

Morphometric Study to Assess Dimensions of Orbital Roof and Floor In Dry Skulls

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ABSTRACT

Background: The orbit is a craniofacial structure that can be affected by a large number of congenital, traumatic, neoplastic, vascular, and endocrine disorders. Therefore, the present study was conducted to assess dimensions of orbital roof and floor in dry skulls.

Materials and Methods: The present study was conducted to assess dimensions of orbital roof and floor in 55 dry skulls which were collected from the Department of Anatomy, Teerthanker Mahaveer Medical College & Research Centre, TMU, Moradabad, Uttar Pradesh, India. Based on the morphology, skulls were differentiated into 36 male and 19 female skulls. The roof length and floor length of the orbit was measured. The data obtained were tabulated and analyzed using Statistical Package for the Social Sciences, Version 21.0 (SPSS, Chicago, IL). The results were considered significant when $p < 0.05$.

Results: In the present study total sample size was 55 dry skulls in which 36 were male skulls and 19 were female skulls. In male mean roof length was 5.43 and in female mean roof length was 4.65. In male mean floor length was 4.81 and in

female mean floor length was 4.76. The right mean roof length was 4.22 and left mean roof length was 4.93. In right mean floor length was 4.45 and left mean floor length was 4.86.

Conclusion: Present study concluded that mean roof length and floor length was greater in males. The left roof and floor length were greater than right roof length.

Keywords: Orbital Floor, Orbital Roof, Dry Skull, Craniofacial.

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INTRODUCTION

The human orbit is a complex anatomic region, which plays an important role in the assessment of craniofacial complex. The knowledge of bony orbit which lodges the visual apparatus are of immense clinical and surgical interest in ophthalmology, oral and maxillofacial surgery and neurosurgery.¹

Each of orbit's four bony walls has its own unique features and is perforated by a number of fissures and foramina which carry important nerves and blood vessels.² Anatomically each orbital cavity consists of a base, an apex, and four walls, comprising medial wall, lateral wall, floor, and roof. This complex hard bony wall protects the eye from external mechanical injury.³ Assessment of orbital dimensions is significant for the knowledge of the anatomical position of orbital structures and surgical management of orbital pathologies.⁴

The orbit may be exposed to many surgeries such as orbital decompression, enucleation, exenteration, optic nerve decompression, and vascular ligation. To avoid injuries to the vital structures in the orbit, mainly neurovascular bundles passing

through various foramina and fissures; hence, precise knowledge of the anatomy of these openings is very important.⁵ Therefore, the present study was conducted to assess dimensions of orbital roof and floor in dry skulls.

MATERIALS AND METHODS

The present study was conducted to assess dimensions of orbital roof and floor in 55 dry skulls which were collected from the Department of Anatomy, Teerthanker Mahaveer Medical College & Research Centre, TMU, Moradabad, Uttar Pradesh, India. Based on the morphology, skulls were differentiated into 36 male and 19 female skulls.

The roof length of the orbit was measured from the midpoint of the upper margin of the orbit to the apex of the orbit (optic foramen OF) using a thick strip of paper. In the same way the length of floor of the orbit was measured from the midpoint of lower margin to the apex of the orbit. The length of the paper was then measured with vernier calliper. (Fig 1 & 2)

The data obtained were tabulated and analyzed using Statistical Package for the Social Sciences, Version 21.0 (SPSS, Chicago, IL). MannWhitney test was done to find out the statistical

significance of all parameters of orbits, with respect to gender and side (right and left side). The results were considered significant when $p < 0.05$.



Fig 1: Measurement of Roof Length (RL)

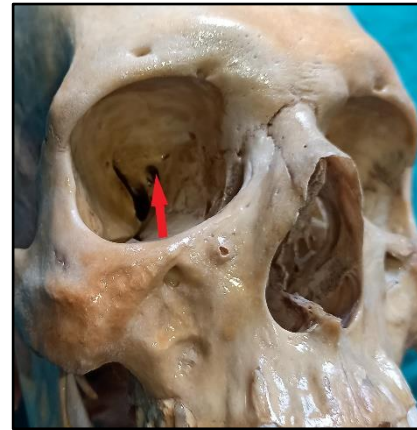


Fig 2: Measurement of Floor Length (FL)

Table 1: Comparison of length of roof and floor between male and female orbits

Parameter	Gender	Mean $\pm$ SD	P-value
Roof length	Male	5.43 $\pm$ 0.4	$p < 0.05$
	Female	4.65 $\pm$ 0.27	
Floor length	Male	4.81 $\pm$ 0.36	
	Female	4.76 $\pm$ 0.32	

Table 2: Comparison of length of roof and floor between right and left orbits

Parameter	Side	Mean $\pm$ SD	P-value
Roof	Right	4.22 $\pm$ 0.32	$p < 0.05$
	Left	4.93 $\pm$ 0.37	
Floor	Right	4.45 $\pm$ 0.31	
	Left	4.86 $\pm$ 0.39	

RESULTS

In the present study total sample size was 55 dry skulls in which 36 were male skulls and 19 were female skulls. In male mean roof length was 5.43 and in female mean roof length was 4.65. In male mean floor length was 4.81 and in female mean floor length was 4.76. The right mean roof length was 4.22 and left mean roof length was 4.93. In right mean floor length was 4.45 and left mean floor length was 4.86.

DISCUSSION

While operating within the orbit surgeon must deal with number of important structures located in a small area. Position of the soft tissue structures in relation to the easily identifiable bony points is helpful and could prevent serious complications.⁶⁻¹¹

In the present study total sample size was 55 dry skulls in which 36 were male skulls and 19 were female skulls. In male mean roof length was 5.43 and in female mean roof length was 4.65. In male mean floor length was 4.81 and in female mean floor length was 4.76. The mean roof length and floor length was greater in males. Thanasil Huanmanop et al.¹² have reported that the roof length of right-side orbits in females was significantly shorter than that of

males. Yongrong ji et al.¹³ showed the result that the roof length is larger in males when compared to females.

The right mean roof length was 4.22 and left mean roof length was 4.93. In right mean floor length was 4.45 and left mean floor length was 4.86. The left roof and floor length was greater than right roof length.

In Thanasil Huanmanop et al.¹² study there is no significant difference in floor length between the genders

Yongrong ji et al.¹³ have reported that the floor length of orbits in males is significantly larger than in females.

In the study of Mekhala D (2012)¹⁴ the values of length of floor in males was 4.85 and in females 4.59 and the p -value is < 0.001 .

In the study, Jeremiah Munguti (2012)¹⁵ on the length of floor on right it is 5.47 and left it is 5.48 and the p -value is 0.927

CONCLUSION

Present study concluded that mean roof length and floor length was greater in males. The left roof and floor length were greater than right roof length. To avoid injuries to the orbit during surgeries precise knowledge of the anatomy of the orbit is very important.

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