



IMPACTED TOOTH: PERIO - ORTHO INTERDISCIPLINARY MANAGEMENT APPROACH: A CASE SERIES

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ABSTRACT

A tooth normally erupts after the development of half to three-quarters of its final root length. After the tooth eruption, impaction is usually diagnosed well is generally asymptomatic. Tooth impaction is most frequent obstacle in daily orthodontic practice and, in most cases, it is recognized by chance in a routine dental examination or during orthodontic treatment. The treatment of impacted teeth requires multidisciplinary cooperation between orthodontist, periodontist and oral surgeon. With the help of orthodontic treatment and surgical exposure of impacted teeth are performed the impacted tooth is brought into the line of the arch. The treatment is long, more complicated and challenging. Current article presents an overview about different techniques available for surgical tooth exposure and some cases about surgical tooth exposure.

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INTRODUCTION

Tooth impaction is generally asymptomatic and, because of that, only a small number of patients seek treatment. In most cases, tooth impaction is recognized by chance by general dentists or orthodontists, when a patient comes to their office for a routine check-up or for orthodontic treatment (1). Patients diagnosed with tooth impaction should be referred to an orthodontist and a oral surgeon or periodontist for consultation and further treatment. The importance of an interdisciplinary approach between orthodontist and periodontist should be highlighted as the management of impacted teeth is crucial (2).

Tooth impaction is a common dental condition ranging from 0.8-3.6% of the general population (3, 4). A tooth normally erupts after the development of half to three-quarters of its final root length. After the tooth eruption, impaction is usually diagnosed well (5). The most commonly impacted teeth are, consecutively, third molars, maxillary canines, mandibular premolars and maxillary central incisors (3, 6, 7). During orthodontic treatment correction of anterior teeth impaction is a part of therapy. The etiology of tooth impaction is multifactorial which can be systemic, localised or genetics condition related (8).

The most common complications of untreated impacted teeth include: 1) morbidity of the deciduous predecessor and migration of the adjacent teeth, 2)

development of a dental cyst, 3) resorption of a crown of an impacted tooth, 4) resorption of the roots of adjacent teeth, 5) ankylosis, 6) infraocclusion, 7) pain and/or discharge (related to infected cysts, tumors), 8) displacement of the adjacent teeth and shortening of the dental arch. 9) Difficulty in tooth movement.

There are 3 modalities for management of impacted teeth: 1) extraction of an impacted tooth, 2) extraction of an adjacent tooth or 3) non-extraction treatment involving orthodontic space opening and surgical exposure (1). When non-extraction treatment is performed, the orthodontic treatment is usually initiated before the surgical exposure for alignment of the teeth, to open the space for the impacted tooth and to enhance the natural eruption process (1). At the surgery, any hard or soft tissue obstruction is removed and the unerupted tooth is exposed. Then, an attachment can be placed either at the time of surgery or shortly thereafter, on the impacted tooth (5). The presence of an orthodontist during the surgical exposure may be useful for bonding an attachment to later apply an orthodontic force in the appropriate direction and to bring the impacted tooth into the dental arch (1). The last step is to obtain the orientation of the roots of the teeth and its normal position in the alveolar process (5).

The techniques for surgical tooth exposure is broadly divided into gingivectomy or soft tissue window preparation, partial thickness flap, full thickness mucoperiosteal flap, osseous

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surgery and tunnel technique. Technique employed for tooth exposure depends on its labiolingual, apicocoronal & mesiodistal position in the arch, which tooth is impacted and how many tooth/teeth are impacted (9).

Case I Soft Tissue Window Preparation

15 year female patient referred from dept. of Orthodontics with impacted maxillary left canine. Radiograph showing tooth position with relation to other teeth. Tooth bulk was not present but it was palpable. Tooth was within covering of soft tissue below mucogingival junction. Soft tissue window was prepared and tooth was exposed in the oral cavity. Orthodontic bracket was bonded and by help of orthodontic wire tooth was retracted coronally. Pre-operative and post-operative tooth position is shown in the photograph 1.



