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Impacted canine in orbita: case report

Inclusão de canino em órbita: relato de caso

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ABSTRACT

The canines are important teeth as regards function, occlusion and esthetics. Disturbances with the eruption of permanent maxillary canines are common. Ectopic eruption of a tooth germ can occur at any time after eruption. It has also been observed that upper canines are affected with eruption disorders more than the third molars. The diagnosis of retained teeth is performed through clinical and radiographic examination, or through the investigation of various complaints, such as pain or orthodontic problems. The dental surgeon should be familiar with the anatomical and functional changes of the impaction, ectopic teeth and the possible repercussions for the patient, because recommendations on the decisions to be taken in cases of canine impaction, are determined through a careful study of each case. The purpose of this paper is to report a rare case of a buried canine in the proximity of the orbital border.

Indexing terms: *Cuspid. Oral surgery. Tooth, unerupted.*

RESUMO

Caninos são elementos dentários importantes no que se refere a função, oclusão, estética. Distúrbios na erupção de caninos superiores permanentes são comuns. A erupção ectópica de um germe dentário pode ocorrer a qualquer momento, desde a sua erupção. Verifica-se ainda, que caninos superiores são mais acometidos com distúrbios de erupção que os terceiros molares. Diagnósticos de elementos dentários retidos são realizados por meio de exames clínicos e radiográficos, ou através de investigações de queixas diversas, como dor ou ortodônticas. O Cirurgião-Dentista deve estar familiarizado com as alterações funcionais e anatômicas referentes as impactações, ectopias dentárias e suas possíveis repercussões ao paciente, pois recomendações sobre as decisões a serem seguidas nos casos de impactações de caninos são determinadas através de minucioso estudo de cada caso. O objetivo do presente artigo é relatar um raro caso de canino incluso com proximidade da órbita.

Termos de indexação: Dente canino. Cirurgia bucal. Dente não erupcionado.

INTRODUCTION

The canines are important teeth in terms of function, occlusion, esthetics and for the development of the arch[1]. The natural eruption of canine teeth takes place between 10 and 12 years of age[2]. Disturbances involving the eruption of permanent upper canines are quite common, as the canines can develop inside the bones and take a longer route before erupting inside the oral cavity, when compared to the other teeth[3]. The absence of natural eruption, linked to the presence of impaction, may lead to root resorption of the adjacent teeth, eruption cysts, diminished dental arch, midline shift or ankylosis[4].

Buried teeth usually occur, among other factors, due to a discrepancy in size between the teeth and the arches, discrepancies in the length of the arch, prolonged retention or premature loss of the deciduous canine, abnormal position of the tooth bud, ankylosis, cystic or neoplastic formation, root lacerations, iatrogenic origins or an idiopathic condition[4].

The ectopic eruption of a tooth germ may occur at any time after eruption. In the case of buried or impacted canines, it seems to be more prevalent in the female sex, with maxillary retentions being more frequent than mandibular[5]. In addition, it was found that, after the third molars, upper canines are the teeth most frequently affected[6].

The diagnosis of the retained canine is normally performed by way of routine clinical examination and x-rays, or through the investigation of various complaints such as

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pain or orthodontic complaints. Extraoral posteroanterior and lateral x-rays may be used, although the radiographic method which is most accessible and most accurately locates the retained canine is the Clark method[5].

It is necessary to carry out a detailed clinical, radiographic examination, and a tomography may also be performed, as the correct diagnosis and location of the retained canine are decisive in the choice and success of the intended treatment[4].

The aim of this article is to report on a rare case of a buried canine in proximity to the orbital border. Documenting this case report is necessary due to its rarity, enabling a critical evaluation to be provided to minimize clinical challenges, both in terms of the diagnosis and in the treatment of similar cases.

When signs of ectopic eruption of the canines are detected early, the interceptive treatment can be facilitated, such as with the early extraction of the deciduous canines and orthodontic widening of the space. Failing this, a more complex form of treatment protocol must be followed, demanding interdisciplinary surgical and dental treatment, important for ensuring successful treatment[7-8].

There is no preventive treatment for canine impaction. However, the treatment of choice would appear to be surgical exposure of the canine and its orthodontic repositioning via a fixed or removable appliance, which would be unviable in cases of buried teeth that are relatively high or close to the critical facial structures, rendering orthodontic traction options unviable[9].

