

Endodontic Management of a Bilaterally Fused Mandibular Second Premolar with Parapremolar –a Case Report



Medical Science

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ABSTRACT

Developmental anomalies are commonly seen in primary than in permanent dentition, which includes fusion, germination, talon's cusp and supernumerary teeth, etc. Any one of these can occur in an oral cavity along with normal complement of teeth, but occasionally two or more of these anomalies can be seen together. Usually these disturbances are unilateral in nature than bilateral, affects anterior teeth than posteriors. This is one of the unique case of non surgical endodontic management of mandibular second premolar fused with parapremolar with bilateral presentation.

Introduction

Developmental dental disturbances mean an abnormality where the pathology starts in the embryonic stage of human life, before the formation of the dentition. These are not only congenital, but may also be inherited, acquired or idiopathic and may result in *anomalies* in the number, size, shape or structure of the *teeth*.^{1,2,3}

A tooth is called supernumerary when there is an extra tooth in any arch. They are more prevalent in primary dentition (0.3–0.8%) than in permanent dentition (0.1–3.8%). Males are affected approximately twice as often as females.^{4,5,6} Supernumerary teeth can occur as single or multiple in number, unilaterally or bilaterally, in mandibular or maxillary arch or in both.⁵ They appear 10 times more frequently in maxilla than in mandible. They erupt in various shapes and sizes in different locations. Commonly, they appear as conical, tuberculate, supplemental or odontome in shape.⁷

Depending on location, supernumerary tooth is known as mesiodens, when an extra tooth is present between the maxillary central incisors, paramolar when an additional tooth is present buccally or lingually/ palatally to any one of the molars, Distomolar when supernumerary tooth erupts distal to the third molar^{6,8} and is known as parapremolar when an extra tooth is formed in the premolar region.^{6,7} Usually they erupt in abnormal location but few teeth are unerupted and remain impacted within jaws for a lifetime. In rare cases, the supernumerary tooth can developmentally fuse with normal tooth.⁸

Fusion occurs when two tooth buds unite during their development.^{3,8,10,11,12} Depending on the stage of tooth development, union can be complete or incomplete, and the tooth may have separate or fused root canals.^{3,10} The fusion can be seen between two normal teeth or between normal and supernumerary tooth. Fusions are almost always unilateral, seen in the anterior region. Epidemiological studies have shown that the prevalence of fused teeth was similar for females and males and occurred most frequently in the primary dentition.³

The complex and uncommon anatomy occurs due to fusion of parapremolar with second premolar in the mandibular arch, poses' difficulty during endodontic diagnosis and treatment.

Case report

A male patient of age 19 years reported with the complaint of pain in his lower right back tooth. Pain was dull and continuous in nature, aggravated on taking cold and hot foods, was relieved on taking medication. Patient also gave a history of food accumulation and pain in his lower left back tooth but was intermittent in nature.

On clinical examination, there was a carious lesion in his mandibular right (# 45) and left second (# 35) premolars. The teeth were larger in size both buccolingually and mesiodistally

compared to adjacent first premolar. Occlusal surface showed bizarre anatomy with several deep pits and fissures. Teeth did not exhibit tenderness to percussion or palpation. Thermal and Electric pulp tests (C- pulse tester, China) showed delayed response and pain was present for few seconds after removing the stimulus. (Fig 1)

For radiographic examination, intraoral periapical radiographs (IOPAR) and Orthopantomograph (OPG) were taken. They showed that teeth were wider in size mesiodistally and shorter occlusoapically and a pulp chamber with two root canals were seen in # 45 and single canal in # 35. IOPAR revealed radiolucency involving enamel, dentin and approximating pulp in both teeth (Fig 2). Depending on clinical and radiographic features, developmental disturbance of teeth was observed where parapremolar fused with second premolar during its development was expected and diagnosed as chronic irreversible pulpitis in both teeth. (Fig 1)

Endodontic treatment of both teeth was planned. Initially treatment was started in symptomatic tooth in the lower right quadrant i.e., in # 45. After local anesthesia administration, the tooth was isolated with rubberdam and access preparation was done using endo access bur (*Dentsply Maillefer*, Switzerland). Access was made intentionally wide and walls were prepared divergent to locate extra canals. After locating two orifices, the pulp was extirpated with barbed broaches and irrigation was done using 3% sodium hypochlorite (Prime Dental Products, India). Root canal configuration of this tooth was vertucci's type III, where two canals terminating in two separate apical foramina. (Fig 3a)

Working length was determined with 20 size K-file (Mani Inc., Japan), using Root ZX apex locator (J.Morita corporation, Japan) and confirmed with radiographs (Fig 3b). Biomechanical preparation was done using Protaper rotary files (*Dentsply Maillefer*, Switzerland) with saline and sodium hypochlorite as irrigants. RC help (Prime Dental Products, India) was used as lubricant during instrumentation. Since the canals were wide, the circumferential filing was done using K-files.

