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

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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 sulcul 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

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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

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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

side and 13.05–20.22 mm on left side and transverse diameter was 4.06–9.71 mm and 6.4–10.01 mm on right and left side respectively.

Conclusion: The diameter of foramen magnum is useful to determine radiological malformations and prior to cutting of foramen magnum or posterior cranial fossa. The shapes can guide surgeons in instrumentation and manipulation around this reason. Thus the morphology of foramen magnum and jugular foramen are important for neurosurgeons radiologists and anthropologists.

Conflicts of interest

The authors have none to declare.

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Morphological and morphometric study of jugular foramen in western Rajasthan population

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Introduction: The jugular foramen (JF) lies at the base of the skull between the occipital bone and the petrous part of the temporal bone. It allows for the passage of important nervous and vascular elements, such as the glossopharyngeal, vagus and accessory nerves, and the internal jugular vein. The jugular foramen is difficult to understand and to access. It is difficult to conceptualize because it varies in shape and size because of its complex irregular shape, its curved course, its formation by two bones.

Materials and methods: 100 jugular foramina of persons of unknown age and gender were examined in Dr. S.N. Medical College, Jodhpur. Metric measurements were taken by using vernier calipers. The mean standard deviation and range of each dimension and derived index were compared.

Result: In 65% cases the right foramina were larger than the left; in 25% of cases the left foramina were larger than right and in 10% cases they were equal in size on both sides. The mean length of the foramen on the right and left were 17.19 ± 3.66 mm and 15.47 ± 3.25 mm; the width measured 6.68 ± 1.99 mm and 5.78 ± 2.07 mm on the right and left respectively; the mean area on the right was 382.22 ± 179.18 mm and on the left 292.47 ± 147.14 mm.

Conclusion: There was statistical significance between the two sides in the length and area but there was no significant difference between the two sides in the width. There was a positive correlation between length and width on each side.

Conflicts of interest

The authors have none to declare.

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Morphometry of superior articular surface of head of radius

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Introduction: The human elbow joint has three different articulations surrounded by a common joint capsule. These joints are the humeroulnar joint, humeroradial joint, and the proximal radioulnar joint. The Humeroradial joint is a shallow ball-and-socket, hinge-type of synovial joint. This study aims to provide morphometric data concerning the superior articular surface of head of radius.

Materials and methods: In a sample of 30 dry specimen of the radius, high-precision measurements were recorded to derive a statistical inference concerning: the maximal depth of the superior articular surface, its average diameter, the articular surface area, and its concavity volume. The depth and the diameter were measured using an electronic vernier. Measuring the surface area and volume at such a small-scale was a challenge. Hence, three methods were deployed: a mathematical method, a cast-material technique, and a low-surface tension fluid application.

Results: The 95% confidence intervals were 1.847–2.119 mm (depth), 18.963–20.445 mm (diameter), 2.961–3.451 cm^2 (surface area), and 0.277–0.359 cm^3 (volume). There was a strong positive correlation for: depth vs. volume, depth vs. area, area vs. volume, diameter vs. depth, diameter vs. area, and diameter vs. volume. However, the correlation was absent (not significant) for age vs. diameter (p-value 0.361), age vs. depth (p-value 0.937), age vs. area (p-value 0.342), age vs. volume (p-value 0.512), limb orientation vs. area (p-value 0.149), limb vs. volume (p-value 0.146).

Conclusion: This is the first study of its kind, to analyze the morphometry of the superior articular surface of the radial head, both experimentally and statistically. Derived data are of high impact in standardization and practical application in anthropology, biotechnology and orthopedics.

Conflicts of interest

The author has none to declare.

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Morphology of the semitendinosus muscle: An anatomical study

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Introduction: To determine the length and width of the semitendinosus muscle in south Indian population and to study the vascular pedicles entering into the semitendinosus muscle.

Materials and methods: The study included 44 formalin fixed cadaveric lower limbs. The length of the semitendinosus muscle belly and its tendon were measured. The width of the semitendinosus muscle belly was measured at the origin, middle part and the termination. The length of the semitendinosus tendon was also measured. The number of vascular pedicles into the semitendinosus muscle was counted and distance of the pedicles from the origin of the muscle was measured. The measuring scale, vernier caliper and cotton thread were used to perform the measurements. The data was tabulated and analyzed.

Results: The mean length of the semitendinosus muscle was 330.8 ± 39.4 mm and its tendon measured 158.9 ± 32.8 mm. The mean width of the muscle was 26.1 ± 6.5 mm, 23.1 ± 8 mm and 9.4 ± 3.3 mm at its origin, middle part and the termination respectively. The number of vascular pedicles entering the semitendinosus muscle ranged between 0 and 7. The distance of the