

TRACTION OF HORIZONTALLY IMPACTED CENTRAL INCISOR: A CASE REPORT

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ABSTRACT

Impactions of maxillary central incisors occur uncommonly. Treatment of such impactions is challenging, as they interfere with facial esthetics and other clinical problems. Early detection of such teeth is most important if complications are to be avoided. We report a case of 13 year old female patient with impacted maxillary central incisor located high in the vestibule, parallel to the occlusal plane at the level of adjacent teeth root tips, with rotated right central incisor and mesially tipped left lateral incisor towards midline with barely 4-5 mm space left between the right central incisor and the left lateral incisor. The impacted tooth was surgically exposed and traction was done with orthodontic intervention.

KEYWORDS: Impaction, Impacted incisor, Supernumerary Teeth, Orthodontic traction

INTRODUCTION

Most permanent teeth erupt into occlusion. In some individuals, however, the permanent teeth may fail to erupt and become impacted in the alveolus. The most commonly impacted maxillary anterior tooth is canine, followed by maxillary central incisor. Maxillary incisor teeth impactions occur infrequently (0.06% - 0.2%).¹ The common causes of impaction seem to be supernumerary teeth, space loss, odontoma and disturbances in the eruption path and apical follicular cysts.^{2,3} The other causes are crown or root malformation of permanent incisors due to trauma transmitted from the primary predecessors that prevent normal eruption.^{2,3}

Although impaction of permanent tooth is rarely diagnosed in mixed dentition stage, an impacted central incisor is usually diagnosed when there is a delay in the eruption of tooth. An anomaly in the eruption of anterior teeth can interfere with facial aesthetics and cause other clinical problems.⁴

This case report presents the surgical exposure and traction of impacted maxillary left central incisor.

Case report

A 13 year old female patient was referred to the Department of Orthodontics. Extra oral examination revealed a fairly convex profile with competent lips. (Fig.1) Intraoral examination shows a class I molar relation, with rotated right central incisor and mesially tipped left lateral incisor towards midline with barely 4-5 mm space left between the right central incisor and the left lateral incisor. (Fig.2) Orthopantamogram of the patient revealed an impacted left central incisor parallel to the occlusal plane at the level of apex of the adjacent root tips. (Fig.3) Treatment plan included correction of rotated right central incisor, surgical exposure and traction of the impacted central incisor.

A crestal incision was made buccal and lingual flaps were reflected. Appropriate bone removal is accomplished and a bracket was attached to the palatal surface of the impacted central incisor and flaps are returned to their original location. (Fig.4) An O18 slot Preadjusted edgewise appliance (PEA) with ROTH prescription was used for alignment of upper anterior teeth. NiTi open coil spring

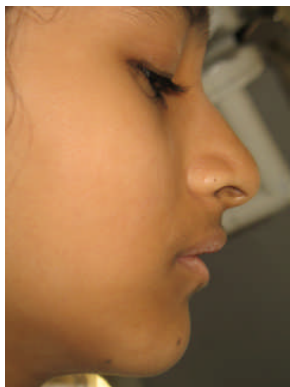


Fig.1. Pre-operative photograph of the patient with convex profile and competent lips.



Fig.2. Intraoral examination showing missing left central incisor, rotated right central incisor and mesially tipped left lateral incisor.



Fig.3. Preoperative OPG showing horizontally impacted upper left central incisor.



Fig.4. surgical exposure of impacted upper left central incisor

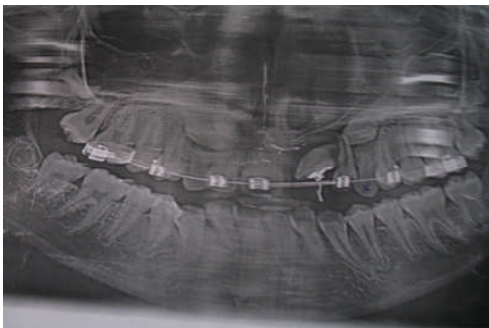


Fig.5. OPG taken after three months showing space gained between central and lateral incisor



Fig.6. Intraoral photograph with derotation of right central incisor, traction of central incisor with palatally fixed Begg bracket.



Fig.7. OPG taken after five months



Fig.8. Repositioned Begg bracket from palatal to labial surface with uprighted impacted central incisor.

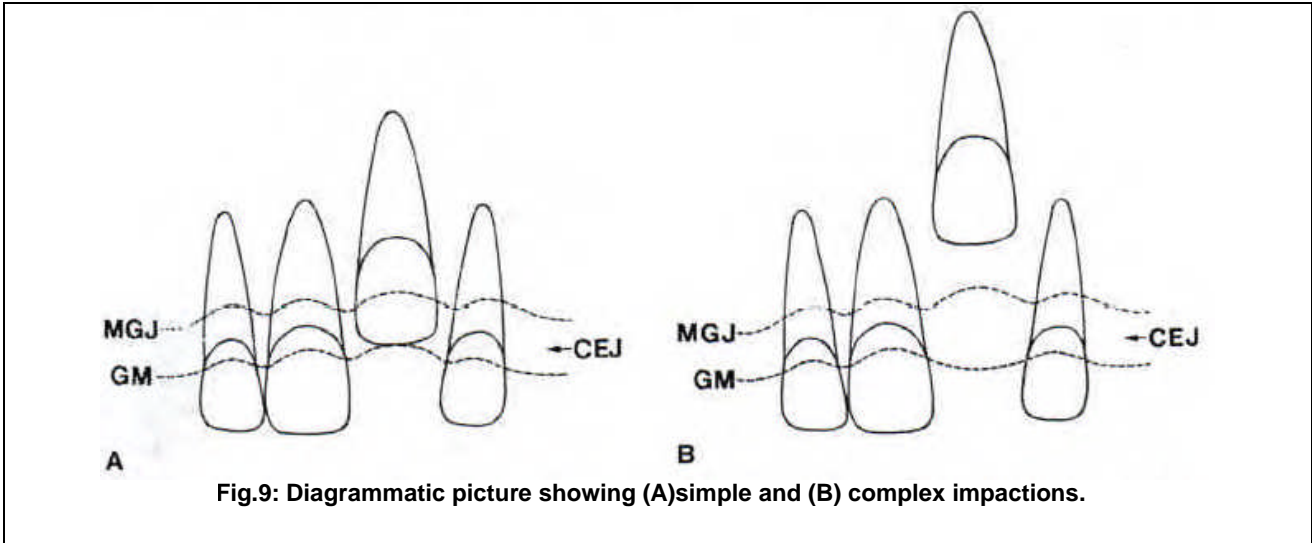


Fig.9: Diagrammatic picture showing (A)simple and (B) complex impactions.

was placed for gaining space for impacted central incisor. Begg bracket was fixed on the palatal surface of the upper left central incisor for traction immediately after surgical exposure. Traction was given through ligature wire with minimal force levels.

Discussion

Impaction is defined as the total or partial lack of eruption of a tooth well after the normal age for eruption.⁵ An impacted tooth may appear blocked by another tooth, bone, or soft tissue, but the cause of impaction is often unknown. Impacted teeth can cause serious dental and aesthetic difficulties as well as psychological problems especially in anterior regions. Impacted maxillary central incisors are of major concern to parents during the early mixed dentition stage because of non eruption of tooth.^{2,3} Impacted central incisors can be classified either as “simple” where the tip of the impacted tooth is near the adjacent cemento-enamel junctions or “complex” where the impacted tooth is positioned high in the vestibule.⁶ (Fig.9)

When the central incisor is impacted, it usually is located in the middle of the alveolus facio-lingually. In most situations, the tooth is oriented vertically with the incisal edge directed towards the dental arch. In some patients, however, the tooth bud of central incisor becomes rotated and diverted, and the impacted tooth may be oriented in a horizontal direction parallel to the occlusal plane.⁶ In our case the central incisor is horizontally impacted parallel to the occlusal plane.

Impaction of maxillary anterior teeth can be a challenging orthodontic problem. Several reports have indicated an impacted tooth can be brought into proper alignment in the dental arch. The following factors are used to determine whether successful alignment of impacted tooth can take place (a) the position and direction of impacted tooth, (b) the degree of root completion, (c) the degree of dilacerations, and (d) the presence of space for the impacted tooth.⁷ Holland has

recommended the movement axis of the impacted tooth must be considered together with these factors.⁸

Surgical techniques to uncover the impacted tooth include 1) Gingivectomy 2) Apically positioned flap 3) Flap/closed eruption technique 4) Pre orthodontic uncovering technique.⁸

In our case we used flap/closed eruption technique to uncover the impacted tooth. This technique is used with high labially impacted teeth and teeth that are impacted in the mid alveolar area. With this the esthetic and functional outcomes such as effects on gingival heights, clinical crown length, width of the attached gingiva, and attachment levels are good. Labially impacted maxillary anterior teeth uncovered with an apically positioned flap technique have more unesthetic sequelae than those uncovered with closed-eruption technique.⁹

In order to avoid resorption and nonvitality of impacted tooth the position of bracket placement was used in two different steps. Initially bracket placement was done palatal to the impacted tooth which offered more controlled tipping later the bracket position was changed to labial side for easy traction of impacted tooth. Minimal forces are applied for traction of the impacted central incisor. Uematsu et al in 2004 reported that forces for traction should not be greater than 50 g as it may be the cause of nonvitality.⁷

Potential problem after uncovering the impacted tooth is lack of tooth movement. This can due to bone may have been left around impacted tooth or inappropriate orthodontic mechanics or ankylosis.⁸

CONCLUSION

Careful history and proper radiographs are necessary before planning any orthodontic treatment or surgical exposure and traction of impacted central incisors. It is better to correct the position of impacted central incisor with orthodontic treatment rather than extraction.

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