

A Study on an Ossified Pterygospinous Ligament

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ABSTRACT

Introduction: Posterior border of lateral pterygoid plate near its upper border shows a ligament which may get ossified some times.

Materials and Methods: Study of ossification of pterygospinous ligament was conducted on 65 human adult skull bone specimens. The lateral pterygoid plate of the sphenoid bone and the presence of ossified pterygospinous ligament were studied.

Results: Out of 65 specimens, only in 2 cases we observed the presence of flattened and broad lateral pterygoid plate and

incompletely ossified pterygospinous ligament on left side in one and on right side of another skull bone.

Conclusion: The ossification of pterygospinous ligament can result in formation of a foramen through which mandibular nerve branches may pass in most of these cases. Mandibular nerve and chorda tympani nerves may get compressed depicting various clinical symptoms, which intern depend upon dimensions of the foramen and grades of compression.

This is important for radiologists, maxillofacial surgeons, dental surgeons and anaesthetists.

Key Words: Pterygospinous ligament, Spine of the sphenoid bone, Pterygoid plates, Mandibular nerve

INTRODUCTION

The ossification of the pterygospinous ligament is very rare. The posterior border of the lateral pterygoid plate near its upper border may become ossified and get connected to the spine of the sphenoid bone.

This can convert it into an incompletely ossified bony bar or a foramen. This ossified ligament may compress the surrounding neurovascular structures.

MATERIALS AND METHODS

130 pterygoid plates belonging to 65 skull bones were studied with respect to the ossified pterygospinous ligament.

Skulls with the ossified pterygospinous ligament were photographed and studied with respect to the extent of ossification of the bony bar and the complete foramen formation.

RESULTS

A total of 130 pterygoid plates belonging to 65 human adult skull bones were studied and only in two cases (3.07%) we found the incompletely ossified pterygospinous ligament. In one case it belonged to the left side and in the other, it belonged to the right side.

There was a small gap between the spine of the sphenoid and the posterior border of the lateral pterygoid plate which measured 3mm in both the cases.

DISCUSSION

The ligaments are fibrous bands which connect the adjacent bones which form the important parts of the joints, but when they ossify, they may lead to many clinical symptoms.

The pterygospinous ligament is found to have muscle fibres which are also sometimes ossified [1]. If this ossified pterygospinous ligament exists, then it forms a foramen through which the

mandibular nerve and some of its branches may pass through and the compression of which may cause clinical conditions like lingual numbness, speech impairment, mandibular neuralgias, etc. [2].

The presence of this ligament may even change the course of the mandibular nerve and its branches [3].

Pinar et al found the completely ossified pterygospinous ligament in 12 cases, out of 361 dry skull bones and incompletely ossified ligaments in 35 cases [4].

Nayak et al studied 416 dry human skulls. The pterygospinous bony bar, the incomplete pterygospinous foramen and the complete pterygospinous bony bar were found to be 9.61%, 3.84% and 5.76% respectively [5].

Peker et al studied 452 adult dry crania and 9 cadavers. The following observations were made. The completely ossified pterygospinous ligament was found in 5.5% of the cases. Complete pterygoalar bridges were found in 4.9% of the cases. The complete pterygospinous osseous bridges were bilateral in 14 out of the 452 skulls [6].

Antonopoulou et al observed incompletely ossified pterygospinous ligaments in 2.5% skulls and a completely ossified pterygospinous bridge bilaterally in 2% of the skulls. These observations were made out in a three dimensional reconstruction in a CT image [7].

Krmpotic et al studied 100 skulls out of which 5 had the ossified pterygospinous ligament. These bony bridges may cause mandibular neuralgias [8].

The presence of the ossified pterygospinous ligaments may cause the failure of anaesthesia during the treatment of trigeminal neuralgias [9].

It has also been found that the thermocoagulation of the trigeminal ganglion becomes difficult in the presence of such ossified ligaments [10].



[Table/Fig 1]: 65 Adult Human Skull Bones



[Table/Fig-2]

CONCLUSION

The prevalence of the ossified pterygospinous ligament has been reported by different authors, with different results. Nayak et al reported it as 5.76%, and Peker et al reported it as 8.8%. In the present study, the prevalence of the ossified pterygospinous ligament was found to be 3.76%.

The knowledge on the anatomical variations in this region is very important for surgeons, anaesthetists, radiologists and neurologists, as the ossified pterygospinous ligament, which can be incomplete or complete, is a very rare finding to be met with and can produce various symptoms depending upon the nerve compression.

It can produce nerve entrapment syndromes and can interfere with surgical/anaesthetic procedures. The knowledge of the ossified pterygospinous ligament increases the success rate of the surgical procedures in this region and helps in curing painful conditions which result from nerve compressions.

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