

Case report

Impactation of a permanent central maxillary incisor by the presence of two mesiodens: Case report



Helena Salgado*, Pedro Mesquita

Faculdade de Medicina Dentária da Universidade do Porto, Porto, Portugal

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ABSTRACT

Supernumerary teeth are a dental tooth anomaly of number whose prevalence varies according to studied population between 0.1 and 3.5%. Mesiodens are supernumerary teeth located in the anterior maxilla. A 10-year-old boy attended our Dental Medicine appointment with doubts about the apparent delay on son's eruption of the upper left permanent incisors. The clinical examination was possible to verify the presence in the arch of the tooth 61, having exfoliated erupted tooth 62 and the tooth 11. A panoramic radiograph was obtained, which revealed the presence of a supernumerary tooth at the midline in the eruption path of the left central incisor. In the computerized tomography was possible to detect the presence of a second mesiodens located palatally. The two supernumerary teeth were surgically removed under general anesthesia. Early diagnosis of this anomaly helps to prevent more serious complications and complex treatments.

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Impactação de um incisivo central maxilar permanente pela presença de dois mesiodens: Caso clínico

RESUMO

Os dentes supranumerários constituem uma anomalia dentária de número cuja prevalência varia, de acordo com a população estudada, entre 0,1 e 3,5%. Os mesiodens são supranumerários localizados na região anterior da maxila. Criança do género masculino, com 10 anos de idade, veio à consulta de Medicina Dentária com os pais a demonstrarem preocupação com o atraso na erupção dos incisivos superiores esquerdos permanentes. Ao exame clínico foi possível verificar a presença na arcada do dente 61, tendo já esfoliado o dente 62 e erupcionado o dente 11. Após realização de uma ortopantomografia foi possível detetar a presença de um dente supranumerário na linha média causador da impactação do dente 21. Na Tomografia Computadorizada foi possível detetar a presença de um segundo mesiodens loca-

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* Corresponding author.

E-mail address: helenatsalgado@gmail.com (Helena Salgado).

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lizado por palatino. Os dois dentes supranumerários foram removidos cirurgicamente, sob anestesia geral. O diagnóstico precoce desta anomalia permite prevenir complicações mais graves e tratamentos mais complexos.

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Introduction

Supernumerary teeth are those that exceed the normal dental formula. This phenomenon is also known as hyperdontia and can occur in single or multiple forms.¹ The literature reports that 80 to 90% of all supernumerary teeth occur in the maxilla.²⁻⁴ Half are found in the anterior region.³⁻⁶

The most common type of supernumerary tooth is mesiodens.⁷ This term is used to refer to an unerupted supernumerary tooth in the central region of the premaxilla between the two central incisors.⁸ Some authors referred a prevalence of 30% to mesiodens.^{3,6,9} Mesiodens may occur as single, multiple, uni or bilateral and often do not erupt. The presence of multiple mesiodens is called “mesiodentes”.^{8,10,11} In a recent study it was observed that 29,6% of patients had two mesiodens.¹² Mesiodens can significantly alter both occlusion and appearance by altering the eruption path and the position of the permanent incisors.³⁻⁶

Exact etiopathogenesis of supernumerary teeth is obscure; however, they may have familial tendencies. Hyperactivity of dental lamina, genetic mutation, dichotomy or environmental factors may also play a contributory role.^{5,13}

Complications associated with supernumerary teeth include impaction, delay or ectopic eruption, crowding, displacement, rotation or root resorption of adjacent teeth and the formation of follicular cysts.^{1,5,14,15}

Impaction of maxillary permanent incisors is not a frequent case in dental practice, but its treatment is challenging because of these teeth importance to facial esthetics. Supernumerary teeth are the main cause of the impaction of upper incisors. According to Peterson et al.¹⁶ 56-60% of mesiodens cause impaction of permanent incisors.

This case report describes the management of a central incisor impaction caused by two supernumerary teeth in the path of his eruption, by surgical and orthodontic approach.

