

Management of a Patient with Midline Diastema Related To Mesiodens: Case Report

Karuna Sharma¹ Sujit Panda², Anil Kohli³, Ashish Katiyar⁴

¹ M.D.S, Assistant Professor, Department of Paedodontics and Preventive Dentistry, Rama Dental College, Hospital and Research Centre, Kanpur

² M.D.S, Professor, Department of Orthodontics and Dentofacial Orthopaedics, Rama Dental College, Hospital and Research Centre, Kanpur,

³ M.D.S, Professor and HOD, Department of Pedodontics and Preventive Dentistry, Rama Dental College, Hospital and Research Centre, Kanpur

⁴ M.D.S, Reader, Department of Pedodontics and Preventive Dentistry, Rama Dental College, Hospital and Research Centre, Kanpur

Abstract

Any tooth appearing in any area of the dental arch in addition to the regular number of teeth is called as supernumerary teeth and the condition is called as hyperdontia. Such teeth which is most commonly found in pre-maxillary region, when present between two central incisors are called as mesiodens. The etiology of this condition is reported to be hereditary and also found to be associated with certain syndromes. Mesiodens when present pose aesthetic or/and functional problem to the patient. The patient who reported to us, had no history of trauma or associated syndrome, came with a chief complaint of space between front teeth and irregularly placed upper front teeth which did not appear good and requested orthodontic treatment for the misalignment of their anterior teeth.

Keywords - supernumerary teeth, mesiodens, midline diastema

Introduction

Presence of an extra tooth in the dental arch in addition to the normal series of teeth is called supernumerary tooth. It may closely resemble the teeth of the group to which it belongs, i.e. molars, premolars or anterior teeth, or it may bear little resemblance.[1]

The prevalence of hyperdontia is reportedly between 0.15% - 3.9%.[2,3,4] Supernumerary teeth may be present in both the primary and the permanent dentitions but their occurrence is 5 times less in the primary dentition.[5,6,7,8]

Mesiodens is defined as a supernumerary teeth located in the maxillary central incisor region and its prevalence has been estimated to be 0.15 to 1.9% of the population. [6,7,9] Supernumerary teeth can occur anywhere in the dental arch, but are found most commonly in the maxilla. The literature reports that 80% to 90% of all supernumerary teeth occur in the maxilla.[10,11].The single supernumerary tooth in the midline is the most common finding.[11] Half of the mesiodens are found in the anterior region.[9,12,13,14] Mesiodens can occur as single or as multiples (mesiodentes), may appear unilaterally or bilaterally, and often do not erupt.8 One-third of all patients with a mesiodens also have other supernumerary teeth; however, some patients present with mesiodentes in conjunction with congenitally missing teeth.[17]

Mesiodentes can significantly affect both occlusion and appearance by altering the eruption path and the position of the permanent incisors.[9,12,13]

Mesiodentes can be classified on the basis of their occurrence- if they occur in the primary dentition, they are known as supplementary mesiodentes and if they occur in the permanent dentition, they are known as rudimentary mesiodentes and according to their morphology they can be classified into conical, tuberculation or molariform. [9, 15]

Supplementary mesiodentes is similar to natural teeth in both size and shape, whereas rudimentary mesiodens display abnormal shape and smaller size. [9] Supernumerary primary teeth are most often mesiodentes or supernumerary laterals. [3,16] If a supernumerary primary tooth is present clinically, a supernumerary permanent tooth is often visible radiographically. Panoramic, maxillary occlusal and periapical radiographs are advised in the diagnosis of mesiodentes.

