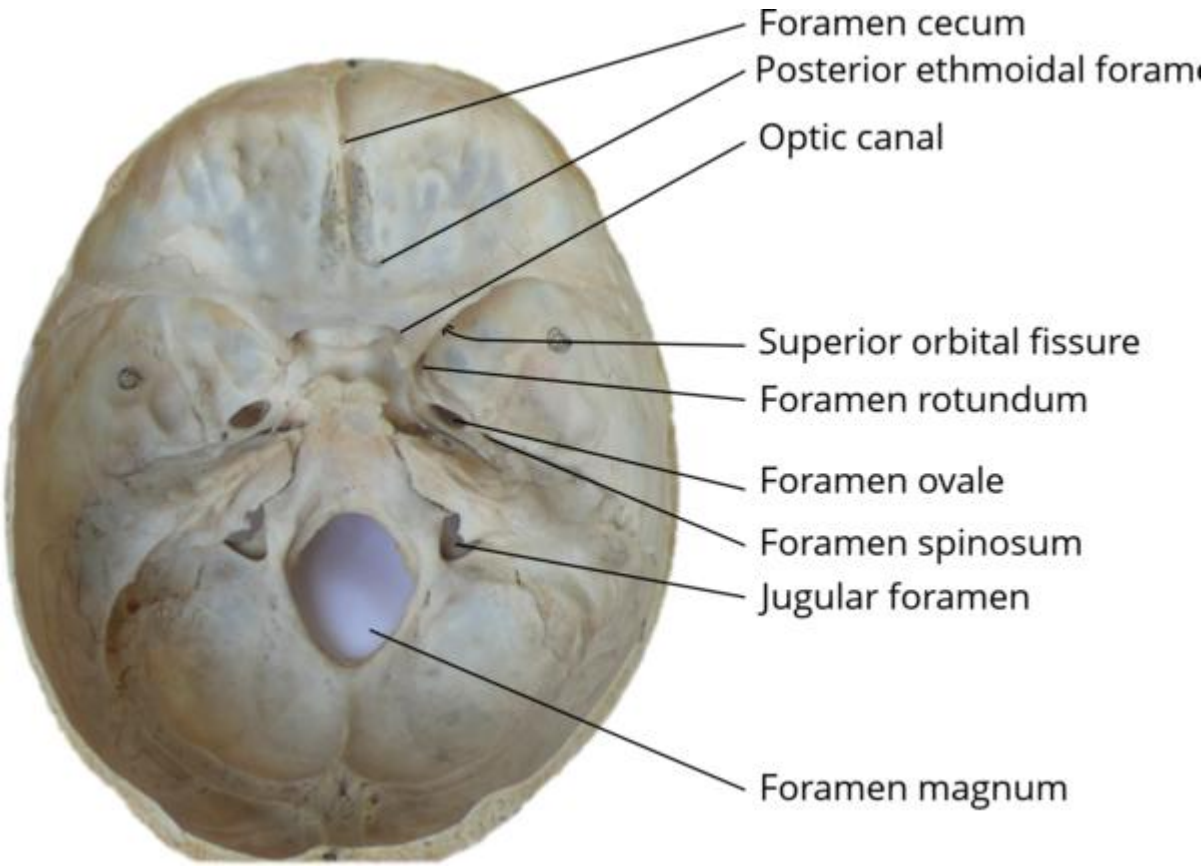
Foramen ovale

Oval opening in the greater wing of sphenoid bone transmitting the mandibular nerve as its major content.



It serves as an important landmark for neurosurgeons in certain procedures as to gain access to trigeminal nerve.

Therefore, its topographic position in relation to adjacent bony landmarks provides useful tool during these procedures.

Morphometric analysis was carried out on 104 foramina ovalia of 52 dry human skulls from South India. Following dimensions of foramen ovale were measured: antero-posterior length, transverse width, distance (d(1)) from tubercle of root of zygoma to the centre of the foramen (CF) and distance (d(2)) from the midline of the base of the skull to CF. Results: The mean antero-posterior length was 7.0±2.17mm on right side and 6.8±1.40mm on left side, mean transverse width was 5.0±0.42mm and 4.70±0.91mm on right and left side respectively. Mean d(1) was 32.58±1.72mm on right side and 32.75±1.76mm on left side. Mean d(2) was 25.83±1.26mm on right side and 25.08±1.31mm on left side. Conclusion: Regional variations in the morphometric measures may be useful in neurosurgical procedures like administration of anaesthesia involving the mandibular nerve [1].

The aim of a study is to objectively describe the shape of the FO and its most likely shape variation. A total of 211 FO were evaluated by geometric morphometric analysis. A consensus shape is presented for the FO. No significant difference was found between the shapes of left- and right-sided FO. The most likely shape variation of the FO occurs as an inverse relationship between the anteromedial-posterolateral and anterolateral-posteromedial aspects of the foramen. The capacity to visualize the average FO shape and understand the most likely shape variance, as illustrated by Zdilla et al., will aid neurosurgeons in their approach to procedures requiring cannulation of the FO [2].

Anatomical variations can occasionally result in unexpected findings on physical examination. McDonough et al. from the Tulane Center for Clinical Neurosciences reported two cases of seemingly unique connections between maxillary nerve (V2, sensory) and mandibular nerve (V3, motor and sensory) branches parts of the trigeminal nerve. In these two cadaveric specimens, at the foramen ovale, small neural connections, confirmed with histology, were identified joining V2 to specifically, the motor root of V3 [3].

Patent foramen ovale

see Patent foramen ovale.

Foramen ovale puncture

see Foramen ovale puncture.

1)
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2)
Zdilla MJ, Fijalkowski KM. The Shape of the Foramen Ovale: A Visualization Aid for Cannulation Procedures. J Craniofac Surg. 2016 Dec 23. doi: 10.1097/SCS.0000000000003325. [Epub ahead of print] PubMed PMID: 28027173.
3)
McDonough S, Olewnik Ł, Iwanaga J, Dumont AS, Tubbs RS. Connection between V2 and V3 parts of the trigeminal nerve at the internal cranial base. Folia Morphol (Warsz). 2022 Apr 5. doi: 10.5603/FM.a2022.0031. Epub ahead of print. PMID: 35380015.