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CASE REPORT

INTERDISCIPLINARY APPROACH IN PEDIATRIC DENTISTRY: A CASE REPORT OF IMPACTED PERMANENT MAXILLARY CENTRAL INCISOR

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ABSTRACT

Dental development and eventual eruption of teeth in the oral cavity has for long been an enigma with respect to physiology and timings of every related aspect. The non eruption of teeth can be confused from something as simple as a delay in eruption to as complicated as congenital absence and to a plethora of causes in between. This condition in a pedodontic setup is further complicated by lack of knowledge among dentists, a series of referrals and ends up being a confusing and horrific experience of the parents and the child. From involvement of surgery to orthodontia, this condition is another example of wonders worked by a 'interdisciplinary approach' in the dental care of children.

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INTRODUCTION

Much as any condition affecting the child's dentition, a missing permanent central incisor incites parental anxiety accompanied by compromised esthetics which eventually creates the vicious cycle of peer concerns and psychosocial impact on the child. Pediatric dentists equipped with knowledge and skill to deal with this tender population have the unique ability to solve every part of this problem as well as restore the child's esthetics and confidence in self at the same time dissipating various parental concerns (Lin, 1999). Permanent maxillary incisors show impaction in a clinic setting ranging from 0.06% to 0.2% of times (Grover, 1985) The major reasons for the impaction of a permanent central incisor include, over retention of primary successor, an arch length tooth material deficiency, a supernumerary tooth or a barrier which might be bony or mucosal (Rani, ?). Odontome causing impaction of permanent incisors has been shown in many studies (Foley, 2004; Glenn, 1994). Such a case of impacted permanent maxillary central incisor can have several plans to management depending upon available space, ankylosis or root resorption processes in impacted tooth or the qualifications and skills of the dentist (Khera *et al*., 2017). This paper presents a case of impacted permanent maxillary central incisor due to an impacted supernumerary tooth which was managed by an interdisciplinary approach involving surgery and orthodontic guidance.

CASE REPORT

A 12 year old female was brought by her parents to the OPD with a chief complaint of missing upper anterior tooth. The girl was healthy and with no history of any significant or relevant medical illness or dental trauma.The patient had Angle's Class I molar relationship with no skeletal discrepancy. The profile was convex and showed facial symmetry. Intraoral examination revealed a missing permanent maxillary permanent incisor on the right side. There was no apparent space discrepancy in maxillary or mandibular arches and the space for the missing tooth was well preserved with no midline shift or migration of teeth into the space. Visual inspection and clinical examination of the area of chief complaint revealed no significant findings which were followed by radiographic investigation.

