WJD

CASE REPORT

Esthetic and Functional Rehabilitation of Mesiodens Associated with Dens Invaginatus

[1]Reshma S Hegde, [2]Girish Nanjannawar

[1]Professor and Head, Department of Conservative Dentistry and Endodontics, KLE Dental College and Hospital, Yeshwantpur Suburb 2nd Stage, Bengaluru, Karnataka, India

[2]Senior Lecturer, Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Dental College and Hospital, Sangli Maharashtra, India

Correspondence: Reshma S Hegde, Professor and Head, Department of Conservative Dentistry and Endodontics, KLE Dental College and Hospital Yeshwantpur Suburb 2nd Stage, Tumkur Road, Bengaluru-22, Karnataka, India, Phone: 9880177116 e-mail: reshmasavn@yahoo.co.in

ABSTRACT

Anomalous and supernumerary teeth, when present in the oral cavity may affect the facial harmony and esthetics. Managing patients with anomalous and supernumerary teeth poses a challenge for dentists especially, when smile esthetics is affected. We report management of a case of mesiodens associated with dens invaginatus, a rare presentation wherein the patient required immediate esthetic restoration.

Key Message: Immediate esthetic management of mesiodens.

Keywords: Mesiodens, Dens invaginatus, Esthetics.

INTRODUCTION

The term mesiodens refers to a supernumerary tooth present in the midline of maxilla between two central incisors. Mesiodens can occur individually or as multiples, may appear unilaterally or bilaterally, and often do not erupt.[1] Dens invaginatus, also known as dens in dente, is a developmental anomaly, which results from an invagination in the surface of a tooth crown before calcification has occurred. Affected teeth show a deep infolding of enamel and dentin starting from foramen cecum or the tip of the cusps, which may have extended deep into the root. Occurrence of mesiodens with dens in dente is a rarity. Since the anatomy of a mesiodens grossly differs from that of central incisors, its presence alters the esthetics of an individual significantly, at times leading to low self esteem and depressive mood alterations.

The aim of this case presentation is to report management of a case of mesiodens with associated dens invaginatus in an adult patient who required immediate esthetic restoration.

Fig. 1: Preoperative labial view

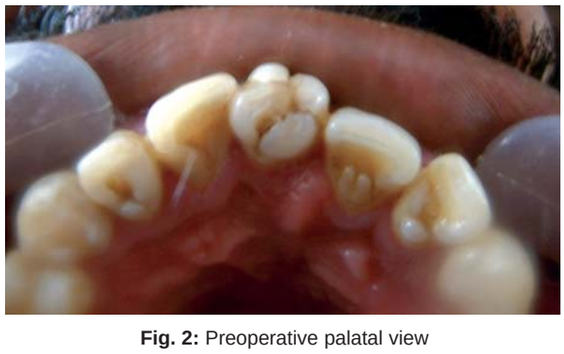

Fig. 2: Preoperative palatal view

CASE HISTORY

A 29-year-old male patient reported to our department with a chief complaint of an abnormally shaped tooth in his upper front teeth region (Figs 1 and 2). His medical and dental histories were unremarkable. Clinical examination revealed mesiodens with multiple cusps with infolding of the outer surface of coronal tooth into its interior surface. The cingulum appears magnified rising to the level of incisive edge of tooth lacking the normal contour of cingulum. Radiographic examination showed infolding of enamel of mesiodens with multiple cusps, suggestive of type I dens in dente (Table 1) with a single pulp chamber and canal (Fig. 3). Patient expressed that his quality of life especially in terms of satisfaction with appearance was severely affected. Hence, treatment plan included an intentional root canal treatment of the mesiodens followed by composite veneering. Intentional root canal treatment was planned because

Fig. 3: Preoperative radiograph

Fig. 4: Postobturation radiograph

Fig. 5: Tooth preparation for direct composite veneer

Fig. 6: Postoperative finished resoration (Labial view)

Fig. 7: Postoperative finished resoration (Palatal view)

extensive tooth reduction was essential, especially on the palatal aspect of mesiodens to get the required anatomy matching that of the palatal aspect of central incisors.

Root canal procedure was completed with established standard of care, obturation was completed using lateral condensation technique (Fig. 4).Though the morphology of tooth in the present case was unusual diagnostic radiograph showed normal pulp chamber, single root with single canal, hence routine access opening was done with no much modification.Tooth preparation for composite veneering was done using round end tapered fissure bur (Fig. 5). Acid etching and bonding agent application was done followed by composite veneering using ceram × duo composite kit. Final finishing and polishing was done using soflex polishing kit (Figs 6 and 7). At the end of treatment, we had achieved acceptable esthetics and function. Unlike routine veneer preparation, in the present case extensive tooth preparation was essential to get the required anatomy matching that of central incisors. The follow-up was done for 6 months.

DISCUSSION

The etiology and genetic consideration of supernumerary teeth remain unclear. Among the several theories proposed for the etiology of hyperdontia, the hyperactivity theory has been more accepted. It states that supernumerary teeth are derived from independent local hyperactivity of the dental lamina. The hypothesis is that lingual extension of an additional tooth bud leads to a eumorphic mesiodens while the rudimentary form arises from proliferation of epithelial remnants of the dental lamina induced by pressure of dentition.[2,3] Mesiodens are the most common supernumerary teeth and the literature reports its overall prevalence to be between 0.15% and 1.9%.[4,5] Mesiodens can significantly alter tooth occlusion and esthetics by altering the eruption path and position of permanent incisors.[6,7]

Dens invaginatus, also known as dens in dente, is a developmental anomaly, which results from invagination in the surface of a tooth crown before calcification has occurred.[8] A widely used classification (Table 1) to characterize the extent of malformation associated with dens invaginatus has been presented by Oehlers(1957).[9] The deep palatal defects of coronal dens invaginatus frequently gives rise to caries and pulp infection. The bizarre anatomy usually aids in retention of plaque.[10] Our patient presented with type I variant of dens in dente in the mesiodens.