Tooth retention represents an alteration where the tooth is preserved inside the bone and may or may not maintain the integrity of the pericoronal pouch during eruption[10].

The etiology of tooth eruption abnormalities is not fully understood. The retention of the upper canine may involve etiological factors such as: Involution of the upper jaw; anatomic position close to the embryological processes of adjacent teeth; long, complex eruption path, with frequently unfavorable positioning[10].

The upper canine is one of the teeth with the most difficult eruption path as it has to pass through the greatest interbone distance, on average 22 mm[11].

The diagnosis of the unerupted canine is carried out through a clinical and radiographic examination or by means of investigation of various complaints, such as pain. In order to find the correct location, it is necessary to perform imaging examinations (periapical, occlusal, panoramic, cephalometric and Waters view radiographs). A detailed clinical, radiographic examination has to be carried out as the correct diagnosis and definition of the location of the unerupted canine are factors that determine the choice and success of treatment[5].

Canine retention having been diagnosed, several different treatment options may be considered such as: surgical exposure and orthodontic treatment of the unerupted canine, extraction of the retained canine or performance of a periodical radiographic follow-up to control some or other pathological condition[12].

Computed Tomography (CT) is not a substitute for conventional radiography, however it represents an additional diagnostic resource, providing additional assurance in the planning of the treatment[13].

Tomography may be employed as a diagnostic method as it shows the position of the unerupted canine, however it is an expensive examination[13-14].

The aim of this paper is to present a rare case of a buried canine in the proximity of the orbited border

CASE REPORT

A 28-year-old, single, white female and homemaker, from the town of Cajazeiras, in the state of Paraíba, showed up at a private clinic complaining of facial pain close to the region of the right eye and nose, mainly reporting pain when she washed and dried her face.

On clinical examination, a very slight increase in facial volume was observed, situated between the lower edge of the right orbit and the nasal pyramid (Figure 1).

On palpation of the area, the patient reported sensitivity to finger pressure in this region.

In the intraoral clinical examination, tooth 13 was found to be absent from the arch. Due to these clinical findings, imaging examinations were requested (panoramic x-ray of the upper jaw, a cephalometric examination in profile and radiography of the facial sinuses (Waters view) (Figure 2), which revealed the presence of an ectopic, buried tooth (right upper canine) located at the level of the lower edge of the right orbit.

On account of the ectopy of the buried tooth and the technical difficulty in accessing the object of the surgery, it was decided to carry out surgery under general anesthetic. Having ordered the usual, preoperative examinations (complete blood count, fasting blood glucose levels, blood clotting test, urea, creatinine and urine summary) as well as the opinion of a cardiologist, with electrocardiogram and surgical risk, which were all within normal levels, the surgery was scheduled.

After anesthetic induction and left-side

nasotracheal incubation, a sub-periosteal infiltration was performed along the base of the right maxillary vestibule with a solution of 0.5% bupivacaine hydrochloride combined with adrenaline, with the aim of hemostatic vasoconstriction and hydrodissection.

Then, by way of an incision made using a Bard-Parker scalpel fitted with a no. 15 blade, a deep vestibular incision was made, extending from the region of tooth 23 to tooth 15. The retraction of the muco-periosteal flaps was carried out using a Chompret syndesmotome and Obwegeser retractors.

Using rotary tools (PM 702 and PM 703 burs), the osteotomy/ostectomy was performed by encircling the crown of tooth 13. After using a straight Seldin elevator, with a combination of oblique and perpendicular movement, tooth 13 was tugged and then removed (Figure 3). The specimen can be seen in Figure 4.

The cleaning of the operative wound was carried out using a 0.9% saline solution and the suturing was performed using separate 3-0 silk stitches.

Antibiotic, anti-inflammatory and analgesic medication was prescribed for post-op, which passed without complication. The sutures were removed 8 days after surgery.

Following the 30-day postoperative review, the patient reported total regression of painful symptoms in the region. A postoperative radiographic examination, carried out for control purposes, can be observed in Figure 5 (in which the alveolar socket of tooth 13 can be observed post-extraction) and in Figure 6 a postoperative cephalometric radiograph in profile. After these checks, the patient was discharged from the outpatient clinic.

