

Delayed eruption of maxillary permanent central incisors as a consequence of mesiodens: a surgical re-treatment approach

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The presence of mesiodens can cause some clinical problems. This paper reports a case of delayed eruption of permanent central incisors in a nine-year-old male as a consequence of a mesiodens and three surgical approaches prior to the eruption of incisors, which occurred after the third surgery when the crown was exposed and submitted to a gentle luxation.

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INTRODUCTION

Supernumerary tooth denotes a duplication of tooth in the normal series.¹ This condition results from the interference during the initiation stage of tooth development.² The etiology of this condition is unknown, but the most widely accepted theory is the hyperactivity of the dental lamina.³

A familial tendency appears to play an important role in the occurrence of supernumerary tooth. Some authors reported the presence of this alteration in close relatives like twins and siblings.^{4,5} It is important to emphasize that this alteration can also be found in association with some syndromes like Cleidocranial dysplasia, Curtis, Gardner, Hallermann-Steiff and Sturge-Weber syndromes⁶ as well as with cleft lip or palate.⁷

The prevalence of supernumerary tooth in different populations has ranged from 0.03% to 0.66% in primary dentition, to 1.5% to 3.36% in permanent dentition⁸ and from 0.45% to 2% in both.^{9,10} Supernumeraries appear to be approximately twice more common in male than in female.^{8,9,11,12}

A large percentage of all supernumerary teeth occur in the maxilla with a strong predilection for the anterior region.^{8-10,13} When it is located between the two central incisors, it is called mesiodens.^{5,6} In the vast majority of cases, mesiodens is single (ranging from 64.3% to 81.4%) or double (ranging from 16.08% to 20%).^{11,12,14} Multiple are extremely rare.¹¹

Early diagnosis of mesiodens can be made through routine radiographs in preschool children, which permits early intervention and a more favorable prognosis with minimal complications.^{1,12} Clinical problems that can be observed are: nasal eruption,³ over retained maxillary primary incisors,^{1,3,5} delayed eruption of the maxillary permanent central incisors,^{1,4,5,11} malposition of the regular teeth,^{3,11,15} unesthetic situation,^{1,3} pain,¹¹ displacement of the median palatal suture¹⁵ and cyst.^{3,11}

The surgical removal of mesiodens is the treatment of choice to prevent clinical complications^{3,12,16} and also to treat an established complication.¹⁷

The purpose of this paper is to report a case of delayed eruption of maxillary permanent central incisors as a clinical complication secondary to preserve a mesiodens and the surgical re-treatment approach.

CASE REPORT

A nine-year-old male presented to a pediatric dentistry clinic of a public University in Rio de Janeiro, Brazil with his mother. The chief complaint was the delayed eruption of permanent maxillary central incisors and an unesthetic appearance derived from the absence of primary central incisors.

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Figures 1A and 1B. 1 A: Periapical view showing the mesiodens; 1B: Periapical view 4 months after mesiodens removal.

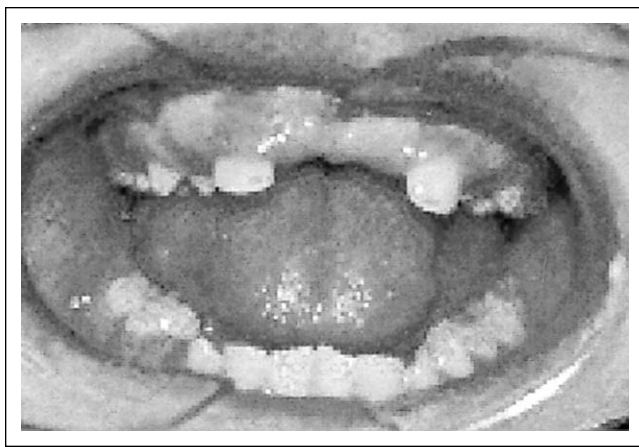


Figure 2. Fibrous gingival tissue with sufficient space for tooth eruption.

