ISSN: 2835-0448

International Journal of Dental Science and Dentistry Research (IJDSDR)

IJDSDR : Dental Publication

Available Online at: www.ijdsdr.com

Volume – 2, Issue – 3, May – June - 2023, Page No. : 18 – 22

An Evolution of Multiple Mandibular Mesiodens Blocking Incisor Eruption in A Non-Syndromic Patient - Case Report

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How to Cite This Article: Fhlem Baozi, Hanery Doukhris, "An Evolution of Multiple Mandibular Mesiodens Blocking Incisor Eruption in A Non-Syndromic Patient - Case Report", IJDSDR – May – June - 2023, Vol. – 2, Issue – 3, P. No. 18 – 22.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Mesiodens, a frequently encountered supernumerary tooth, primarily occurs in the maxillary anterior region, with mandibular involvement being exceptionally rare. This case report presents an unusual instance of multiple mandibular mesiodens in a middle-childhood girl with no significant medical, dental, or familial predisposition.

Keywords: Mandibular Mesiodens, Surgical Extraction, Clinical And Radiological.

Introduction

A Pediatric dentists and orthodontists are familiar with mesiodens as one of the more prevalent irregularities affecting the growing dentition, necessitating a multidisciplinary evaluation. The exact cause of hyperdontia is not fully understood. Several theories have been proposed to explain this dental anomaly, such as hyperactivity of the dental lamina and the concept of tooth bud dichotomy. Additionally, a familial tendency has been noted, with evidence indicating a possible sex-linked inheritance pattern, as males are affected approximately twice as often as females. Hyperdontia in the lower anterior region has an estimated prevalence of only 0.01%. In non-syndromic individuals, the prevalence of supernumerary teeth was recorded at 1.24% in South Indians and 1.6% in North Indians, with a slight male predominance but reports of multiple mandibular mesiodens are even rarer.

Mesiodens can result in the delayed emergence of permanent teeth, shifting of the midline, rotation of teeth, and resorption of the roots of neighbouring teeth, along with other issues. Supernumerary teeth are usually removed between the ages of 5 and 10 to avert these

complications and reduce the likelihood of requiring orthodontic treatment, which can be time-consuming and inconvenient. Due to the intricacy of numerous clinical factors that could be encountered, if it is suspected that complications are developing, surgical excision of the mesiodens may be considered. In this case, multiple mesiodens is interrupting the eruption of the central incisor so immediate surgical extraction was planned. This study aims to highlight a unique case of lower multiple mesiodens that presented in the Department of Paediatric Dentistry for evaluation and treatment. A young girl with no relevant medical, dental, family and psychosocial history presented with a rare finding of lower mesiodens.

Case Explanation

A middle childhood girl presented with a chief complaint of mal-aligned lower front teeth. No medical or dental history was relevant, and there had never been any prior jaw or tooth injuries. A clinical evaluation revealed a girl in good health with no additional physical anomalies. A retained deciduous tooth and lingually erupting lateral incisors were seen during an intraoral examination (Figure 1a). Firstly, an intraoral periapical (IOPA) radiograph was taken in order to address the diagnostic issue. A retained deciduous central incisor and an unerupted mesiodens were seen just above the unerupted central incisor (Figure 1b) in the IOPA radiograph. Additional occlusal radiographs (Figure 1c) and the orthopantogram (OPG) (Figure 1d) were taken to evaluate the position, quantity, and movement of the mesiodens.

Figure 1 a:

Figure 1 b:

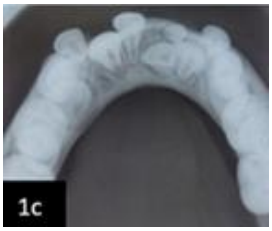

Figure 1 c:

Figure 1 d:

Investigation

The permanent central incisor's position in relation to the mesiodens and neighboring permanent teeth was useful in this instance, despite the OPG radiograph's limited utility due to its distortion and thin focus through in the anterior dental midline region. An occlusal radiograph was also taken to determine the mesiodens precise location with respect to the neighboring permanent teeth.

Treatment

The decision to remove the mesiodens was made with the consent of the patient, taking into account the clinical and radiological findings. Under local anesthesia, the surgical procedure was performed without any pain. Firstly, an incision was made on the crest, and the envelope flap was lifted (Figure 2a). As the buccal alveolar bone was removed using bone cutting bur, mesiodens were exposed (Figure 2b) and extracted (Figure 2c). Finally, an interrupted suture was placed

(Figure 2d). The extracted mesiodens exhibited distinct anatomical variations—one had a small, conical root and measured 8 mm in length, while the other two resembled small odontoma-like structures (Figure 2e). Histologically, the pulp of the mesiodens displayed a typical and normal loose connective tissue, with collagen fibers, blood vessels, and nerve fibers distributed in between a variety of fibroblast-like cells, odontoblasts, and undifferentiated mesenchymal cells. A single layer of odontoblasts was seen encircling the pulpal periphery.

