



Surgical Management of Bilateral Double Permanent Immature Incisors: Case Report

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Abstract

Double tooth is a very rare shape, size and structure anomaly of teeth. Both diagnostic procedure and treatment plan are challenging in pediatric dentistry. We report the case of a 9-years-old child concerned with the unsightly appearance of his double large incisors. At the same occasion we describe the surgical management strategy when conservative approach can't be done and the aesthetic result is paramount.

Keywords: Bilateral double teeth; Fusion; Gemination

Introduction

The term "double teeth" describe a dental anomaly of number and morphology that may affect primary and permanent teeth [1]. When the union occurs, pulp chambers and canals may be linked or separated depending on the developmental stage and they are joined by dentine. Due to involvement of epithelial and mesenchymal germ layers, irregular tooth morphology is resulted [2]. Although the precise etiology remains unknown, but hypothesis of the influence of physical forces causing closing contact between two developing teeth, and genetic predisposition is often suggested in the process. This developmental anomaly may cause clinical problems including esthetic impairment as well as functional disorders, pain, caries and tooth crowding which are mainly treated by endodontic and surgical treatments [3,4].

A double tooth is among the most challenging problems in dentistry. Owing to the abnormal shape and size of the crown(s) and root(s), treatment usually requires a multi disciplinary approach to address both endodontic and aesthetic considerations [5].

The aim of the present paper is to describe the management strategy of bilateral double permanent immature incisors when conservative approach can't be done and the aesthetic result is paramount.

Case Presentation

A 9-years-old boy referred to the dental department of pediatric dentistry and prevention of Rabat University, for symptom of large front teeth. The patient was the youngest of 4 siblings of parents with no history of consanguinity and didn't reveal any particular general pathology neither any known drug allergy and with no history of orofacial trauma. Clinical examination revealed a mixed dentition with a large maxillary left (21-21 bis) and right central incisors (11-11 bis) with a central depression along the entire vestibular surface that tended to divide the pieces in two (Figure 1). These double central maxillary incisors may have resulted from germination or fusion of a central incisor with a supernumerary incisor since the dentition formula was complete. Radiographic exploration with panoramic dental X-ray didn't reveal any other form of dental anomaly and retro-alveolar radiographs could not confirm whether the pulp chambers were separate or not (Figure 2).

Dentas can reveal a separated canal root in the right maxillary incisors and a common pulp in a middle point in the canal of the left incisor root (Figure 3). After clinical and radiological analysis of the case, we opted for surgical management by hemi section of both teeth followed by an orthodontic treatment to fix both aesthetic and functional problem. Before starting treatment, the patient and his parents were informed about the complex anatomy of the teeth, therapeutic options and potential complications, and the parents approved consent. The treatment consisted at a separation under continuous irrigation of each tooth. The distal part of 11 (11 bis) and the distal part of 21 (21 bis) were chosen for their anatomical shape. The supernumerary elements were then luxated and removed (Figures 4-6). A cap of Biodentine (Septodont, France) was put in the

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Figure 1: Clinical examination: Large maxillary left (21-21 bis) and right central incisors (11-11 bis).



Figure 5: Previous steps. A: Coronal depression marking. B: Root length measurement.



Figure 2: Panoramic dental X-ray.



Figure 6: Removal of the supernumerary elements.

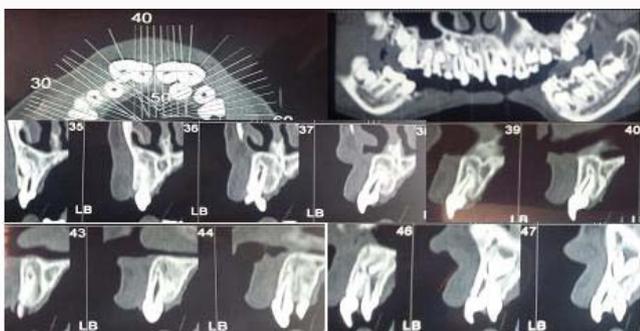


Figure 3: Dentascan examination.



Figure 7: A: Cap of Biodentine protected by glass ionomer cements. B: Surgical sutures.

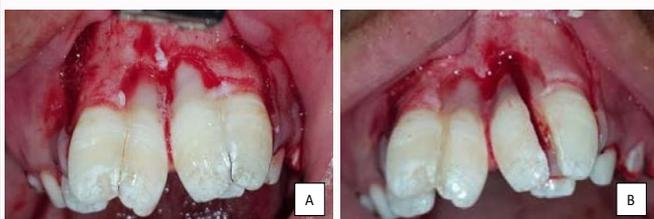


Figure 4: Surgical steps. A: Alveolectomy B: Root.