The medical history was unremarkable. The dental history revealed a prior presence of two mesiodens favoring the over retention of the maxillary primary central incisors and the delayed eruption of the maxillary permanent central incisors. An oral surgeon, from Oral Surgery Department, had previously removed, 8 months ago, both mesiodens and maxillary primary incisors. Meanwhile, the permanent teeth had not erupted. A periapical radiographic from the period prior to the extraction of mesiodens and the primary incisors (Figure. 1A), and another took 4 months after the surgery (Figure 1B) were brought by the mother.

Clinical examination revealed a mixed dentition comprising the following permanent teeth: first molars, maxillary lateral incisors, mandibular incisors and left maxillary and mandibular first pre-molar. The edentulous area

showed a fibrous gingival tissue and although there was inadequate arch-space for anterior teeth alignment, sufficient space was available for eruption (Figure 2). The oral hygiene was good and he was caries-free.

During this consultation, another periapical radiograph was taken (Figure 3). Considering the clinical and radiographic findings, it was decided to make an incision in the fibrous tissue over the alveolar ridge to allow eruption of the permanent incisor. Three months later, no appreciable movement of the impacted permanent central incisors were noticeable, and another surgical procedure was planned. Four months after the first appointment, the crowns of central incisors were exposed, bone around crowns was removed and the teeth were submitted to a gentle luxation (Figure 4). This surgery was made by an oral surgeon, from Oral Surgery Department.

Suture removal and local hygiene were performed a week after the surgery and gingival tissue showed inflammation. The importance of oral hygiene was stressed. The difference in crown levels between the central and lateral incisors was recorded, on both sides, in order to closely follow the eruption process. The first clinical measurement (1 week after crowns exposed) showed a distance of 7.0 mm at the right side and of 5 mm at the left side (Figure 5A). Nine months later, it was observed a distance of 3.5 mm at the right side and of 2.0 mm at the left side (Figure 5B).

Nine months after incisors crowns exposure, the two central incisors were fully erupted. Minor problems of crowding and leveling still existed, since an arch-space deficiency remained. Therefore the patient was referred to the Orthodontic Department.

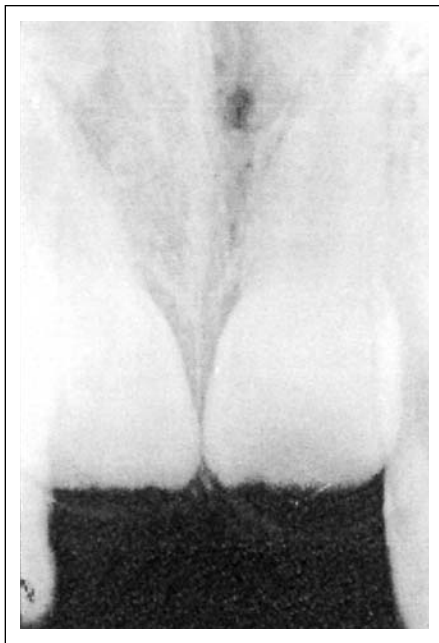
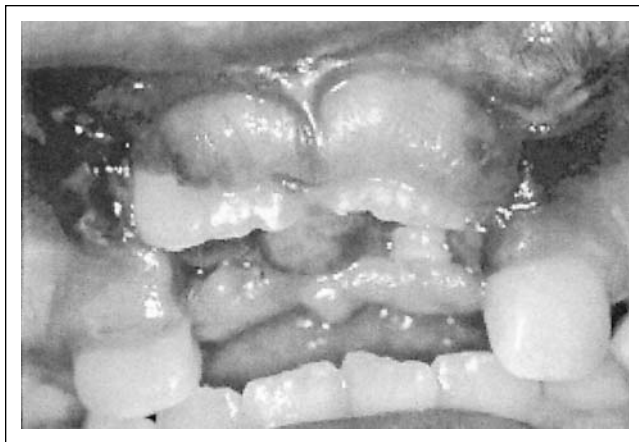


Figure 3. Periapical view – First consultation.



Figure 4. After surgery when crowns of central incisors were exposed, bone around crowns were removed and submitted of a gentle luxation.



