Rare Patterns of Impacted Mandibular Teeth: A Case Series

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Tooth eruption is the axial movement of the tooth from its developmental position within the jaws to the functional position in the occlusion plane. Any interference in the complex sequential events or pathology of the surrounding bone may cause difficulty in eruption. This may cause an ectopic eruption and aberrant eruption pattern. This process might be altered by genetic, molecular, cellular or tissue causes too. Impacted teeth may therefore, be non-functional, abnormal or pathological. Moreover, ectopic eruption of second molars is rarely seen and infrequent. Here we report a case series of ectopic eruption of permanent mandibular molars with some rarest presentation.

Keywords: Ectopic eruption, Inverted, Impaction, Mandibular molar, Ramus

INTRODUCTION

Tooth eruption is a complex, localized, and programmed sequence involving bone remodeling at specific timing. Impaction of third mandibular molars is a frequent condition with an incidence of 20-30%, with more prevalence in women.¹ The finding of an impacted third molar in the mandible in an ectopic position located away from its usual anatomic location is an is not so common. The knowledge about its etiology, clinical features, therapeutic options, and surgical approaches for extraction is limited due to limited literature regarding it.² They have been found in ramus, condyle, and coronoid process.² Local factors-related to the failure of eruption include malocclusion, disturbances of the deciduous dentition, the position of the adjacent teeth, space deficiency in the dental arch, idiopathic factors, supernumerary teeth, odontoma, or cysts.¹³ Usually, tooth buds of permanent second molar, that inclined mesially develop distal to permanent first molar. This anomaly corrects through remodeling, failure of which may lead to malocclusions such as ectopic eruption, or infrequent eruption pattern.

Here we report a case series of a mandibular molar with rarest eruption pattern. Ectopic eruptions of the third molar are rare and impactions of first and second molars are infrequent. However, we report a case of first and second molars impacted ectopically that too inverted, which make this case is unique. Inverted molar in ramus is another infrequent event in clinical cases which is another infrequent case. Impacted third molars in between first and second molars are rare in literature. So reporting the case series like this will have some significance.

CASE REPORTS

Case 1

A 40-year-old male patient presented to the Department of Oral and Maxillofacial Surgery with mild edema and pain in relation to the left side of face following a road traffic accident. The clinically case was diagnosed to be left parasymphysis fracture. Orthopantamogram (OPG) was taken for confirmation. Also to left parasymphysis fracture, we found out an impacted 48 in between 47 and 46, with well aligned tooth clinically. The superior portion of impacted crown lies at the apical level of the first molar. Parasymphysis fracture is treated conservatively by upper and lower arch bar and intermaxillary fixation (Figure 1).

Case 2

A 15-year-old patient reported with swelling in the left side of the face. Multiple rashes noted over chest. The clinically case was diagnosed to be an odontogenic cyst. OPG reveals 18 below the floor of orbit and an inverted 38 in the in the ascending ramus of left mandible. Both cystic lesions, seen in OPG diagnosed to be odontogenic keratocyst by biopsy

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and were enucleated surgically under GA. Postoperative healing was uneventful (Figure 2).

**Case 3**
A 22-year-old male patient reported with limited mouth opening, which existed from birth onwards. On examination, there was deviation of mouth opening, the palpable prominent anti-gonial notch on the right side of the mandible, micrognathia, deep bite. Case is diagnosed to be tempero mandibular joint ankylosis. OPG reveals horizontally impacted permanent first molar and an inverted second molar that impinges on first molar in the anterior border of ramus. The most probable reason for this phenomenon may be ankylosis of right temporomandibular joint (TMJ), which caused a diminished growth of mandible (Figure 3).

**DISCUSSION**
An ectopic eruption occurs due to the deviation in the normal path of the eruption. Ectopic eruption is seen more in maxillary first permanent molars and canines, followed by the mandibular canine, mandibular second premolar, and the maxillary lateral incisors.\(^8\,9\) Prevalence of ectopic eruption of the mandibular permanent second molar is reported between 0.06% and 0.3%.\(^10\) According to Raghoebear, the important cause of ectopic eruption of permanent second molar is arch length deficiency.\(^11\) In the permanent dentition, third molars are the most common teeth to become impacted accounting for over 80% of all impacted teeth.\(^1,4,12,13\) Maxillary canines have the second frequency, followed by premolars and second molars. Impactions of first and second molars are relatively uncommon. Cho et al. reported the prevalence of impaction of permanent mandibular second molars to be 1%.\(^13\)

Impactions of permanent first molars were found 0.0001%.\(^14\) Impaction of permanent lower first molar is rare and there are a limited number of studies regarding its incidence and prevalence. Dachi and Howell examined 4745 patients and found that there were no impactions of the maxillary first molar and only three impacted mandibular first molars.\(^15\) Grover and Lorton surveyed 5000 panoramic radiographs of army recruits and reported only one maxillary impacted molar but no instance of impacted mandibular first molar was found.\(^4\) Impaction is one of the conditions which mimics ectopic eruption of the teeth. Impaction is the lack of eruption of a tooth caused by an obstruction clinically or radio graphically detectable or due to an abnormal direction of the tooth.\(^11\)

