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Case Report

Spontaneous Eruption of Impacted Maxillary Central Incisor: Using Diode Laser

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Abstract

Maxillary impacted permanent central incisors are not frequent. Due to their importance in facial esthetics, treatment becomes challenging. Impaction of teeth may be due to adjoining teeth, overlying thick bone, thick band of soft tissue or a genetic abnormality. Early detection of impacted teeth is most important if complications are to be avoided. This article describes a case of unerupted maxillary right central incisor in a 7.5 -year-old male patient due to thick band of soft tissue overlying the tooth. Operculectomy is the surgical removal of gingiva forms an overlying soft tissue flap over a partially erupted tooth or unerupted tooth. Hence in the present case report the choice of treatment decided was laser assisted operculectomy where a window was created which allowed the tooth to erupt spontaneously without orthodontic intervention into it's proper position in the dental arch.

Keywords: Impacted Incisor; Laser; Operculectomy

Introduction

The diagnosis of an impacted maxillary central incisor is usually noticed when there is a delay in it's eruption. To identify the presence of retained deciduous teeth beyond their exfoliation dates, a thorough intra oral examination should be carried out. Adequate space for incisors along with labial or palatal swelling should be noted. X-rays should be taken. An orthopantomogram and anterior occlusal radiograph can be taken for general examination. Cone beam computed tomography technology has become available for imaging the facial region and can be used to localise any impacted teeth, including incisors and this allows us to accurately locate the impacted tooth including it's associated structures [1]. This case report describes a case of unerupted maxillary left central incisor and it's treatment using laser with no orthodontic assistance. To our knowledge, such a case has not been reported in literature.

Case Report

A 7.5 year old male patient reported with a chief complaint of unerupted upper left front tooth (Figure 1). The medical history was non-contributory. Dental history revealed that the child had an eruption cyst with respect to upper right central incisor, which was excised surgically 5 months ago successfully. At that time it was noted that 61 had already exfoliated. Patient returned to the department after 5 months after removal of the cyst and it was noted that the upper left central incisor had not yet erupted. On examination the incisal edge of the underlying impacted tooth was palpable. An intra oral periapical radiograph of upper anterior region demonstrated an impacted permanent left central incisor due to thick soft tissue overlying the tooth. Treatment plan consisted of surgical exposure of the tooth in order for it to erupt. A blood investigation was carried out before the procedure. Weight of the patient was checked so as to calculate the maximum dosage of local anaesthesia. The area to be operated was then anesthetized using 2% lignocaine hydrochloride. Operculectomy was performed by creating a surgical window using a diode laser on the bucco-incisal gingival region of the impacted tooth. Tissue removal was done at the level of the incisal third around the tooth (Figure 2). Post-operative instructions were given. Tooth was allowed to erupt without the help of any orthodontic intervention. Healing of the surgical site was seen at one week. Complete eruption of the tooth was seen after one month follow up (Figure 3).

Figure 1: Pre-operative photograph.

Figure 2: Window created using Diode laser to facilitate the eruption of Impacted Maxillary Central Incisor.

Figure 3: 1 month re-call showing erupted Maxillary Central Incisor.

Discussion

Delayed eruption of maxillary incisors requires crucial monitoring and intervention. According to Mac Phee., *et al*. [2] unerupted maxillary central incisor in 5–12 year-old age group has an incidence of 0.13. Literature reveals several causes of failure or delayed eruption of maxillary incisors such as supernumerary teeth (most common), dilaceration after trauma, ectopic position of the tooth bud, non-vital or ankylosed primary teeth, early extraction (or loss) of deciduous teeth, bone disease and mucosal barriers in the path of eruption that acts as a physical obstruction [3] which was the cause for impaction in the present case.

Important clinical signs are over-retention of the analogous primary tooth while the adjacent permanent tooth is in eruption or has already erupted, lack of space for permanent tooth eruption or space closure; rotation and inclination of the adjacent teeth; eminence of soft tissue in the palatal or labial mucosa based on tooth location; absence of eruption bulge at 1–1.5 years prior to the time of tooth eruption [3]. In our case there was presence of an eruption bulge in the buccal mucosa, exfoliated corresponding primary tooth and the contralateral tooth had erupted.

Crowding, diastema formation, cyst formation, displacement of teeth, periodontal problem, difficulty in mastication and compromised esthetics are oral complications of impacted teeth by Kalaskar., *et al* [4].

Palpation along with the help of radiographic examination can help in locating the impacted tooth [5]. A palatal or labial bulge is likely to be experienced which will help locate the position of the unerupted tooth. A painless, incompressible, palatal or labial fibro mucosal protuberance helps in locating the crown of the impacted tooth [3]. In the present case on palpation we encountered a labial bulge which helped in locating the impacted tooth.

Diagnosis of impacted tooth is confirmed and its location is determined through radiographic evaluation [6]. Panoramic radiograph imparts low dose of radiation and gives the best radiographic survey hence it is considered the standard radiograph for first-step examination [7]. An intra oral periapical radiograph and a panoramic radiograph was taken for the patient in the present study.

Crawford in 1997 stated that 54-76% of impacted maxillary incisors erupted spontaneously when supernumerary tooth is removed and if there is adequate space in the dental arch. However, Mason., et al. 2000 stated that it could take up to 3 years for the spontaneous eruption of impacted maxillary incisor. The tooth loses it's potential to erupt normally once the root apex is closed but if the root of the impacted tooth is still developing, the tooth may erupt normally [8]. In the present study since the child was just 7.5 years old, root formation was not complete hence spontaneous eruption with no orthodontic treatment was chosen as the treatment and was seen also in one month.

Early diagnosis is critical to the success of the treatment even though different methods of treatment have been postulated. Laser technology provides an opportunity for more efficient diagnosis and treatment of oral dental soft and hard tissue conditions in children. Laser therapy is well accepted by the children and parents due to its minimal invasiveness. For soft tissue removal and exposure of unerupted teeth, Er, Cr: YSGG, Er, YAG, diode and Nd: YAG lasers are used. But, there is always a risk of enamel damage at the surgical site. However, this risk is nonexistent if diode or Nd: YAG lasers are used due to their specific wavelengths [9]. Hence in the present case a Diode laser was used.

Conclusion

As maxillary incisors are esthetically important, parents are often troubled due to unexpected eruption sequence. As soon as the parent see signs of unerupted tooth they should seek treatment from a Pediatric Dentist in order to prevent psychological complication that follow abnormalities of the anterior maxilla. It is important to

attain an accurate diagnosis through thorough examination. Hence every case must be treated individually with a valid and evidence based treatment plan to achieve the best possible outcome for each patient. With lasers, particularly in pediatric dentistry there is an ease of treatment with better outcome and cooperation from children and parents.

Conflict of Interest

None.

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