



ORIGINAL RESEARCH PAPER

Dental Science

AN IMPACTED, INVERTED AND ROTATED MAXILLARY CENTRAL INCISORS AND ITS SURGICAL MANAGEMENT: A CASE REPORT.

KEY WORDS: Impaction, Maxillary left central incisor, Surgical approach.

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ABSTRACT

A female patient aged 13 years was referred to the Department of Oral and Maxillofacial Surgery, CSMSS Dental College, Aurangabad, Maharashtra, India with a complaint of a missing tooth in the upper anterior region of the jaw. The patient was apparently healthy with no relevant family, medical and dental history. This case is peculiar due to the fact that the impacted maxillary central incisors are not frequently reported in our routine dental practice. Here, a case of impacted maxillary left permanent central incisors, with only a few reported cases in the literature, is presented. On radio diagnosis, it was observed that the tooth was sprawling in an inverted position in the anterior region of the maxilla with mild dilaceration. Moreover, the tooth was located beneath the remnants of the root stumps of the deciduous maxillary central incisors and lateral incisors. The treatment for this case was planned with mutual efforts of the orthodontists, the oral surgeon, and the patient with his parents. The most appropriate treatment of choice for this case was the Surgical extraction of the impacted maxillary central incisor along with the root stumps of deciduous teeth that were performed under local anaesthesia without any hindrance to the nasal floor.

INTRODUCTION:

An impacted tooth may be defined as a tooth that has either failed to emerge in the dental arch beyond its expected time of eruption, or a tooth that is incapable of eruption because of some physical barrier or insufficient space in the jaw. (1,2)

The most frequent impactions in the oral cavity are the mandibular 3rd molars followed by maxillary 3rd molar, maxillary and mandibular canines, mandibular second premolars, maxillary central and lateral incisors. (2-4) Central incisor impactions may be a consequence resulting from several local or systemic factors. The prevalence of impacted maxillary central incisors ranges from 0.06% - 0.2%. (6) The important etiological factors associated with central incisor impactions include i) over-retained deciduous teeth, crowding; trauma; may cause ankylosis or dilaceration; ii) pathologic obstruction for the erupting tooth: supernumerary teeth, odontomas; ectopic eruptions. (5-7) Although there are only a few studies related to the impaction of maxillary central incisors, the tooth poses a great challenge in the treatment due to its impact on facial aesthetics and phonetics. The treatment modalities range from a conservative approach to a more aggressive approach which includes surgical removal, orthodontic traction, autologous transplantation, incision sprouts etc. (8,9)

The objective of this case report is to elucidate and highlight a rare phenomenon of impacted and inverted maxillary left central incisor with mild dilaceration that was managed by the surgical approach.

Case Report:

A 13-year female child was brought by his parents to our Department of Oral and Maxillofacial Surgery, with a complaint of a missing anterior tooth in the upper front area of the jaw. The child was in good physical condition with no history of medical and dental disorder. There was no obvious abnormal extraoral findings. Intraoral examination revealed that the permanent central incisor of the left maxillary region was missing with no prior history of extraction or trauma. A panoramic radiograph was advised which revealed an inverted, impacted and rotated left maxillary central incisor with its coronal part facing the nasal floor and the radicular portion facing towards the alveolus over the over-retained deciduous central and lateral incisor. Moreover, it was also

observed that there were several unerupted maxillary teeth in the right & left quadrant. Furthermore, there was also a noticeable fact that both permanent left and right lateral incisors were absent i.e. both teeth were congenitally missing. The patient was also advised a preoperative cone-beam computed tomography (CBCT) imaging so as to evaluate the morphology, location and the developmental stage of the impacted incisor more precisely. The patient was referred to the Department of Orthodontics of our institution for their opinion and after going through their set of clinical examination, they concluded that the orthodontic management of the impacted tooth is difficult to carry out because of the position and morphology of the tooth. They also opined that if the patient underwent orthodontic treatment, the outcome prognosis would be very poor, so it was prescribed to undergo the surgical extraction of the impacted tooth. Informed consent was taken from the patient and her parents after explaining the surgical procedure and its associated complications. Surgical extraction was performed under all aseptic precautions (AAP) & local anesthesia without any hindrance and impairment to the nasal floor. The bone shaving and guttering was performed with the normal saline (NS) irrigation and the bony defect was filled with platelet-rich fibrin (PRF) to accelerate the healing process. The reflected mucoperiosteal flap was then closed with 3-0 Mersilk suture.



