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Dental retention clinical and surgical approach: Report of two cases

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Abstract
Dental retention in the clinical and surgical practice of universities and private clinics is one of the main health problems most frequently treated. Due to the high incidence of this problem shown in medical literature, the general dentist must know the diagnosis and treatment of dental retention whose difficulty in some cases can have complication as a result. This article documents the clinical and surgical approach and report two cases.

Keywords: Dental retentions, surgery treatment, complications

Introduction

Tooth impaction in the field of oral and maxilofacial surgery occupies an important place, given its high frecuency of presentation. The third molars are the ones that most frequently present a high incidence of being retained, due to their late development in the dental arch and the phylogenetic evolution that over the years has been developing the mandible, losing space for these organs to erupt.

No less important are the retained canines that affect the esthetics and function of patients, and that often remain retained due to alterations in occlusion and lack of space; the supernumerary teeth, although less frequently, also present a challenge for the surgeon, especially because a percentage are associated with syndromes such as Gorlin Goltz, Gardner, cleft lip and palate, among others. Supernumerary teeth are present in excess in the jaws and have a varied morphology and can be dysmorphic, conical or eumorphic, the most frequent presentation is mesio dens.

The presence of dental inclusions, retentions and impactions is a consequence of local factors such as mechanical obstructions, including teeth, cysts or tumors, insufficient space in the dental arch due to skeletal incongruities, premature loss of deciduous teeth or discrepancies in tooth-arch size and systemic factors such as genetic disorders, endocrine deficiencies and previous irradiation of the mandible [1].

Eruption is the movement of the tooth into the occlusal plane, it begins when the crown formation is complete and the root has begun to form [2]. Retained teeth are those that, once the normal eruption period has arrived, remain inside the jaws, keeping their pericoronal sac intact. There are two types of retentions: intraosseous and submucosal; thus we have retained, included or impacted dental organs; there are also different classifications according to frequency of presentation, position of the longitudinal axis of the tooth in relation to the mandibular ramus, the occlusal plane and the depth of the tooth [3].

The treatment is fundamentally surgical regardless of the type of retention, we must carry out a thorough clinical and radiographic diagnosis considering the anatomical structures involved, the type of retention, the retained dental organ and the amount of bone covering it. All of these considerations should be taken into account when planning treatment, as associated complications can always occur. Surgical techniques should be considered in relation to the type of retention presented by the patient. When extracting a mesio-denture it is important to take into account the amount of bone to be removed, whether or not there are diastemas, axial rotation of the incisors, root resorption of adjacent teeth, etc. [4]. Regarding third molars, especially mandibular ones, the most frequent complications are edema, trismus, postoperative bleeding, delayed healing and infectious processes; less common are damage to adjacent teeth, jaw fractures and damage to the dental nerve. In the removal of upper third molars oroantral fistulas and fractures of the tuberosity [5].

This article documents information on the diagnosis and management of dental impacted teeth and presents two clinical cases. It also explains the importance of surgical planningm prevention and management of complications.

Multiple dental retention

Some concepts that describe dental retention are very important. They have to do with the normal stage of eruption, which is a process of migration of a dental organ from an intraosseous position to its complete eruption in the dental arch in occlusion with its antagonist. The normal physiological process of eruption includes events such as: the growth of the root of the tooth that allows its axial displacement, the vascular pressure within the tooth germ overcomes the pressure within the dental follicle resulting in the impulse of the tooth to the periphery, other events include the growth of the alveolar bone, dentin and parodontal membrane, as well as the proliferation of the root epithelial sheath of Hertwing and the pressure of the musculature around the oral cavity. Chronologically, the physiological process of dental eruption is divided into pre-eruptive, pre-functional eruptive and functional eruptive phases.

Factors inducing dental impaction

- Lack of space in the dental arches: an adequate relationship between the size of the dental arches and the size of the teeth is necessary.
- Deviation of the eruptive line: altering the eruptive process, retaining the dental organs, causing transposition and transmigration.
- Premature loss of primary teeth, trauma, alveolodental ankylosis of primary teeth, supernumerary teeth, cysts and tumors of the jaws, premature loss of primary teeth, alveolodental ankylosis of primary teeth, supernumerary teeth, cysts and tumors of the jaws.

