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Clinical case

Simultaneous surgical treatment of impacted third and fourth molars: a case report

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ABSTRACT

Introduction: Supernumerary teeth or hyperdontia is an uncommon alteration characterized by an increased number of teeth in an individual, the etiology of which remains controversial. This abnormality is more common in females and the most frequent location is the maxilla, usually on the midline.

Objectives: This paper describes simultaneous surgical treatment of impacted third and fourth molars as well as the diagnostic protocol necessary to perform it.

Clinical case: We present the case of a 48-year-old female who came in to the Orofacial Implantology Surgery Service at Hospital Virgen de La Paloma who was referred by her regular dentist. Radiological study with panoramic radiographs revealed the presence of bilateral impacted lower distomolars next to third molars. Their relationship with the inferior dental nerve was determined by tomography. Once the patient was informed, and after obtaining informed consent, surgical extraction of the four lower molars was carried out.

Conclusions: The treatment of supernumerary molars should be performed as

soon as possible to avoid displacement and eruption of permanent teeth.

KEYWORDS

Lower third molars; Distomolars; Surgical treatment.

INTRODUCTION

Supernumerary teeth, or hyperdontia, has been defined as a dental abnormality characterized by an increase in the number of teeth in an individual compared to the normal configuration of temporary and permanent dentition, made up of 20 and 32 teeth, respectively.^{1,2}

The appearance of these alterations is not very common, with an incidence of 0.3 to 0.6% in temporary dentition and 0.1 to 3.8% in adult dentition.³ Prevalence is higher in females by a 2:1 ratio.⁴

They usually appear in greater proportion in the maxilla than in the mandible by a ratio that varies from 5:1 to 10:1.⁵ In addition, the most common location is the midline despite being found at any point on the dental arcade. This type represents 80% of supernumerary teeth and is known as mesiodens^{6,7} and is followed, in order of frequency, by fourth upper molars, inferior premolars, upper lateral incisors, fourth lower molars and central lower molars, with the rarest being the presence of upper premolars, upper and lower canines and lower lateral incisors.⁸

The etiology of supernumerary teeth is still controversial. However, it has been shown that the type of dentition in humans favors their appearance given that humans have diphyodont (two dentitions) heterodont (distinct morphology for each dental group) dentition, that has undergone numerous variations over their phylogenetic evolution.⁵

The diagnosis of supernumerary teeth is the result of incidental findings during routine radiographic examinations.⁹ Only one-fourth completely or partially erupt, with the majority remaining included. The presence of hyperdontia can lead to multiple complications including delay in the eruption of permanent teeth or dental malposition (rotation, torsion, version), which in many cases is the first clinical manifestation of a supernumerary tooth.^{10,12} In addition, it can lead to rhizolysis and periodontal injury of the adjacent teeth due to compression of the

roots, and we can even find radicular cysts associated with these teeth, though it only occurs in 5% of cases.^{5,13,14}

Supernumerary teeth are classified according to their morphology, number and location:

Regarding morphology, a distinction is made between “supplemental teeth” that appear to be a normal tooth (eumorphic) and “supplemental teeth” that have atypical morphology (heteromorphic), and those that may appear with distinct forms: conical supplemental teeth that are small in size with a rudimentary crown and root and tubular teeth with crowns with multiple cusps and a single curved root.^{5, 15-17}

Regarding the number of supernumerary teeth, we can find cases of single hyperdontia (a single supernumerary tooth), with the mesiodens being the most common as a single finding and the fourth molar being the second in order of frequency.¹⁸ A less common finding is multiple hyperdontia in which multiple supernumerary teeth usually appear both anteriorly and posteriorly. They may be associated with complex syndromes such as cleidocranial dysplasia¹⁹, Gardner’s syndrome or cherubism.⁵

Finally, supernumerary teeth are also classified upon their location. Focusing on the molar region, which is the area that we are dealing with primarily in this paper, we can find distomolars or retromolars, which are those located distal to the third molar on the same line of the dental arcade, or we may find those known as paramolars, located in the interdental triangle between the second and third molar or less frequently between the first and second, outside of the line of the arcade on the vestibular, lingual or palatine side.^{15,17,20}

