CASE REPORT

ODONTOME ASSOCIATED WITH IMPACTION OF MAXILLARY CENTRAL INCISOR : AN ORTHODONTIC CASE REPORT

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ABSTRACT

Odontomas are the most common type of odontogenic tumors. They are included under the benign calcified odontogenic tumors. Odontomas are basically classified into two types, complex and compound odontomes. Generally, Odontomes are asymptomatic. Occasionally, signs and symptoms relating to their presence do occur in form of impactions. The presence of odontomes in the anterior region more often leads to the impaction of the impaction of the permanent anterior teeth. We report a case of a 17year old female, who came to the Department of Orthodontics and Dentofacial Orthopedics, Dr. R. Ahmed Dental College & Hospital, Kolkata, West Bengal, with retained discoloured primary left maxillary central incisor and permanent left maxillary central incisor impaction due to the presence multiple odontomes in the left maxillary central incisor region. The surgical removal the odontomes was carried out. Combined approach with surgical exposure and the application of an orthodontic force brought the impacted left maxillary central incisor down to its proper position in dental arch.

KEY WORDS

Odontomes, Impaction, Maxillary Central Incisor Impaction.

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INTRODUCTION[1-7]

Odontomas are hamartomatous not true neoplasms. They are classified into compound and complex[1]. Compound odontomas are malformations in which all the tissues are in organized pattern giving resemblance to shape of tooth whereas the complex odontomes do not have an organized arrangement of the tissues. These are variable in size and shape; however, whether they are complex or composite type, they usually have broader and wider cross-section and their presence will be more likely to cause the failure of eruption of the central incisors than a supernumerary tooth. Impactions are quiet common in the routine practice but the impactions of central incisors are the least frequent impacted teeth with an incidence rate of 0.06- 3%.[3-6] Early diagnosis is very important in these cases and interceptive orthodontic treatment could not only improve skeletal mal relationship and eliminate functional interferences, but also may correct disturbances during the eruption.[8] The maxillary incisors are the most prominent teeth in a smile, they are also the teeth that are maximum displayed during speech in most individuals and the normal eruption, position and morphology of these teeth are crucial to facial esthetics and phonetics.[9] As missing upper incisors are regarded as unattractive this may have an effect on self-esteem and general social interaction, and it is important to detect and manage the impaction as early as possible.[10] In this case report we discuss the surgical removal of the odontomes, followed by the surgical exposure of the impacted central incisor and the orthodontic traction of the impacted central incisor teeth .

CASE REPORT

A 17 year old female came to the Department of Orthodontics and Dentofacial Orthopedics, Dr. R. Ahmed Dental College & Hospital with the chief complaint of colour change in upper front teeth and one forwardly placed small teeth. The patient's medical and family history was insignificant. Extraoral examination revealed a mesoprosopic face with an convex profile and an obtuse nasolabial angle (Fig. 1)

Fig 1: Extraoral Pre treatment Photgraphs

Fig 2: Intraoral Pre Treatment Photographs

Fig 3: Pre-Treatment Radiographs

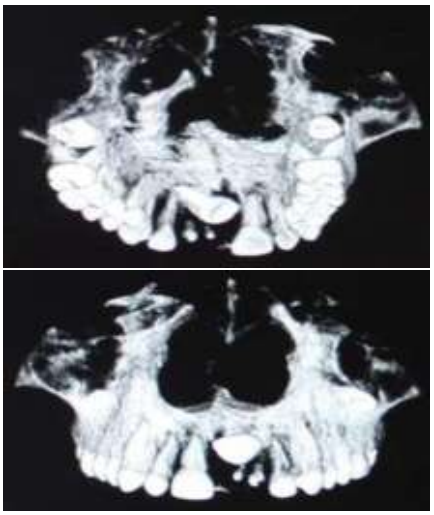


Fig 4 :Pre Treatment CBCT

Pre and Present Treatment Cephalometric Values

Parameter	Mean	Pre treatment	Present Treatment
SNA	82°	83°	83°
SNB	80°	80°	80°
AB Plane to NPog	0° to -9° (-4.6°)	-7°	-7°
ANB	02°	3°	3°
Wit`s Appraisal	-2mm to +2mm	1mm	1mm
Pog –Na perp	Small -8 to -6mm Medium -4 to 0 mm Large -2 to +2 mm	2mm	0mm
Na perp to point A	0-1 mm	+2mm	1mm