In addition to these local causes, we must consider systemic diseases such as jaw syndromes, genetic or hereditary alterations, which lead to dental impaction and which oblige Oral and Maxillofacial Surgeons to have a comprehensive and multidisciplinary management of patients. Multiple dental retention is a rare condition that describes dental organs that remain unerupted inside the jaws, despite their normal eruption stage, affecting any dental organ, whether permanent or supernumerary [6]. Among the most common is the mesiodens, this type of supernumerary anomalies according to their shape can be supplementary of normal shape and size or rudimentary which have abnormal shapes and sizes being conical, tuberculated or molariform [7].

Imagin studies

Imaging studies are a very relevant diagnostic aid to assess dental impaction because they allow us to clearly know the position, size and shape of the roots, as well as the depth of the impaction in the jaws and whether or not they involve adjacent structures such as the dental nerve, proximity to the maxillary sinus and associated pathology. Cone beam tomography is considered the gold standard. Among its advantages, it eliminates image superimposition, with a single shot visualizing areas in the axial, coronal and sagittal planes, as well as 3D reconstructions in real size.

The percentage of radiation is lower, the advantages are undoubtedly indisputable, however, in university clinics this type of technology is not available and we must rely on the still useful panoramic radiography, however, in complicated cases the patient must be referred to a radiographic center to carry out this type of study.

Clinical cases 1

The patient is female, 13 years old, with no systemic history of importance for her current condition. He presents anterior dental crowding and malocclusion, the panoramic, occlusal and periapical radiographs show a retained dental organ corresponding to a mesiodens (fig.1). After evaluation of the preoperative laboratory studies, which were within normal ranges, and with the informed consent signed by the patient's parents, the surgical procedure was performed under local anesthesia (Fig. 2-3). The surgery was successfully performed and the patient was discharged fifteen days after her medical checkup. The patient is referred to the orthodontic department for further treatment.

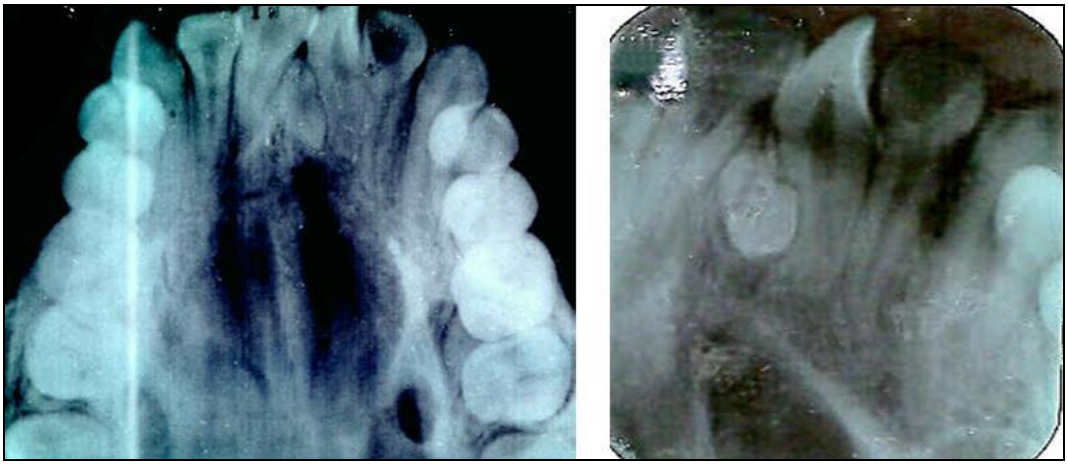

Fig 1: Occlusal and periapical radiograph showing retained mesiodens and its proximity to the roots of the central incisors.