Figure 2 a:

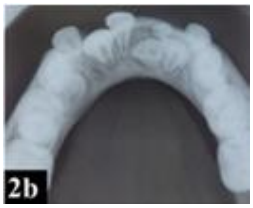

Figure 2 b:

Figure 2 C:

Outcome and follow-up

Patient was recalled after 1 week for suture removal. Patient was asked to visit at 3 months intervals for further follow-up. Six-month postoperative IOPA (Figure 3a) and occlusal (Figure 3b) radiographs revealed the occlusal movement of unerupted permanent mandibular right central incisor. However, due to the mesial movement of neighboring teeth, there was little space left for the eruption of the permanent mandibular right central incisor (Figure 3c). One-year follow-up revealed the eruption of the central incisor, which had previously been blocked by the mesiodens (Figure 4). Due to malaligned dentition, the patient was referred to the Department of Orthodontics for space management.

Figure 3 a:

Figure 3 b:

Figure 3 c:

Figure 4:

Discussion

It is well known that the anterior part of the maxilla contains the majority of supernumerary teeth, and numerous writers have documented that the preponderance consistently favors males (varying from 1.3:1 to 6.5:1). In this case report, however, the mesiodens was found in the incisor region of the mandible, and the patient was a female, defying these well-established statements. Based on its form, number,

and location, the extracted tooth could be categorized as a conical, solitary mesiodens in the suggested classification system for supernumerary teeth. Comparing this mesiodens to the nearby central incisors, it was smaller.

Multiple hypotheses have been suggested to account for the presence of supernumerary teeth. The phylogenetic theory indicates that their formation is a consequence of the resurgence of ancestral characteristics. The tooth germ dichotomy theory links the emergence of supernumerary teeth to the division of the dental lamina into several segments. On the other hand, the hyperactivity of dental lamina theory asserts that these additional teeth develop due to an overgrowth of the residual dental lamina.

Mesiodens is typically discovered by accident during a standard two-dimensional radiograph examination, which includes intraoral (Clark method and occlusal views) and extraoral (OPT and teleradiography) views [5,7]. Unerupted mesiodens may result in early resorption of the primary incisors and other issues such as delayed or prevented eruption, rotations, or displacement of permanent teeth8.When the central incisors erupt asymmetrically or the deciduous incisors do not exfoliate normally, there is a clinical suspicion of a supernumerary tooth, especially a mesiodens[4]. Cyst formation, diastema, crowding, and permanent tooth displacements are less common problems. If there is a suspicion that issues are developing, surgical excision of the mesiodens is considered. Mesiodens can hinder the eruption of permanent central incisors, potentially causing impaction. They may either erupt into the oral cavity or remain impacted within the jawbone[9]. Studies indicate that delayed eruption of adjacent teeth occurs in approximately 28–60% of Caucasians with supernumerary teeth.

Hyperdontia can be linked to various syndromes, including Gardner's syndrome, Cleidocranial dysplasia, Marfan syndrome, Ehlers–Danlos syndrome, Rothmund–Thomson syndrome, Orofacial digital syndrome, Chondroectodermal dysplasia, Hypertelorism–Hypospadias syndrome, Incontinentia pigmenti, Anderson's syndrome, and Tricho–Rhino–Phalangeal syndrome[6]. Based on insights from various articles on mandibular mesiodens, management guidelines were developed (Table 1).

Table 1:

Extraction	Non-Extraction
Inhibition/delayed eruption of adjacent tooth	Satisfactory eruption of adjacent teeth
Displacement of adjacent tooth	Absence of pathological conditions
Interferences with orthodontic appliance	Less risk of damaging vitality of the related teeth
Presence of pathologic conditions	
Spontaneous eruption of supernumerary	

Conclusion

The diagnosis and management of mesiodens pose a significant challenge, particularly in cases where clinical experience and knowledge are insufficient. Studies indicate a higher prevalence in males, with conical and tuberculate morphologies being the most frequently observed types. The decision regarding the timing of intervention must be carefully tailored to each case, considering root development, eruption patterns, and potential complications to ensure optimal functional and esthetic outcomes.

As primary healthcare providers for pediatric and adolescent patients, pediatric dentists play a pivotal role in identifying and managing such anomalies. Given the increasing emphasis on malocclusion and esthetic

concerns, a comprehensive, evidence-based understanding of these rare dental occurrences is essential. This case underscores the importance of early diagnosis, multidisciplinary collaboration, and strategic intervention, contributing valuable clinical insights into the rare phenomenon of multiple mandibular mesiodens. A proactive and well-informed approach is crucial to preventing complications and ensuring favorable long-term outcomes.

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