Case report

The parents of a 10-year-old boy attended our Dental Medicine appointment with doubts about the apparent delay on son's eruption of the upper left permanent incisors. The clinical history did not reveal any systemic pathology associated. Intraoral examination revealed the presence of the permanent teeth 11 and 12 and the absence of the left corresponding teeth (Figure 1). A panoramic radiograph (Figure 2) was obtained, which re-

vealed the presence of a supernumerary tooth at the midline in the eruption path of the left central incisor. The patient was asked to take a computerized tomography, in order to assess the location and relationships of the mesiodens. By analyzing tomography images (Figures 3, 4 and 5) it was possible to verify the presence of another mesiodens, located palatal to the impacted central incisor. Under general anesthesia, the mesiodentes were carefully removed, as well as tooth 61 (Figure 6), without disturbing the unerupted teeth. A full thickness mucoperiosteal flap was raised in both palatal and buccal sides (Figures 7 and 8). After careful elevation of the flaps a slight elevation in the palatal cortical was evident. Adequate amount of bone was removed on both corticals using rotary cutting instruments. The supernumerary teeth were then luxated and removed. The impacted tooth 21 was surgically exposed and an



Figure 1. Pre-treatment intra-oral photograph showing the absence of left definitive maxillary incisors.

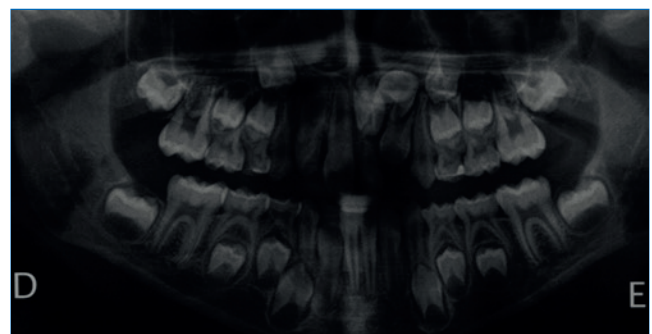


Figure 2. Panoramic radiography showing a supernumerary tooth at the midline.

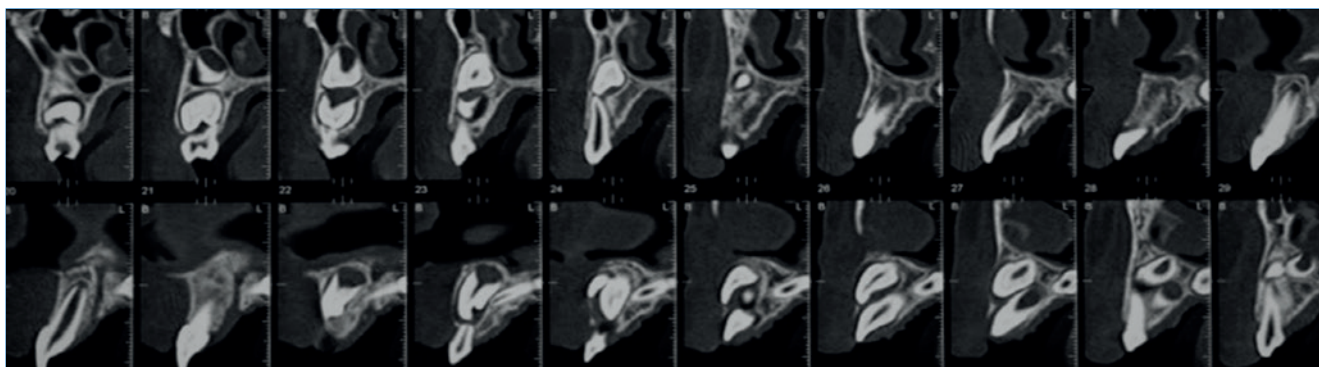


Figure 3. Computerized axial tomography – sagittal slice showing the presence of a second mesiodens.

