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Incidence of Foramen Meningo - Orbitale in South Indian Population

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Abstract

Foramen meningo-orbitale is a small inconsistent foramen usually found on the roof or the lateral wall of orbit forming an additional connection between the orbit and the middle cranial fossa. It is usually single but may also be multiple transmitting the orbital branch of middle meningeal artery. In the current study we investigated 97 adult dried human skulls it was found to be present in 43 skulls (44.32%), it was unilateral 27 skulls (27.83%) and found bilaterally in 16 skulls (16.49%). The incidence of this foramen may be of surgical significance for surgeries related to the anterior cranial fossa and also to ophthalmologist.

Key Words: Foramen meningo-orbitale, Orbit, Clinical significance

Introduction

Foramen menigo-orbitale is a small opening usually in the roof or lateral wall of the orbit, lateral to the lateral end of the superior orbital fissure. It is usually found to be single but may also be multiple transmitting the orbital branch of middle meningeal artery forming an additional connection between the orbit and middle cranial fossa.

The foramen is not listed as a consistent feature of skull in many standard text books. The incidence of this foramen is found to be variable, it is reported to be only 29% in studies done by Kwiatowski et al [1] but Erturk et al [2] reported a consistent presence in 82.9% skulls.

Other names used for this in various literatures are meningo-orbital foramen, sinus canal foramen, sphenofrontal foramen, foramen of Hyrtl, Lacrimal foramen, Cranio- orbital foramen.

Materials and Methods

97 adult dried human skulls were investigated. All the skulls were from the collection of the Department of Anatomy, Saveetha Dental College, Chennai, Tamilnadu state, India. No information regarding the age or sex of the skulls was available. The incidence of the foramen was studied.

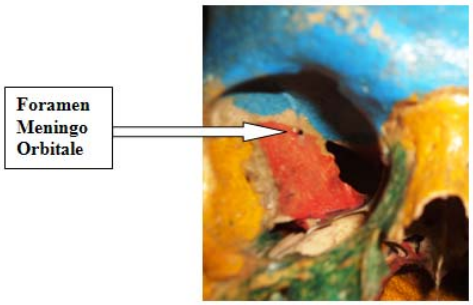

Fig 1. Anterior view of Right Orbit showing Foramen Meningo orbitale (Block arrow)

Results

Foramen menigo-orbitale was found to be present in 43 skulls (44.32%) of the total number of 97 skulls studied. It was unilateral (either on the right or on the left side) in 27 skulls (27.83%) and was found bilaterally in 16 skulls (16.49%). It was found to be double in 6 orbits (3.09%) 4 on the right and 2 on the left-side.

Table 1 The incidence of the foramen meningo-orbitale in 97 adult skulls

Total No. skulls foramen found	UNILATERAL		BILATERAL*	
	RIGHT	LEFT	SINGLE	DOUBLE
43	13	14	12	2

* In 2 skulls with Bilateral foramens 2 foramens were found on right side and 1 foramen was found on the left side.

Discussion

Foramen menigo-orbitale was found to be present in 43 skulls (44.32%) of the total number of 97 it is almost equal to the numbers reported by Lee and Chung [3] in Korean population 45% and Georgiou and Cassel [4] reported its presence in 49% of skulls. Some authors have reported a relatively fewer presence of this foramen Kwiatkowski et al [1] has reported to have found this in only 28% of 46 skulls, Santo Neto et al [5] have reported its presence in only 3 of 50 skulls they examined. Others have reported a very high level of incidence of this foramen, Erturk et al [2] reported it in 82.39% of 141 skulls, it was found in 80.4% skulls in studies by Krishnamurthy et al [6]. Mysorerkar and Nandedkar [7] have reported its presence in 44 right orbit and 46 left orbits of 100 skulls they have examined.

This foramen has been referred to as the anastomotic foramen (Moore, 1985) [8], the lacrimal foramen (Basmajian, 1980) [9], the foramen meningo-orbitale (Royle, 1973) [10], the foramen of Hyrtl (Lasjaunias, 1981) [11], and as the cranio-orbital foramen (Diamond, 1990) [12]. The foramen is not listed in Nomina Anatomica (1980) [13]. Due to the embryonic significance of this foramen Georgiou and Cassell [4] has proposed to proclaim this foramen as 'stapedial-ophthalmolacrimal' foramen.

The foramen meningo-orbitale represents an embryonic conduit between the supraorbital division of the stapedial artery and the permanent stem of the ophthalmic artery. In the adult this may be represented by a connecting vessel between the orbital branch of the anterior division of the middle meningeal artery and the lacrimal branch of the ophthalmic artery [4]. The anatomy of the cranio-orbital foramen and the course of the orbital branch should be well known by surgeons reconstructing the anterior base of the skull, the orbit after orbital base surgery, and during excision of meningiomas [2].

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