For this reason, radiological studies are necessary in order to determine the position of the supernumerary tooth, its size, shape, proximity to adjacent teeth and anatomical structures and the distance that separates it from the occlusal plane.²¹

Extraction of these supernumerary teeth is generally

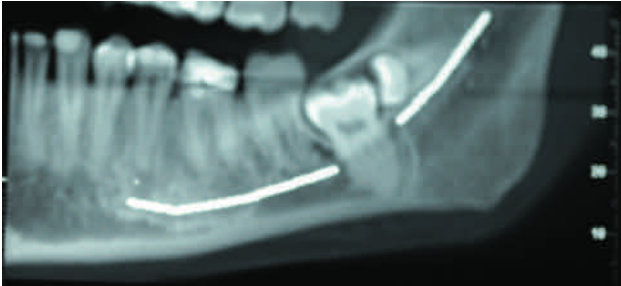


Figure 1. Panoramic slice on CBCT. Note the presence of the left lower distomolar and the third molar in relation to the inferior dental nerve.



Figure 2. Panoramic slice on CBCT. Note the presence of the right lower distomolar and the third molar in relation to the inferior dental nerve.

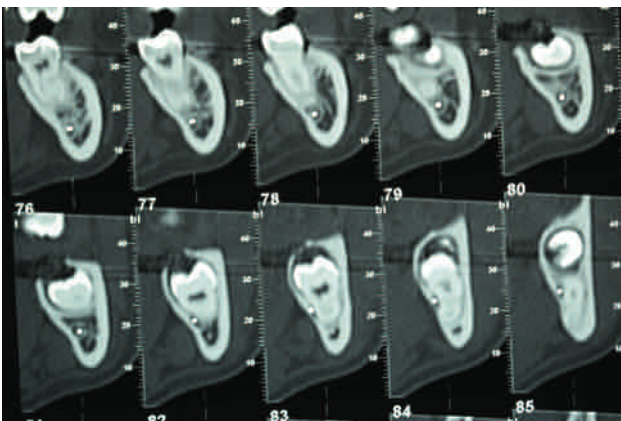


Figure 3. Left transverse slices which reveal the lingual position of the inferior dental nerve.

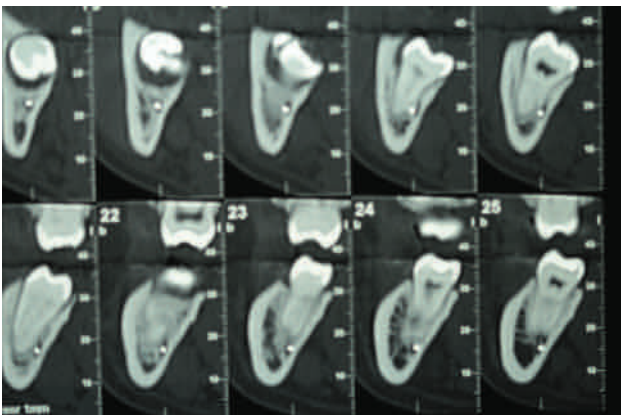


Figure 4. Right transverse slices with lingual position of the inferior dental nerve.

the first treatment option in order to avoid future complications⁸, as it is usually done for included third molars.²²

The purpose of this paper is to present a clinical case of bilateral lower distomolars that, despite their position and close relationship with the inferior dental nerve, did not present any clinical signs.

CLINICAL CASE

A 48-year-old female patient comes in to the Orofacial Surgery and Implantology Department at Hospital Virgen de La Paloma, referred by her regular dentist. The patient had unremarkable previous history. She underwent an exhaustive intraoral and extraoral examination which did not reveal any pathology. Radiological testing with a panoramic radiograph revealed the presence of impacted bilateral inferior distomolars next to third molars. The right lower third molar was in a horizontal position and the contralateral was vertical. The anatomy was eumorphic and its relationship with the inferior dental nerve advised the performance of a tomography (Figures 1-4).

Once both diagnostic tests were obtained, the patient was notified of the benefit of surgical extraction of the four molars, as well as the advantages of performing this procedure under general anesthesia.