Table 1: Classification of dens invaginatus[17]

Classification	Description
Type I	The invagination, which is enamel lined, is confined within the tooth crown
Type II	The enamel lined invagination extends into the root but remains confined as a blind sac and communication with the pulp is possible
Type III	Invagination penetrates the root and forms an additional lateral or apical foramen

Table 2: Treatment options for mesiodens

Primary dentition	No treatment, observe
Mixed dentition	Extract and follow-up for space closure, intervene if necessary
Permanent dentition	1. Extract and close space with orthodontic appliance 2. Esthetic management (with or without RCT) in nonextraction cases

Malocclusion affecting anterior dental esthetics has been found to have negative repercussions on daily living.[11] Both men and women, who perceive themselves as unattractive can have poor self esteem, difficulty in social situations and an increased vulnerability to depression. Changing a smile of a person by correcting the underlying esthetic problem of the teeth can bring about an entire personality change. In our patient anterior dental esthetics was severely affected and he was unhappy with his appearance. He expressed that he was extremely satisfied with his appearance after the treatment. We had not assessed objectively any biosociopsycological aspects of malocclusion and esthetics in our patient, however a battery of instruments is available to evaluate impact of malocclusion and esthetics like oral impact on daily performance (OIDP) for impact of malocclusion, oral esthetic subjective impact scale (OASIS) for self-perception of dental aesthetics and global negative self-evaluation (GSE) scale for self-esteem[11].

Management of a mesiodens depends on the stage of development of the dentition whether primary, mixed or permanent (Table 2). Extraction of a supplementary mesiodens in primary dentition is not recommended because supernumerary primary teeth often erupt in the oral cavity and surgical extraction of unerupted teeth may increase the risk of displacing or damaging the permanent incisors.[12,13] However, extraction during the mixed dentition stage allows normal eruptive forces to promote spontaneous eruption of the permanent central incisors.[14] A significant delay in the treatment can create the need for more complex surgical and orthodontic management. Delay in extraction of the mesiodens increases the chances of impaction of permanent central incisors, necessitating surgical exposure followed by orthodontic treatment.[15,16] Space closure following extraction of mesiodens requires long-term retention because of increased potential for relapse. The present treatment plan of restoring the tooth with a composite veneer can be considered in an adult patient when time is a factor and emergency esthetic management is necessary.

CONCLUSION

Extraction of mesiodens and orthodontic treatment is a recommended treatment option in treating such cases, however reshaping a mesiodens with a composite veneer should be considered in patients, who require an immediate esthetic management or in patients, who are not willing for a prolonged treatment plan as would be the case when considering orthodontics as a treatment option.

REFERENCES

1. Primosch RE. Anterior supernumerary teeth-assessment and surgical intervention in children. Pediatr Dent 1981;3(2): 204-15.
2. Sykaras SN. Mesiodens in primary and permanent dentitions. Report of a case. Oral Surg Oral Med Oral Pathol 1975;39: 870-74.
3. Pindborg JJ. Pathology of Dental Hard tissues. Philadelphia; WB Saunders company 1970;26-33.
4. Sedano HO, Gorlin RJ. Familial occurrence of mesiodens. Oral Med Oral Pathol 1969;27(3);360-61.
5. Sykaras SN. Mesiodens in primary and permanent dentitions. Report of a Case Oral Med Oral Pathol 1975;39(6):870-74.
6. Marya CM, Kumar BR. Familial occurrence of Mesiodense with unusual findings: Case reports. Quintessence Int 1998;29(1):49-51.
7. Vonarxt: Anterior Maxillary supernumerary teeth: A clinical and radiographic study. Aust Dent J 1992;37(3):189-95.
8. Balogh MB, Fehrenbach MJ. Illustrated dental embryology, histology and anatomy Philadelphia; WB Saunders company.1997;67-69.
9. Oehlers FA Dens invaginatus (dilated composite odontome) Variation of the invagination process and associated anterior crown forms. Oral surgery, oral medicine and oral pathology (1957) 10,1204-18.
10. Chen YM, Tseng C, Harn W. Dens invaginatus review of formation morphology with 2 case reports. Oral surg, oral med oral pathol, oral radiol endo 1998;86;347-52
11. Marques LS, Filogônio CA, Filogônio CB, Pereira LJ, Pordeus IA, Paiva SM, Ramos-Jorge ML. Aesthetic impact of malocclusion in the daily living of Brazilian adolescents. J Orthod 2009 Sep;36(3):152-59.
12. Humerfelt D, Hurlen B, Humerfelt S. Hyperdontia in children below four years of age: A radiographic study. ASDC J Dent child 1985;52(2):121-24.
13. Henry RJ, Post AC. A labially positioned mesiodens: Case report. Pediatr Dent 1989;11(1);59-63.
14. Solares R. The complications of late diagnosis of anterior supernumerary teeth. Case report. ASDC J Dent child 1990;57(3);209-11.
15. Tay F, Panga, Yuen S. Unerupted Maxillary anterior supernumerary teeth; Report of 204 cases. ASDC J Dent child 1984;51(4):289-94.
16. Witsenburg B, Boering G. Eruption of impacted permanent upper incisiors after removal of supernumerary teeth. Int Journal Surg 1981;10(6):433-35.
17. M Hülsmann. Dens invaginatus: Aetiology, classification, prevalence, diagnosis, and treatment considerations. International Endodontic Journal 1997;30:79-90.