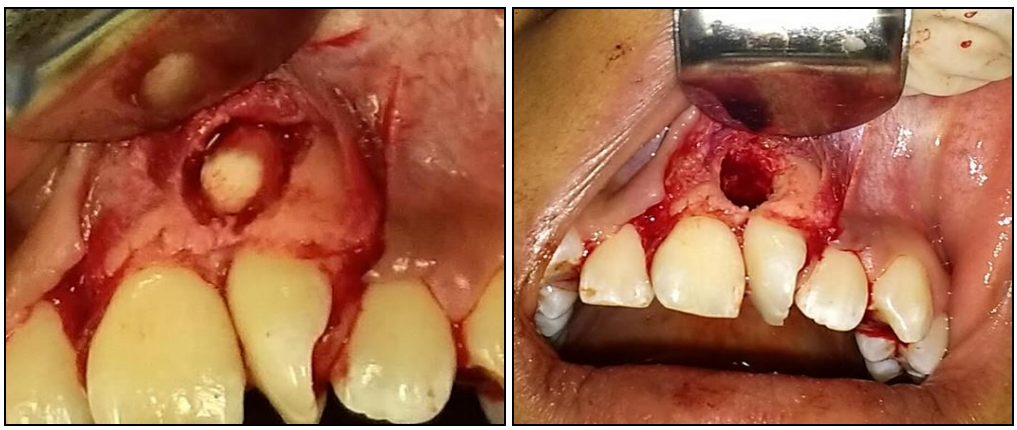

Fig 2: An ostectomy is performed to locate the mesiodens and proceed to its removal, an ostectomy is performed to locate the mesiodens and proceed to its removal.

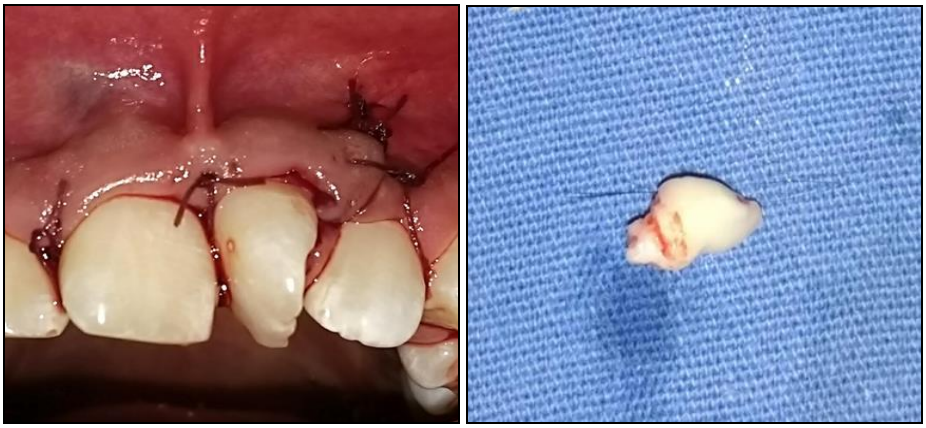

Fig 3: Image showing the suturing of the wound at the end of the surgical procedure.

Case report 2

Male patient, 18 years old, with no history of importance for his current condition. He is sent from the orthodontic department for the extraction of retained upper and lower third molars as a complement to his comprehensive orthodontic-surgical management. The panoramic radiograph shows the upper third molars retained in vertical position Winter classification and the lower third molars in horizontal position, class II position A, Pell and Gregory classification (Fig.1). Preoperative laboratories were found to be within normal parameters, and once the informed consent was signed, surgery was performed under regional anesthesia.

A mucoperiosteal incision is made in the retromolar region and blunt dissection, followed by osteotomy to expose the retained dental organ, is avulsed and the actual extraction is performed (Fig.2) Finally, the surgical site is washed and curetted, hemostasis is performed and the wound is sutured with polyglycolic acid 3 zeros (Fig.3). Once the surgery of the lower third molar is completed, the surgery of the upper third molar on the same side is performed.

The posterior alveolar nerves and the greater palatal nerve are infiltrated, a contouring incision is made with a vestibular liberatrix and a mucoperiosteal flap is carved to expose the third molar, the osteotomy is performed in order to remove the bone retention, the dental organ is avulsed and extracted (Fig.4). Once the dental organ has been extracted, the pericoronary cap is removed and the surgical site is treated, hemostasis is performed and the surgical wound is sutured (Fig.5). In a second stage, the contralateral retained third molars were extracted.

All surgeries were performed without incident or accident. Once the surgeries were completed, the patient was discharged and sent to the orthodontic department to continue his treatment.

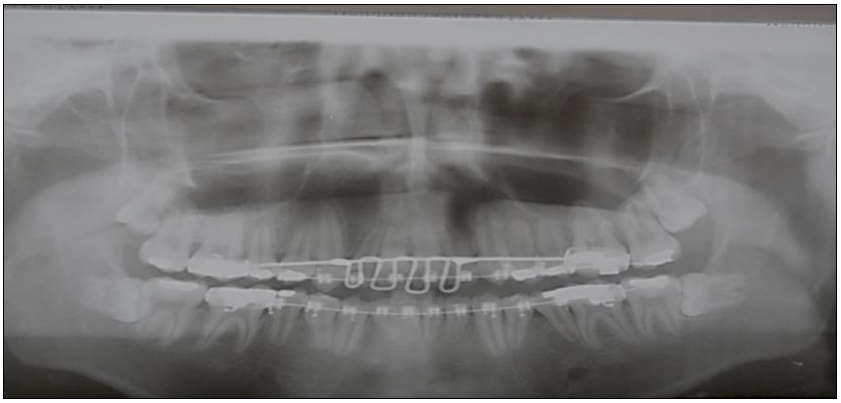

Fig 1: Panoramic radiograph showing retained upper and lower third molars.

