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RESEARCH ARTICLE

AESTHETIC MANAGEMENT OF MESIODENS: A CASE REPORT WITH REVIEW OF LITERATURE

^{1,*}Dr. Dhanya John, ²Dr. Josey Mathew, ³Dr. AngelMary Joseph and ⁴Dr. Basil Joy

¹Assistant Professor, Department of Conservative Dentistry & Endodontics, Annoor Dental College, Perumattom, Muvattupuzha, Kerala, India

²Associate Professor, Department of Conservative Dentistry & Endodontics, Annoor Dental College, Perumattom, Muvattupuzha, Kerala, India

³Assistant Professor, College of Dentistry, Department of Substitutive Dental Sciences, Al-Zulfi, Majmaah University, Saudi Arabia

⁴Assistant Professor, Mar Baselious Dental College, Muvattupuzha, Kerala, India

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ABSTRACT

Aim: The aim of this article is to give a brief review on clinical features, diagnosis and treatment options of mesiodens. **Background:** The most common type of supernumerary teeth found between the two central incisors is the mesiodens. It can cause several complications including compromised aesthetics and malocclusion. Till date surgical extraction and orthodontic correction are considered as excellent solution for the management of mesiodens. However aesthetic rehabilitation with direct composite veneers could be considered as an alternative minimally invasive treatment option. **Case Description:** This case report describes the successful clinical management of an unattractive smile of a 35 year old male patient caused due to the presence of mesiodens in the midline primarily using aesthetic treatment only. **Conclusion:** Satisfactory aesthetic correction could be achieved with direct composite veneers.

INTRODUCTION

A supernumerary tooth is a developmental anomaly in which there are extra teeth in addition to the normal dentition.¹ Supernumerary teeth present between central incisors were termed as mesiodens first by Bolk (1917). It can occur in the maxilla or the mandible with more prevalence in the maxilla. In the Indian population the incidence of one supernumerary is about 87%, 12% with two and 1% with multiple supernumerary teeth. Its prevalence is about 0.1-3.6% with more incidences in males than females with a ratio of 2:1. It may or may not be associated with syndromes like down's, cleidocranial dysplasia, Gardner syndrome and developmental defects like cleft lip and palate.² Opinion regarding management of mesiodens is highly controversial and is dependent on the status of eruption and position of mesiodens. This article reviews about the various treatment options previously attempted followed by a case report of a conical shaped mesiodens in a non-syndromic patient. To achieve optimal aesthetics was challenging.

Despite the restorative challenge this case was managed conservatively by aesthetic correction alone.

CASE REPORT

A 35 year old male patient reported to the department of conservative dentistry with the chief complaint of an unaesthetic smile which affected his social and mental well-being. He complained of presence of an extra tooth in the upper front teeth region of the jaw. His medical, dental and family history was recorded. On extra oral examination, there was no facial asymmetry and his profile was convex. The interpupillary line was parallel to occlusal plane and perpendicular to the midline of the face. Lips were competent. On intra oral examination, soft tissue profile was normal with fairly symmetrical gingival architecture and good periodontal health. (Fig-01) Mild discrepancy in gingival zenith was noticed. Mesiodens was conical shaped with blunt incisal edge. It was smaller in size compared to adjacent central incisors. Centric occlusion and centric relations coincident with Angle's class I molar relation. Phonetic difficulties with "F" and "V" sounds were observed. Overjet and overbite was within normal limits. Radiographic analysis was done to rule out the presence of impacted teeth, caries, cystic lesions, resorption of adjacent

*Corresponding author: Dr. Dhanya John,

Assistant Professor, Department of Conservative Dentistry & Endodontics, Annoor Dental College, Perumattom, Muvattupuzha, Kerala, India.

Table 1. Reported cases of mesiodens and their management

Author	Year	Age /sex	Type	No:	Position	Chief complaint	Treatment
Reddy Meta l	2013		Conical	1	Straight	Unaesthetic appearance	extraction
Nagrathna C et al	2014	47/M	Conical	2	Straight	Unaesthetic appearance	One was extracted and the other reshaped into central incisor with strip crown
Krishnappaetal ⁹	2014	16/F	Conical		Inverted	Unesthetic appearance	extraction
Samantaroy et al ⁴	2014	23/F	Conical	1		Unaesthetic appearance	Endodontic treatment followed by crown and veneers
Villavicencio Jet al ¹⁰	2015	11/M	Supplemental	2	Straight	Unaesthetic	Extraction followed by interceptive orthodontics
		10/M	Molariform	2	Straight	Blocked eruption of permanent incisors	
		9/M	Conical	2	Straight	Unaesthetic appearance	
Krishnamurthy NH et al ⁸	2017	15/M	Conical	2	Straight	Unaesthetic appearance	extraction

teeth and other abnormalities. Extra oral and intraoral photographs were taken for smile analysis and treatment planning. Diagnosis of unilateral, dysmorphic, conical mesiodens located between 11 and 21 was made. Patient was given an option for surgical extraction of mesiodens followed by orthodontic correction. However the patient refused due to lack of time and financial constraints. Impressions were taken and diagnostic models were made with dental stone. A minimally invasive treatment plan was formulated taking into account correction of midline, tooth proportions, smile line and anterior guidance. The mesiodens was planned to be veneered as left central incisor while the left central as lateral incisor and left lateral incisor as canine with help of composite restorations. A diagnostic wax-up was done on the cast. A silicone index using polyvinyl siloxane was fabricated. The teeth were cleaned with pumice. Bevels were given to soften optical transition from tooth structure. Minimal recontouring was done in relation to 21. Enamel was etched using 37 % phosphoric acid for 15 seconds. After rinsing and drying, bonding agent was applied according to manufacturer's instructions and cured. A thin bladed interproximal carver was used to contour the increments. A small brush was used to smooth the composite. Sof-Lex disks (3M ESPE) polishing cups and aluminium oxide finishing strips were utilized for finishing and polishing. Composite polishing paste was used for final gloss. (Fig -02, 03)

