

Management of Complicated Crown Fracture and Associated Impacted Mesiodens- Case Report with 3yrs Follow-up

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ABSTRACT

Mesiodens being the most common type of supernumerary tooth, usually results in malocclusion, poor aesthetics and cyst formation if it is not corrected. The management protocol involves surgical removal. The situation can be complicated in young permanent dentition where there are a lot of chances of damage to the permanent dentition during surgical removal of impacted teeth. This article reports a case of impacted mesiodens which was diagnosed during management of complicated crown fracture. The case was followed up to 3years which showed a good bone formation. The article highlights the need for regular follow-up after surgical removal of impacted teeth in young children, to see any changes or damage in the developing permanent teeth.

Keywords: Fracture, Impaction, Mesiodens, Teeth, Trauma

CASE REPORT

An 11-year-old male patient reported to Department of Pediatric Dentistry with the chief complaint of pain in the upper front tooth. When history was elicited subject revealed that there was a fall one month back in school due to which he sustained fracture of the maxillary left permanent central incisor. Medical history was non-contributory. Intra oral examination revealed complicated crown fracture in maxillary left permanent central incisor (Tooth 21). Radiographic image demonstrated fractured maxillary left central incisor with pulp exposure with complete root formation. In addition to that presence of two impacted inverted conical shaped mesiodens was observed [Table/Fig-1a,b]. With parallax technique (horizontal tube shift technique), the bucco-lingual position of the unerupted mesiodens was evaluated. One impacted mesiodens was found in the palatal aspect and other one in the buccal aspect. Endodontic therapy in maxillary upper left central incisor and surgical extraction of the two impacted mesiodens was planned. Endodontic therapy was performed for the maxillary upper left central incisor. After adequate infiltration with a 30gauge needle, using a #15blade (Bard Parker, Rutherford) an elliptical incision was made in the anterior buccal region extending from distal surface of right central to the distal of left central incisor. A full thickness flap was elevated and with a sterile round bur in a slow speed hand piece was used to remove the bone and expose the tooth. Both palatal and buccal approach was used for surgical removal of the impacted double mesiodens [Table/Fig-2a,b,3]. After complete healing of the operated area, crown preparation was done in maxillary left central incisor for jacket crown placement [Table/Fig-4]. Jacket crown was placed in maxillary left central incisor. Patient was reviewed regularly

according to the protocol. Three year clinical and radiograph follow-up show good prognosis [Table/Fig-5].

DISCUSSION

Complicated and Un-complicated crown fracture is the most common injury to the permanent teeth [1]. Crown fracture with pulp exposure represents 0.9 % to 13% of all traumatic injuries to the teeth [2]. The important part in determining the prognosis of the tooth with pulpal exposure is minimizing the bacterial invasion to the pulp. However, providing a hermetic seal once the removal of the infected pulpal tissue is done is critical in the prognosis [3].

The most common type of supernumerary is mesiodens [4]. Mesiodens is more common in the permanent than in the primary dentition. The incidence of occurrence of mesiodens in Indian population was estimated to range from 0 to 1.4% [5]. Review done by Meighani & Pakdaman in 2010 found that the prevalence of mesiodens in various studies from 1932 to 2008 is between 0.09% and 2.05% [6]. The most common management of impacted mesiodens is surgical removal of the impacted tooth. In very young children the surgical removal needs more attention because of the close proximity of the developing permanent tooth. Any trauma to the developing young permanent tooth will lead to arrest in root development. Hence, there is a need for regular follow-up of any surgically removed mesiodens to see the development of adjacent permanent tooth.

Complicated crown fractures are those in which fracture of the crown involves the pulp and expose it to the oral environment. Where exposure of the pulp occurs, immediate form of treatment is necessary if the health of the pulp is to be maintained. Except in



[Table/Fig-1a, b]: Clinical and radiographic image showing fractured 21 and associated impacted mesiodens [Table/Fig-2a,b]: Buccal and palatal flap elevation

[Table/Fig-3]: Surgically removed mesiodens



[Table/Fig-4]: Postoperatively after jacket crown done in 21
[Table/Fig-5]: Follow- up image after 3yrs shows good bone formation in the surgical area

immature teeth most traumatically exposed pulps in anterior teeth will become necrotic and infected if left untreated for one month [7]. A number of procedures have been recommended for the treatment of exposed pulps. These include pulp capping, partial pulpotomy, pulpotomy and root canal treatment. In the absence of luxation injury, necrosis of an exposed pulp does not usually occur immediately, although this is the inevitable response if an exposed pulp is left untreated. Inflammatory responses and bacterial contamination, which are responsible for necrosis in exposed pulps, are confined to the site of the exposure for some time [7,8]. Since the patient reported one month after the injury, root canal therapy was initiated. Access to root canal was created and Calcium hydroxide dressing (Calcicure, Germany) was placed in the root canal for 2 week. Root canal was obturated with gutta percha.

Mesiodens occurs more frequently in boys than in girls, with the ratio being approximately 2:1. The available evidence suggests that 80% to 90% of all supernumerary teeth are found in the maxilla and half are found in the anterior region [9]. A sex-linked pattern has also been proposed, as males are affected twice as frequently as females [5,6,9]. Mesiodens can occur individually or as multiples (mesiodens), may appear unilaterally or bilaterally, and often do not erupt [6,9]. The most common position of mesiodens found is vertical, in this case both the mesiodens was vertical but in an inverted angulation which is very rare occurrence.

Morphologically, mesiodens may have various forms. Three common types; namely, conical or peg shaped, tuberculate or barrel shaped and molariform mesiodens (tooth like) have been reported, of which the conical form is the most common type [10]. Conical mesiodens usually occur singly. They are usually located palatally between the maxillary central incisors, tending to displace the erupting permanent central incisors [9]. Conical mesiodens often have a completely formed root and has a higher chance of erupting in the oral cavity. In the present case it was conical mesiodens where both the mesiodens were pointing superiorly. Hence, surgical management of the impacted inverted double mesiodens was the only option available and it was operated.

Prompt diagnosis of common anomalies in the primary and the mixed dentition will prevent further complication. It is common that anterior primary mesiodens erupts and exfoliates normally before detection and could be mistaken with other developmental anomalies. Cone Beam Computerized Tomography (CBCT) has represented an important new development in dento-maxillofacial radiology, and it has also precipitated a shift from two-dimensional to three-dimensional data acquisition, image reconstruction, and visualization [11]. CBCT helps in identifying the exact position of the impacted tooth and the amount of bone overlying so that a proper planning of the surgical procedure can be carried out. The present scenario the patient was addressed due to trauma and impacted mesiodens was accidentally determined with the help of radiograph and managed appropriately.

CONCLUSION

This case report highlight the need for regular follow up following any surgical procedure in young permanent dentition. Mesiodens is not a rare phenomenon, but inverted mesiodens which was diagnosed following trauma to the permanent teeth and the follow up period of 3years justifies the case for publication.

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