

## Bilateral Ectopic Eruption of a Maxillary Third Molar Tooth from the Infratemporal Surface of the Maxilla in a Dry Human Skull

### Abstract

Unilateral ectopic eruption in an infratemporal region (ITR) is rare and hardly documented a couple of times. However, the bilateral third molar in the ITR presented here is rarely described. ITR has a complex anatomy and is a house of many vital structures. Ectopic eruption of a tooth in this region may manifest in different ways depending on the effected anatomical structure. In this article, we report bilateral ectopic erupted third maxillary molar tooth that was found in a dry human skull. The tooth was partially erupted on both sides from the infratemporal surface of the maxilla, and the direction of the eruption was downward and laterally. The morphology and morphometric measurement of the ectopic tooth with the surrounding anatomical structures has been performed with the help of Vernier caliper. Knowledge of such rare anomalies may be helpful for the ear, nose, and throat and maxillofacial surgeon for the early diagnosis and treatment, hence avoiding the unnecessary hassle of the patient.

**Keywords:** Ectopic, eruption, infratemporal region, third molar

### Introduction

The teeth are present only in vertebrates. Teeth develop from epithelial-mesenchymal interaction between oral epithelial and neural crest-derived mesenchyme. The buds for the permanent teeth are formed during the 3<sup>rd</sup> month of development and lie on the lingual aspect of the deciduous teeth. They remain dormant until the 6<sup>th</sup> year of postnatal life. Then, they begin to grow, pushing against the underside of the deciduous teeth helping in the shedding them.<sup>[1]</sup>

A tooth which is malposition is considered as ectopic. The incidence of ectopic tooth is frequent within the dental region but rare in nondental areas.<sup>[2]</sup> The frequency of ectopic tooth is more in incisor, canine, and premolar as compare to the third molar. In the existing literature, the prevalence of ectopic molar varies from 0.1% to 1%.<sup>[3]</sup>

The etiology of an ectopic tooth is still obscure many theories explain either developmental defect or displacement due to pathological conditions such as trauma, tumors, or cysts. Any abnormal tissue interaction during the process of odontogenesis may result in ectopic

tooth development and eruption. Some predisposing etiological factors responsible are crowding of tooth, cleft palate, genetic factors, trauma, and high bone density.<sup>[2]</sup>

Anatomy of the infratemporal region (ITR) is complex and is a site of many important structures in a compact space. It contains various muscles, nerves such as mandibular, lingual, inferior alveolar, and the third part of the maxillary artery. The infratemporal surface of the maxilla forms the anterior wall of the infratemporal fossa which in the center possesses two or three alveolar foramen for posterior superior alveolar nerve and vessels. On its posterior inferiorly aspect bears a rounded eminence called the maxillary tuberosity, which gives origin to the superior head of the medial pterygoid muscle.<sup>[4]</sup>

The present study describes the morphology and morphometric measurements of a very rare case of bilateral eruption of the third molar (M3) from the infratemporal surface of the maxilla in a dry human skull.

### Case Report

A bilateral ectopic third maxillary tooth was detected in a dry human skull of approximate estimated age range from 30 to 35 years. The morphometric

**How to cite this article:** Daimi SR. Bilateral ectopic eruption of a maxillary third molar tooth from the infratemporal surface of the maxilla in a dry human skull. *Int J App Basic Med Res* 2020;10:131-3.

### Syed Rehan Hafiz Daimi

Department of Anatomy, College of Medicine, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

**Submitted:** 11-Feb-2019  
**Revised:** 10-Jan-2020  
**Accepted:** 14-Feb-2020  
**Published Online:** 02-Apr-2020

**Address for correspondence:**  
Dr. Syed Rehan Hafiz Daimi,  
Department of Anatomy, College of Medicine, Imam Abdulrahman Bin Faisal University, Dammam 31441, Saudi Arabia.  
E-mail: [srdaimi@iau.edu.sa](mailto:srdaimi@iau.edu.sa)

#### Access this article online

**Website:**  
[www.ijabmr.org](http://www.ijabmr.org)

**DOI:**  
10.4103/ijabmr.IJABMR\_16\_19

#### Quick Response Code:



This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** [reprints@medknow.com](mailto:reprints@medknow.com)



**Figure 1:** Lateral view of skull showing ectopic maxillary third molar in the infratemporal surface of the right and left maxilla indicated by black arrows

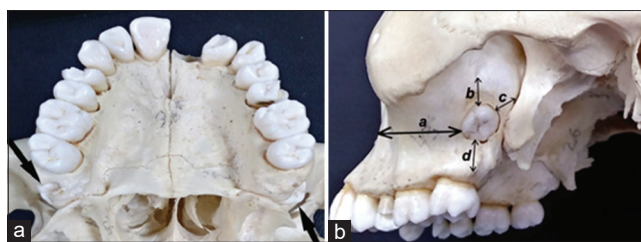
measurements between tooth and surrounding anatomical landmarks were taken with the help of digital Vernier caliper. The tooth was partially erupted on both sides from the infratemporal surface of the maxilla. The direction of the eruption was downward and laterally [Figures 1 and 2a]. The maximum erupted length of M3 on the right side was 4 mm, whereas it was 2 mm on the left side. The distance of ectopic tooth from anatomical landmarks are as follows [Figure 2b]; the distance of the ectopic tooth to the midsagittal plane was 50 mm on the right side and 51 mm on the left side (arrow a), distance to the alveolar canal was 12 mm and 6 mm on the right and left side, respectively (arrow b), distance to the pterygomaxillary fissure noted was 11 mm on the right and 10 mm on the left side (arrow c), distance between ectopic tooth and superior alveolar margin observed was 6 mm on the right and 11 mm on the left side (arrow d).