Figure 1. Slight increase in volume between the region of the lower edge of the right orbit and the nasal pyramid, the region reported by patient to be sensitive.

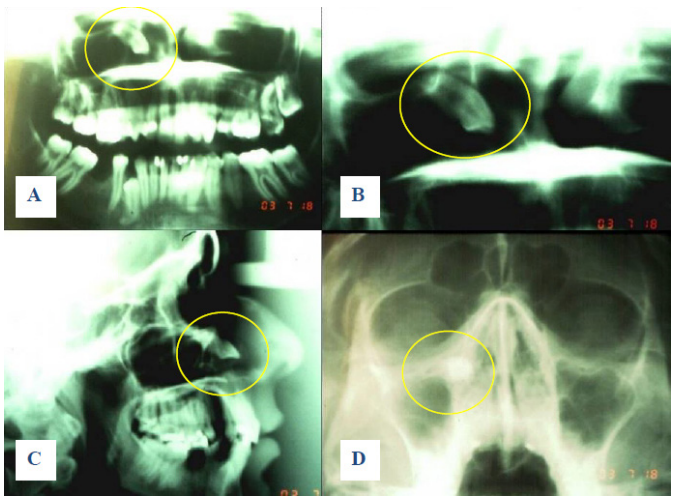

Figure 2. A: Panoramic radiograph; B: Approximate image of panoramic radiograph; C: Cephalometric radiograph, and D: Waters view identifying the buried tooth

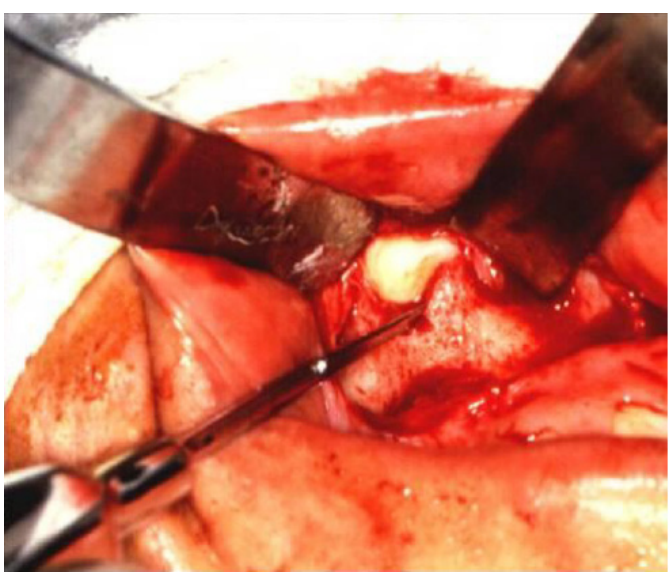

Figure 3. After osteotomy and ostectomy, dislocation using the straight Seldin elevator.

Figure 4. Specimen.

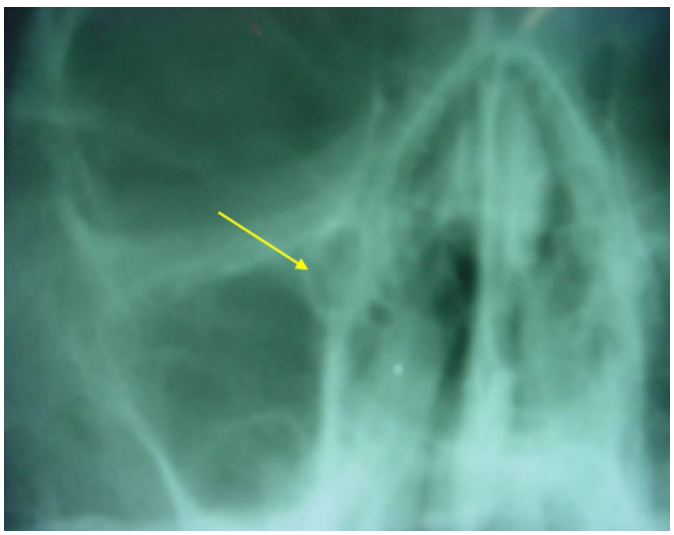

Figure 5. Waters view radiograph 30-day post-op, evidencing the location of buried tooth 13, post-excision.

Figure 6. Cephalometric radiograph in profile 30-day post-op.