Parameter	Mean	Pre treatment	Present Treatment
Upper CI to A-Pog	+5 to -1 mm(2.7 mm)	3mm	4mm
Interincisal angle	130°-150°(134°)	158°	131
Upper CI to NA (linear)	04mm	1mm	3.5mm
Upper CI to NA (angular)	22°	10°	21°
Upper incisor Protrusion	4-6 mm	4mm	5mm
Upper CI to SN	102°	94°	106°

Parameter	Mean	Pre treatment	Present Treatment
Lower CI to NB (linear)	04mm	3mm	4mm
Lower CI to NB (angular)	25°	20°	26°
IMPA (Tweed)	76°-99° (90° norm)	92°	94°
Lower incisors Protrusion	1-3 mm	1mm	1.5mm

Growth Pattern	Mean	Pre treatment	Present treatment
Y (growth) axis	53°-66° (59.4°)	52°	56°
F M A	16°-35° (25° norm)	17°	19°
MPA (Steiner`s)	32°	22°	24°
MPA (Down`s)	17° to 28° (21.9°)	19°	20°
L A F H	Small 60-62 mm Medium 65-67 mm Large 70-73 mm	53mm	56mm
JARABAK's ratio	62% to 65%	71%	70%
Facial Axis Angle	0 ± 3.5°	+2°	+1°

Parameter	Mean	Pre treatment	Present treatment
Nasolabial angle	102°±8°	97°	99°
Facial angle	90°-92° (91±7°)	97°	96°
H angle	10° (7°-15°)	15°	14°
Upper sulcus depth	5 mm	5mm	4mm
Lower sulcus depth	5 mm	5mm	3.5mm
Ricket's Lip analysis	Upper 4mm behind Lower 2 mm behind	-3mm -1mm	-3mm -1.5mm
Steiner`s Lip analysis	Lips behind - flat Lips anterior- protrusive	-1.5mm 0mm	-2mm 0mm
Z- angle	80°± 9°	76°	80°

TREATMENT OBJECTIVES

Objectives :

1. Removal of retained primary maxillary incisors .
2. Surgical removal of multiple odontoma present.
3. To dis-impact left permanent maxillary incisors.
4. To maintain the class I molar relation and class I canine relation bilaterally.
5. To attain normal overjet and overbite.
6. To improve the smile and aesthetics and overall appearance

TREATMENT PLAN

Patient was planned to be treated by MBT 0.022″ slot Pre Adjusted Edgewise Appliance. After placement of 0.019″x 0.025″ stainless steel base arch wire, extraction of retained 61, 62, followed by surgical removal of odontomes and guided extrusion of 21 to be done followed by levelling and alignment.

Retention Protocol :

Fixed spiral wire retainer in upper and lower arches

TREATMENT PROGRESS

Surgical removal of odontome and surgical exposure of the impacted central incisor and placement of the attachment.

The bone and the connective tissue covering the tooth were removed, and the odontome was removed and sent for pathological examination. Crown was exposed for bonding the Beggs bracket n with a ligature wire tied to it. The flap was closed after bonding the lingual button, and the ligature wire was brought out and passively tied to the archwire. After 2 weeks, orthodontic traction of the impacted incisor was started. 10 months since the commencement of the orthodontic therapy the central incisor was successful results were seen in the patient.

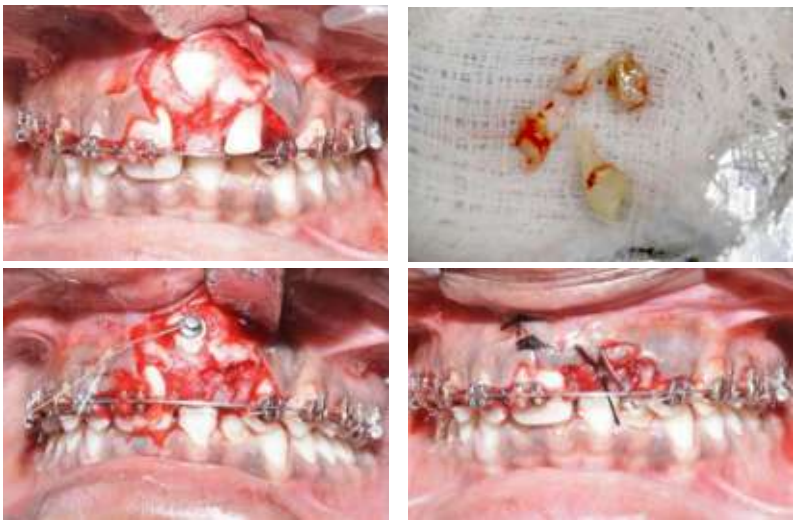


Fig 5 Surgical Removal Of Odontome

MID TREATMENT PHASE :

