was found to be more in females studied compared to males. The trochlear was observed to have type B morphology predominantly.

**Conclusion:** Many reasons exist for patellofemoral arthritis to occur. Among them, increase in sulcus angle can lead to instability of patella which could result in earlier occurrence of arthritic changes. Differing trochlear morphology and increasing sulcus angle proves to be a definite predictor of patellarfemoral arthritis.

#### Conflicts of interest

The author has none to declare.

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#### Gonial index of mandible: Effect of age and gender related variations in the north Indian population



S. Bathla\*, S.K. Srivastava, S.K. Rathee

Pt. B.D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, India

**Introduction:** Gonial index (GI) is a linear radiomorphometric index of the mandible and is used as an important predictor of osteoporosis/osteopenia.

**Aim:** To measure GI and study its relation to age and gender in the north Indian population of Haryana.

**Materials and methods:** This study was conducted in the Anatomy Department, Post Graduate Institute of Medical Sciences, Rohtak using 60 adult human orthopantomographs obtained from the Department of Periodontology; which were divided into 6 age groups (35–65 years) with equal number of males and females. GI was measured as the mandibular cortical width on the bisectrix of the gonial/mandibular angle, as described by Bras et al (1982).

**Results:** In males, the mean GI values ranged from 1.92 mm ± 0.307 mm to 2.48 mm ± 0.448 mm. In females, values ranged from 1.69 mm ± 0.329 mm to 2.17 mm ± 0.264 mm. The correlation between age and mean GI was found to be statistically insignificant ( $p > 0.05$ ) for both sexes. Sexual dimorphism was observed as the difference in the total mean GI values between males and females was statistically significant ( $p < 0.05$ ). Bilateral asymmetry was also recorded as statistically significant differences ( $p < 0.05$ ) were found between right-sided and left-sided mean GI values in both the genders.

**Conclusion:** Gonial index was significantly influenced by gender/sex, but it remained independent of age.

#### Conflicts of interest

The authors have none to declare.

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#### Morphological study of foramen magnum and jugular foramen in dry skull



Abhilasha Dadhich\*, Priyanka Katara

S.M.S. Medical College, Jaipur, India

**Introduction:** Foramen magnum is the largest foramen present in the lower part of the occipital bone. The jugular foramen is opening between the lateral part of the occipital bone and the petrous part of temporal bone. The dimensions of the foramen magnum and jugular foramen are clinically important as important structures pass through them. This study is to examine and document the dimensions of foramen magnum and jugular foramen.

**Materials and methods:** 60 dry human skulls were taken from the department of anatomy SMS medical college, Jaipur. The anteroposterior, transverse diameter and the shape of foramen magnum and jugular foramen was measured by the vernier caliper. Mean and range was calculated and tabulated.

**Results:** The range of anteroposterior diameter of foramen magnum was 28.8–39.9 mm and transverse diameter was 22.9–33.8 mm. The shape of foramen magnum was oval in 12%, circular in 26% and polygonal in 62%. The range of anteroposterior diameter of jugular foramen was 10.92–15.93 mm on right