



## Surgical and Orthodontic Management of An Impacted Canine: Presentation of A Clinical Case and Review of the Literature

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 11 Sept 2023	<b>Aim:</b> In this research, a descriptive and analytical literature review was conducted on the management of retained teeth in oral medicine. Information was gathered from various scientific sources to examine the causes, complications, and treatment options related to this clinical condition. <b>Material and method:</b> The importance of early diagnosis was highlighted, and a clinical case of a patient with a retained canine treated surgically was presented. <b>Statistics and Result:</b> The use of surgical and orthodontic approaches in the management of retained teeth, as well as post-surgical recommendations, were discussed. The research provides clear and precise guidelines for oral medicine professionals in addressing this condition.
CC License CC-BY-NC-SA 4.0	<b>Keywords:</b> Impacted Teeth, Management, Surgical Treatment

### 1. Introduction

Proper management of retained teeth is fundamental in the practice of oral medicine. According to the World Health Organization (WHO), retained teeth are defined as those that, when attempting to erupt, are trapped within the bone tissue of the jaws, keeping their physiological pericoronary sac intact. At present, it is considered that retained or impacted teeth constitute a syndrome, since they are associated with a set of triggering alterations and are absent in the oral cavity, presumably due to various factors (Rodríguez et al., 2019).

The specific etiology of a retained or impacted canine is still unknown; However, several authors have proposed various possible causes, which can be local, general or genetic. Local causes include systemic diseases, fever, irradiation and Gardner's syndrome, among others. It has also been observed that early canine loss, ankylosis, the presence of cysts, dental crowding, fibroids, root dilacerations and trauma can contribute to the development of this condition (Egido et al., 2013).

It has been found that complications associated with retained teeth occur more frequently in young to adult patients, although they do not necessarily undergo surgical intervention to a greater extent. This may be related to the fact that the bone becomes more compact with age, which implies a greater risk in the excision of retained teeth. Several studies have published results indicating an increase in complications in older patients. It has been observed that when the tooth is completely included in its bone bed, it is classified as a type 3 retention, which implies a greater complexity in the surgical technique required (Valle et al., 2017).

Failure to treat a retained canine can lead to aesthetic and functional problems, such as speech and chewing difficulties. In addition, it can trigger displacement or even the loss of incisors, shortening of the dental arch, cyst formation, canine ankylosis, recurrent pains and malocclusions. Although some

patients with a retained canine have no complications throughout their life, there is a potential risk, underscoring the importance of its treatment (Egido et al., 2013; Quevedo et al., 2017).

In the case of a retained canine, the recommended treatment is mostly surgical. Surgical exeresis is the usual approach for retained teeth, but sometimes surgical procedures are combined with orthodontic treatments, especially in the anterior region of the oral cavity. Another approach used is surgical traction, which is preferably performed on canines and incisors and uses an orthodontic appliance known as a cantilever (Solis et al., 2019).

Therefore, it is vitally important to conduct a comprehensive study with the aim of gathering up-to-date information on the proper management of patients diagnosed with "retained teeth". This article focuses on providing a complete and detailed review of this topic, in order to provide clear and precise guidelines for oral medicine professionals in the management of this clinical condition.

## **2. Materials And Methods**

This research is a bibliographic review, of descriptive type, in which the qualitative character prevails and has a synthetic analytical method, since most of the information of the information collection was extracted from several scientific articles. The information was collected through research in different articles related to the object of study extracted from sources such as: Elsevier, PubliMed, Science, etc; which allowed comparisons and findings of important data that enrich the results of this research.

## **3. Results and Discussion**

### **Presentation of the clinical case**

This research presents a clinical case in which the management of a patient with retained tooth treated surgically, in a private clinic, in the period of time May – September 2022, which is selected through a non-probabilistic sampling of type subject, is disclosed. It is a clinical case of an 18-year-old patient, male, student, mixed race, where his mother refers as a reason for consultation that "he has a tooth above that bothers him", in the diagnostic analysis a deciduous canine with late eruption by pre-eruptive rhizolysis is visualized.

In the diagnostic stage of the management of retained teeth, it is essential to perform a thorough evaluation to determine the presence and characteristics of this condition. The first step was to collect detailed information about the patient's medical and dental history. Present symptoms, such as pain, inflammation, or functional difficulties, should be explored. In addition, a physical examination of the oral cavity is performed.

In the clinical and radiographic analysis, the proximity of the crown of the impacted tooth to the root of the definitive lateral incisor is visualized, so the treatment plan is based on the stimulation of the eruption process of the impacted canine, away from the nearby anatomical structures that may be affected.