Photograph 1 Photographs showing radiographic tooth position, intra-operative and post-operative tooth position

Case II Apically Displaced Partial Thickness Flap

14 year female patient referred from dept. of Orthodontics with impacted maxillary right canine. Patient was under orthodontic treatment for since last 8 month. Tooth was impacted in soft tissue. Bulk of the tooth was visible on alveolar ridge. Tooth was palpable on the ridge. Partial thickness apical displaced flap was planned and performed. Partial thickness flap was elevated and displaced is apically till the cementoamel junction and suture with adjacent tissue. Pre-operative, intraoperative and post-operative status of tooth is presented in the photograph 2.





Photograph 2 canine exposure by partial thickness apically displaced flap

Case III: Full Thickness Mucoperiosteal Flap with Osseous Surgery

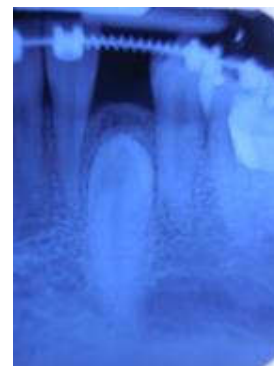
16 year male patient referred from dept. of Orthodontics with palatally impacted maxillary right lateral incisor. Radiograph showing relative tooth position in two dimension view. Tooth was palpable on the palate. Tooth was impacted in roof of the oral cavity behind central incisor and canine. Full thickness palatal flap was elevated and osseous reduction was performed. Orthodontic bracket was placed and wire attachment was given. Pre-operative and intra-operative tooth position is presented in the photograph 3.



Photograph 3 Photograph showing radiographic and pre-operative and intra-operative tooth position

Case IV: Full Thickness Mucoperiosteal Flap with Osseous Surgery

18 year female patient referred from dept. of Orthodontics with impacted mandibular left canine. Tooth was inside the bony alveolar ridge, 3 - 4 mm below the crest of the alveolar ridge. Tooth was not palpable from the ridge. Full thickness mucoperiosteal flap was elevated. Osseous reduction was performed. Tooth was completely exposed till the cemento enamel junction. Orthodontic bracket was placed. Mucoperiosteal flap was sutured at apical extent and left open on coronal part of the tooth. Radiographic tooth position, pre-operative and final tooth position after surgery is presented in photograph 4.





over-retained primary teeth. As a treatment part primary canine and first molar were extracted and permanent canine and first premolar were exposed. Orthodontic bracket was placed on canine and wire attachment was given to bracket. Here tooth was drawn from tunnel which occurred after primary teeth extraction, so the technique is known as tunnel technique.



Photograph 4 Radiographic, intra-operative and final tooth position after bracket placement

Case V: Tunnel Technique

13 year female patient referred from dept. of Orthodontics with over-retained mandibular left primary canine and first molar. Permanent canine and first premolar was impacted due to



Photograph 5 Radiographic, intra-operative and final tooth position after bracket placement



Photograph 6 Radiographic, intra-operative and final tooth position after bracket placement

Case VI Apically Displaced Full Thickness Flap

18 year female patient referred from dept. of Orthodontics with impacted maxillary left central incisor, lateral incisor and canine. Tooth was palpable on labial surface of gingival and alveolar mucosa. Full thickness mucoperiosteal flap was elevated and all the impacted teeth were exposed. Orthodontic bracket was placed on teeth. Flap was displaced apically and sutured. (Photograph 6)



CONCLUSION

The etiology of tooth impaction is multifactorial. Patients with impacted teeth are often referred for orthodontic treatment and these patients often referred to a periodontist for surgical tooth exposure. Their treatment is challenging and requires an interdisciplinary approach, however early detection of tooth impaction can prevent many unwanted complications by instituting preventive measures. The stability after orthodontic treatment with surgical tooth exposure is as good as normal orthodontic cases.

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