Figure 1. Pre operative Photograph

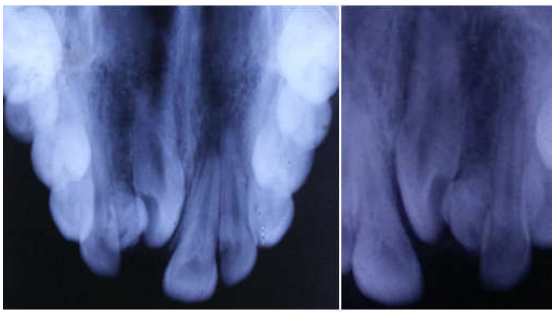

Figure 2. Maxillary occlusal radiograph and Intraoral Periapical Radiograph

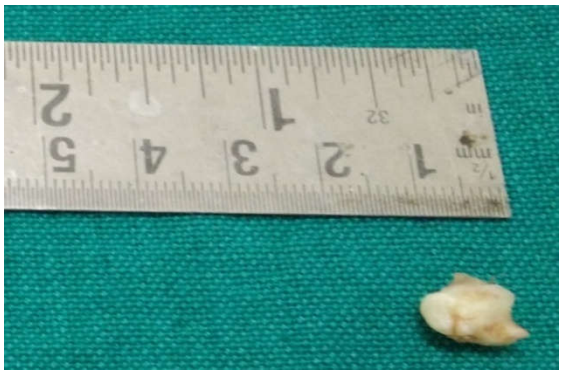

Figure 3. Specimen of odontome surgically removed

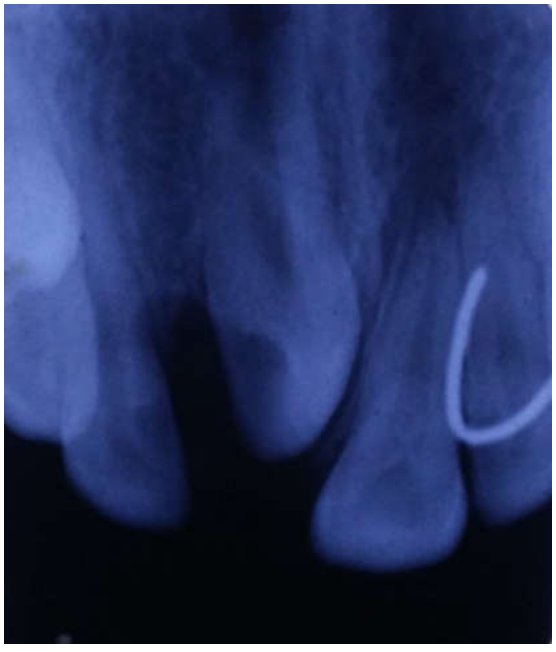

Figure 4. Follow up radiograph after 6 months

Figure 5 . Bonding and Nickel Titanium archwire placement (0.016 inches)

Figure 6. Orthodontic Guidance of tooth into occlusion

Figure 7. After completion of treatment

An intraoral periapical radiograph was taken which revealed and impacted left permanent maxillary central incisor along with an impacted complex odontome. The treatment plan based upon the cooperation level of parents and patient was explained consisting of following steps (McDonalds', 2011):

- Surgical extraction of impacted supernumerary tooth
- Wait and watch for 6 months followed by radiographic evaluation to check for spontaneous eruption of impacted tooth
- In case of no spontaneous eruption, orthodontically guiding the tooth into occlusion

Surgical removal of the odontome was accomplished by raising a full thickness mucoperiosteal flap and enucleation of the t=hard tissue structure while taking care that no damage was inflicted to the surrounding structures. The surgical removal was followed by a wait and watch period of 6 months after which radiographic evaluation of eruption of tooth was done which showed no change in the position of the tooth. This indicated next step of the treatment plan wherein the tooth was guided orthodontically into occlusion. Full mouth bonding was done using MBT brackets and anchorage derived from permanent first maxillary molars. A full thickness flap was

raised to bond a mini sized bracket with the impacted central incisor and engaged using a round nickel titanium wire of diameter 0.016 inches.

DISCUSSION

As the understanding of problems affecting the dentition of the child has increased, so have better ways of solving them come forth. A problem of an impacted incisor was dealt in many ways starting from no treatment at all, to extracting the tooth and replacing it prosthodontically or even allowing the adjacent teeth to encroach upon the space and allow space closure (Thosar, 2006). Dental literature today shows that careful treatment planning can lead to proper and even ideal alignment of the impacted central incisor (Kolokithas, 1979; Tanaka *et al*., 2001). This has been made possible with advancements, improved technology augmenting dentist's ability to fulfill patient's choice for wanting to preserve the original tooth and undergo treatment to bring it in a functional state has made this approach possible. Improved imaging systems can help precisely locate the position of the impacted tooth and the obstruction as was an odontome in this case. Routine use of these techniques like Cone Beam Computed Tomography can make diagnosis and treatment planning much easier at the same time can also be more effectively employed for patient education. Surgical techniques for exposure for impacted teeth are of two types, namely, open and closed technique. These surgical techniques are described by Becker A in 1998 as follows (Becker, 1998):

- Circular excision the oral mucosa which overlies the impacted tooth
- Using the apically repositioned flap
- The closed technique where the flap is repositioned in its former position after an attachment has been placed on the crown of the tooth.

The first two techniques described above are called as the open surgical technique and the third technique is the closed technique. Open techniques have been associated with loss of attachment, gingival inflammation and recession (Levin, 1974). We used the closed surgical techniques because studies have demonstrated better esthetic results using this technique (Becker *et al*., 2002). The surgical exposure of the crown was kept conservative and was followed by placement of the bracket on the labial surface of the tooth. This was based on the guidelines by Bishara (1997) and Vanarsdall *et al*. (1977)
A number of factors through literature and clinical technique employed here have been detected to decide success on cases of impacted incisors. These are: a) the exact location of impacted tooth, b) the direction of impaction of tooth, c) status of root completion, d) space available for the impacted tooth. (Lin, 1999; Kolokithas, 1979; Brin *et al*., 1982; Wasserstein *et al*., 1977; Tanaka *et al*., 2001; Uematsu *et al*., 2004).

Conclusion

Although it is a rare occurrence but an impacted central incisor may present with significant difficulty and more relevantly concern for the patient due to its vital role in facial esthetics. But with available resources it can be an easily and successfully manageable case especially in growing children. A combination of surgery and orthodontic traction has shown good stability in these cases although it should be followed with a long term monitoring to check for tooth's overall health.

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