

A MORPHOMETRIC STUDY OF THE SPHENOID RIDGE AND SURROUNDING STRUCTURES

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The sphenoid ridge is the posterior border of the lesser wing of sphenoid bone. Its medial end is the anterior clinoid process; the lateral end extends up to the pterion. The sphenoid ridge and the surrounding structures are commonly involved in conditions such as meningiomas, carotid aneurysms and fistulae. For treatment of these conditions, new procedures and techniques such as endoscopic surgery and surgery through keyhole approach have been developed. With the usage of these, as during endoscopic navigation, relationships and measurements of the sphenoid ridge and the surrounding structures are useful. Hence, studies have been carried out to obtain data on the above measurements. The current study aims at measuring the sphenoid ridge and the distances from it to vital structures in the cranial cavity. It is expected that the data obtained will be useful in enhancing surgical safety and precision. The preliminary findings are presented in this paper.

Fourteen adult skulls with intact sphenoid bone were used to measure the linear length of the lesser wing. Twelve cadavers dissected by students, eight male and four female, were used to measure the linear length of the lesser wing and the distances from the anterior clinoid process, mid and lateral points of the sphenoid ridge to oculomotor nerve as it enters the cavernous sinus (CNiii), mandibular nerve at the foramen ovale (CNv₃), facial nerve at the internal auditory meatus (CNvii), middle meningeal artery at foramen spinosum (MMA) and crista galli (CG). All measurements were taken using sliding callipers.

The average linear lengths of the right and left lesser wings of the dry skulls were 4.3cm and 4.2cm respectively. The values obtained from the wet skulls were 4.3cm and 4.3cm respectively. There was no significant difference between the measurements made on dry and wet skulls ($p=0.7$). When the measurements on dry and wet skulls are considered together, the range and average lengths obtained for right and left lesser wings were 3.9 – 4.8 cm (Median: 4.3) and 3.8 – 4.6 cm (Median: 4.3) respectively. The average distances to CNiii, CNv₃, CNvii, MMA, and CG from anterior clinoid process on the right side were, 0.9, 2.6, 3.6, 3, 4.5 cm, respectively. The same parameters measured on the left side were, 0.9, 2.5, 3.7, 3, 4.5 cm. The average distances to the above structures from the mid point of the sphenoid ridge on the right side 2, 3.1, 4.5, 3.4 and 4.2 cm were respectively. The same parameters measured on the left side were, 2.5, 3, 4.5, 3.3 and 4.2 cm respectively. The distances from the lateral point of the sphenoid ridge to the above structures on the right side were 4.2, 4.4, 5.7, 4.6 and 5.2 cm respectively. The same parameters measured on the left side were 4.2, 4.4, 5.8, 4.6 and 5.2 cm.

To obtain the normal values of the studied parameters for Sri Lanka, a larger sample needs to be studied. The readings for all sixteen parameters showed a narrow range in our study as opposed to a similar study carried out elsewhere. It therefore, appears that the chosen parameters do not show a wide variation among Sri Lankans.