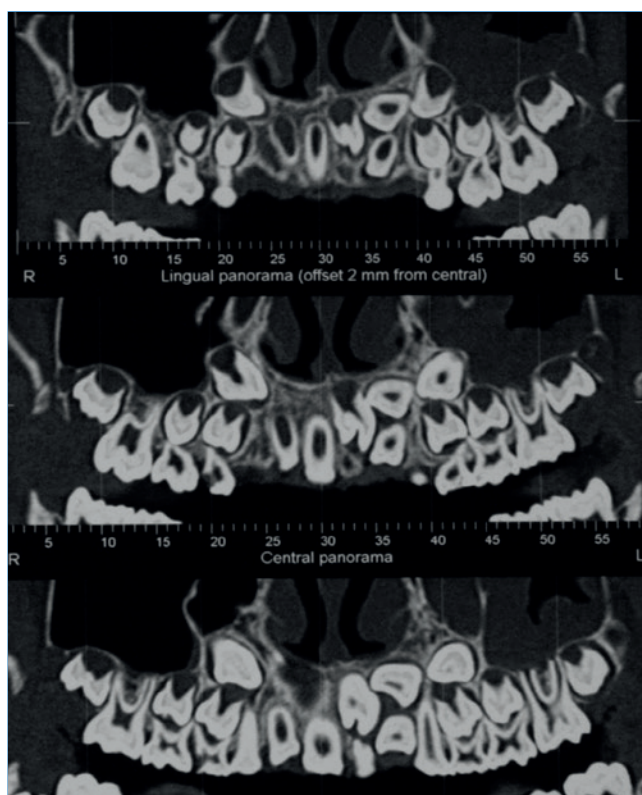


Figure 4. Computerized axial tomography – frontal slice showing the presence of a second mesiodens.

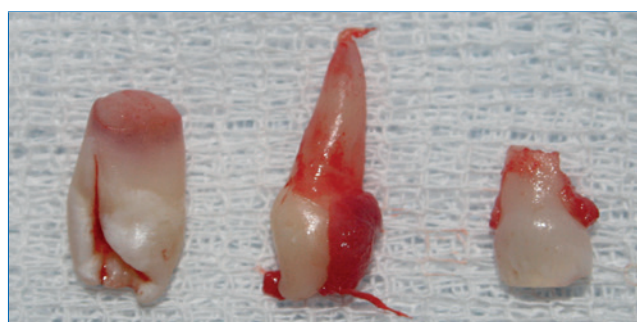
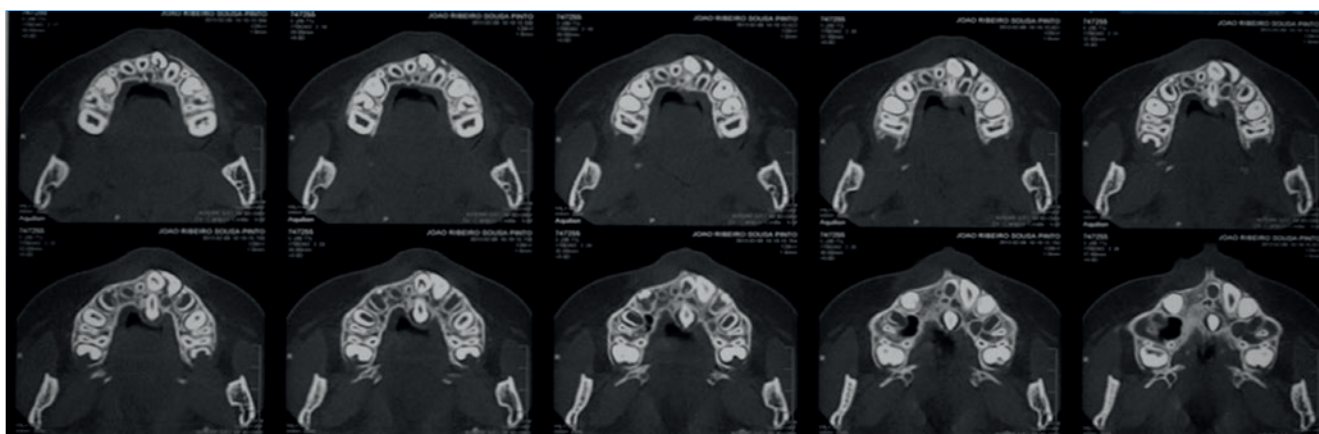


Figure 6. Extracted mesiodentes and tooth 61.



Figures 7. Surgical exposure for removal of mesiodentes, buccal side.



Figures 5. Computerized axial tomography – axial slice showing the presence of a second mesiodens.

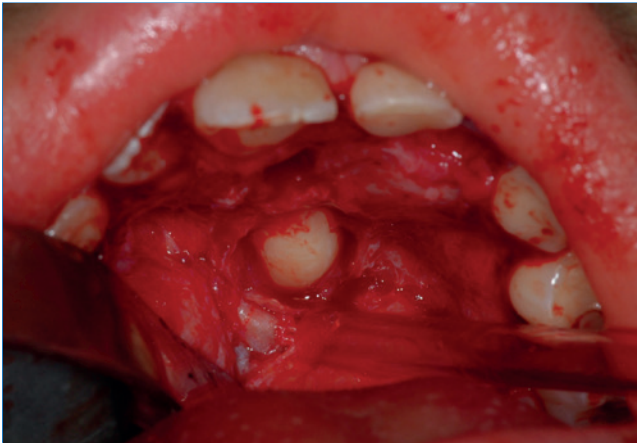


Figure 8. Surgical exposure for removal of mesiodentes, palatal side.