Fig 1: Panoramic Radiograph showing impacted left maxillary central incisor.

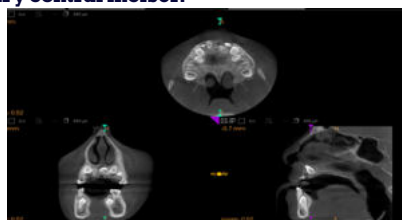


Fig 2: Cone-beam computed tomography (CBCT) for

more accurately evaluation of the morphology, location and the developmental stage of the impacted



Fig 3: Intra-operative photograph showing exposure of central incisor.



Fig 4: Post-operative photograph shows removal of impacted central incisors without any hindrance to nasal floor.

DISCUSSION:

Discrepancies during the eruption of anterior teeth could affect the facial aesthetics, functional disturbance and might cause psychological issues undermining self-confidence.^(6,10) The frequency of maxillary central incisor impaction is far less as compared to the maxillary canine impactions. However, owing to the position of the maxillary central incisors, parents are often concerned when the eruption paradigms do not follow the norms.^(9,11) This usually stimulate the parent to seek dental treatment in order to prevent psychological complications co-occurring with anomalies of the anterior maxilla.

The impactions of maxillary central incisors are uncommon phenomenon. The cause for their impaction includes supernumerary teeth, odontoma, loss of space in the arch, any hindrance in the eruption path, trauma, cysts and many more.⁽¹⁰⁻¹³⁾ To investigate the relationship between the impacted left central incisor with the surrounding tissue, we chose Computed Tomography (CT) scans in conjunction with the panoramic radiography. CT is more useful in cases of impacted teeth for locating the exact 3d position of these teeth, while eliminating the superimposition of images of structures outside the area of interest. CT scans are also helpful in determining the curvature of the dilacerated tooth. This will aid the surgeons to plan where to open the initial flap and also help us in determining the difficulties that might be encountered in resolving the impactions.^(14,15)

The various treatment modalities for the impacted maxillary central incisors include: a) a combined surgical and orthodontic approach including the surgical exposure, opening of orthodontic space and traction of the impacted central incisor in its proper position, b) extraction of the impacted central incisor and restoring it with an implant or a bridge later in life when the growth had ceased, c) extraction of the impacted central incisor followed by the closure of space; replacing lateral incisor for central incisor with subsequent prosthetic restoration.⁽¹⁵⁾ Several works of literature available indicate that the impacted tooth can be brought back to proper alignment within the dental arch. The factors determining whether the successful alignment of an impacted tooth is as follows: i) the direction and position of the impacted tooth, ii) the degree of dilaceration, iii) the degree of root completion.⁽¹⁶⁻¹⁹⁾ However, the treatment approach of impacted maxillary teeth entails the cooperation of various dental multi-specialties such as oral surgeons, orthodontists, and prosthodontists.

Keeping this in mind, a combined surgical and orthodontic treatment becomes the standard treatment of choice. On the other hand, if the impacted tooth is surgically removed, loss of alveolar bone is anticipated. Subsequently, it is observed that the alveolar ridge becomes thinner and inadequate following

the healing period.⁽¹⁷⁾ However, in the presented case, the surgical extraction modality outweighs the advantages of orthodontic treatment option because of the poor prognosis of the impacted tooth for an orthodontic treatment. In this case, the surgical extraction of impacted left central incisor was performed under local anaesthesia. Utmost care was taken during the removal of bone and elevation of tooth without hampering nasal floor.

CONCLUSION:

The impacted maxillary central incisors pose a great clinical challenge because of its importance in facial aesthetics and phonetics which requires a multi-disciplinary expert approach. The prognosis and treatment modalities of the impacted tooth will depend on its position, morphology, the space available in the jaw and other factors. It is very crucial for the clinician to perform a thorough examination and accurately interpret the imaging modalities in order obtain a precise diagnosis. To conclude, the surgical extraction of inverted and impacted central incisor followed by the prosthesis was the treatment of choice in the presented case as a consequence of poor prognosis of the orthodontic treatment.

Conflict of Interest: Nil

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