DISCUSSION

Impacted or buried teeth, in general, are a dilemma for the dental surgeon and for orthodontists with regard to the decision on the procedure to be adopted for each case, either using traction or in the decision to remove them[5,8].

Gaetti-Jardim et al.[5] explain that the difference between impacted and buried canines lies in the fact impacted teeth are those that are retained but have the potential to erupt, i.e. their apexes are not complete, while buried canines are those teeth with a complete root and no potential for eruption, therefore requiring surgical intervention as the treatment option. In the clinical case presented, in which the tooth was buried and with an uncommon location as well as being ectopic, located at the level of the lower edge of the orbit, and the accentuated level of unviability for orthodontic traction, the best treatment option was surgical removal.

The present report is in agreement with Hypollito et al.[15], Hanke et al.[7], Sajnani[8] and Bertil et al.[2] that the majority of impacted canine teeth occurs with the female sex, and unilaterally. They also mention that the location of the impacted canines seems to be related to genetic traits and this might be attributable to differences in the maxillary bone structure in different races, for instance the format of the upper arch, the palate height, and the nasal cavity which has an influence on the format of the mandible and causes variations in the position of the tooth germ in the arch. In addition, differences in craniofacial growth influence the amount of space in the dental arch.

For Bertil et al.[7] and Aydin et al.[9], the most common locations for impacted canines are in the palate and in the vestibular position, deviating from the atypia found in the case presented here, which reveals canine ectopy situated at the level of the lower edge of the orbit.

Gaetti-Jardim et al.[5] stress that buried canines are generally diagnosed via extraoral, intraoral and radiographic clinical examinations requested by the clinical dentist who, through the combination of clinical and imaging information, provide decisive data to enable the preparation of the treatment to be adopted.

In the formulation of the treatment plan, the pre-op should encompass a complete surgical delineation of the tooth, either through orthodontic movement or through excision, exhibiting the spatial location of the tooth to be treated.

We are in agreement with Tito et al.[13] that tomography could be employed as a diagnostic method for this case, as it would show a three-dimensional picture of the position of the unerupted canine in question, and could help in the decision of the surgical technique to be employed. However, again in agreement with Tito et al.[13], tomography is a high-cost examination and the patient in question had difficulty in doing this examination, so it was decided to carry out panoramic, cephalometric and Waters examinations, as these would supply conditions for the decision on the surgical access to be followed.

For Gaetti-Jardim et al.[5], the treatment options for impacted teeth are as follows: conservative, non-surgical treatment that seeks to retain the tooth, non-conservative treatment depending on the location of the tooth, consisting of its elimination by means of surgical extraction

techniques, as in the case presented here, whose treatment of choice was non-conservative surgical treatment, due to its ectopic location.

According to Bertil et al.[2], important factors such as the choice of type of anesthesia to be used, projection of operative trauma, reconciled with the psychological profile, should be considered together with the patient, with the aim of choosing and providing the best treatment, prognosis and patient comfort[5]. In the present case, due to the unviability of conservative treatment, due to its location close to critical facial structures, the impossibility of orthodontic traction and given the possibility of the risk of cysts, infections and resorption, we went for the non-conservative, surgical treatment option as this offered better conditions of prognosis and patient comfort.

CONCLUSION

The precise diagnosis of impacted canine teeth may be performed by a clinical dentist and orthodontist, so that proper treatment can be initiated as quickly as possible.

The dental surgeon must be familiar with the functional and anatomic changes relating to impactions, ectopic teeth and the possible repercussions for the patient, since recommendations about the decisions to be followed in case of canine impaction, are determined through a thorough study of each case.

It should be stressed that the contribution of this study to the literature is shown through the explanation of the procedures used to diagnose the case and the explanation of the surgical technique applied to the treatment, thereby enabling dental surgeons in similar cases.

In order to reach any conclusion about the treatment to be proposed, it is essential to make a proper diagnosis, through the physical examination of the patient in association with imaging examinations, which may be simple, panoramic or cephalometric x-rays, or computed tomography, which give a more accurate location of the area and identification of the proximity to the prime facial structures.

Collaborators

SBF MARTORELLI, ÉPM LACERDA, FBM ANDRADE and FLMA FONSECA participated in all stages of preparation of the article.

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