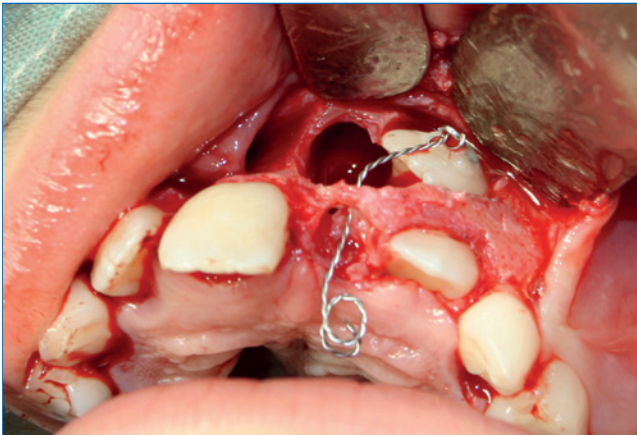


Figure 9. Attachment of traction device to the buccal surface of impacted tooth 21.

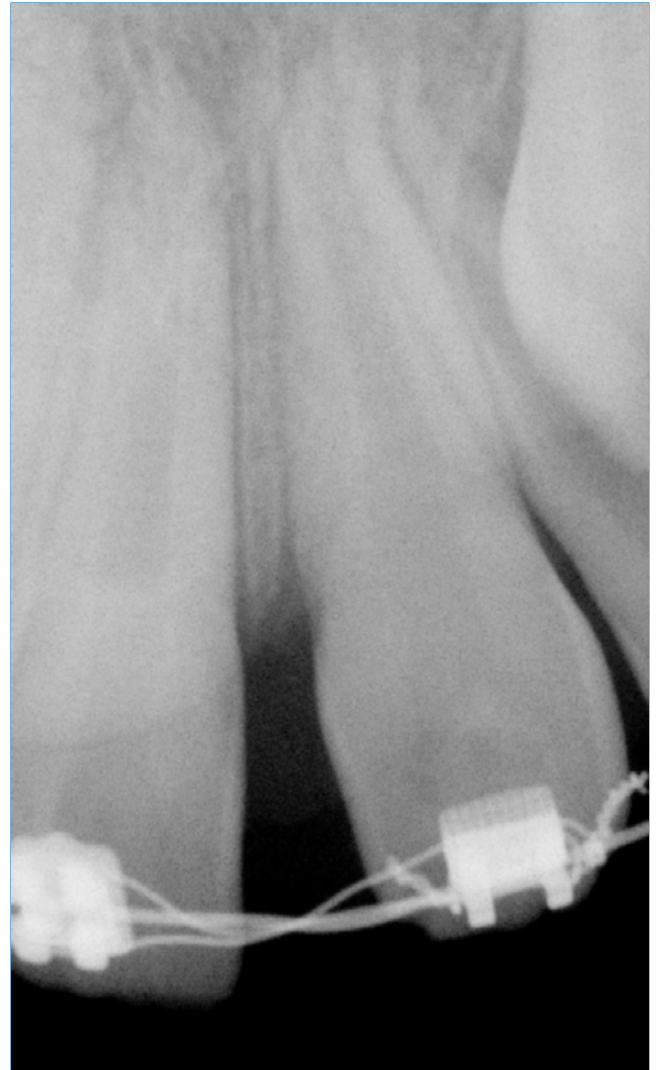


Figure 11. Control periapical radiograph 3 years and 9 months after removal of mesiodentes.

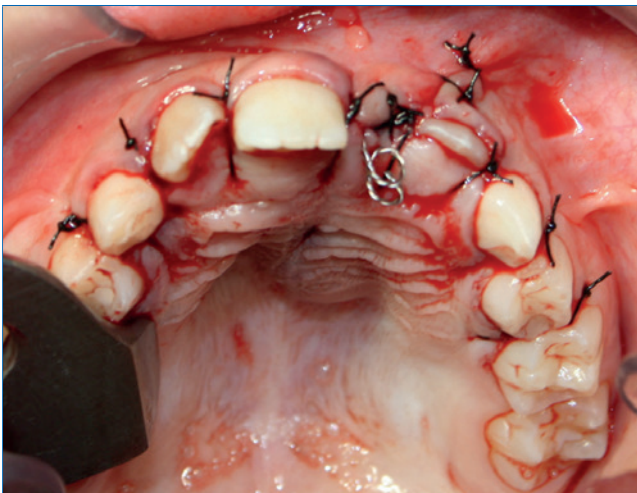


Figure 10. Wound closure with 4-0 supramid sutures.



