Variations in impacted mandibular permanent molars: Report of three rare cases

MANJIRI JOSHI, VIKRANT KASAT

Abstract

The impaction of permanent teeth is not uncommon, but few permanent teeth are rarely impacted like mandibular first and second molars. Though third molars are commonly impacted, inversely impacted mandibular third molars are very rare. Here, we report three unusual cases of impacted mandibular molars accidentally diagnosed on conventional radiographs.

Keywords: Impaction, inversely impacted, mandibular molar, permanent

Introduction

A tooth which is completely or partially unerupted and is positioned against another tooth, bone, or soft tissue so that its further eruption is unlikely, described according to its anatomic position, is known as impaction.[1] Usually, permanent dentition is affected and deciduous teeth impaction is extremely rare, but when occurs, it is seen mostly in second molars. Ankylosis plays an important role in its pathogenesis.

Partially impacted tooth is the one which is not completely encased in bone and has communication in oral cavity through periodontal pocket. It might lead to caries also. On the other hand, completely impacted tooth is the one which is completely encased in the bone and does not have any communication with oral cavity.[2] The impaction of permanent teeth usually occurs in the descending order of third molars, followed by maxillary cuspids, mandibular premolars, mandibular canine, maxillary premolars, maxillary central incisors, and mandibular second molars. First mandibular molars and maxillary second molars are rarely impacted.[3]

Case Reports

Case 1
A 44-year-old man patient reported to the department for complaint of pain and swelling on the left side of face since 1 week. Clinical examination revealed extraoral diffuse swelling on the left side of face which was tender on palpation. Patient had trismus. Intraoral examination revealed inflamed pericoronal flap with partially seen 38 and distal periodontal pocket with 37. Radiographs revealed inversely impacted 38 in ramus on left side [Figures 1 and 2].

Figure 1: IOPA showing carious third molar that was inversely impacted

Figure 2: OPG showing inversely impacted third molar in ramus
Case 2
A 28-year-old man reported to the department for complaint of pain and swelling in upper right back region of jaw since 3 days. Also, there was previous history of pain and swelling in lower right back region of jaw three months back, for which patient was on medication and got symptomatic relief.

Intraoral examination revealed root pieces with 17, with intraoral swelling in buccal vestibule. Clinically, 47, 48, and 38 were missing. There was no history of extraction with the abovementioned teeth. Radiographs [Figures 3 and 4] revealed root pieces with 17, with periapical rarefaction and horizontally impacted 47 and 48, overlying one above other.

Case 3
A young man aged 21 years reported to the department of Oral Medicine and Radiology for complaint of malaligned teeth. Clinical examination revealed missing 36, mesioangularly inclined 37. There was no history of extraction or exfoliation with 36. Intraoral periapical radiograph revealed impacted 36 in between 35 and mesioangularly placed 37 below cemento-enamel junction of 35 [Figure 5].

Discussion
The etiology of mandibular third molar impaction has focused on following several factors based on long-term clinical trials: lack of space, third molar angulation, ectopic position, obstruction of the eruption pathway, and late third molar mineralization or early physical maturity.[4] First molar impactions are still rare when compared with other impactions and very few cases have been reported in the literature. Overall incidence of impacted mandibular molars is 18%. Among all, mandibular third molar impaction appears to occur in the frequency from 17 to 32% in various studies. Third molar impactions are found to be with almost same frequency in maxilla and mandible, but few studies have found a higher frequency in mandible.[5,6] Of all third molars, most common is mesioangular impaction (43%) followed by vertical impaction (38%), distoangular impaction (6%), and horizontal impaction (3%).[7]

The location of mandibular third molar tooth germ is in the ramus of mandible with occlusal surface at an angle of mandibular plane. To assume its normal occlusal relation, the tooth germ must therefore undergo a sagittal uprighting movement during eruption.[8] This uprighting has been found to be under strong genetic influence.[9] In addition to these types of impaction, when variation in sagittal plane occurs, they are either deflected buccally or lingually. Few complicated cases have been reported earlier in the literature where third molar is inversely impacted, either pointing toward inferior border of mandible or situated completely in ramus.[2] Our case of inversely impacted third molar coincides with the finding reported earlier in literature.
has been reported as 0.03 to 0.04% of all impacted teeth. However, according to the study by Grover and Norton the incidence of impaction of first molar and second molar was 0% and 0.06%, respectively.\[10\] Second molar impactions are thought to occur more frequently in the mandible than in the maxilla with slight female predilection and most often are unilateral with mesial inclination.\[11\]

According to the classification by Andreasen and Kurol,\[12\] the absence of eruption of the second molar can be classified into the following three events:

**Impaction**
It is caused by a physical obstacle and due to lack of space, which could provoke a collision between the follicles of the second and third molar. In fact, ectopic eruption with mesial inclination of the second molar is most common and often related to the imbrication of the front teeth. It can also be caused by other obstacles like extra teeth, odontomas, odontogenic tumors, or giant cell fibromatosis in the eruption line.

