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

entry of vascular pedicle to the semitendinosus muscle from its origin was ranging between 44 mm and 265 mm.

Conclusions: The morphometric data obtained in the present study is important to the vascular and plastic surgeons. It has implications during the harvesting of the grafts and pedicle flaps. The data is also essential to the anthropologists, orthopedicians and clinical anatomists.

Conflicts of interest

The authors have none to declare.

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Measurement of height from ulnar length: A cross-sectional study among the staff of NEIGRIHMS, Meghalaya

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Aim of the study: To observe the correlation between the height and length of ulna.

Materials and methods: 164 (male: 118 and female: 46) healthy 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 ulna length was measured with wide spread caliper using standard procedure.

Results: The regression analysis was carried out to find the strength of relationship of ulna length with body height and the following equation was formulated: $y = mx + c$, where y = height of the subjects, x = length of ulna, c = intercept/constant, m = regression coefficient. In our study following values were obtained. For male subjects: $m = 5.495$ and $c = 26.71$; so equation becomes $y = 5.495x + 26.71$ and $r^2 = 0.913$. For female subjects: $m = 5.641$ and $c = 22.06$; so equation becomes $y = 5.641x + 22.06$ and $r^2 = 0.836$.

From the above we suggest that there is strong positive correlation between height and length of ulna among both male and female study subjects. All the findings will be discussed in details during presentation.

Conclusion: By using the length of ulna we can calculate the height of an individual which will be beneficial for anatomist, clinicians and anthropometry studies.

Conflicts of interest

The authors have none to declare.

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Reconstruction of femoral length from markers of its proximal end

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Introduction: Stature is one of the most important parameter in the identification of an individual, and it can be calculated from measurements of long bones specially femur and tibia. Bony markers such as head and neck of femur can be of use in determining the femoral length and thereby stature of an individual. The aim of this study is to derive regression equation for estimation of length of femur by measuring proximal segments.

Materials and methods: This study consists of 280 femora (136 of right side and 144 of left side). The maximum length of femur, head vertical and transverse diameter, head circumference, neck vertical and transverse diameters were measured with the help of osteometric board and vernier caliper.

Results: The data were statistically analyzed for correlation coefficient and regression. The mean of maximum length of femur was 412.56 + 30.34 mm (right femur – 414.96 ± 30.57 mm, left femur – 410.29 ± 30.05 mm). The length of femur significantly correlates with the other measurements of proximal end ($p < .01$). Linear regression equations of length of femur against various proximal end measurements have been derived.

Conclusion: The positive correlation between maximum femoral length and parameters of its proximal end, and regression equation derived in this study will be useful in estimation of the total length of the femur. Hence, this study will be helpful to anthropologists, archaeologists and forensic investigators.

Conflicts of interest

The authors have none to declare.

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Bilateral linguofacial trunk in a cadaver: A case report

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Background: External carotid artery (ECA) extends from level of upper border of lamina of thyroid cartilage to a point behind the neck of mandible and parotid gland providing eight branches: superficial temporal, maxillary, ascending pharyngeal, superior thyroid, lingual, facial, occipital and posterior auricular artery. Cases of common thyro-lingual, linguo-facial and thyro-linguo-facial were reported of which linguo-facial trunk is most common.

Materials and methods: During routine dissection in Department of Anatomy, ESI Medical College, Kolkata, Linguo-facial trunk originated from ECA on both sides above greater cornu of hyoid bone in a 60-year-old cadaver. This variation was coloured and photographed.

Observations: Lingual and facial arteries originated from front of ECA as common linguo-facial trunk on both sides and coursed upward towards the mandible, dividing into facial and lingual arteries at the level of laryngeal prominence. Lingual artery crossed the internal laryngeal, passed underneath the hypoglossal nerve and anterior belly of digastric muscle to enter digastric triangle. Facial artery passed upwards and forwards reaching posterior part of submandibular gland. Other branches of ECA were normal.

Discussion: Knowledge of linguo-facial trunk is essential for radiologist to interpret carotid system imaging for superselective intra-arterial catherization and placement of cross clamps on carotid arteries in carotid end-arterectomy and in Facial Artery Musculo Mucosa (FAMM) flap for reconstruction of oronasal fistulas and closure of soft tissue defects in mandibular vestibule. Variations pose a danger during thyroidectomy, laryngectomy, carotidendoplasty for treatment of carotid stenosis or extracranial–intracranial arterial bypass for treatment in occlusive cerebrovascular disease, skull base tumours or aneurysms.