Figure 12. Intra-oral photograph 3 years and 9 months after removal of mesiodentes.

orthodontic device for traction was attached to it (Figure 9). The extraction sockets were gently curetted, irrigated with saline and the wounds closed with 4-0 supramid sutures (Figure 10).

The young patient was regularly examined, and three years and nine months after surgery, it is possible to see that tooth 21 is already in a more occlusal position. (Figures 11 and 12).

Discussion

According to location supernumerary teeth can be classified as mesiodens (situated at the midline), paramolar (located buccally between the second and third molars), and distomolar (located distally to the third molar). They may show vertical, inverted or transversal orientations.¹⁷ A study conducted in Australia demonstrated that supernumerary teeth were most frequently located in maxillary incisor region (64.3%) with mesiodens accounting for 32.4% of the cases. Next most frequent locations were maxillary third molar region (29.6%), mandibular third molar region (7%), mandibular premolar region (7%), maxillary premolar region (4.2%) and mandibular incisor region (4.2%).¹⁷

The prevalence of supernumerary teeth is 0.3-0.8% in deciduous dentition and 1.5-3.5% in permanent dentition,^{1,18,19} with higher incidence rate in males than females (incidence ratio of 2:1^{6,9} or 4:1¹²). This is in agreement with our case.

Supernumerary tooth may occur in different forms, shapes and locations.²⁰ In what concerns to morphology supernumerary teeth can be classified as conical, tuberculate, supplementary or odontomas. Primosh³ classified supernumerary teeth as two types according to shape; supplementary or rudimentary; supplementary or eumorphic are those that have a normal shape and size; rudimentary or dysmorphic have an abnormal shape (conical, tuberculate or molariform) and smaller size. Most studies referred conical morphology as the most common followed by tuberculate and supplementary.^{15,21,22} In our clinical case one of the mesiodens had a conical morphology and the other a tuberculate one.

Although the abundant information is available on normal tooth development, the genetic etiology and molecular mechanisms that lead to congenital deviations in tooth number have not been clearly understood. Sedano and Gorlin²³ proposed a genetic theory in which mesiodens is an autosomal dominant trait with the lack of penetrance in some generations. It has been suggested that the environmental factors might have an influence on genetic susceptibility which could be cause for negative family history in our case.

Although supernumerary teeth could erupt normally, they may remain impacted. It has been stated that only 25% of maxillary anterior supernumeraries erupt.²⁴ The most common complication of supernumerary teeth is failure of eruption of maxillary ventral incisors.¹⁷ In this case report supernumerary teeth were responsible for impaction of left permanent maxillary central incisor.

A careful planning before surgery is essential to accurate localization of the teeth in order to reduce the risk of damage of the permanent teeth and nobel structures. Intraoral examination and panoramic radiography, alone, are insufficient for determining the exact location of supernumerary and impacted

teeth.²⁵ In the present case, computerized tomography provided information about a second mesiodens with palatal location that was not diagnosed initially. Above this CT provided valuable information that helped us to determine the morphology and the exact 3D position of the supernumerary teeth. The comprehensive pictures in 3 planes provided by CT can assist surgeon in choosing the appropriate surgical approach, identifying the tooth that should be extracted, and reducing the amount of surgical trauma on the adjacent hard and soft tissues.

Consensus among various authors remains unclear as to the optimal timing for surgical removal of an unerupted mesiodens.²⁶ Several advocate early removal of a mesiodens in order to prevent future orthodontic problems and need for more difficult surgical procedures.²⁷⁻²⁹ However others feel it is best to observe badly impacted supernumeraries until the complete root development of the permanent incisors. In the present case the mesiodens were in the path eruption of tooth 21 so surgical removal was indicated in order to prevent permanent incisor's impaction.

Conclusion

Supernumerary teeth may result in the failure of eruption of adjacent permanent incisors. Early diagnosis of the presence and removal of those teeth is essential to prevent higher complications. It is important to determine both the number and location of mesiodens in a patient. Treatment depends on the type and position of the supernumerary tooth and its effect on the adjacent teeth.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

Conflict of interest

The authors have no conflicts of interest to declare.

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