

Case Report

UNUSUAL PRESENCE OF BILATERAL ACCESSORY FORAMINA IN THE PETROUS TEMPORAL BONE -A CASE REPORT

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ABSTRACT

The anatomy of the skull base is complex. Numerous foramina and canals are seen in the skull base which transmits vital neurovascular structures. It is composed of five bones viz. ethmoid, sphenoid, occipital, paired frontal, and paired temporal bones. Petrous part of the temporal bone is rough and uneven, lies between the posterior border of greater wing of sphenoid and basilar part of the occipital bone. It shows the presence of anterior or internal orifice of carotid canal and forms the posterio-lateral boundary of foramen lacerum. In the present case, an accessory foramina was observed on the anterior surface of the petrous temporal bone on both sides over the trigeminal impression posterior to the foramen ovale communicating with the carotid canal, which might be vascular and transmitting persistent trigeminal artery. The knowledge of presence of normal and accessory foramina and canals (variant positions of foramina and canals) in skull is important for neurosurgeons, anatomists, endocrinologists & radiologists as these foramina transmit neurovascular structures which may cause complications like unnecessary profuse bleeding during surgeries.

Keywords: Accessory Foramina, Petrous Part of Temporal Bone, Vascular, Foramen

INTRODUCTION

The skull base is irregular showing asymmetry due to the presence of numerous foramina and canal (Gozil *et al.*, 1996). Berlis *et al.*, (1992) stated that knowledge of skull base anatomy was of great importance in cases of clival tumour and aneurysms.

When skull base is viewed superiorly after removing the calvaria, there are three naturally occurring regions i.e. anterior, middle and posterior cranial fossae (Raut *et al.*, 2012). Middle cranial fossa is the most common site for accessory foarmina. Posterior border of middle cranial fossa is formed by superior borders of the petrous part of the temporal bone and the dorsum sellae of the sphenoid. The shape of petrous part of the temporal bone is pyramid-shaped and it is wedged between the occipital and sphenoid bones. The petrous portion forms the part of the endocranium. It derived from the Latin word petrosus, means "stone-like, hard". It is one of the densest bones in the body. It consists of an apex, a base, three angles, and three surfaces. Internal opening of carotid canal is present in the apex which also forms the posterio-lateral boundary of foramen lacerum (Petrous, 2013). Internal carotid artery, carotid plexus of nerves and sympathetic fibres passes through this carotid canal which is a bony canal (Aoun *et al.*, 2013; Carotid Canal, 2013). The carotid canal is an important surgical landmark for neurosurgeons (Calguner *et al.*, 1997).

CASES

During undergraduate teaching on adult human dried skull in the department of Anatomy, Gian Sagar Medical College and Hospital, Banur, Patiala, an accessory foramen was observed on the anterior surface of the petrous part of the temporal bone on both sides (Figure 1). It was present over the trigeminal impression posterior to the foramen ovale communicating with the carotid canal on both sides. The

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measurements were done with the help of a divider and digital vernier callipers with the resolution of 0.01 mm. The accessory foramen varied in shape and size on both sides. The foramen of right side was elliptical in shape with dimensions 0.15 X 0.12 mm while on left side it was nearly circular in shape with dimensions 0.12 X 0.13 mm. Both foramina had smooth margins.

