

Surgical Repositioning of Impacted Permanent Central Incisor- An Alternative and Practical approach

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Abstract: Impaction of permanent anterior teeth, due to obstruction from supernumeraries or from other pathologies are not rare in children. The commonest treatment done for this is surgical removal of the obstruction, exposure of the impacted tooth and applying traction to bring it into alignment. When the impaction is very much unfavourable, extraction of impacted teeth and prosthetic replacements are done. Surgical repositioning is an alternative realistic approach in such cases. In the first case, removal of an odontoma and in the second case, removal of a supernumerary tooth and in both the cases, successful surgical repositioning of the impacted permanent central incisor at the same visit, are presented.

Keywords: Odontomas, Impacted permanent central incisor, Supernumerary tooth, Surgical repositioning

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I. Introduction

The term 'odontoma' by definition alone, refers to any tumor of odontogenic origin. Most authorities accept the view today that an odontoma represents a hamartomatous malformation rather than a neoplasm. Compound composite odontomas have superficial anatomic similarity to normal teeth and complex composite odontoma represents an irregular mass bearing no morphologic similarity even to rudimentary teeth. The complex form of odontoma is less common than the compound type.¹

According to Budnick, the compound odontoma has a predilection for the anterior maxilla and compound odontomas for posteriors of the jaws. Most odontomas are asymptomatic, although occasionally signs and symptoms relating to their presence do occur which include un-erupted or impacted teeth, retained deciduous teeth, swelling and evidence of infection.¹ Treating an impacted tooth in a child, either due to a supernumerary or due to any other pathology, presents a difficult situation for the clinician. According to the Dental aesthetic index of university of IOWA 1986, a missing/un-erupted maxillary permanent incisor can have a major impact on dental and facial aesthetics and were considered to be the most unattractive deviant occlusal trait in their study.² The most commonly employed treatment in these cases are surgical exposure and orthodontic movement of the tooth into alignment, which involves higher costs and additional compliance requirements for the patient. Furthermore, when the tooth is placed deep and its position is unfavourable, this treatment is not possible. In our case reports, we have employed an alternative method of surgical removal of the obstruction and repositioning of impacted tooth into normal alignment in the same appointment. Thus completing the treatment successfully in a lesser number of visits and a much shorter time span.

II. Case report: 1

A 12 year old male child reported to the pediatric dentistry clinic, Government Dental College, Thiruvananthapuram with the complaint of a retained milk tooth and un-erupted permanent tooth in relation to upper front teeth region. On clinical examination he had a retained 62 and clinically missing 21. All other permanent teeth up to 2nd permanent molars had erupted. (fig: 1, 2) His medical history was non-contributory. His IOPA X-ray showed a calcified mass resembling an odontoma, obstructing the eruption of 21. OPG and maxillary true occlusal view showed 21 located high in the anterior maxillary alveolar bone. Other pathologies were ruled out in both the arches. After routine blood investigations, surgical removal of the odontoma and repositioning of 21 was done.



Figure 1



Figure 2



OPG showing retained 62, odontoma and highly positioned 21



Maxillary occlusal view



IOPA X-ray

Surgical procedure:

Local anesthetic was administered on labial and palatal side of the area extending from 13 to 23. Retained 62 was extracted by closed technique and a rectangular flap was raised. The large calcified mass was removed after which the incisal edge of 21 could be seen high in the socket. After sufficient removal of bone from the mesial aspect, 21 was luxated using periosteal elevator and was brought into position using an upper root forceps (fig: 3, 4, 5). The tooth was positioned into its normal alignment and the flaps were sutured. Flexible wire and composite splinting was done for 4 weeks. (fig: 6). Root canal treatment was carried out during this time period (fig 8). The calcified mass was sent for histopathological examination and the report suggested it to be a complex odontoma. After 6 weeks, grade-I mobility was noted on splint removal and the patient was kept under review, with proper home care instructions. After 6 months, the patient was completely asymptomatic. Post operative IOPA X-ray showed adequate bone deposition in the region of removed odontoma and around the repositioned 21, with a normal PDL space of 21(fig10).