Figures. 5A and 5B. 5A: First clinical measurement; 5B: Last clinical measurement, nine months after exposure of incisors crowns.

DISCUSSION

Supernumerary teeth are considered one of the most significant dental anomalies affecting the primary and mixed dentition.¹ In the present case, mesiodens were present in a nine-year-old male child, and according to the reviewed literature, it is really more frequent in this gender.

Although according to the mother there were two mesiodens not erupted, the radiographic view suggests a presence of two mesiodens not erupted and another one erupted in place of tooth number 51. Unfortunately it is not possible to be sure about this diagnosis with only a radiographic view and without any conclusive clinical information. It is important to emphasize that double mesiodens are not very common^{11,12,14} and multiple, are extremely rare.¹¹

Although supernumerary teeth had been found in members of the same family,^{4,5} associated with syndromes⁶ or with cleft lip or palate, the patient was healthy, and did not present prior history of clefts as well as no cases of supernumerary in his family members.

The delay in mesiodens diagnosis can result in many clinical complications. In the present case the sequel observed was the over retention of maxillary primary central incisors and the delayed eruption of the permanent maxillary central incisors. Both complications are usual in case reports^{1,5,16} and in research articles.^{11,15} Furthermore, the patient complained about his unesthetic appearance, which is considered another clinical problem. It is important to emphasize that this dissatisfaction with one's own appearance, can bring social problems.

The periapical radiograph brought by the mother was acceptable to diagnose the mesiodens presence.^{3,13} However, another periapical radiograph, with different angulations (Clark's technique) to determine the spatial location of mesiodens is extremely important when surgical intervention is required^{3,13} as well as an occlusal radiograph, that could determine the labio-lingual position of the mesiodens. The panoramic view is not indicated for these cases due to the poor definition in the anterior maxilla.¹³

The timing of the surgical removal of supernumerary teeth is controversial. Some authors recommend immediate removal, while others late intervention.³ In the present case, the removal was delayed due to a late diagnosis of the condition because the patient failed to visit the dentist until the clinical complications had appeared. Patchett¹³ reported that this late presentation to a dentist could explain why there is a discrepancy between ideal and actual age at time of treatment.

Di Biase¹⁸ reported that 75% of the incisors erupted spontaneously after removal of the supernumerary. Unfortunately, it did not happen in the present case, as after 8 months the permanent incisors had not erupted yet. Hattab *et al.*¹ reported a case that after 8 months after the removal of the mesiodens, one of the central incisors had erupted and the other did not, leading to an orthodontic traction. In the present case, trying to promote the eruption of the permanent incisor, an incision was made on the fibrous tissue over the alveolar ridge, but this treatment did not succeed, and for this reason, it was concluded that the delayed eruption was not a consequence of this tissue.

Although the eruption usually occurs satisfactorily following the removal of supernumeraries, Howard¹⁹ had reported that sometimes it could fail. This author called this group of teeth, a re-operation group. The surgical exposure of unerupted incisors and removal of bone around the crowns, followed or not by orthodontic traction has also been reported by other authors.^{1,3,19,20}

Luxation has been reported as treatment for ankylosed teeth.² The literature reviewed did not present any case of delayed eruption of maxillary permanent central incisors as consequence of mesiodens treated with luxation. However, this procedure was chosen because there was not enough anchorage to initiate orthodontic traction of these teeth at the moment.

The patient was submitted to three different surgeries. In this situation it is important to state that mesiodens removal only, cannot solve the problem of delayed eruption of maxillary permanent incisors at all times, in addition, this treatment can progress slowly.

CONCLUSION

The presence of mesiodens in young children justifies a regular radiographic follow-up. This procedure can provide mesiodens diagnosis by the dentist as well as prevent clinical complications like the delayed eruption of the maxillary central incisors. Once clinical complications are present, the solution is to remove the cause and follow up the patient. Sometimes only the removal of mesiodens cannot solve all the problems and another surgical intervention is justified as well as a long period of accompanying can be necessary.

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