

Mesiodens Preventing Eruption of a Permanent Central Incisor

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Abstract

A maxillary midline supernumerary tooth is the most common type of supernumerary tooth. We present a case of a mesiodens, preventing eruption of a permanent central incisor. The aetiology, diagnosis and the effect of these developmental anomalies upon the dentition are discussed.

Introduction

Hyperdontia (supernumerary teeth) is a developmental anomaly in which extra teeth are formed.^{1,2} Supernumerary teeth are classified as:

- a) Accessory, where the morphology is different to that of the normal series.
- b) Supplemental teeth, with morphology similar to normal teeth.

Accessory teeth can also be subclassified into:

- i) Conical (peg-shaped)
- ii) Tuberculate (barrel-shaped)
- iii) Odontome

Keywords

Tooth, supernumerary; tooth, unerupted; mesiodens

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The prevalence of supernumerary teeth ranges from 0.15% to 3.9%³ and are five times more common in the maxilla, with a male to female ratio of 2:1.⁴ Supernumerary teeth are less common in the deciduous dentition, with an incidence of 0.3% to 1.7%.⁵ A supernumerary deciduous tooth is followed by a supernumerary permanent tooth in 35% - 50% of cases. The majority of supernumerary teeth remain unerupted. It has been stated that only 25% of anterior supernumerary teeth erupt spontaneously.⁶

Multiple supernumerary teeth may be a feature of a syndrome, such as; cleidocranial dysostosis, Gardner's syndrome, cleft lip and palate, Fabry-Anderson's Syndrome or chondroectodermal dysplasia (Ellis-van Greveld Syndrome).^{2,7}

A mesiodens is an accessory supernumerary tooth present in the midline of the maxilla between the two incisors. It is the most frequent supernumerary tooth with an overall prevalence of 0.15% to 1.9%.⁸ It may occur individually or as multiples (mesiodentes). A mesiodens that is palatally located is the most common type, and is usually unerupted. This type of supernumerary tooth often prevents the maxillary incisors from contacting each other, resulting in the formation of a mid-line diastema.

Case Report

A healthy 9 year old boy was referred by his General Dental Practitioner to the School Dental Clinic (SDC) Floriana, because of delayed eruption (>2 years) of the permanent upper left

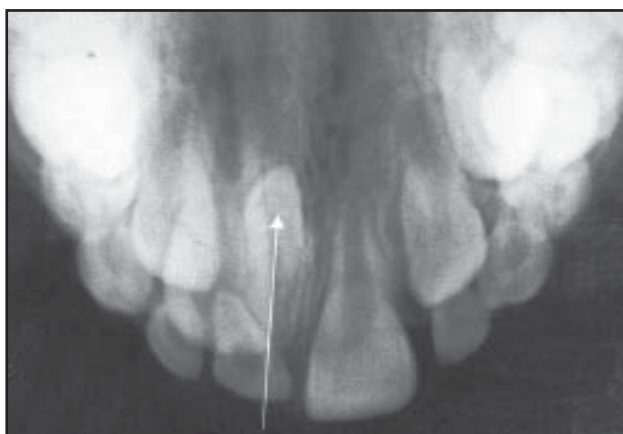


Figure 1: Standard Maxillary Occlusal view of the premaxilla, showing an unerupted, inverted mesiodens (arrowed). 21 is magnified and indistinct, indicating its position as being buccal to the arch.

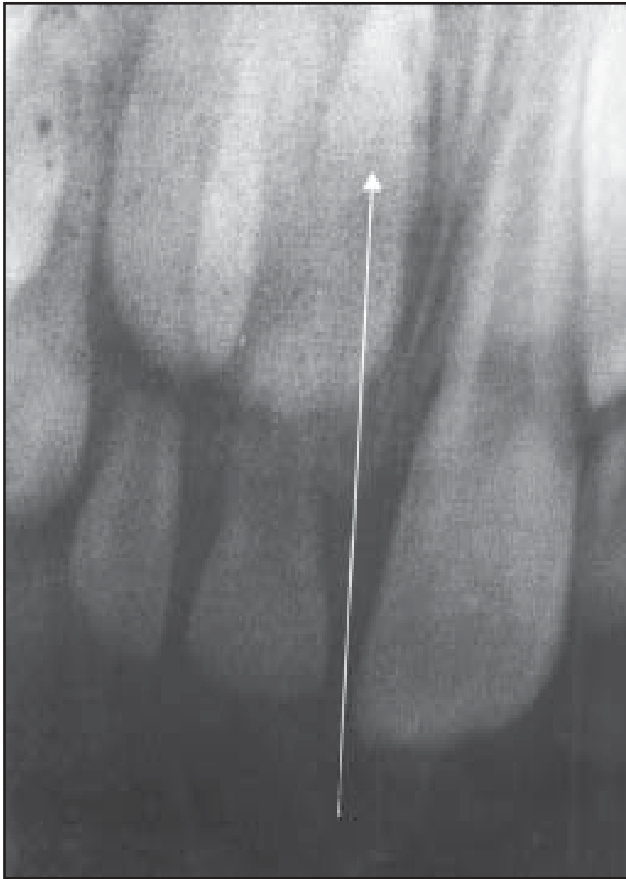


Figure 2: Intraoral periapical view taken with a distal tube shift for localization using horizontal parallax. The mesiodens (arrowed) has moved distal relative to the root of the deciduous central incisor and the crown of the buried permanent incisor, indicating its position as palatal to the line of the arch.

central incisor (21). A Standard Maxillary Occlusal radiograph (SMO) was taken (Figure 1). The radiograph revealed a mesiodens and an unerupted 21. A periapical radiograph of the upper left incisor region was taken to reveal further detail of the area and for localization of the mesiodens using the parallax radiographic principle (Figure 2). This showed the mesiodens to be located palatal to the central incisor.