## Discussion

Ectopic eruption of M3 is mentioned mostly by the case reports. Ectopic eruption of a tooth within the dentate region is often seen in clinical practice, more commonly in the mandible. The incidence is higher in females. Incisors, canines, and premolars are most often affected.<sup>[5]</sup> The various ectopic sites of M3 mentioned in the literature are maxillary sinus, nasal cavity, nasal septum, mandibular condyle, coronoid process, sigmoid notch, the palate, orbit, and even in external acoustic meatus have been documented.<sup>[3,6,7]</sup> The frequency of unilateral occurrence of ectopic M3 seems to be more than bilateral.<sup>[3]</sup>

Majority of ectopic M3 are asymptomatic, and they are accidentally diagnosed during radiological investigations. The patient can remain asymptomatic or may present variable signs and symptoms depending on the location of the tooth.<sup>[2]</sup> The symptoms presented are stuffy nose, chronic or recurrent sinusitis, recurrent hemoptysis, epiphora, headache, facial numbness or pain also facial swelling, and restricted mouth opening.<sup>[3,6,8]</sup>

Mishri *et al.* have reported a similar case of tooth in the ITR, but it is unilateral. They documented the distance between the anterior margin of tooth and midsagittal plane as 46 mm; we found it to be 50 mm. They found a



**Figure 2:** (a) Inferior view of maxilla showing ectopic maxillary third molar bilaterally indicated by black arrows. (b) Morphometric measurement of the ectopic molar tooth with the surrounding anatomical structures. (Arrow a) - Distance from the midsagittal plane, (arrow b) - Distance from alveolar foramen, (arrow c) - Distance from a pterygomaxillary fissure and (arrow d) - Distance from superior alveolar margin

distance of 2 mm between ectopic tooth and the superior alveolar arch while we noted it as 6 mm on the right side and 11 mm on the left side.<sup>[2]</sup> In the present case, tooth on both the sides was partially erupted, and the maximum length of the eruption on the left side is 7 mm, and on the right is 4 mm. The documented length of completely erupted maxillary M3 teeth ranges from 14 to 22 mm with an average of 17–19 mm.<sup>[9]</sup> The site of ectopic tooth eruption coincides with the origin of the superficial head of the medial pterygoid muscle, which may lead to difficult in opening the mouth.

Once an impacted tooth is detected, it is mandatory to remove it to avoid further complications.<sup>[8]</sup> Several surgical and external approaches have been described such as intraoral, temporal, Caldwell-Luc, and endoscopic sinus surgery.<sup>[3]</sup> The morbidity associated with all these approaches is high and should be taken into consideration.<sup>[10]</sup> The accurate analysis of the tooth location leads to the best choice in terms of surgical approach and less morbidity.<sup>[6]</sup> Each unique case should be individualized and analyzed by the surgeons and treated adequately.<sup>[8]</sup>

Surgical removal of tooth from infratemporal fossa is very difficult due to the complex anatomy of the region, and the limited surgical exposure further worsens the situation.<sup>[10]</sup>

## Conclusion

The present study indicates a rare case of the ectopic eruption of the maxillary M3 bilaterally from the infratemporal surface of the maxilla in a dry human skull. The site of eruption may affect the structures such as maxillary sinus, posterior superior alveolar nerve, medial pterygoid muscle, and produces symptom accordingly. Hence, the knowledge of such rare anomalies would be useful for maxillofacial and ear, nose, and throat surgeons for making proper diagnosis and treatment.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Sadler TW. Langman's Medical Embryology. 12<sup>th</sup> ed. Pennsylvania: Lippincott Williams and Wilkins: 2012. p. 283-5.
2. Mishri SR, Singh R, Passey J, Singh S, Sushobhana. Ectopic third molar tooth on the infratemporal surface of maxilla. *Ital J Anat Embryol* 2016;121:96-9.
3. Zhang Z, Jiang X, Chen Q, Chen YB, Si Y, Liu Y. Ectopic eruption of maxillary third molar tooth in the external acoustic meatus: A case report. *Ann Otolaryngol Rhinol* 2014;2:1016.
4. Moore KL, Dalley AF, Agur AMR. Clinically Oriented Anatomy. 7<sup>th</sup> ed. Philadelphia: Lippincott Williams & Wilkins; 2010. p. 916-26.
5. Erkmen N, Olmez S, Onerci M. Supernumerary tooth in the maxillary sinus: Case report. *Aust Dent J* 1998;43:385-6.
6. Ozer N, Uçem F, Saruhanoglu A, Yilmaz S, Tanyeri H. Removal of a maxillary third molar displaced into pterygopalatine fossa via intraoral approach. *Case Rep Dent* 2013;2013:1-4.
7. Supriya B, Fazil KA, Babu GS, Saidath K. Ectopic positions of third molar – Maxilla and mandible. *J Oral Med Oral Surg Oral Pathol Oral Radiol* 2015;1:80-2.
8. Corega C, Vaida L, Festila D, Bertossi D. Unusual anatomical detection of a third molar in the infratemporal fossa. *Chirurgia (Bucur)* 2013;108:907-9.
9. Ahmed HM. Management of third molar teeth from an endodontic perspective. *European J Gen Dent* 2012;1:148-60.
10. Bodner L, Joshua B, Puterman M. Removal of a maxillary third molar from the infratemporal fossa. *J Med Cases* 2012;3:97-9.