Curious Impacted Incisor

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ABSTRACT

Although impaction of a permanent tooth is rarely diagnosed during the mixed dentition period, an impacted central incisor is usually diagnosed accurately when there is delay in the eruption of tooth. For the case reported in this article, the impacted incisor was moved into its proper position with surgical exposure followed by orthodontic corrections.

Keywords: Impacted incisor, Orthodontic traction, Surgical exposure.


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Conflict of interest: None

INTRODUCTION

According to Becker, a permanent tooth with a delayed eruption is an unerupted tooth whose root is developed in excess of its length and whose spontaneous eruption may, in time, be expected. A tooth that is not expected to erupt in a reasonable time in these circumstances is termed as an impacted tooth. Impaction of tooth is a retardation or halt in normal process of eruption. According to Kuftinec and Shapira, impaction is a condition in which a tooth is embedded in the alveolus so that its eruption is impeded and it is locked in position by bone or by adjacent teeth. Sequence of impaction of teeth from the most frequently impacted to the rare ones are: For the Maxilla most common are 3rd molars, canines, second premolars and central incisors. For the Mandibular most common are canines, 2nd molars, lateral incisors, 1st premolars. Prevalence of impaction of central incisor has been reported 0.06 to 0.2%. Teeth can get impacted due to various causes. Etiology of impacted teeth could be grouped under local and systemic causes (Table 1). Missing and unerupted maxillary incisors can have a major impact on dental and facial esthetics and were considered to be the most unattractive deviant occlusal trait. There are very few studies reporting any functional problems associated with missing anterior teeth although some speech difficulties have been reported, particularly with the ‘s’ sound. As missing upper incisors are regarded as unattractive this may have an effect on self-esteem, general social interaction. Therefore, it is important to detect and manage the problem as early as possible.

CASE REPORT

History

An 11-year-old patient reported with a chief complaint of over retained deciduous upper left front tooth. There was no significant medical or dental history and the patient was in good physical and mental health. Patient had metal crown on 26, 36 and 46. Restoration present on 16, 24, 37.

Diagnosis

An 11-year-old male patient with class II skeletal maxillomandibular relationship, average growth pattern, retrognathic mandible and orthognathic maxilla, profile was convex. Class II molar and canine relationship on the left side, end on molar and canine relationship on the right side, overjet of 8 mm, overbite of 8 mm, impacted 21 was

Table 1: Etiology of impacted teeth

<table>
<thead>
<tr>
<th>Local causes</th>
<th>Systemic causes</th>
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<tbody>
<tr>
<td>Trauma</td>
<td>Endocrine and nutrition</td>
</tr>
<tr>
<td>• Trauma to deciduous teeth</td>
<td>• Growth disorders: pituitary, thyroid deficiency</td>
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<tr>
<td>• Displaced tooth buds</td>
<td>• Vitamin D deficiency</td>
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<tr>
<td>• Dilacerated teeth</td>
<td>Irradiation</td>
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<tr>
<td>Physical barriers</td>
<td>Leukemia</td>
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<tr>
<td>• Retained primary tooth</td>
<td>Syndromes</td>
</tr>
<tr>
<td>• Supernumerary teeth</td>
<td>• Familial gingival fibromatosis</td>
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<tr>
<td>• Fibrous tissues</td>
<td>• Cleidocranial dysostosis</td>
</tr>
<tr>
<td>• Odontoma</td>
<td>Nonsyndromic</td>
</tr>
<tr>
<td>Less space</td>
<td>• Multiple supernumerary and impacted teeth</td>
</tr>
<tr>
<td>• Early loss of deciduous teeth</td>
<td>• Familial tendency for impacted teeth</td>
</tr>
<tr>
<td>• Arch length discrepancy</td>
<td>• Idiopathic</td>
</tr>
<tr>
<td>• Latrogenic</td>
<td>• Primary failure of eruption</td>
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<tr>
<td>Cleft lip and palate</td>
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<td>Alveolar cleft without SABG</td>
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</tbody>
</table>

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present 13 mm superior to over retained 61 and odontome. Impacted incisor was positioned labially. crowding of 3 mm was seen in the upper arch and 1 mm in the lower arch (Figs 1 to 3).

**Treatment Objectives**

The treatment objectives included extraction of deciduous 61, removal of odontome and alignment of the impacted maxillary left central incisor, advancement of mandible, getting class I molar and canine relationship, achieve a well-balanced functional occlusion.

**Treatment Plan**

Two phase treatment plan was decided.

**Phase I**

Extraction of deciduous 61 and surgical removal of odontome was planned, leveling and aligning of the impacted maxillary left central incisor.

**Phase II**

Removable twin block (myofunctional appliance) for advancement of mandible.

**Treatment Progress**

Fixed mechanotherapy using preadjusted Edgewise Appliance (PEA) with 0.022’ slot was planned for the patient. Banding of all 1st permanent molars was done followed by bonding of the maxillary and mandibular arches. Initially 0.014’ NiTi was placed in both the arches. Note that the upper deciduous 61 was not bonded. After a month 0.016’ NiTi was placed in the maxillary and in the mandibular arches. The patient was recalled after a period of 4 weeks. At this appointment, 0.018’ AJ Wilcock stainless steel wire was placed in both the arches. Extraction of deciduous 61 and surgical removal of odontome was done. A MPA (multipurpose attachment) bracket with a hook was attached to the impacted incisor and traction was given using a 0.010 SS ligature wire. Force
applied was 40 gm. Note that the impacted incisor was not involved with the main archwire and the open coil spring was placed between 11 and 22 to maintain space. The patient was recalled after a period of 3 weeks. At the recall visits of every 4 weeks the ligature wire was tightened to the main archwire. Mid treatment which is after alignment of impacted incisor extraoral photographs, intraoral photographs and radiographs are shown in Figures 4 and 5. Later treatment was followed by myofunctional appliance with upper and lower twin block appliance to correct skeletal class II.

**Treatment Results**

In 10 months impacted incisor was aligned and was in its normal position.

**DISCUSSION**

The occurrence of unerupted maxillary incisors can be associated with hereditary and environmental factors. However, the relevant importance of these different factors is not known. Often the position of the impacted incisor (i.e. distance from alveolar crest, rotation, angulation and inclination) determines the surgical procedure used. Vermette\(^5\) suggested that the closed technique resulted in a more esthetically pleasing gingiva than the apically repositioned flap. However, there was no significant difference between the techniques regarding periodontal attachment. In contrast, superior results have
been reported in terms of gingival, periodontal and pulp status using the closed eruption technique in comparison with the apically repositioned flap. The timing of intervention has been suggested as being important, with several studies suggesting that the younger the age, the quicker the tooth erupts. However, other studies have
suggested that age of intervention has no effect. To some extent the differences can be explained by the small mean time difference of about 3 months in eruption, inadequate sample sizes and unmatched age groups.

**CONCLUSION**

Maxillary permanent impacted left central incisor was successfully positioned in the maxillary arch by surgical exposure and orthodontic traction and showed good stability. Long-term monitoring for stability and periodontal health is very important after orthodontic traction.

**REFERENCES**