

A South Indian skull-based study of morphological and morphometrical measurements of foramen magnum

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ABSTRACT

Aim: The aim of the study was to analysis of morphometric and morphology parameters of foramen magnum. **Objective:** The study was conducted on completely ossified adults 92 dry skulls. **Materials and Methods:** The study was conducted on 50 South Indian skulls (25 females and 25 males). The skulls were free from fracture or other deformities. Morphometric analysis on the occipital bones was conducted with Vernier calipers graduated to the last 0.01 mm. **Discussion:** The area of the foramen magnum was calculated using the formula derived by Radinsky's and Teixeria, and hence, mean and standard deviation was calculated. Radinsky's formula: $A=1/4 \times \pi \times w \times h$. Teixeria's formula: $A=p \times [(h+w)/4]^2$. **Conclusion:** The length, breadth, and area of foramen magnum are found to be higher in males than female.

KEY WORDS: Foramen magnum, Morphometry, Skull, Area, Width

INTRODUCTION

The fruitful distinguishing proof of the perished is indispensable to any legal examination. One of the foremost organic characteristics to be evaluated from skeletal remains is the sex of the person.^[1] Anthropological examination is the pillar in the estimation of the sex of obscure skeletal remains. Skeletal sex estimation depends on the explicitly dimorphic articulation of hard attributes that are created through various examples, rates, and times of adolescence penis growth.^[1] Sex can be evaluated from a gross examination of the skeleton utilizing metric and morphological techniques.^[2] The guideline point of the present research is to contemplate the sexual dimorphism of the anteroposterior distance across, transverse width also, and zone of foramen magnum in a populace from beachfront Karnataka district utilizing factual contemplations and to assess whether the foramen magnum morphometry^[3] can be dependably utilized as an apparatus for scientific distinguishing proof when just a section of base of the skull is brought for identification.^[4] Sex estimation turns

out to be progressively troublesome if just sections of a skull are brought for medicolegal examination.^[5] Such divided skulls might be experienced in instances of physical abuse, for example, fire, explosions, or savagery.^[6] The basal area of the occipital bone is secured by a bigger volume of delicate tissue.^[7]

MATERIALS AND METHODS

The study was conducted on 50 South Indian skulls (25 females and 25 males). The skulls were free from fracture or other deformities.^[8] Morphometric analysis on the occipital bones was conducted with Vernier calipers graduated to the last 0.01 mm. Measurements were done using the following bony landmarks on the skull namely, basion, the middle point of the anterior margin of foramen magnum and opisthon the middle point of the posterior margin of foramen magnum. The prongs of the Vernier caliper were placed over the screw provided, and length and breadth of foramen magnum were recorded over the graduated metallic scale on the calipers itself.

RESULTS

The various measured and calculated dimensions were compiled and given below as bar charts.

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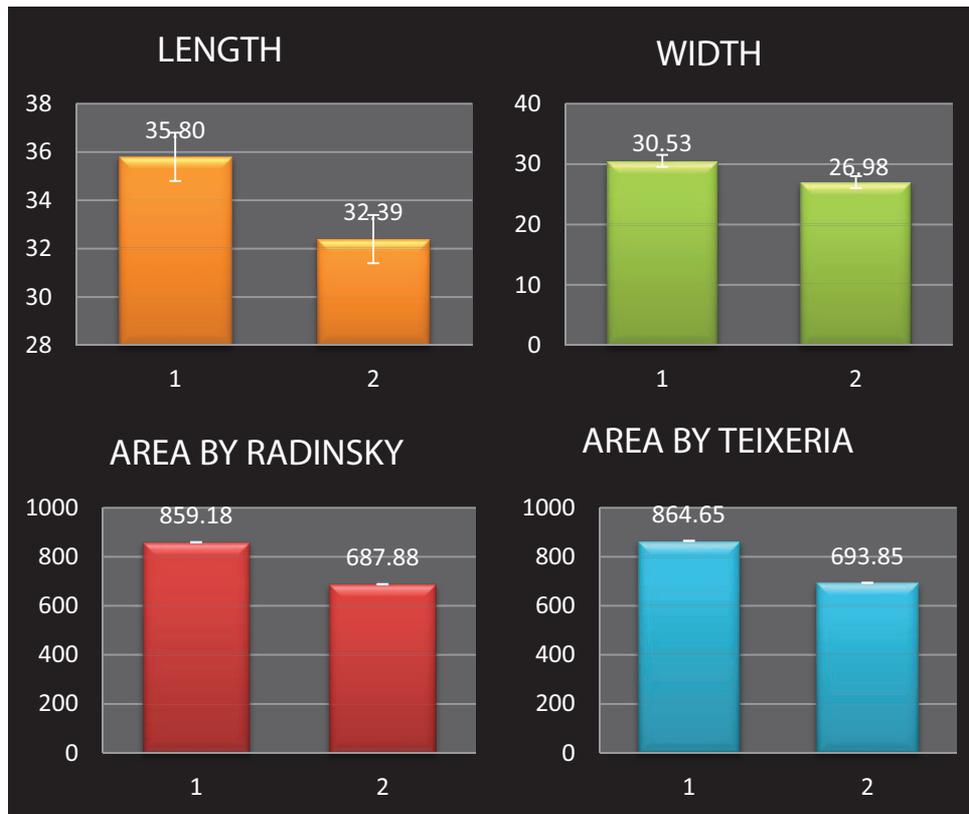
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DISCUSSION

The area of the foramen magnum was calculated using the formula derived by Radinsky's and Teixeria, and hence, mean and standard deviation was calculated.

Radinsky's formula: $A=1/4 \times \pi \times w \times h$

Teixeria's formula: $A=\pi \times \left[\frac{(h+w)}{4} \right]^2$ ^[9]

The length (*h*)/anteroposterior diameter is the distance between basion and opisthion. The width (*w*)/transverse diameter is the distance between the lateral margins of foramen magnum at the point of greatest lateral curvature.^[10]

CONCLUSION

The length, breadth, and area of foramen magnum are found to be higher in males than female.

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