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9: Post surgical specimens



Figure 10



III. Case report: 2

A 10 year old male child reported to the pediatric dentistry clinic, Government Dental College, Thiruvananthapuram with the complaint of un-erupted permanent tooth in relation to upper front region. On clinical examination he had clinically missing 11. All other permanent teeth had erupted up to his age (fig 11, 12). His medical history was non-contributory. IOPA X-ray and maxillary true occlusal view revealed a supernumerary tooth impacting the eruption of 11. Surgical repositioning of the tooth was planned as the location was unfavourable for the normal eruption. CBCT was taken to confirm the exact location of the supernumerary tooth with respect to 11 so that repositioning of 11 can be done during the removal of supernumerary tooth (fig 13). After routine blood investigations, surgical removal of supernumerary tooth and repositioning of 11 was done on the same appointment (fig 14, 15, 16). Flexible wire and composite splinting was done for stabilization and RCT was carried out to avoid any pulpal pathology (fig 17). From the radiographs and CBCT it was found that 11 was a small tooth as compared to its counterpart which was confirmed after repositioning (fig 18). Composite restoration was done to bring the incisal edge of 11 at the level of 21 (fig 20). After 6 months, the patient was completely asymptomatic and bone healing was satisfactory with a normal peri-radicular appearance (fig 21,22).



Figure 11



Figure 12

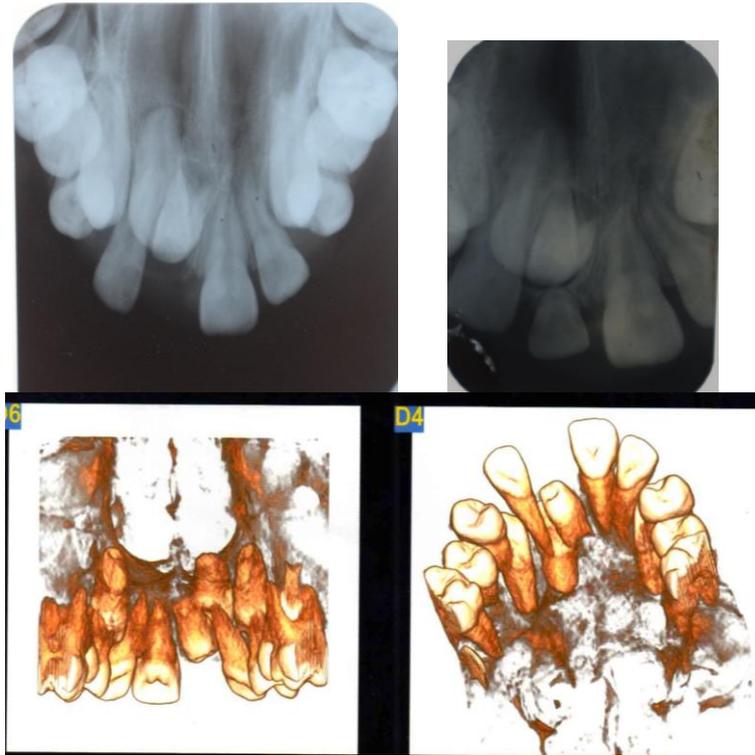


Figure13



Figure 14

Figure 15

Figure 16



Figure 17

Figure 18

Figure 19



Figure 20



Figure 21

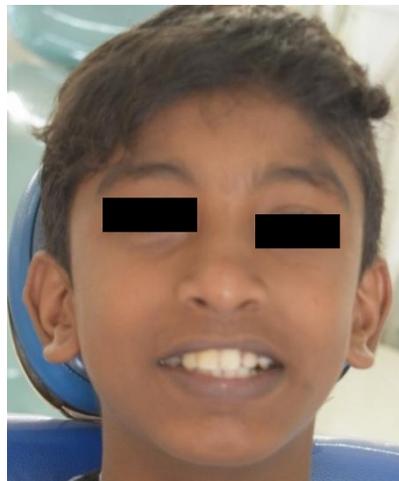


Figure 22

IV. Discussion

It is a challenging situation for the pedodontist as well as the patient and the parent to manage an impacted permanent tooth. Removing a supernumerary tooth or a complex odontoma and at the same time managing an impacted permanent incisor in a child patient in a single visit procedure requires good clinical judgement and appropriate case selection. Many a times extractions and prosthetic replacements were done in unfavourable impactions. The impacted, deeply placed tooth makes it challenging for surgical exposure and application of traction to bring it into alignment, especially in cases where patients report an inability to comply with long term follow up appointments. The method of surgical repositioning is a viable solution to this problem. Surgical repositioning is a kind of auto-transplantation, as the tooth is completely moved from its impacted position to a new position at a distance of one or more centimeters.³ It is normally assumed that

repositioned tooth loses its vitality. In these cases, an impacted 21 and an impacted 11 has been successfully surgically repositioned in two pediatric dental patients.

