



Intentional Retention and Restoration of Mesiodens Highlighting the Importance of Patient Treatment Needs in Treatment Planning

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Abstract

Early diagnosis and extraction is the best treatment option for the mesiodens to prevent further complications. But in most cases, mesiodens is not diagnosed at correct time and leads to various complications such as ectopic eruption of permanent central incisor. In such cases also, treatment is extraction of mesiodens and orthodontic alignment of ectopically erupted tooth. Treatment should always be planned taking various factors into consideration such as main objective for the treatment, radiographic and clinical evaluation, treatment outcome, financial condition of the patient and patient's preferences. We should think of all treatment alternatives while planning treatment and must take final decision with patient's involvement. This case report presents a case of intentional retention of fully erupted mesiodens as an esthetic substitute for malpositioned maxillary central incisor emphasizing the importance of patient preferences and treatment needs in treatment planning.

Keywords: Esthetic; Maxillary central incisor; Mesiodens; Treatment needs

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Introduction

Mesiodens is a supernumerary tooth present in the maxillary midline between two central incisors. The reported prevalence rate of mesiodens in general population ranges between 0.15% and 1.9% [1-3]. Early diagnosis and surgical extraction of mesiodens in the early mixed dentition helps spontaneous alignment of the adjacent teeth. But most of the time occurrence of mesiodens in the oral cavity goes unnoticed and it may erupt in the oral cavity. However, symptomless cases could be left untreated along with regular check-up. Whereas few cases associated with ectopic eruption of permanent central incisor needs extraction of mesiodens to create sufficient space for orthodontic alignment of permanent teeth to enhance esthetics [4,5]. Even with these advances in treatment, some patients may refuse orthodontic therapy due to occupational limitations of time, appearance during treatment and cost factor. This case report presents a case of intentional retention of conical shaped mesiodens and its restoration with fixed prosthesis as an esthetic substitute for cervically fractured and labially positioned maxillary central incisor unveiling the relevance of patient's preference and treatment needs in treatment planning.

Case Presentation

A 25-year-old male reported to department of Conservative Dentistry and Endodontics with a chief complaint of unesthetic appearance due to fractured upper front tooth. Patient gave history of trauma 1yr back and had not undergone any treatment before for his fractured tooth. On clinical examination, maxillary left central incisor was found to be fractured at cervical third and was labially positioned. Conical shaped fully erupted mesiodens was present between maxillary central incisors on clinical examination and was in alignment with right maxillary central incisor. On periapical radiographic examination, periapical radiolucency with apical root resorption was found in relation to maxillary left central incisor. Mesiodens was found to have completely formed root on periapical radiograph. As esthetic, cost and treatment duration were of prime concern for the patient and also patient was reluctant to orthodontic therapy, treatment was planned to extract fractured labially

positioned maxillary left central incisor and endodontically treat and restore mesiodens with fixed prosthesis as an esthetic substitute for maxillary left central incisor. Before extraction of maxillary left central incisor, diagnostic wax up was done to visualize the future treatment outcome [6]. Oral prophylaxis was done. Maxillary left central incisor was extracted. After 15 days of healing of extraction socket, single visit endodontic treatment was done in relation to mesiodens under rubber dam isolation. Root canal treatment of mesiodens was performed manually with k-files under copious irrigation similar to any other vital permanent anterior tooth with single canal, closed apex and with no periapical involvement. Distal half of mesiodens was built with Composite followed by crown cutting. Porcelain fused to metal crown having the anatomy of maxillary left central incisor was then fabricated and cemented on prepared mesiodens. Patient was instructed not to put excessive masticatory pressure on maxillary anteriors in future. Patient was found to be asymptomatic and satisfied with the esthetic outcome at 1-month, 6-month and 1-year follow up visits.

Discussion

Treatment planning can be defined as developing a course of action that encompasses the ramifications and sequale of treatment to serve patient's need [7]. Development of treatment plan for a patient consists of four steps:

1. Examination and problem identification
2. Decision to recommend intervention
3. Identification of treatment alternatives
4. Selection of the treatment with patient's involvement [8].