Figure 8: One year clinical follow-up. Absence of any healing complication.

coronal pulp exposure after sectioning to prevent vascular tissue necrosis, and was protected by glass ionomer cements. The muco-periosteal flaps were repositioned and secured in place by using 4-0 braided silk surgical sutures (Figure 7). The patient was seen after 2 weeks, 1 month, 3 months, 6 months and one year later for clinical and radiological follow-up (Figure 8, 9). The orthodontist began his treatment after clinical and radiological stabilization.

Discussion

Germination and fusion is a very rare anomaly. The difference between fusion and germination is difficult to determine. Fusion is usually defined as the union of two normally separated tooth germs and germination as the division of one normal tooth germ. Consequently, fusion may be differentiated from germination by the reduced number of teeth, except in case of the union of a normal tooth and a supernumerary tooth. The both form are coronal anomalies

in shape, size and structure of teeth [6]. The etiology of fusion and germinations is still unknown. Evolution, trauma, heredity, and environmental factors are thought to play a role in this anomaly. Some Studies have suggested that it may also result from traumatic disturbances to the developing tooth bud. Hereditary tendency with mode of inheritance being either autosomal recessive or dominant affecting the dental lamina is also found to result in hyperdontia [7]. Many therapeutic options are described in the literature on management of double tooth. Some studies advocate extraction of the anomalous tooth, followed by orthodontic management to close the spaces [5].

In any case, two situations are prevalently observed:

- Independent pulp chambers and root canals; in this case it is preferable to wait until late adolescence of the patient, once pulp horn recession has taken place, to then separate the crowns



Figure 9: 9 month panoramic X-ray follow-up.

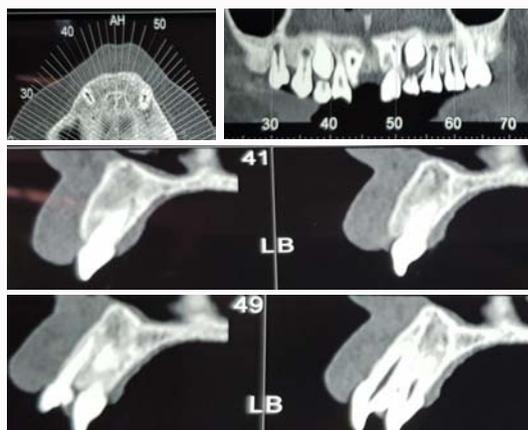


Figure 10: One year dentascans follow up alveolar height gain with no sign of dental alkolosis.

and subsequently restore both teeth. If one of the affected teeth is a supernumerary piece, the latter should be removed.

- A single pulp chamber with independent root canals; in this situation endodontic treatment of both canals is indicated, with double chamber aperture and root canal sealing, followed by crown sectioning to separate the teeth and program subsequent crown reconstruction [8].

In our case esthetics was the primary concern of our young patient, to enable him to lead a normal psychosocial life.

Three treatment options were considered. Firstly, surgical treatment by slicing of the double tooth followed by an elimination of the supernumerary tooth and an orthodontic management of the palatally placed lateral incisor to align the anterior can be attempted. Secondly, extraction of the palatally placed lateral incisors, surgical separation and prosthetic management of the double tooth may be done. The third option was the extraction of the double tooth and the suggestion of a prosthetic solution. Considering the age of our young patient and the healing potential of immature teeth we opted for the first surgical option. The presence of separated roots made our management simple.

Separation was carried out with the guide groove marking to avoid skidding, after the coronary third of the crest alveolectomy the separation of the roots was carried out under abundant irrigation to avoid overheating and then a gentle dislocation in order to avoid the mobilization of the presumed half. The procedure was done tooth-by-tooth starting the left tooth. After elimination of the supernumerary element, a biodentine styling was carried out to protect the pulp

exposure at the coronary level thus promoting the healing process. Endodontic treatment after slicing roots was not yet recommended. Our attitude is supported by animal studies, which showed that root fragments with vital pulps were maintained in the alveolus without any inflammatory reaction [9]. The roots were left without pulpal treatment and we waited for healing like in coronectomy treatment in which the literature reported that better prognostic results were obtained in patients who had not received root canal treatment with mineral trioxide aggregates after coronectomy [10]. No bone substitutes have been put in place to facilitate subsequent orthodontic treatment.

The muco-periosteal flaps were repositioned and secured in place by using (4-0) braided silk surgical suture. Oral hygiene instructions and regular recall appointments were advised for the patient. Orthodontic treatment with functional apparatus was reserved for after surgery, to favor correction antero-superior diastemas and overjet.

Conclusion

The presence of germination or fusion in primary or permanent dentition needs to be diagnosed and treated to ensure proper functional and esthetic satisfaction. The recognition and treatment of such anomalies are a challenge to the dentist. Germination and fusion usually present as fused roots and rarely as separate roots as in our case. Comprehensive approach is important to avoid further complications. Studies of comparison between the different treatments must be realized concerning this subject.

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