Once consent was obtained, a preoperative workup was ordered which included a chest x-ray, electrocardiogram and systemic blood tests.

The surgery was performed following disinfection of the surgical field with povidone iodine, a linear festoon incision was made from the mesial side of the second molar with distal unloading (Figure 5) and mucoperiosteal detachment exposing the bone in order to perform the osteotomy followed by extraction of the left lower distomolar (Figure 6). Following extraction of the distomolar, exodontia of the left lower third molar was performed which required odontosection of the crown (Figure 7). To clean the surgical area and remove the bone remnants, the field was ir-

rigated with normal saline solution prior to closure of the soft tissues with 3-0 suture (Figure 8).

The surgical intervention was finalized by removing the third and fourth molar on the contralateral side, initially by ostectomy and then via odontosection of the distomolar that was finalized with exodontia (Figures 9 and 10). Exodontia of the right lower third molar was then carried out. Odontosection was not necessary at this point.

Postoperatively, the patient received antibiotics (amoxicillin 750 every 8 hours for 7 days), anti-inflammatories (sodium diclofenac 10 mg every 8 hours for 4 days) and rescue analgesia if needed.

After a week, the patient went to the outpatient clinic for follow up. The surgical area was checked and the sutures removed.

DISCUSSION

Supernumerary teeth occur as developmental alterations. They appear infrequently in any area of the dental arch and may be associated with systemic syndromes.

Leco Berrocal *et al.*²³ published a study in 2008 analyzing the surgical activity carried out in the Master's in Oral Surgery program at Universidad Complutense de Madrid, in which 6750 interventions were performed. Only 0.5% of the interventions were due to the presence of supernumerary teeth.

The percentage of fourth molars varies according to the results published by different authors, from 1% according to Menardia *et al.*²⁴ and Stafne *et al.*²⁵, 2% for Luten *et al.*²⁶, up to 1.9% for Backmann *et al.*²⁷

They appear more frequently in the maxilla than in the mandible, as described by authors such as Muhammed-Isa Kara *et al.*⁹, with 84.4% and 15.8%, respectively, Leco Berrocal *et al.*²⁸, who found 79.2% in the maxilla and 20.8% in the mandible, or Menardia *et al.*²⁴, who reported 86.8% of supernumerary molars in the maxilla.



Figure 5. Linear incision with posterior unloading for surgical access.

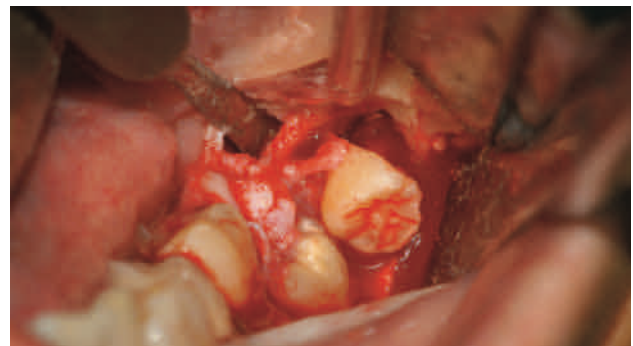


Figure 6. Extraction of left lower distomolar.

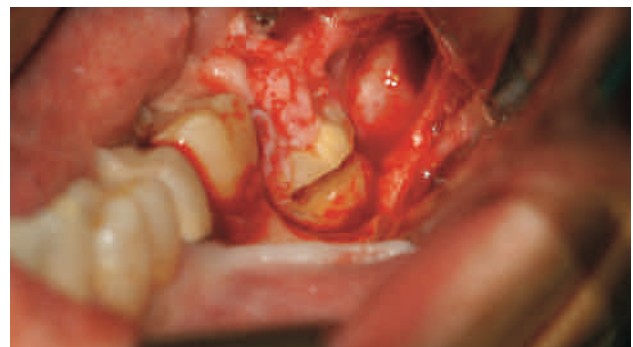


Figure 7. Odontosection of the crown of the left lower third molar.