Treatment planning should be adaptable to meet the changing needs, preferences, and health conditions of the patient [9]. Informed consent has become an integral part of modern day dental practice [10]. One aspect of informed consent is to provide the patient with the necessary information about the alternative therapies available to manage their oral conditions. This case report presents a case in which treatment planning was done taking patient's treatment needs and preferences into consideration. Mesiodens can be classified based on their occurrence in permanent dentition (rudimentary mesiodens) or the primary dentition (supplementary mesiodens) and based on their morphology as conical, tuberculate or molariform. Conical mesiodens usually occur singly. They are generally peg-shaped and tend to displace the erupting permanent central incisors. Conical mesiodens often have a completely formed root and can erupt into the oral cavity [11,12]. This case report presents a case of fully erupted rudimentary and conical or peg shaped mesiodens with completely formed root. Various complications might occur due to mesiodens. Delay in the eruption of permanent teeth and displacements of permanent maxillary incisors are common complications. It has been mentioned that conical types often cause displacement of the adjacent tooth [13]. In this case report mesiodens was conical in shape so probably it resulted in alteration in the path of eruption of maxillary left central incisor causing labial displacement. Panoramic, maxillary occlusal and periapical radiographs are needed for diagnosis of mesiodens [14]. In this case report, mesiodens was fully erupted and its position in oral cavity was clearly visible clinically. So, only diagnostic periapical radiograph was helpful to know the level of root formation of mesiodens and the periapical status of fractured maxillary left central incisor. Early diagnosis of a mesiodens is the

most appropriate treatment, often reducing the extent of surgery, orthodontic treatment and possible complications [15]. Extraction of the mesiodens in the early mixed dentition stage usually around 10 years of age, when the unerupted central incisor's apex is almost mature is recommended [16]. But here in this case, mesiodens was detected much later when it had already caused a complication of labial displacement of maxillary left central incisor. We had three treatment alternatives in this case which were:

1. Extraction of mesiodens to create space for the orthodontic alignment of maxillary left central incisor after its endodontic therapy. Then to restore cervically fractured maxillary left central incisor with post core and full coverage fixed prosthesis.
2. Extraction of mesiodens and labially positioned fractured maxillary left central incisor followed by fixed partial denture using right maxillary central incisor and left maxillary lateral incisor as an abutment.
3. Extraction of labially positioned fractured maxillary left central incisor followed by retention and restoration of mesiodens as its root was fully formed and it was in alignment with maxillary right central incisor [17].

All treatment alternatives along with their long term effect were explained to the patient. First option has advantage of good esthetics and prognosis but it has disadvantage of long treatment duration, increased treatment cost due to orthodontic therapy and post – core, and patient was also reluctant for orthodontic treatment. Second treatment option has advantage of good esthetics and prognosis but it has disadvantage of more number of appointments, higher treatment cost and cutting of intact tooth structure of right central and left lateral incisor. Third treatment option has advantage of good esthetic outcome, no need for orthodontic treatment and crown cutting of intact teeth, less no. of treatment appointments and cost of treatment was lower than other two options. It has disadvantaged that prognosis of endodontic treatment and prosthetic restoration of mesiodens was doubtful. But, few case reports has already been published in the literature where results of endodontic treatment and prosthetic restoration of mesiodens was found to be successful [17]. The patient prime concern was esthetic, treatment cost and duration of treatment and he strictly refused orthodontic treatment and cutting of intact tooth also. The third treatment option was fulfilling all the treatment needs and preferences of the patient. And in case this treatment fails in future then we had an option of esthetic restoration with fixed partial denture. So, final treatment plan was selected with patient's involvement. Patient was found to be completely satisfied with esthetic outcome of the treatment.

Conclusion

While formulating treatment plan we should think of all treatment alternatives possible and must select treatment option with patient's involvement. This case report presents a case highlighting the importance of patient preferences and treatment needs in treatment planning.

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