



Study of Mastoid canals and grooves in South Indian skulls

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Abstract

This study was conducted to determine presence of mastoid canals and grooves, totally 125 skulls were used for this study. The mastoid canals and grooves were present in 59.2% and 20% respectively. The knowledge of mastoid canals and grooves is very important for otolaryngologists and neurosurgeons.

Key words: Mastoid canals and grooves, Otolaryngology

Introduction

Vascular tunnels or canals and grooves in the mastoid region of significant caliber and varying length just posterior to the mastoid process. The mastoid foramen is a large hole in the posterior border of the temporal bone. It transmits a mastoid emissary vein to the sigmoid sinus and a small branch of the occipital artery, the posterior meningeal artery to the duramater. The position and size of this foramen are very variable, it is not always present, sometimes it is situated in the occipital bone, or in between the temporal and the occipital bones. It transmits an emissary vein connecting the sigmoid sinus with the posterior auricular vein and a meningeal branch of the occipital artery. In this present study we reported presence of mastoid canals and grooves.

Materials and Methods

125 dry adult human skulls constituted the material for the present study.

The skulls belong to the Department of Anatomy, JJM Medical College, Davangere, Karnataka, India. Each was studied for the incidence of mastoid canals and grooves and recorded.

Results

Out of 125 total skulls studied, the mastoid canals were present in 74(59.2%) skulls out of these bilaterally were 35(28%), right unilateral were 20(16%) and left were 19(15.2%)(Table 1).

Table 1. Distribution of mastoid canals

Sex	No. of skulls	Bilateral	Right	Left	Total
Total	125	35(28%)	20(16%)	19(15.2%)	74(59.2%)

Table 2. Distribution of mastoid grooves

Sex	No. of skulls	Bilateral	Right	Left	Total
Total	125	10(8%)	8(6.4%)	7(5.6%)	25(20%)

The mastoid grooves were present in 25(20%) skulls out of these bilateral were 10(8%), right unilateral were 8(6.4%) and left were 7 (5.6%) (Table 2).

Discussion

The mastoid canals were found to lodge a sizeable branch of the occipital artery and its companion vein, this artery ascends to supply the scalp. Glasscock & Shambaugh (1990), Ludman (1988) and Romanes(1981) noted an occipital branch of the posterior auricular artery in this positions. Warwick et al (1989) and Gardner et al (1963) described two occipital branches of occipital artery. Hollinshead (1982) and Schaeffer (1953) described an ascending or auricular branch of the occipital artery at this site.

Mastoid canals containing vessels may be attributable to the mode of development of this part of the temporal bone. In the embryo the bone develops from two components. The squamous part arises in mesenchyme at 8th week of fetal life and forms the anterosuperior part. The petro mastoid part develops from the cartilaginous epiotic centre at 5-6th months of fetal life and forms the posteroinferior part by 1 year of age (Schaeffer, 1953). These are demarcated on the external surface as the petrosquamous suture, directed downwards and forwards into the mastoid process. In the adult skull this may barely be distinguishable or is seen as series of irregular depressions or well marked fissures. The squamous plate grows posterior and covers a large area of the lateral surface of the petro mastoid bone. The 'junction' between these two components of the temporal bone in many adults is often separated by a heavy plate of bone referred to as Korner's septum or a 'false bottom' and is a remnant of the suture (Wright, 1987). The ascending branch of the occipital artery lying on the developing petro mastoid in fetal life is

likely to be buried by the ossifying squamotemporal bone. In other words, this ascending branch of the artery in some skulls is 'trapped' between two growing bones.

Since the presence of artery with its accompanying vein in this region is liable to injury as it may be undetected, it is necessary for surgeons operating in this area to be aware of this vascular arrangement to avoid troublesome bleeding with more care in case of females. The importance of structures in the mastoid area has increased due to the increasing use of the transtemporal route for surgical procedures involving access to structures in the posterior fossa and the mastoid air system by neurosurgeons and ENT surgeons.

References

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