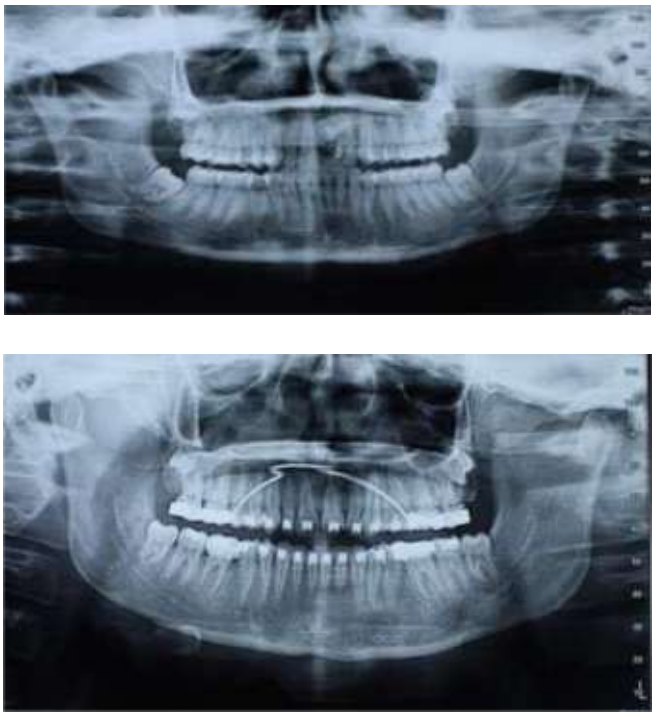
Fig 6: Appearance Of Diastema

Fig 7: Upper Occlusal Photograph

Pre Treatment

Mid Treatment Initial Phase

Mid Treatment Late Phase



Radiographic Comparison Pre & Mid Treatment

POST TREATMENT PHOTOGRAPHS

DISCUSSION

Odontomes are relatively common odontogenic lesions which are generally asymptomatic and are diagnosed mostly in the second decade of life. The most common site for the presence of odontomes are in the anterior part of maxilla either between the roots the erupted teeth or ver the crown of the unerupted teeth leading to delayed eruption of the teeth or its impaction. An anomaly in the eruption of anterior teeth can affect facial esthetics and may cause psychological problems. Several techniques have been developed as a choice of treatment for this scenario. The successful management of the odontome and impacted central incisor is often a difficult task and enquires the joint expertise. It is important that orthodontist and oral surgeon together prepare a full proof treatment plan based on scientific rationale. 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 an impacted tooth can take place:

(1) the position and direction of the impacted tooth,

(2) the degree of root completion,

(3) the degree of dilacerations, and

(4) the presence of space for the impacted tooth.[3,11-15]

Orthodontic and surgical intervention should not be delayed to avoid unnecessary difficulties in aligning the tooth in the arch.[16] Various surgical techniques have been described for exposing impacted teeth before orthodontic tooth movement.[17] Two of the most commonly used surgical exposure techniques for labial impacted teeth are: the window approach and a technique which exposes only 4-5 mm of the most superficial portion of the labial aspect of the cusp tip while maintaining 2-3 mm of keratinized tissues.[18,19]

In this case, the available space for tooth alignment was sufficient and the tooth was in a favourable position. The tooth was brought into right anatomical position in the dental arch. If the impacted tooth is diagnosed with its root completely formed or if present in an unfavorable position, combination of surgical and orthodontic treatment has to be carried out.

CONCLUSION

The management of an odontome depends on its location, number and its relation to the adjacent tooth. The treatment of an unerupted maxillary central incisor tooth will depend on its state, position, and presence of enough space in the dental arch. If eruption is delayed, the permanent tooth should be exposed because it is important to allow the tooth to erupt into correct position as soon as possible. Impaction of maxillary permanent incisors is not a frequent case in dental practice, but its treatment is challenging because of the importance of these teeth in facial esthetics.

Conflict of Interest: None..

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