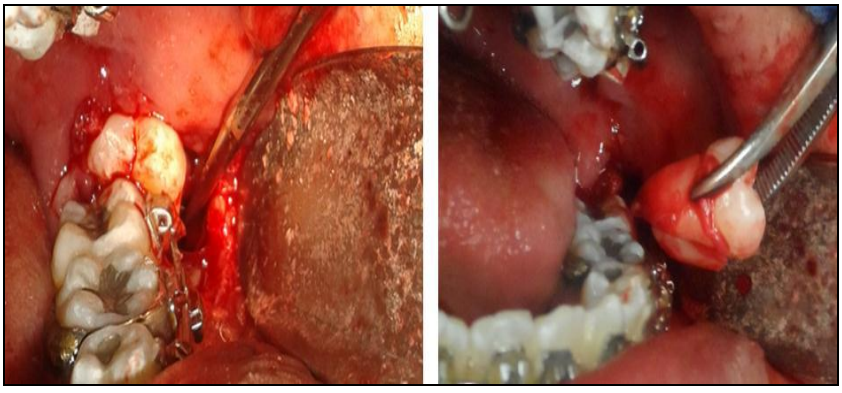

Fig 2: Avulsion of the retained dental organ and extraction itself.

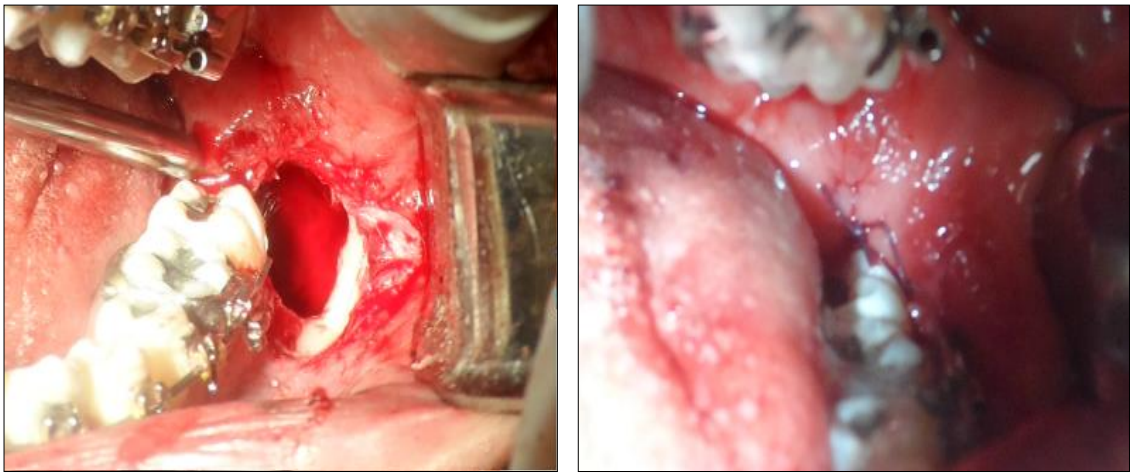

Fig 3: Shows the surgical site, and wound suture perfectly attached.

