Unlocking the Midline: Management of Twin Mesiodens with Sequential Orthodontic Closure

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ABSTRACT

Mesiodens, the most prevalent form of supernumerary teeth, typically occurs in the maxillary midline and may disrupt the normal eruption and alignment of permanent incisors. While a single mesiodens is frequently reported, the occurrence of twin mesiodens is relatively rare and can lead to complications such as midline diastema, delayed eruption, and anterior malalignment. Early diagnosis and appropriate intervention are critical to prevent long-term esthetic and functional disturbances.

This case report describes the clinical management of a pediatric patient presenting with two supernumerary teeth in the maxillary midline associated with spacing and displacement of the permanent incisors. Radiographic evaluation confirmed the presence and orientation of the supernumerary teeth. A multidisciplinary treatment plan involving extraction of the mesiodens followed by orthodontic therapy was implemented to achieve controlled space closure and proper alignment of the anterior teeth. Following removal of the supernumerary teeth and subsequent orthodontic guidance, satisfactory alignment of the maxillary incisors and closure of the midline diastema were achieved, resulting in improved esthetics and functional occlusion.

This report underscores the importance of early detection and interdisciplinary management in cases of supernumerary teeth. Timely surgical removal combined with orthodontic intervention can effectively restore normal dental alignment and optimize esthetic outcomes in patients presenting with twin mesiodens

Keywords: Mesiodens, supernumerary teeth, diastema closure, fixed mechanotherapy

INTRODUCTION

Mesiodens is defined as a supernumerary tooth located in the maxillary midline between the two central incisors and represents the most frequently encountered supernumerary dental anomaly. The prevalence ranges from 0.15% to 1.9% and it is more commonly observed in males than females. Mesiodens may present as erupted, impacted, inverted, or ectopically positioned and may occur singly or in multiples. These teeth are often associated with complications such as delayed eruption of permanent incisors, midline diastema, displacement, rotation, and root resorption of adjacent teeth.1-4

The etiology of mesiodens has been attributed to hyperactivity of the dental lamina, genetic predisposition, and disturbances during tooth development. Early diagnosis is crucial for preventing occlusal and esthetic complications. Removal of the supernumerary tooth followed by orthodontic correction is often indicated when spontaneous alignment does not occur.5-7

The present case report describes the diagnosis and comprehensive management of twin mesiodens in a 14-year-old male patient with successful orthodontic closure of a midline diastema and long-term stabilization.

CASE REPORT

A 14-year-old male patient reported with a chief complaint of retained tooth-like structures in the upper front teeth region. The patient and his parents stated that these teeth had been present since early childhood and were causing esthetic concerns.

On clinical examination, malalignment of the maxillary anterior teeth was observed, characterized by a persistent midline diastema secondary to the presence of two teeth-mesiodens in the midline region (fig.1a & b). Radiographic evaluation (1c) confirmed the presence of two mesiodens located between the maxillary central incisors, contributing to midline

diastema and altered incisor alignment.

Upper and lower impressions were made, and diagnostic casts were prepared for detailed evaluation. The casts were carefully studied, and a treatment plan was formulated managed by atraumatic routine intra-alveolar extraction of the mesiodens followed by orthodontic closure of the midline diastema using fixed mechanotherapy.

1. Pre-operative Stage

Pre-operative intraoral examination revealed that the patient presented without any prior orthodontic intervention and expressed primary esthetic concerns related to the anterior maxillary region. Clinical assessment showed retained supernumerary teeth in the midline contributing to spacing and malalignment of the maxillary incisors.

Figure 1a: Intra Oral frontal

Figure1b: Maxillary occlusal view

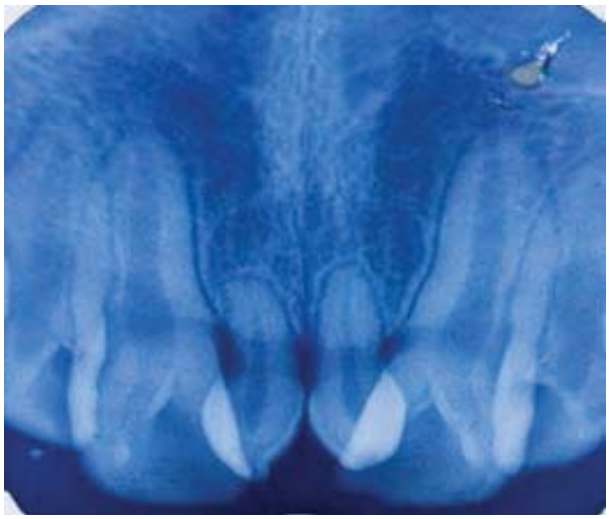

Figure 1c: Radiograph showing mesiodens

2. Extraction of Mesiodens (Atraumatic Extraction Under Local Anesthesia)

Both mesiodens were extracted atraumatically under local anesthesia. Care was taken to preserve surrounding tissues and adjacent teeth. Hemostasis was achieved and postextraction instructions were provided.