Auto-transplantation was first reported by Widman in 1915.⁴ This transplantation is very successful when the root end is open. In this case root end was closed at the time of repositioning. Lena Baglund et al 1996 recommends endodontic treatment in all closed apex cases.⁵ Vivek kumar Adlakha 2011 has reported good success in auto-transplantation of dilacerated upper central incisor.⁶ Prabhu .N.T 1997 has reported good successful surgical repositioning of permanent maxillary central incisor in a 12 year old boy.⁷ Andreason, 1992 states that if auto-transplantation was carefully done, success rate can be 95%.⁸

The various advantages of surgically repositioning the impacted incisor are:⁹

1. There is only one surgical site and the surgical procedure is done only once.
2. Simple orthodontic mechanics if needed.
3. Impacted tooth has a thick periodontal membrane, which is more suitable for reattachment than the narrow periodontal membrane found in erupted, functional tooth.
4. Immediate esthetics; The impacted tooth is repositioned into alignment immediately. Immediate esthetics achieved can be a good compliance incentive for both clinicians, patients and parents.
5. Helps in achieving normal periodontal and gingival attachment, normal dental and skeletal growth.
6. Shorter duration of treatment.
7. Lesser costs involved.

The most commonly impacted maxillary tooth is the canine, followed by the central incisor. The advantage of surgical repositioning/auto-transplantation is that it gives a quicker and satisfactory result in a shorter period of time, as compared to the procedure of surgical exposure and use of traction to bring them into alignment. When surgical exposure for traction becomes impossible due to deeper and abnormal position or when removal of the pathology results in considerable bone loss or in situations warranting repeat surgical procedures for orthodontic alignment, extraction of the impacted tooth and prosthetic replacement were often done. Surgical repositioning is definitely a good alternative in such cases. Auto-transplantation done for immature tooth is always very successful. In this case the root end was already closed and after repositioning, root canal treatment was carried out at the earliest to avoid any chances of pulpal reaction.

V. Conclusion

Surgical removal of odontoma/supernumerary tooth and repositioning procedure for an impacted maxillary central incisor with closed apex was done with good results in two cases. The gingival contour and gingival sulcus depth were normal. Bone deposition around the repositioned tooth was satisfactory at 6 months post-operatively and the tooth appeared to have normal PDL space. Hence this treatment modality could be considered in managing impacted permanent teeth, where other options might prove nonviable.

References

- [1]. Shafer, Hine L. *Shafer's Textbook of Oral Pathology*. 5th ed. (R Rajendran BS, ed.). Elsevier Inc.; 2006.
- [2]. Cons.n.c, Jenny.J KF. *DAI the Dental Aesthetic index.Iowa College of Dentistry,university of Iowa-;* 1986.
- [3]. Ramakrishnan E, Ismail AA, Ahamed E, Jayaprakash S. Surgical repositioning of impacted permanent central incisor-A Novel method and case report. 2016;15(8):20-24. doi:10.9790/0853-1508102024
- [4]. L. W. om transplantation ab retrinerade horritander,svensk Tandlakartidskmiift. 1915.
- [5]. Lena Berglund JC. Orthodontic pretreatment prior to autotransplantation of palatally impacted maxillary canines.case report on a new approach. *Eur J Orthod*. 1996;18:449-456.
- [6]. Vivek Kumar Adlakha, Preetika Chandna, Sumir Gandhi, Saroj Chopra Namita Singh SS. Surgical Repositioning of a Dilacerated Impacted Incisor. *Int J Clin Pediatr Dent*. 2016;4(21):55-58.
- [7]. Prabhu.N.T MA. Surgical management of a labially placed permanent maxillary central incisor after supernumerary teeth reimplantation:Report of a case. *J.clinic.paediatric Dent*. 1997;21(3):201-203.
- [8]. J.O A. *Auto Transplantation of Canines .In Andreason J.O(ed).Atlas of Replantation and Transplantation of teeth.Chapter 6.Munksgaard .Cepenchaen PP-196.;* 1992.
- [9]. TP T. Surgical repositioning of an impacted dilacerated incisor in mixed dentition. *J Am Dent Assoc*. 2002;133(1):61-66.

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