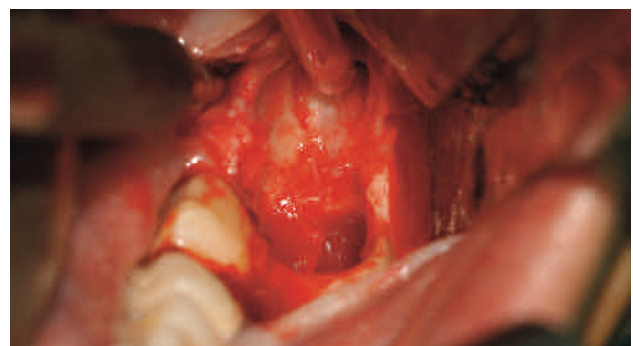


Figure 8. Appearance of the residual cavity after extraction of both retained teeth.

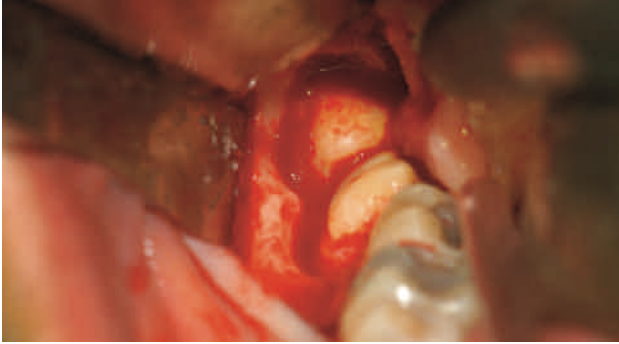


Figure 9. Detail of the osteotomy for extraction of the distomolar and right lower third molar.

The etiology is still controversial. Three main theories have been proposed to explain polydontia:

The “embryonic epithelium hyperactivity” theory, the most widely accepted theory in the literature, defines epithelial hyperactivity at any time during embryonic development as the cause of new dental formation.²⁹

The “dental follicle excision” theory, which states that factors such as trauma or developing disturbances (developing mutations) may provoke division of the follicle in two or more fragments, which would lead to the formation of two teeth from a single germ (dichotomous theory).^{5,29}

The “atavism” theory, which explains the formation of supernumerary teeth as a phylogenic reversion, meaning a return to a primitive dental formula, similar to that of in certain vertebrates with a greater number of teeth, such as primates.⁵

The gender association leans towards females, as reported by Shahzad *et al.*³⁰ in their 2012 study which reported that 65% of those affected were females. Regarding the most common age of onset, Salcido-García *et al.*³¹ determined that the presence of supernumerary teeth is greater during the first decades of life.

Regarding the position, it is more common to find supernumerary molars as distomolars, with a smaller number of cases being found in a paramolar position. This was described in the 2012 study by Muhammed-Isa Kara *et al.*⁹, who found that 63% of cases were distomolars and only 37% were paramolars. In addition,



Figure 10. Odontosection performed on the left lower distomolar.

Leco Berrocal *et al.*²⁸ found that out of 2000 patients, 79.2% were in the distomolar position.

These data are surprising given that authors such as Donado *et al.*³², Gay-Escoda *et al.*⁸ or Penarrocha *et al.*⁵ consider paramolars to be third and fourth in frequency among supernumerary teeth.

Unlike our clinical case, the majority of authors describe the presence of bilateral fourth molars frequently in the maxilla, as described in 1992 in the study by Martínez-González *et al.*²⁹

Regarding the treatment of supernumerary molars, authors such as Donado *et al.*³² state that treatment should be carried out as soon as possible to avoid displacement and eruption of permanent teeth. This same opinion is reported by Cozza *et al.*³³. However, authors like Koch *et al.*³⁴ advise against extraction of these included molars in children under 10 years of age given the need to perform the procedure under general anesthesia in the majority of cases. In addition, Kruger *et al.*³⁵ suggest delaying exodontia, but in this case they indicate the need for adjacent teeth to have closed apices.

However, all authors agree that, when performing exodontia, it is paramount that surgery should begin with the tooth that is in the most coronal position, performing its odontosection in order to simplify surgery and avoid performing aggressive osteotomies that may worsen the postoperative course. This is the procedure that was utilized in the clinical case presented in this article.



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