Upper third molar surgery

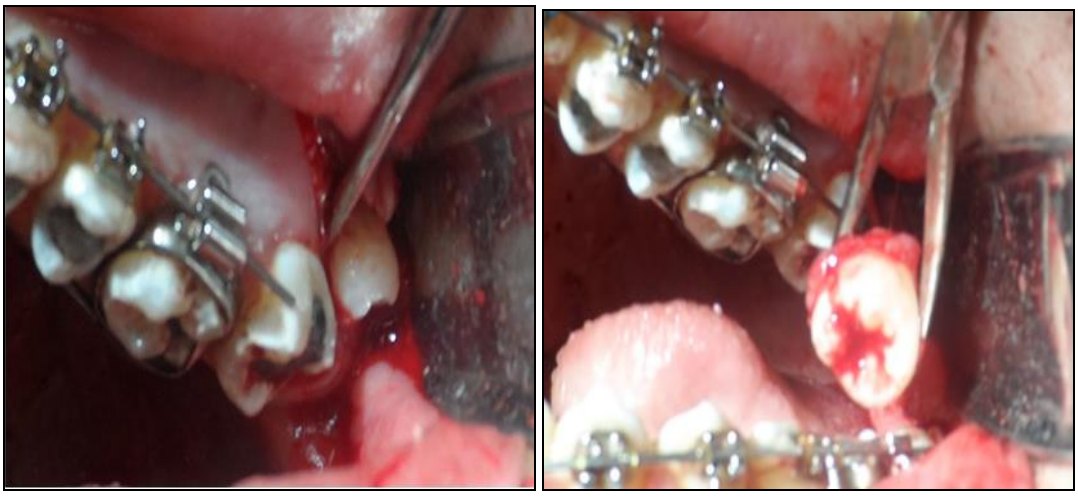

Fig 4: Osteotomy to release the retention and avulsion and extraction

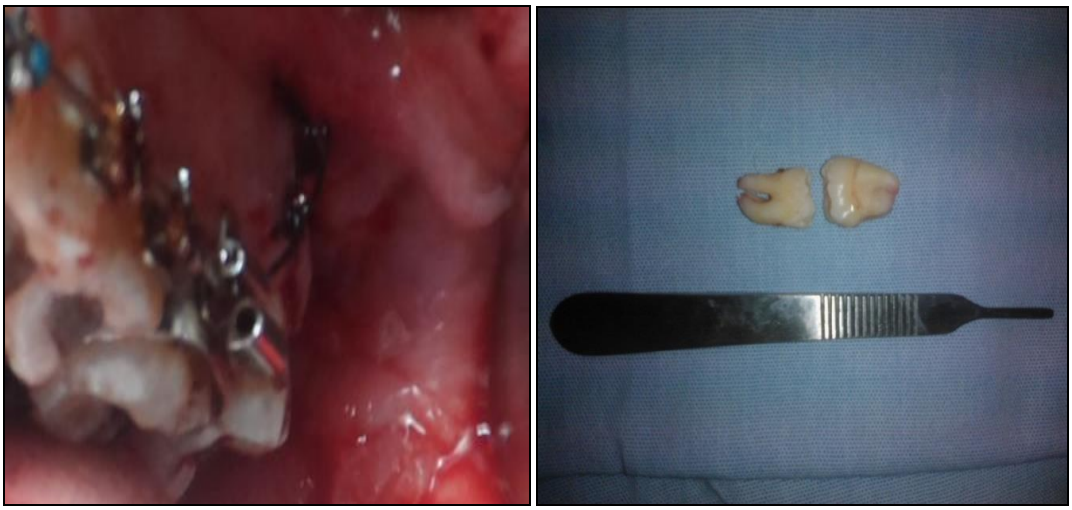

Fig 5: The wound is sutured with isolated stitches with polyglycolic acid three zeros, tooth extracted in its totality can be observed

Discussion

Dental retentions in general be they supernumeraries, canines, premolars and/or retained third molars are a frequent cause of consultation and treatment, recent literature addresses these problems from various topics: radiographic diagnosis, clinical aspects, incidence and prevalence studies, surgical techniques and finally management of complications, Srinivas M *et al* (2003). emphasize the management and prevention of complications. Evidently, it is in the surgical extraction of mandibular third molars that most complications may arise. It is therefore essential to study and plan each particular case in detail, to have the necessary instruments, supplies and medications, and in case of a complication or

emergency, to have the skills, abilities and knowledge necessary to carry out these procedures. And of course, the patient must be involved in the development of the surgical procedure, identifying and explaining the surgical risks and possible complications that may arise. Carrying out a surgical procedure of this nature should be a shared and joint decision between the physician and the patient and, if necessary, the family.

Conclusions

At the university health care clinic of the UNAM, dental retentions carried out during the school period constitute a high frequency of surgical treatments, with lower third molars predominating. However, in the case of retained canines we must consider the esthetic and functional value of the organ in question and avoid mutilation in cases where it is possible to place the dental organ under orthodontic traction. Multidisciplinary management of this type of patient is recommended, with careful evaluation of clinical cases and surgical management by the oral and maxillofacial surgeon.

Ethical aspects

Informed consent was signed and the patient's identity was preserved.

Acknowledgment

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