Figure 2a: Extraction of mesiodens under local anesthesia

Figure 2b: Extracted mesiodens.

3. Healed Socket Post-Extraction

Follow-up evaluation showed satisfactory healing of the extraction sites with no signs of infection or complications. The palatal tissues demonstrated healthy healing, allowing commencement of orthodontic treatment.

Figure 3a: Healed Socket (Occlusal view)

Figure 3b:Healed Socket(Frontal view)

4. Bracket and Elastomeric Chain Placement

Fixed orthodontic therapy was initiated in the maxillary arch using pre-adjusted edgewise brackets with a 0.022" slot prescription. Following bonding, initial leveling and alignment were carried out using a 0.014" nickel–titanium (NiTi) archwire to relieve rotations and initiate alignment of the maxillary anterior teeth. This was sequentially progressed to 0.016" NiTi to further improve alignment and arch coordination.

After achieving satisfactory preliminary alignment, working archwires of 0.016" × 0.022" NiTi followed by 0.017" × 0.025" stainless steel were placed to provide adequate stiffness for torque control and root parallelism.

Elastomeric chains were engaged from canine to canine to facilitate controlled closure of the midline diastema using light continuous forces (approximately 100–150 grams), ensuring bodily movement of the central incisors while

minimizing tipping.

Adjustments were performed at 4-week intervals. Complete closure of the midline diastema and satisfactory alignment of the maxillary anterior segment were achieved over a treatment duration of approximately 9–10 months.

Figure: 4a

Figure: 4b

Figure: 4c

Figure 4a, 4b & 4c: Placement of brackets and elastomeric chain for orthodontic closure of midline diastema.

5. Follow-Up and Progress Evaluation

Periodic follow-up visits demonstrated progressive improvement in alignment and midline correction. Space closure occurred gradually with coordinated incisor positioning.

6. Stabilization with Ligature Wire Prior to Debonding

Before debonding, stabilization was performed using ligature wire to maintain the achieved alignment and minimize relapse.

Figure 5: Stabilization with ligature wire prior to bracket removal.

7. Final Result

At the completion of active orthodontic treatment, optimal alignment of the maxillary anterior teeth was achieved. The midline diastema was successfully closed, and satisfactory esthetics were obtained.

Figure 6: Final post-treatment intraoral view showing corrected alignment.

Following space closure, a bonded lingual retainer (canine-to-canine) was placed to prevent relapse. Additionally, a removable clear retainer was also delivered.

8. Clear Removable Retainer Placement

To maintain long-term stability, a clear removable retainer was delivered for the maxillary arch. Proper fit, complete seating, and adequate occlusal clearance were verified. The patient was instructed regarding insertion and removal techniques, wear protocol, and maintenance to ensure optimal retention and hygiene compliance

Figure 7: Clear Removable Retainer Placement to maintain long term stability.

Discussion

Mesiodens is a significant etiological factor responsible for midline diastema, eruption disturbances, and anterior malalignment. Early detection and timely removal are recommended to prevent progressive displacement and orthodontic complications.1,2,5

In the present case, the presence of two mesiodens contributed to persistent midline spacing and altered alignment of the maxillary incisors. Diagnostic cast analysis aided in treatment planning. Extraction of mesiodens under local anaesthesia was performed successfully, followed by orthodontic space closure.

The use of elastomeric chains enabled efficient closure of the diastema with controlled and physiological tooth

movement. Stabilization prior to debonding and the use of a fixed lingual retainer were essential to maintain long-term alignment and minimize relapse potential.

This case underscores the ability of pediatric dentists to manage selected orthodontic concerns—such as anterior alignment and closure of midline diastema—along with the removal of supernumerary teeth, provided appropriate expertise and careful case selection are ensured.

Conclusion

Twin mesiodens can significantly affect esthetics and alignment of the maxillary anterior teeth. Early diagnosis, appropriate extraction, and timely orthodontic intervention are essential for optimal outcomes. Comprehensive management involving atraumatic extraction followed by fixed orthodontic therapy and retention resulted in stable functional and esthetic results in this case.

Declaration of Patient Consent

Written informed consent was obtained from the patient and parent/guardian for publication of clinical photographs and relevant clinical information. All efforts were made to maintain patient anonymity.

Ethical Considerations

The treatment described was carried out as part of routine clinical care within the Department of Paediatric and Preventive Dentistry and adheres to institutional ethical standards and the principles of the Declaration of Helsinki.

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