Multiple impacted teeth are a rare condition and often found in association with syndromes such as noonan’s syndrome, cleidocranial dysplasia, gardner’s syndrome, aarskog syndrome, down syndrome, and zimmerman-laband syndrome. Impaction of multiple teeth without an associated syndrome or systemic condition, are uncommon in the literature.\(^16-19\) Primary failure of eruption might be due to a metabolic imbalance in the follicle of the tooth, with subsequently bone resorption failing to initiate.\(^20\) Ankylosis and submerged tooth are similar conditions, where in the cessation of eruption of a tooth occurs after Emergence.\(^11\) Heredity is also mentioned as an etiologic factor. Recently, mutations in parathyroid hormone receptor 1 have been identified in many cases of primary failure of eruption.\(^21,22\) According to Andreasen et al., three main causes have been distinguished for eruption disturbances: Ectopic position, obstacles in the eruption path, and failures in the eruption mechanism. Failure of tooth eruption is also associated with various systemic and local factors.\(^23\) Local factors related to the failure of eruption include malocclusion, disturbances of the deciduous dentition, the position of the adjacent teeth, space deficiency in the dental arch, idiopathic factors, supernumerary teeth, odontoma, or cysts.\(^4\,7\) Systemic factors include Hypothyroidism.

Mandibular second molar impaction has been classified in three angulations: Mesial, vertical or distal.\(^3\) Mesial angulation is the most common form\(^3\) and it was found out that an initial inclination of second molar <20/24\(^16\) or 30\(^24\) was associated with an higher impaction risk.\(^5,25-27\)

Table 1 includes reported cases of ectopic molars from 1978 to 2015.\(^3\) From above table case 2 is the 11th case with ectopic teeth in ramus with inverted appearance. Case 3 is the
rarest case of permanent first molar impacted with inverted second molar impacted in the anterior border of the ramus and missing third molar due to TMJ ankylosis. Most of the second molars are impacted in the body of the mandible, but its appearance in ramus is very rare. Appearance of a third molar in between the 1st and 2nd molar is another rarity.

Failure to treat ectopic first and second molar at the right time may lead to caries, periodontitis, and resorption of first permanent molar, malocclusion, cyst formation, pain, and infection. Treatment options for an impacted molar include orthodontic up righting, surgical up righting, extraction, transplantation, and surgical-orthodontic approach. An ideal period to treat ectopic mandibular second molar is from 11 to 14 years of age with incomplete root formation. Various factors influencing the treatment options are the inclination of the tooth, depth of the second molar with reference to the first permanent molar.

CONCLUSION

Radiographic examination of patients does reveal some interesting and surprising findings. Ectopic eruptions, most of the time will be an incidental finding. The significance of the discovery of an ectopically erupted tooth, in a person without the normal compliment of teeth, is highly essential, in view of the associated pathology seen with such occurrences.

REFERENCES

13. Cho SY, Ki Y, Chu V, Chan J. Impaction of permanent mandibular

Table 1: Reported cases of ectopic molars from 1978 to 2015

<table>
<thead>
<tr>
<th>Author</th>
<th>Age/sex</th>
<th>Location/type of impaction</th>
<th>Associated pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Markowitz et al., 1979</td>
<td>23/F</td>
<td>Mid ramus, near mandibular foramen, vertical</td>
<td>Entogenous cyst on right side</td>
</tr>
<tr>
<td>Burton and Scheffer, 1980</td>
<td>57/F</td>
<td>Right side above mandibular foramen, left side subcondylar region; inverted</td>
<td>Entogenous cyst on left side</td>
</tr>
<tr>
<td>Adams and Walton, 1996</td>
<td>45/F</td>
<td>Right midramus region near mandibular foramen; Inverted</td>
<td>Entogenous cyst</td>
</tr>
<tr>
<td>Toranzo Fernandez and Torrones, 1999</td>
<td>70/F</td>
<td>Ramus</td>
<td>Swelling, Trismus</td>
</tr>
<tr>
<td>Aysegul Apaydin 2015</td>
<td>38/F</td>
<td>Ascending ramus</td>
<td>Cyst</td>
</tr>
<tr>
<td>Wang et al.</td>
<td>25/F</td>
<td>Ramus</td>
<td>Cyst</td>
</tr>
<tr>
<td>Kansy et al.</td>
<td>31/F</td>
<td>Right ramus</td>
<td>Intra oral cyst</td>
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<td>Ahmed and Speculend</td>
<td>27/F</td>
<td>Left ramus</td>
<td>-</td>
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<tr>
<td>Kupferman and Schwartz</td>
<td>36/F</td>
<td>Right and left ramus</td>
<td>Pain and infection</td>
</tr>
<tr>
<td>Chun-Cheng Wang</td>
<td>49/F</td>
<td>Right ramus</td>
<td>Chronic infection</td>
</tr>
<tr>
<td>Case 1</td>
<td>40/F</td>
<td>Between 47 and 46</td>
<td>Incidental finding during investigation following RTA</td>
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<td>Case 2</td>
<td></td>
<td>Inverted mandibular third molar</td>
<td>OKC</td>
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<tr>
<td>Case 3</td>
<td></td>
<td>First molar</td>
<td>Entogenous keratocyst, TMJ ankylosis</td>
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<tr>
<td></td>
<td></td>
<td>Second molar</td>
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</tbody>
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OKC: Odontogenic keratocyst, TMJ: Temporomandibular joint

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