Genetics is believed to play a part in the development of mesiodentes, as such teeth have been diagnosed in twins, siblings and sequential generations of a single family.[4] A sex-linked pattern has also been found, as males are affected twice as frequently as females. [2, 5, 15] Autosomal dominant inheritance with incomplete

penetration has been the proposed genetic theory.[6]

A Case Report

A 12-year-aged male patient reported to the Department of Paedodontics and Preventive Dentistry Rama Dental College, Kanpur, with chief complaint of space between the upper two front teeth and irregular front teeth. Pt gave a past dental history of the extraction of a small conical tooth between the upper central incisors. On intraoral examination, a space of 4 mm was seen between the upper two permanent central incisors. The upper left central incisor was proclined and left lateral incisor was palatally placed but was not in cross-bite. No crowding was observed in the lower arch. Dentition stage was permanent, with first molars, both the premolars and canines present in both the arches. Orthodontic consultation was taken. It was decided to close the diastema using Hawley's appliance (Adams clasp on molars and a long labial bow)

During the second visit, a Z spring was incorporated to align the retroclined left lateral incisor. Activation was done every four weeks. With the activation of Z spring the palatally placed lateral incisor started moving into the arch. Interestingly, as the treatment progressed the labial movement of the lateral incisor resulted in mesial tipping of the left central incisor ultimately resulting in closure of black triangle which had appeared earlier.



Figure 1: Preoperative Opg



Figure 2: Preoperative Photograph



Figure 3: Patient with Appliance



Figure 4: Z Spring Incorporated in the Same Hawley's Appliance



Figure 5: Post Treatment Photograph



Figure 6 : Preop Photograph Occlusal View Postop Photograph

After seven months, overjet was corrected, and diastema was closed. The analysis of the final photographs shows the reestablishment of normal dental development, highlighting the efficiency and effectiveness of the treatment. Furthermore, due to the esthetic improvement of the smile, the patient reported a higher level of self-confidence and was generally happier than in the original situation. After completion of the alignment of the incisors the patient was referred to the Department of Orthodontics for the completion of orthodontic treatment.

Discussion

There is a great possibility of the disruption of normal occlusal development due to the presence of an extra tooth and early intervention is usually required to remove it to obtain reasonable alignment and occlusal relationship. [17] Extraction should be done as soon as the supernumerary teeth can be removed without harming the developing normal teeth. [17] There may be certain complications. Presence of mesiodens (erupted and unerupted) may cause midline diastema. A retrospective study showed 10% of cases with Supernumerary teeth presented midline diastema.[18] Supernumerary tooth is the common reason for the delayed or failure of eruption in premaxillary region [19].Any form of Supernumerary Teeth can cause this complication; erupted or unerupted supplemental Supernumerary Teeth most often leads to crowding[17].Displacement of the crowns of the adjacent teeth is a common feature in cases associated with Supernumerary Teeth. [20] The amount of displacement ranges from a mild rotation to complete displacement.[13] Supernumerary teeth cause severely rotated incisors and sometimes remain unerupted. Self-correction and correct alignment may result in early removal of the causative Supernumerary Teeth [21].Root resorption of adjacent teeth sometimes leads to loss of tooth vitality [22].Ectopic eruption of Supernumerary Teeth has been reported, among these frequently reported in the nasal cavity. Clinically, a white mass may be seen in the nasal area, radio graphically appearing as a tooth-like radiopacity [23] Patients with a history of anterior conical or tuberculation supernumerary teeth at an early age have a 24% possibility of developing single or multiple supernumerary premolars at late age [24]. Root Abnormalities may occur. Dilacerations is defined as an angulations' or deviation or sharp bend or curve in the linear relationship of the crown of a

tooth to its root.[25] Loss of tooth vitality has been reported in rare cases.

In the present Case, complication associated with the supernumerary teeth was diastema formation after extraction of mesiodens and misaligned incisors. The supernumerary tooth was mesiodens and the most common complication of mesiodens is displacement of central incisors. [14] Early diagnosis and treatment of patients with supernumerary teeth are important to prevent or minimize complications. Treatment depends on the type and position of the supernumerary tooth and its effect on the adjacent teeth. Supernumerary teeth have been reported in patients with syndromes such as Ehlers-Danlos syndrome Type III [26], Cleidocranial dysplasia [27], Gardner's syndrome [28], Ellis-Van Creveld syndrome [29], etc and also have been reported in conditions like cleft lip and/or palate. But in this case mesiodens was not associated with any syndrome.

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