

Integrated Surgical and Orthodontic Treatment: A Twinned Teeth Dilemma

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ABSTRACT

Background: Twinned or geminated teeth may cause spacing, caries, aesthetic and periodontal problems which are usually seen in the anterior region. Various treatment methods can be used for correction of double teeth according to the demands of the condition. This article reports bilateral fused maxillary incisor teeth. The fused right side incisor was separated by hemisection and remaining mesial incisal margin was built using composite. Further, comprehensive orthodontic treatment was done to align the anterior maxillary teeth.

Keywords: Esthetics, Supernumerary, Tooth abnormalities.

INTRODUCTION

Double teeth occur infrequently and may be distinguished from fusion, gemination, concrescence and dental twinning. Double tooth is a congenital anomaly in which two adjacent teeth are joined at the crown level (enamel and dentin), forming a single tooth with an enlarged crown¹. Abnormalities in tooth size, shape and structure are caused by disturbances during the morphodifferentiation stage of development².

Although the etiology of these anomalies is still unknown, it is believed some physical force, pressure or trauma causes the contact of developing teeth, thus producing necrosis of the epithelial tissue that separates them and leads to fusion²⁻⁴. The possible causes of this tooth anomaly include trauma and environmental factors such as



thalidomide embryopathy, fetal alcohol exposure, or hypervitaminosis². In addition, several authors suggest that dominant autosomal heredity may be one of the etiologic

factors^{2,5}.

Genetic factors may be involved in some cases^{5,6}. Double teeth may also be part of syndromes such as achondrodysplasia and chondroectodermal dysplasia⁷. The incidence of these anomalies is more common in the anterior region. Approximately 0.1% occurs in permanent and 0.5% in primary dentition⁸. The present article describes a clinical case of double teeth by the multidisciplinary approach maintaining the vitality of the teeth.

CASE HISTORY

A 9 year old boy reported to the Department of Pedodontics and Preventive Dentistry with the complaint of having large giant teeth resulting in aesthetic and functional problems within his upper jaw. There was no history of orofacial trauma and no family history of dental anomalies. Patient's medical history was irrelevant with his condition. On intra oral examination, the patient was in the late mixed dentition, with class I molar relationship and demonstrated fair oral hygiene. Examination revealed large teeth with respect to the upper right central incisor. The shallow labio-lingual groove was associated with

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Fig 1: Preoperative view of the facial aspect of double teeth.



Fig 2: Preoperative radiograph of the double teeth.



Fig 3: Flap raised and hemisection.



Fig 4: Extracted supernumerary element.



Fig 5: Reshaping by composite resin.



Fig 6: Postoperative view of facial aspect.

the enlarged teeth and also with the adjacent upper left central incisor (Figure 1).

Radiographic evaluation of the right side showed two separated roots with a pulpal



Fig 7: Postoperative Radiograph indicating no pathology.



Fig 8: Closure of mid line diastema after orthodontic treatment.

communication, but it was unclear whether the pulp chambers were separated. Close examination of the upper left central incisor demonstrated two pulp chambers with a single wide root canal (Figure 2). The differential diagnosis was either gemination of the central incisor or fusion between the central incisor and a supplemental tooth. The patient was diagnosed as having bilaterally fused permanent central incisors with supernumerary teeth.

MANAGEMENT

The patient and his parents were informed about the complex anatomy of the tooth, the therapeutic options, and possible complications before initiating the treatment. Concerning different types and morphologic variations of fused and

geminated teeth several treatment methods have been described in the literature⁴.

Management of fused teeth may be complex and contain various treatment protocols that may include interdisciplinary endodontic, surgical and periodontal interventions⁹. Presence of two separate roots, the nonexistence of periapical lesions, and the patient's good periodontal health made it potential to detach the supernumerary tooth from the normal incisor^{10,11}. After sufficient time for healing, orthodontic treatment would be carried out to close the space and align all the teeth.

Under local anaesthesia, a flap was raised from the distal aspect of maxillary right central incisor to the maxillary left central incisor. The crown of the supernumerary element was separated from that of the normal tooth under continuous irrigation, using a high speed straight fissure bur (Figure 3). An elevator was positioned between the roots to create a fracture. The supernumerary element was then slightly luxated and extracted (Figure 4). Following surgical treatment, direct pulp capping with composite resin on the mesial marginal side of the right incisor was done (Figure 5) and sutured. Systemic antibiotics were administered and chlorhexidine mouthwash was recommended.

One week later, the sutures were removed, good healing was observed, with minimal inflammation and the patient reported no pain and no pathology was observed on radiograph (Figure 6 & 7). After a six-month follow-up period, healing had occurred with no complications, and the tooth had a normal response to thermal pulp testing, therefore orthodontic treatment was initiated to close the midline diastema to improve the alignment (Figure 8). After the orthodontic treatment completion, the right central incisor remained vital without any undue complications even after two years. However, the patient was not keen on left central incisor, which needs to be reshaped in the future if the patient desires.

DISCUSSION

It is difficult to decide whether fusion or gemination has occurred in a given case, because the double tooth could have arisen from a split of a

single tooth germ or fusion between a normal tooth germ and that of a supernumerary tooth¹².

A multidisciplinary treatment is necessary for patients with double teeth. Various surgical procedures have been recommended to extract a supernumerary element fused to a normal tooth^{6,10,13}. The commonest is the one-step technique, in which a mucoperiosteal flap is raised and the supernumerary tooth is parted and removed¹⁰. Another method implicates extraction of the double tooth, extraoral separation and reimplantation⁶. A third approach involves a double surgical procedure intended to reduce periodontal problems. First, a 3mm buccal flap is raised to access the tooth, and the roots are separated along their entire length, without involving the epithelial junction. After six weeks, a second procedure is performed to separate the crowns and the remaining portion of the fused roots¹³. However, another procedure i.e. guided tissue regeneration, after the supernumerary element is removed; a deproteinized bovine bone mineral graft can be applied to the bone defect and covered with a resorbable collagen membrane. This technique can be used in along with any of the other procedures¹³. The case shown here is similar to others reported by Karaçay and colleagues¹⁴ in which fused supernumerary teeth were extracted and the remaining teeth were orthodontically repositioned unlike other reported cases³. Valesco et al stated that intentional extirpation of the pulps or pulpotomy in both roots must be carried out before hemisection to prevent subsequent exposure of the root canals and tissue necrosis³. Description of orthodontic treatment of split double teeth is uncommon in the literature¹¹. Usually, removable appliances are involved, whereas in this case a fixed appliance was used to obtain more comprehensive occlusal correction because of the large median diastema produced pursuant to surgery¹¹.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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