After the completion of instrumentation, the mastercone was selected and obturated using Obtura II thermoplasticized gutta-percha delivery system (Obtura *Spartan*, Fenton, MO) with AH plus (*Dentsply Maillefer*, Switzerland) as sealer (Fig 3c). The access cavity was permanently restored with miracle mix.

Patient was recalled after a week to perform root canal treatment on other tooth in the mandibular left quadrant. Same procedure was followed for this tooth except that the root canal configuration was vertucci's type I (Fig 4 a, b and c).

Discussion

Developmental anomalies are usually familial in occurrence and many of them occur due to trauma. Multiple supernumerary teeth are seen commonly in association with cleft lip and pal-

ate, Cleidocranial dysostosis and Gardner's syndrome.^{7,13} Etiology was unknown in this case as patient gave non-contributory medical history and there was no familial background.

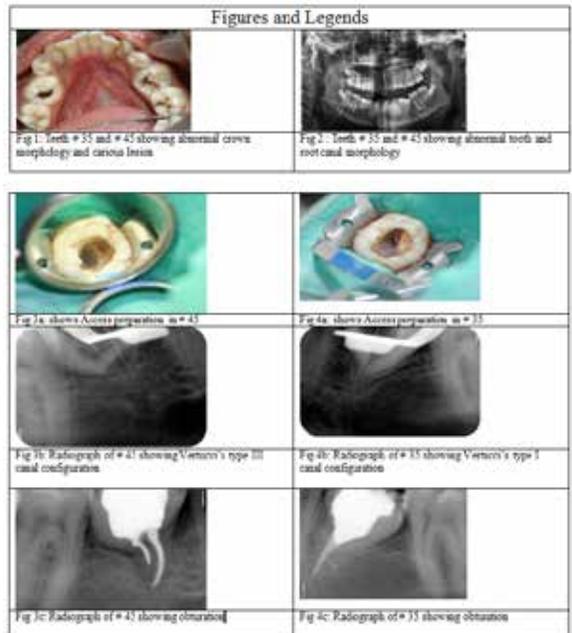
This case was diagnosed as fusion between supernumerary and normal tooth because there were normal number of teeth in the mandibular arch except that it was abnormally wide in shape and size. Occlusal surfaces of both affected teeth showed irregular tooth morphology with deep grooves, with increased predisposition to plaque accumulation. These have to be carefully analyzed as they can result in dental caries, periodontal disease, crowding, malalignment of teeth and occlusal dysfunction. Strict oral hygiene and proper management is required in these patients.^{6,14,15}

Endodontic management of these teeth is problematic because of complex anatomy, tooth positioning and difficulty in rubber-dam isolation. In this case, access preparation was started at the centre of occlusal surface of premolars but the canal orifices were located in the mesial half of the crown portion. In mandibular right premolar, two orifices were located where they followed a law of orifice location by Krasner. The canals were wider in the cervical third and narrower in middle and apical thirds giving a funnel shaped appearance. So, needs careful diagnosis and treatment planning by multidisciplinary approach including conservative, endodontic, prosthodontic and periodontal considerations.

In the literature, there are case reports of unilateral presence of supernumerary tooth fused with mandibular molars^{8,14,16,17,18} and with mandibular premolar.^{3,19} But, this is an exclusive case of bilateral presence of supernumerary tooth fusion with mandibular second premolar.

Conclusion

In this reported case, successful non-surgical endodontic management of fused mandibular second premolars with parapremolars is presented. Management depends on knowledge and technical skills of the operator. Correct diagnosis by careful clinical and radiographic examination of the condition is essential to decide on the treatment of the tooth and also to implicate in a better prognosis for the patient.



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