DISCUSSION

Diagnosis of mesiodens can be done by clinical and radiographic examination. Clinically mesiodens are classified into rudimentary (dysmorphic) or supplemental (eumorphic) according to their shape. Rudimentary mesiodens are further classified as conical, molariform, or tuberculate, the most common presentation being conical. Conical types have complete root formation, are generally located mesially between the central incisors, and rarely delay eruption of adjacent teeth. A radiograph is an essential aid in the diagnosis of impacted mesiodens and cystic lesions. Rotational tomography with additional occlusal or periapical radiographs will help in more precise diagnosis. The presence of mesiodens can result in various complications like delayed eruption of permanent teeth (26-52%) and displacement (28 – 63%). It may also be associated with abnormal root formation, crowding, spacing, impaction, intraoral infection and cystic lesions (4-9%). Occasionally the tooth might erupt into the nasal cavity. Opinion regarding management of mesiodens is highly controversial and is dependent on the status of eruption and position of mesiodens.

For impacted mesiodens cases, extraction is the only treatment option. In asymptomatic cases, no treatment is indicated until patient has aesthetic concern. However it should be observed periodically. Extraction of mesiodens is discouraged by few due to fear of iatrogenic damage to permanent teeth. Surgical intervention in a young child can bring phobia towards dental treatment. The table [table 1] below depicts the modes of treatment by various authors. It was observed that in most cases although there were no associated complications with mesiodens it was extracted. Nagrathna C et al³ opted for extraction of one mesiodens and recontouring of the other into a central incisor with help of strip crowns. Samantaroy et al⁴ attempted aesthetic contouring with the help of ceramic veneers and ceramic crowns after treating the teeth endodontically. Mesiodens also presents aesthetic challenge as they alter the appearance of face, abnormal alignment of teeth and cause speech problems. This could affect the self-confidence of the individual. Smile correction should be done in the most optimal and minimal invasive manner. In this case, the discrepancy was more than 4 mm. Both the central incisors had a mesial tilt. Attempt was made to preserve the vitality of teeth with minimum or no preparation. Proper position and alignment in arch determines the overall harmony and balance of smile. The presence of mesiodens made the case challenging it to be managed in a nonsurgical, minimally invasive restorative manner as it disrupted the arch form and relative proportions of teeth. Hence the principle of illusion and illumination were applied. Among the guidelines for proportion, Recurring Esthetic Dimensions (RED) proposed by Ward⁹ was utilized as it allows great flexibility in contouring tooth proportions according to facial proportions. Hence RED proportion was adopted for composite augmentation. Zenith point was contoured in such a way that it was positioned distal to the perpendicular line drawn through the centre of the tooth except for lateral incisor where it was positioned centrally. As the patient had a low smile line, correction was not critical. The lateral incisor was narrower cervically, less symmetrical and tipped distally at the cervix.¹⁰ In this case using the principles of illusion, mesial and distal line angles were brought closer together to give a narrower appearance. The gingival height of contour was brought incisally and distally for the tooth to appear shorter. The mesioincisal line angles were made rounder and less acute than central incisors. The incisal embrasures were gradually increased in depth from central to canine. Tooth inclinations for centrals were positioned vertically whereas for laterals the incisal edge was inclined labially with the cervical area tucked in. This is in accordance with the guidelines by Mohan et al.



Fig. 1. Preoperative



Fig. 2. Preoperative



Fig. 3 Post Operative

Diagnostic wax up helped to visualize the final outcome in a more predictable manner. Wax up also helped in fabricating a putty index which helped in defining the palatal surface and incisal edge of the resin restoration.

Esthetic rehabilitation with direct composite veneers is most desired as they require the least amount of tooth preparation. These composite veneers are strong, durable, and cost effective and can be completed in a single visit.

Conclusion

This is an interesting case where resin restorations were used to rekindle an unaesthetic smile. Mesiodens are usually extracted and corrected orthodontically. Due to constraints of time and cost, a minimum invasive treatment was carried out successfully to achieve a pleasing smile. A keen understanding of the principles of smile designing and knowledge helps us to provide a unique and visually pleasing smile. The advancements made in the field of dental materials enable us to achieve a durable and rejuvenating smile. Efforts must be made to opt for the most non-invasive, financially affordable yet durable treatment option wherever possible.

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Key points

- Mesiodens mostly exhibits a rudimentary morphology smaller in size than adjacent normal teeth which can dreadfully affect the esthetic appearance of an individual concomitantly affecting psychosocial wellbeing.
- Awareness of the incidence features and management of mesiodens is of utmost importance.
- Treatment planning should aim for the non/minimal invasive line of treatment in the absence of other complications.

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