Orthodontic treatment with conventional appliances is used, after the alignment and leveling phase, the activation process of the retained canine prior to surgical intervention begins by flap lift, operculotomy, corticotomy at the coronary level and assisted lujación, cementing of orthodontic attachment for traction and a discontinuous suture with synthetic non-absorbable thread 4/0.

As postsurgical recommendations are indicated: Ibuprofen 600 mg orally every 12 hours, for 5 days; Amoxicillin plus clavulanic acid by V/O of 500 mg/125mg every 8 hours for 7 days, soft diet, chlorhexidine-based mouthwashes for 15 days and postoperative control in 8 days.

By means of a temporary anchoring device placed at the level of the first molars complemented with a Cantilever with backward and occlusal direction of force, the dental eruption is stimulated in order to separate the crown of the impacted tooth from the root of the erupted lateral tooth. The activations of the Cantilever are carried out every 30 days having the definitive result at 3 months, causing the eruption in the parasutural area at the level of premolars.

### **Diagnostic stage**



**Figure 1.** Panoramic radiography. Source: Od. David Zapata Hidalgo Esp



**Figure 2.** Frontal socket of the patient's oral cavity. Source: Od. David Zapata Hidalgo Esp



**Figure 3.** Lateral intake of the affected area. Source: Od. David Zapata Hidalgo Esp



**Figure 4.** Occlusal socket of the upper arch of the affected area. Source: Od. David Zapata Hidalgo Esp

### Orthodontic stage



**Figure 5.** Treatment process with the retained tooth. Source: Od. David Zapata Hidalgo Esp



**Figure 6.** Process of opening space in the upper arcade. Source: Od. David Zapata Hidalgo Esp

#### Dental exposure



**Figure 7.** It results from surgical intervention on the retained tooth. Source: Od. David Zapata Hidalgo Esp

The frequent presence of retained teeth in the field of stomatology is a common finding both on clinical inspection and during X-raying. In particular, orthodontics is closely related to the diagnosis of retained teeth, as it is a crucial means of reaching definitive conclusions (Case et al., 2009; Jose, 2007).

Retained teeth can be found due to various causes, regardless of the age, sex or race of the patient. It is important to note that, in most cases, the parents or guardians of the child are the ones who come to the consultation with concern, since they expect that the tooth has erupted in the oral cavity due to the age of the child. (Martinez, 2019; Alexandra, 2016) Early detection of retained teeth is essential to initiate an adequate treatment plan. Accurate diagnosis requires a combination of clinical, radiographic and in some cases, additional evaluations such as CT scans or MRIs (Martinez, 2017; Moreno, 2013).

During clinical discussion, it is important to consider the implications and consequences of retained teeth. These teeth can affect facial aesthetics, masticatory function, and the proper development of dental occlusion. In addition, there is a risk of complications such as cyst formation, recurrent infections, root resorption and malocclusions. It is crucial to carefully evaluate the underlying causes of retained teeth. In many cases, a genetic predisposition to this condition has been observed, highlighting the importance of conducting a detailed analysis of the patient's family history and

medical history. In addition, local factors such as the presence of cysts, ankylosis, trauma or dental crowding that can contribute to tooth retention should be considered (Silva et al., 2023; Parades et al., 2023).

The management of retained teeth depends on several factors, such as the position, age of the patient, the state of development of the dental roots and the presence of associated complications. Treatment options may include surgical extraction, orthodontic traction, or a combination of both approaches. Careful planning and interdisciplinary collaboration between stomatologists, orthodontists, and maxillofacial surgeons are critical to achieving successful outcomes (Benites et al., 2022; Castillo et al., 2021).

#### 4. Conclusion

It is important to act at the right time, to avoid major complications in the patient. The retention of maxillary and / or mandibular canines represents one of the most difficult challenges to solve for the specialist, since not only must he make the decision to extract, retract or not extract, but he must select the most appropriate tooth if he decides to perform extractions, in addition the treatment is usually complex if he decides not to extract pieces, Undoubtedly, it is these cases where the importance of a good diagnosis and treatment plan is highlighted since they represent the pillars for good decision-making for subsequent treatment. Early detection and diagnosis of retained teeth are essential for proper clinical management. Understanding the underlying causes and potential associated complications is crucial to determining the most appropriate therapeutic approach. Timely treatment of retained teeth can prevent long-term complications and promote proper dental and facial development of the patient.

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