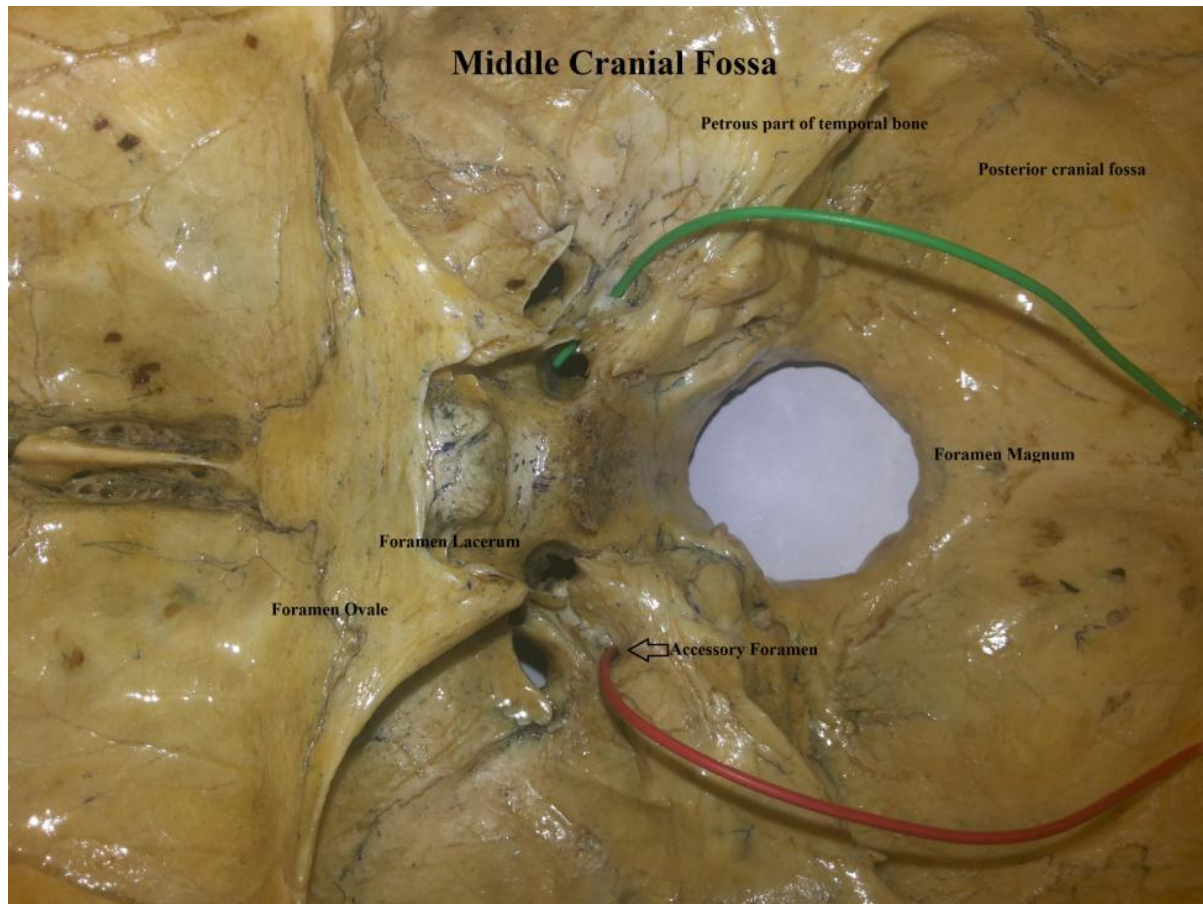


Figure 1: Showing an Accessory Foramen on the Anterior Surface of the Petrous Part of the Temporal Bone on both Sides

DISCUSSION

The morphological variations in foramina and canals of skull have increased the interest of various research workers for many decades because of their anthropological, racial, clinical and surgical importance (Sethi *et al.*, 2011). In the present study, the accessory foramina with smooth margins were observed on the anterior aspect of the petrous part of the temporal bone on both sides. The accessory foramina found in the present case was communicating with the carotid canal on both sides. As per our information, such a variation in the petrous part of temporal bone has never been reported in the accessible literature. Since these accessory foramina were communicating with the carotid canal, so, it might be transmitting one of the branches of internal carotid artery indicating accessory foramina as vascular. However, this assumption cannot be confirmed as the study was done on dried human skull. Primitive trigeminal artery, a presegmental branch is closely related to fifth nerve during intrauterine life (Standring, 2008). Normally, this artery disappears. But in some cases this artery may persist. In the present case, the accessory foramen might be transmitting persistent trigeminal artery.

Clinical Importance

The knowledge of presence of normal and accessory foramina and canals (variant positions of foramina and canals) in skull has great importance for neurosurgeons, anatomists, endocrinologists radiologists as

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these foramina transmit neurovascular structure passes through these foramina which causes complications like unnecessary profuse bleeding during surgery or trauma (Aggarwal *et al.*, 2012). Therefore, ensure the presence of these accessory foramina and canals before undergoing any surgery or investigations like Computed tomography (CT Scan), Magnetic Resonance Imaging (MRI).

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