International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

A Study on Retromolar Foramen and Other Accessory Foramina in Human Mandibles of Tamil Nadu Region

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Received: 30/07//2013 *Revised: 04/09/2013* *Accepted: 16/09/2013*

ABSTRACT

Aim of the Study: Observational study was done on small openings in human mandibles behind the third/last molar tooth and their percentages shapes, distance from the last molar tooth with their mean diameters. Other accessory foramina were also studied. Then they were compared with the present available literatures.
Place of Study: In the Department of Anatomy from Velammal Medical College, Madurai, Tamil Nadu.
Period of Study: During the month of July 2013.
Materials and Methods: A forty one human mandibles from the Department of Anatomy from Velammal Medical College, Madurai Tamil Nadu constituted the materials for the present study. Their size, shapes were noted, distance from the last most molar tooth were measured, and their percentages were calculated
Discussion: The present study were well compared and correlated with present available literatures through internet, journals etc.
Conclusion: This study on small openings - retro molar foramina has clinical significance especially during the dental surgeries like surgical extractions of last molar tooth during which inferior alveolar neurovascular bundle may be injured. Therefore Dentist should aware of these openings during surgical manoeuvre on mandible. Because it has great surgical impotence to clinicians as well as dentists, it has been studied and reported.

Key Words: Retromolar foramina, Inferior alveolar neurovascular bundle, Human mandibles, Mandibular accessory foramen, Local anaesthesias, Mandibular canal, Accessory foramina

INTRODUCTION

A retromolar fossa is fossa is situated between anterior border of ramus of the mandible and temporal crest .It is in this fossa, there may be presence a single or more foramina known as Retromolar foramina through which passes neuro-vascular bundles which [provides nutrition and innervations of the pulp periodontium molar teeth[1-3] Retromolar foramina have occurred in many Indian populations as reported by studies done by Indian authors[4-6] An incidence of 7.7% retromolar teeth

have occurred in 234 mandibles as reported by Swayer and Keily.[3]

MATERIALS METHODS

Forty one unknown human mandibles from the Department of Anatomy of Velammal Medical College, Madurai constituted the materials for the present study. Out of them four mandibles were studied from articulated skeleton and thity seven from the individual bones were studied. Five mandibles showed the presence of retromolar foramen four were unilateral and one was bilateral. These foramina were confirmed by passing the probes. Their sizes, shapes were noted and their distance from last molar tooth were measured and noted. Other accessory foramina were also studied

Observations:

i. Five mandibles (12.19%) showed the presence of retro molar foramen.
ii. four(9.75%) were unilateral and
iii. One was bilateral (2.43%). Average diameter of retromolar foramina was 2.0mm. Diameters of retromolar foramina were ranging from 0.5mm to 2.0 mm. In all foramina when probe was passed canals were present, they were very tortuous.

DISCUSSION

A retromolar foramina is said to be non metrical variants of the mandible. Retromolar canal vary in diameter and length. They also show variability in morphology and morphometry. These are paramount during the any surgical procedures of the mandibles especially during implantation of teeth over the mandible.[7] Variations in the width of the canal have been reported. They may vary from 0.1mm to 1.5mm.[8] Barker & Locket have reported that multiple accessory foramina were observed on the internal surface of each ramus of the mandible.[9] Bilateral accessory foramina were reported posterior to right third molar tooth and slightly anterior on the left side have been reported by Casey in dry adult mandible.[10] Further variation can occur in numbers also. Sometimes no retromolar foramina present.[11] Various studies have shown that foramina have been concentrated in the posterior aspect of the mandible and lesser in the region of symphysis menti. They are commonly found on the internal surface than on the external surfaces of the mandibles.[11-13] Jeyaseelan and Sharma studied on 620 mandible and observed that in 4% of mandibles presence of foramina over the posterior internal surface. These foramina takes part in the transmission of vessels and nerves.[14] Ossenberg analysed 2500 mandibles for the retromolar foramina and stated that these foramina are more common in native populations of North America than in other part of the world namely India, Europe, Africa,& Northeast Asia. They occur more commonly unilaterally than bilaterally. There was no proper sex distribution.[15] About 150 mandibles were studied by Haverman & Tebo (1976) for the diameter of retromolar foramina and found about 36 foramina per mandible had a mean diameter of 0.3mm frequently on the internal surface than on external surface.[13] Study was done by Schiller and Wisewell *(1954)* in the same region in 126 mandibles, also observed that there is no relation of retromolar foramina with age and sex. They found that in 63.5% of mandibles, they were bilateral and the average diameter was 0.45mm.[16] Chapnick(1980) in a study on 122 dry human mandibles, reported that lingual foramina of 0.5mm diameter were present in 68.9% of mandibles.[17] Kaufan et al (2000) reported a case of bilaterally accessory canals of 1 to 2 mm in diameters in a body of the mandibles in 58 years old healthy man at Post graduate periodontal

clinic at Columbia university school of Dental and oral surgery .On the right side accessory had a communication with mandibular canal The length of accessory canal was 15mm on the left side and had a communication with mandibular canal with the same diameter throughout. The foramina of 1-2mm in diameter were seen more over the crest of the alveolar bone of the mandible then to ascending ramus of the mandible and they were symmetrical [18] Accessory foramina variations if not timely identified, can cause various surgical complications They may cause haemorrhage, fibrous tissue formation at site of implantation and patient may complain of dysesthesia.[19] Best way of diagnosing the retro molar foramina is by local inspection of the mandible and during dissection. Clinically it is diagnosed by radiographs panoramic radiographs. Still for further accuracy use of CT scan over the two dimensional radiographs gives greater reliability.[20-23] The variations of human mandible is very important because several dental procedures are carried out like dental extraction of third molar tooth, orthognathic surgey, mandibular reconstructions, and in implantation surgery.[24]

Present study:

In the present study, unknown dry forty one human mandibles have been studied .Out of them, five(12.19%) showed presence of retromolar foramen .In four mandibles(9.75%) they were unilateral and in one mandible(2.43%) they were seen bilaterally. Except in one-outer aspect, all were seen on inner aspect of ascending part ramus of the mandible. Average diameter of retromolar foramina were 2.0mm. Diameters of retromolar foramina were ranging from 0.1mm to 2.5 mm. In all foramina when probe was passed canals were present, but they were very tortuous. No retromolar foramina were present in the rest of the mandibles. No foramen was seen in the region of symphysis menti. Our study is similar as seen in Jeyaseelan and Sharma studies on 620 mandible. In two mandibles along with retromolar foramina, there were also accessory foramina seen on outer aspect of mandibles.

Photograph-1.Showing Retro molar foramen on left side of Mandible .

Legend 2- showing accessory foramen.

CONCLUSION

This study gives the presence of retromolar foramen, their number direction, and dimension. They should be diagnosed clinically by panoramic radiographs. For further accuracy we can use CT scan which gives us greater reliability. Hence study has been done on retromolar foramina and reported. Their occurrence should be known by the surgeons and anaesthetists.

ACKNOWLEDGEMENTS

Our sincere thanks to our Respected Chairman Sir, our Dean sir and RMO sir for giving us permission to study the mandibles from our Department of Anatomy, Velammal Medical College, Madurai.

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How to cite this article: Bilodi AKS, Singh S, Ebenezer DA et. al. A study on retromolar foramen and other accessory foramina in human mandibles of Tamil Nadu region. Int J Health Sci Res. 2013;3(10):61-65.

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