**Primary retention (eruption arrested before the rupture of the gum)**
In the majority of cases, cause is unknown. In the remaining situations, it is associated with syndromes where osteoclastic activity is compromised.\[13\]

**Secondary retention (cessation of the eruption after gingival rupture, without the presence of a physical obstacle)**
It is more common than primary retention and is caused by a small area of ankylosis, especially in the interradicular zone.

Our case of second mandibular molar impaction falls into first event according to Andreasen and Kurol.

The space for second permanent molars is obtained by resorption of the bone at the anterior border of the mandibular ramus and mesial migration of the first molar into the leeway space. The tooth bud of the second permanent molar develops with some mesial inclination and the ability for natural self-correction manifests as the remodeling changes occur.\[14\] Disturbances of this natural process may lead to impaction and be associated with an arch length deficiency because of inadequate mandible growth. Also, our case of second mandibular molar impaction coincides with this finding.

Excess space between the developing second molar and first molar may also result in impaction, probably because the second molar crown needs the first molar distal root for proper eruption.\[15\] The mandibular second molar impactions are reported as mesioangular, distoangular, and vertical. Among all three, first two are mostly due to lack of space and last one might be associated with ankylosis.\[16\]

**Conclusions**
Mandibular molar impaction is a very challenging disturbance that requires proper evaluation. Therefore, if any of the mandibular molar is not erupted at its normal time and if others have erupted, all probable causes should be ruled out by means of physical, clinical, and radiological examination.

**References**

1. Sarkar S. Impaction of second permanent molar: A case report. J Ind Soc Pedo Prev Dent 2000;18:75-6.
2. R. Rajendran in Shafer’s textbook of Oral Pathology. Chap 1, 5th ed. New Delhi: Elsevier publication; 2005. p. 83-5.
3. Damm N, Bouquot A. Oral and maxillofacial Pathology. Chap 1. 2nd ed. New Delhi: Elsevier Publication; 2004. p. 66.
4. Richardson ME. Early development position of lower 3rd molars relative to certain jaw dimensions. Angle Orthod 1970;40:226-30.
5. Dachi SF, Howell FV. Exodontia. A survey of 3,874 routine full mouth radiographs. II. A study of impacted teeth. Oral Surg Oral Med Oral Path 1961;14:1165-9.
6. Rajasuo A, M urtomag H, Meurman JH. Comparison of the clinical status of 3rd molars in young men in 1949 and in 1990. Oral Surg Oral Med Oral Pathol 1993;76:694-8.
7. Peterson LJ. Principles of Management of impacted teeth in contemporary oral and maxillofacial surgery. 2nd ed. Missouri: Mosby Publications; 1993. p. 237-9.
8. Richardson ME. Pre-eruptive movements of the mandibular 3rd molar. Angle Orthod 1978;48:187-93.
9. Efstratiadis SS, Kent RL Jr, Lebret LM, Moorrees CF. Spatial position of mandibular 3rd molars in monozygotic twins. Angle Orthod 1984;54:271-82.
10. Grover PS, Norton L. The incidence of unerupted permanent teeth and related clinical cases. Oral Surg Oral Med Oral Path 1985;59:420-5.
11. Frank C. Treatment options for impacted teeth. J Am Dent Assoc 2000;131:623-32.
12. Andreasen JO, Kurol J. The impacted first and second molar. In: Andreasen JO, Petersen JK, editors. Textbook and color atlas of tooth impactions. Copenhagen: Munksgaard; 1977. p. 197-218.
13. Oliver RG, Richmond S, Hunter B. Submerged permanent molars: Four case reports. Br Dent J 1986;160:128-30.
14. Majourau A, Norton LA. Uprighting impacted second molars with segmented springs. Am J Orthod Dentofacial Orthop 1995;107:235-8.
15. Shapira Y, Borell G, Nahlieli O, Kuftinec MM. Uprighting mesially impacted mandibular permanent second molars. Angle Orthod 1998;68:173-8.
16. Sajjan G. Arrested eruption/Impaction of Mandibular Second Molar: A report of two cases. J Ind Dent Assoc 2002;73:317-8.

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