The patient was subsequently referred to the Oral Surgery Department at St. Luke's Hospital for the removal of the mesiodens and exposure of the 21.

Treatment was carried out as a day case using general anesthesia. 61 and 62 were extracted. A gingival sulcular incision in the gingival sulcus, extending from the upper left deciduous canine to the upper deciduous right canine, was performed to raise a full thickness palatal envelope flap. Bone was removed to uncover the supernumerary tooth with a round bur, allowing the tooth to be elevated and removed from its position.

Bone overlying the 21 was removed with a round bur to facilitate its eruption and the flap closed over the crown of the exposed tooth with four black silk sutures.

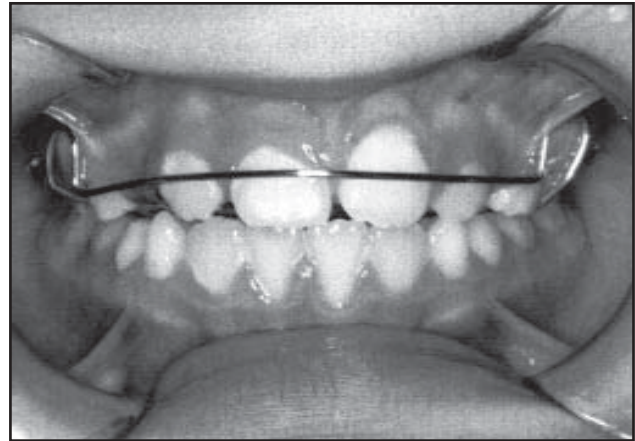


Figure 3: Intraoral view showing tooth 21 in place after being retracted with an orthodontic appliance.

On discharge the patient was prescribed Amoxicillin 250mg caps tds for five days.

At one week recall for removal of sutures, healing was uneventful.

At the three month review it was found that unexpected mesial drift of the permanent upper left lateral incisor (22), into the space of the unerupted 21, had taken place. Both upper deciduous canines were extracted under local anaesthetic to allow retraction of the 22 with an upper removable appliance, in order to provide space for the 21 to erupt spontaneously.

One year post-operatively the 21 had erupted, albeit slightly proclined. A second appliance was used to realign the 21 into place.

The position of the tooth is now satisfactory (Figure 3).

Discussion

The aetiology of supernumerary teeth remains unknown; however, it is appropriate to consider hyperdontia as a multifactorial inheritance disorder.⁹ Whilst the occurrence of supernumerary teeth cannot be predicted, the influence of genetic factors is strongly suggested.⁵ Familial occurrence of mesiodens has been reported to involve siblings and sequential generations of a single family, and is thus thought to be an autosomal dominant condition with incomplete penetrance. A sexlinked pattern of inheritance may also be acting.³

Several theories have been put forward concerning the cause of this dental anomaly; the most widely accepted of these is the hyperactivity theory, which implies that supernumerary teeth are the result of excessive but organized growth of the dental lamina. Remnants of the dental lamina or palatal extensions of the active dental lamina are induced to develop into an additional tooth bud, which results in a supernumerary tooth.⁷

Mesiodentes can cause impaction or ectopic eruption of the maxillary incisors. To this end, in a recent retrospective study on 47 Maltese cases, Betts and Camilleri¹⁰ reported that supernumerary teeth were the most common cause of failure of eruption of maxillary incisors, having put the figure at 47%.

They also reported that, following the removal of the supernumerary teeth and conventional surgery and orthodontics, the maxillary incisors usually erupt successfully. It is therefore important that clinical diagnosis and management of this condition occurs early, in order to minimize aesthetic and occlusal problems which may arise.³

Diagnosis: This is by radiography, either as an incidental finding, or following investigation of an occlusal anomaly. Careful localization of the supernumerary tooth, utilizing radiographic techniques, such as parallax, is indicated prior to surgery and is normally carried out using supplementary intraoral views.

The Dental Panoramic Tomogram (DPT) is unreliable in this type of case as the focal trough is very narrow in the anterior region. Part of the premaxilla may lie outside the trough and may not be visualized. This view may be used to supplement intraoral views if pathology in other parts of the jaws is suspected.

Supernumerary teeth may affect the dentition in various ways. Some of the problems these teeth can cause are:

1. crowding
2. displacement and/or rotation
3. failure of eruption
4. hindrance of orthodontic movement
5. enlargement of the follicle and possible cystic change

In all these cases the treatment of choice is extraction of the supernumerary tooth, with orthodontic treatment as appropriate.

If the unerupted supernumeraries exhibit no pathology and will not interfere with orthodontic movement of the adjacent teeth, they are usually left in situ. Periodic radiographic control is essential, as degeneration of the follicle may lead to development of a dentigerous cyst.

When surgical removal of a supernumerary tooth is indicated, this is best carried out under general anesthesia.¹¹ It is important to ensure that enough space for the unerupted tooth to erupt into is present. Lack of space may necessitate extraction of other teeth with or without orthodontic intervention. Once enough space is present, the tooth should erupt after 12 months, in a pre-pubertal patient. However, if it remains unerupted after two years, re-exposure and orthodontic traction is indicated.^{11,13}

Post-pubertal patients should have an attachment and chain bonded at the time of exposure and traction applied straightaway.

During surgery, care must be taken not to damage the adjacent developing teeth or follicles.¹²

Conclusion

Early detection and management of all supernumerary teeth is a necessary part of preventive dentistry. In this way orthodontic problems and/or dental pathology associated with his dental anomaly can be avoided.¹² The importance of early radiographic investigation of suspect cases cannot be understated.

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