A STUDY OF OCCURRENCE AND MORPHOMETRIC ANALYSIS OF FORAMEN OF CIVININI IN SOUTH INDIAN DRY SKULLS

AUTHOR:
KEERTHANA BALAJI
B.D.S 1st year,
Saveetha Dental College,
162, P.H. Road, Chennai, Tamilnadu-600077,

COAUTHOR:
M.S. THENMOZHI
Saveetha Dental College,
162, P.H. Road, Chennai, Tamilnadu-600077.

ABSTRACT:

Aim & Objective:
To study the occurrence and morphometric analysis of foramen of civinini in south Indian dry skulls.

Background:
Sphenoid bone comprises of some rare ossified ligaments, which may encounter difficulty during surgical procedures. The complete ossification of the Pterygospinous ligaments form foramen civinini, through which the branches of mandibular nerve pass. The ossified Pterygospinous ligaments is a major cause of entrapment of lingual nerve or a branch of mandibular nerve and cause mandibular or trigeminal neuralgia.

Reasons:
Knowledge of civinini ligament and foramen of civinini are important for anatomists, radiologists, neurosurgeons, maxillofacial surgeons, dental surgeons and anaesthetists especially while treating trigeminal neuralgia and also while performing surgical procedures on the pterygoid region. This study was conducted to identify the occurrence of Foramen of civinini and its morphometric analysis in South Indian dry skulls for the knowledge of its surgical applications.

Keywords:
Sphenoid bones, Foramen of civinini, Pterygospinous ligaments, Mandibular nerve

INTRODUCTION:
Many anatomists and anthropologists have been attracted by the significance of vertebrate skull which is the most modified part of axial skeleton. The sphenoid bone lies in the base of the skull, wedged between the three bones namely frontal, temporal and occipital. It has a central body, a pair of greater and lesser wings spreading laterally from it and two pterygoid processes[1]. The infratemporal fossa is a surgically significant region, in which the osseous part of pterygoid process extends vertically downwards from the junction of the root of greater wing and the body of the sphenoid. Each pterygoid process comprises of medial and lateral pterygoid plate[2]. The medial pterygoid plate is narrower and longer while the lateral pterygoid plate is broad, thin, and everted[3]. The lateral pterygoid plate consists of anterior and posterior margins. The anterior margin is free and forms the posterior boundary of pterygomaxillary fissure. The free posterior margin presents a small spur at the root or in the centre, which is called as spine of sphenoid or spine of civinini. Thickening of ligament between the lateral and medial pterygoid muscles leads to the formation of pterygospinous ligament[2]. The pterygospinous ligament extends from the lateral pterygoid plate to the spine of sphenoid bone[4]. Complete ossification of the pterygospinous ligament is known as pterygospinous bar which is also called as civinini bar. When completely ossified, the pterygospinous ligament form the foramen of civinini, described by Civinini in 1829[5]. Complete or incomplete pterygospinous bony bridges and foramina may cause entrapment of nerves in the exocranial region of foramen ovale and may produce various clinical symptoms. A branch of mandibular nerve i.e., lingual nerve runs between tensor veli palatine and lateral pterygoid muscle, where Chorda tympani nerve joins it. Sometimes the lingual nerve gets entrapped between the bar and the muscle in the presence of civinini bar which will cause numbness in the area of its distribution and pain during talking[6]. Partial or complete ossification of pterygospinous ligament seems to be a major cause of mandibular neuralgia. Therefore the foramen of civinini and civinini ligament are important for anatomists, radiologists and
surgeons while performing surgeries on the pterygoid region and while treating trigeminal neuralgia[7]. This present study was conducted to study the occurrence and the morphometric analysis of Foramen of civinini in South Indian dry skulls.

MATERIAL AND METHOD:

This study was conducted in Department of Anatomy, Saveetha Dental College and Hospitals. A total number of 53 dried skulls of unknown age and sex were studied for the presence of Foramen of Civinini. Among the 53 dried skulls, 29 were full skulls and 24 were half skulls.

RESULT:

UNILATERAL:

BILATERAL:
PARTIALLY OSSIFIED FORAMEN:

Among the 53 dried skulls, foramen of civinini was present only in 11 skulls which includes 7 full skulls and 4 half skulls. As a result, the complete ossified bar that formed a complete foramen of civinini was noticed in only one case. Incomplete foramen of civinini were noticed in 10 cases. A bilateral foramen was noticed in only one case and a unilateral foramen of civinini was observed in 10 cases.

<table>
<thead>
<tr>
<th>Foramen of Civinini</th>
<th>Total Number Of Foramen in Skulls</th>
<th>Sides(right/Left)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partially Ossified</td>
<td>10</td>
<td>Left</td>
</tr>
<tr>
<td>Completely Ossified</td>
<td>1</td>
<td>Right</td>
</tr>
<tr>
<td>Unilateral</td>
<td>10</td>
<td>Left</td>
</tr>
<tr>
<td>Bilateral</td>
<td>1</td>
<td>Both</td>
</tr>
</tbody>
</table>
DISCUSSION:

The thickened cranial part of ligament, between the lateral and the medial pterygoid muscles, result in the formation of pterygospinous ligaments. Italian anatomist F Civinini first described and coined the term “pterygospinous ligament” or “ligament of Civinini”[2]. Complete ossification of this ligament forms a foramen called foramen of civinini, through which branches of mandibular nerve gets passed. Thus, it has to be remembered that while applying anaesthesia to the mandibular nerve, one may encounter variable ossified formations which seem to be an obstacle to high quality conductive anaesthesia. The nerves are subjected into compression due to the presence of this ossified structure which may result in trigeminal neuralgia[8]

CONCLUSION:

In conclusion, although the incidence of foramen of Civinini was low in South Indian population, it would seem important to extend the knowledge of the topography and morphology of this ossified structure. Thus, the presence of Civinini ligament and Foramen of Civinini have clinical significance due to its relation with the branches of mandibular nerve in therapeutic and surgical approach.

REFERENCES:


