

TREATMENT OF IMPACTED CENTRAL INCISOR ASSOCIATED WITH AN ODONTOME: A CASE REPORT

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Abstract:

Clinically Missing Maxillary Central Incisor is a commonly encountered dental problem in Orthodontic Office. This clinical presentation may have a varied etiology from Fibrous Operculum, Lack of Space for eruption, presence of Mesiodens etc.. Orthodontic Treatment of a case is being reported in a patient having an odontome with an Impacted Maxillary Central Incisor.

Key Words: Orthodontic treatment, Impacted Incisor, Odontome

Introduction

The central incisor impaction is not very common in our clinical practice. The frequency of maxillary incisor impaction ranges from 0.06% to 0.2% [1]. The central incisor is the most frequently retained incisor and its treatment is very challenging because of its varying pattern of impaction and also because these teeth are very important from esthetic point of view. The common causes of impaction can be divided into obstructive causes and traumatic causes. Obstructive causes [2-6] normally involve supernumerary teeth, odontome, ectopic position of tooth bud, alteration in the eruption path or formation of scar tissue due to trauma or premature loss of primary incisor and loss of space. Traumatic causes include obstruction due to thick soft tissue repair, dilacerations, arrested root development, acute traumatic intrusion [7,8,9]. The treatment and prognosis of impacted teeth depends upon various factors (10,11,12) and include many treatment option like wait & watch for spontaneous eruption, surgical exposure with traction of tooth and sometimes extraction of tooth.

The odontoma is a pathologic entity also known as hamartoma or malformation tumor. it is a tumor of odontogenic origin, representing 22% of the odontogenic tumors. Odontome appears radiopaque in radiographs and it's a slow growing lesion. Its etiology is unknown; however, suggested factors are local trauma, infection, and genetic characteristics. Of all types of odontoma, 67 % are found in maxilla and 33% in mandible. Odontoma is slow growing, small lesion, normally remain asymptomatic. Odontoma can be of two types, compound and complex. Compound odontoma normally resemble to a normal tooth while complex odontoma appears as irregular mass with enamel and dentin structure but ill-defined morphological aspects. Compound odontoma is more common in maxillary anterior region while complex odontoma is frequently found in mandibular posterior region. Surgical removal is indicated, and these do not show recurrence [13,14].

In this case report, we present the sequential management of an impacted central incisor due to over-retained primary incisor along with an odontoma.

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Case report:

16-year-old girls presented to the Dental Clinic with chief complaint of crowding in upper anterior region, mainly concerned for esthetics. The patient was healthy with no medical or dental history of any trauma or major concern. Clinical examination revealed a balanced face, good oral health, an Angle Class I malocclusion, missing permanent maxillary right central incisor, presence of maxillary deciduous right central incisor, upper right lateral incisor in crossbite, mesiolingually rotated labially placed upper right canine, slight mesiolingual rotation of upper left central incisor and mild crowding in lower arch (Figure 1).



Fig.e 1: Pretreatment Photographs of patient.

Radiographic examination demonstrated the presence of irregular radio-opaque mass and impacted maxillary right central incisor apical to deciduous incisor (Figure 2). Impacted incisor was horizontally placed with the tip of the crown close to the apex of left central incisor. The etiology of the impacted incisor could be due to odontoma and over-retained primary incisor.

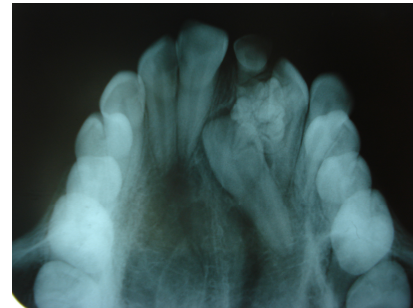


Fig. 2: Pretreatment Radiographs

Treatment Objectives:

1. Removal of primary incisor along with odontome. Surgically expose the impacted left maxillary permanent central incisor, apply orthodontic traction with light forces to bring it into proper position in upper arch.
2. Correct the mild mandibular anterior crowding.
3. Establish ideal overbite and overjet.
4. Improve facial esthetics.

TREATMENT ALTERNATIVES:

The following are three possible treatment alternatives:

1. Removal of deciduous central incisor and odontome followed by surgical exposure of impacted incisor and orthodontic traction of impacted incisor into proper position.
2. Extraction of deciduous central incisor, odontome and impacted teeth and place a conventional prosthesis or implant supported prosthesis.

TREATMENT PROGRESS:

After discussing possible treatment options with the parents and the patient, it was decided to attempt the first approach. Treatment started with fixed mechanotherapy in upper arch. Initial leveling and alignment was achieved with gradual changeover from Niti round wires to rectangular stainless steel wires.

Deciduous incisor was not removed until now to maintain the space for impacted incisor. Then deciduous incisor and odontome was removed and open coil spring was used to create sufficient space for impacted incisor. Impacted incisor was then exposed with closed eruption technique and bonding attachment was bonded over tooth and ligature wire was used to tie the incisor bracket to the archwire (Figure 3). Light extrusive force was applied by activation the ligature wire and applying force with elastomeric chain in the range of 30-60 gms. Patient was called after every 3 week for reactivation (Figure 4). Traction was applied for 6 months. Once incisor was erupted, it was directly ligated to archwire to level and align .

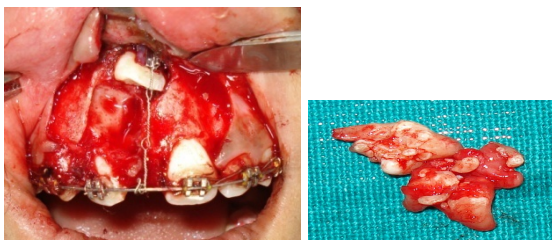


Fig. 3: Surgical exposure of incisor with bonding of attachment.



Fig. 4: activation of impacted incisor.

TREATMENT RESULTS

Overall active treatment time was 18 months. The impacted maxillary central incisors were uncovered surgically and moved into place orthodontically. Ideal overbite and overjet relationships were established. Good intercuspation was achieved, and midlines were coinciding with each other and facial midline. Interproximal contact was good, roots were parallel, and the final appearance of the teeth was esthetically pleasing. Periodontal evaluation showed acceptable gingival contour and adequate width of keratinized attached gingival tissue around right central incisor.(fig.5)



Fig.5: final position of impacted right maxillary incisor.

DISCUSSION

The treatment of impacted teeth requires a multidisciplinary approach. Successful treatment of impacted teeth requires close cooperation of orthodontist, oral surgeon, sometimes prosthodontist and periodontist. The successful relocation and esthetic management of impacted maxillary incisor depends upon many factors like position and direction of impacted teeth, degree of root completion, degree of root curvature and space available for impacted incisor. As soon as the impaction is detected, diagnosis should be made and treatment should be carried out to minimize the negative impact in the dental arch such as inclination of adjacent teeth towards space of unerupted teeth as well as psychological trauma of a missing tooth. The removal of the obstacle that interfered with the physiologic eruptive path makes potential eruption process easier. Obstruction should be removed as soon as possible if noticed.

In some cases spontaneous eruption is expected after removal of obstruction, while in other we need to undergo Orthodontic traction and subsequent correction of the positioning of the teeth [15,16]. Normally there is lack of space for impacted incisor. In such cases space is regained with the help of open coil spring prior to removal of obstruction and surgical exposure of the impacted tooth. Surgery to expose the dental crown of the retained tooth should be done in the area from which the odontome can be easily removed, also where the impacted tooth can be easily accessed to prepare it to receive a bonded orthodontic traction purpose. Surgical exposure for impacted can be done in one of two ways, one is open eruption and second is closed eruption technique. In open eruption method, the impacted teeth may be exposed by the removal or repositioning of the soft tissue that envelopes them, to leave the impacted tooth in full view at the end of the surgical procedure. In closed Eruption Technique, a surgical flap raised from attached gingiva to crest of ridge, with vertical releasing incision high enough to expose the impacted tooth. An attachment is then bonded to tooth & flap sutured back to its normal place and light traction force is applied (17). Most of the cases of maxillary incisor impaction may offer a favorable prognosis through the combination of surgery and orthodontic treatment in a more conservative approach [18]. One of the major concern about the treatment of impacted teeth is the periodontal consideration about the outcome. Cases considered successful in periodontal terms are those with teeth that are sound and stable within bone, with sufficient width of attached gingiva, with no sign of severe root resorption, dehiscence and mobility of tooth [19,20].

CONCLUSIONS

Treatment of impacted teeth must always be considered in young patients.

Orthodontic Treatment of an impacted incisor is a clinical challenge. Early detection, Proper diagnosis, careful treatment planning and Periodic follow up is required when moving an impacted tooth by orthodontic traction. We must understand that not every impaction can be resolved by orthodontic treatment. So we must not make any heroic attempt.

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