http://dx.doi.org/10.1590/1981-86372020000320190031

Extra-buccal surgical access for canine removal included in mandibular symphysis: case report

Acesso cirúrgico extra-bucal para remoção de canino incluso em sínfise mandibular: relato de caso

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ABSTRACT

Included teeth are all the dental elements that arrive the normal time of its eruption, remains immersed within the tissues. Usually found when missing a tooth, or on routine radiographic examinations. In the presence of included teeth, it is necessary to define the best treatment approach, whether it is surgical, through exodontia, or by orthodontic tracings. Inclusive canines, in the symphysis region and near the base of the mandible, are rare and make the use of orthodontic traction techniques contraindicated. Presence of teeth in the intraosseous ectopic position can cause injuries, such as alveolodentary ankylosis, calcium metamorphosis of the pulp and aseptic pulp necrosis, among others. Anamnesis, physical examination (intra- and extraoral) and radiographic examinations such as panoramic, periapical, computed tomography, and occlusal radiographs should be performed to make the diagnosis adequate. In general, the success of the treatment depends on the age of the patient and the position of the canines at the time of the surgical procedure. The objective of this work is the extraction of a lower canine with extra-oral access in an outpatient clinical setting under local anesthesia.

Indexing terms: Cuspid. Ambulatory surgical procedures. Anesthesia, local.

RESUMO

Dentes inclusos são todos os elementos dentários que chegada a época normal de seu irrompimento, permanece imerso no interior dos tecidos. Geralmente encontrados quando se observa ausência de algum dente, ou em exames radiográficos de rotina. Na presença de dentes inclusos, deve-se definir qual a melhor abordagem de tratamento, se é cirúrgica, através de exodontias, ou por tracionamentos ortodônticos. Caninos inclusos, em região de sínfise e próximos à base da mandíbula, são raros e fazem com que o uso de técnicas do tipo tracionamento ortodôntico sejam contra-indicadas. Presença de dentes em posição ectópica intraósseos podem causar injúrias,

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How to cite this article

Souto LAP, Meneses-Santos D, Rodrigues CMC, Silva CJ, Rocha FS, Silva MCP. Extra-buccal approach of transmigrated canine. RGO, Rev Gaúch Odontol. 2020;68: e20200053. http://dx.doi.org/10.1590/1981-86372020000320190031

como anquilose alveolodentária, metamorfose cálcica da polpa e necrose pulpar asséptica, dentre outros. Para que o diagnóstico seja adequado, deve-se realizar, anamnese, exame físico (intra e extraoral) e exames radiográficos como panorâmicas, periapicais, tomografias computadorizadas e radiografias oclusais. Em geral, o sucesso do tratamento depende da idade do paciente e da posição dos caninos no momento do procedimento cirúrgico. O objetivo deste trabalho relata a extração de um canino inferior com acesso extra-oral em ambiente clínico ambulatorial sob anestesia local.

Termos de indexação: *Dente canino. Procedimentos cirúrgicos ambulatórios. Anestesia local.*

INTRODUCTION

Transmigration is the pre-eruptive intraosseous migration of a tooth, crossing the mandibular midline [1]. In other words, transmigration refers to instances where the lower canine is outside its usual location, especially near the midline [2]. The canines included in the mentonian region are less discussed in the literature, are rare, and are of an unknown etiology [3].

Transmigrations are usually asymptomatic and discovered during routine radiographic orthodontic examinations [1]. They may cause neuralgic symptoms [4] and can be reabsorbed by root pressure or inclination of adjacent teeth [5], or migrate to adjacent structures such as the coronoid process [6], causing pain and discomfort to the patient.

The actual distance of canine migration through the mandibular midline is more important than the migration itself [3]. The transmissible canines are classified according to the following criteria: Type 1: Canine positioned mesio-angularly through the midline within the mandible bone, labial, or lingual to the anterior teeth, and the part of the crown of the tooth traversing the midline. Type 2: canine horizontally impacted near the lower border of the mandible, below the apex of the incisors. Type 3: Canine eruption mesial or distal to the opposing canine. Type 4: Canine horizontally impacted near the lower border of the mandible, below the apexes of premolars or molars on the opposite side. Type 5: Canine positioned vertically in the midline (the long axis of the tooth crossing the midline) regardless of the eruption state [7].

Transmigrated canines occur due to environmental, systemic, or local conditions [8], and including a long eruption path of the canine germ, traumatic factors, early loss of deciduous canine teeth, lack of space, abnormal crown length, functional endocrine disorders, hereditary factors, odontomas, and tumors [4,9].

For diagnosis, radiographic examinations and radiographs (including panoramic, occlusal and periapical views) are important [10]. The Clark technique is also used to locate an anatomical repair or any body in the vestibular-lingual direction [11].

Herein we report a case of surgical treatment of canine transmigration at the base of the mandibular symphysis by extra-buccal access, under local anesthesia.

CASE REPORT

Our patient was a 16-year-old female with melanoderma who sought orthodontic treatment for aesthetic rehabilitation. On physical examination, the dental surgeon observed no erupted dental element 43 in the dental arch. The patient was referred to the Department of Buccomaxillofacial Surgery and Traumatology at the Federal University of Uberlândia for evaluation and conduct.

On panoramic radiography (figure 1), the right lower canine was included in the mandibular base, with part of its crown crossing the midline. Lateral teleradiography (figure 2) revealed dental element 43 located within the mandibular base. Given that surgical traction was impossible due to the position of the tooth, surgical removal was selected as treatment. The patient had no systemic comorbidities, allergies, or surgical contraindications.

The patient underwent conscious sedation with oral 7.5 mg Midazolan 1 hour before the procedure. Surgery was initiated with induction of local anesthesia using an inferior alveolar nerve block and submental extrapharyngeal infiltrations using 2% Lidocaine Hydrochloride with 1: 100,000 epinephrine. Surgical access was initiated with an extraoral incision, followed by detachment and dissection of the tissues in planes up to the depth of the periosteum, exposing the mandibular bone base. For ostectomy and crown exposure of the dental element (Figure 3A), we used the spherical drill bit #08 on a straight part, followed by a dental prosthesis performed with frustoconical drill #702 with a high rotation to facilitate the removal of the tooth. The crown was removed with a lift and in root sequence (figure 3B and 3C). The pericoronary hood was removed

(figure 3D), the borders regularized, and irrigated with a 0.9% saline solution. We used Monocryl 4-0 sutures for internal planes and nylon 5-0 on the skin. The patient was instructed about postoperative care and prescribed the prophylactic antibiotic amoxicillin and codeine and paracetamol for analgesia.

Figure 1. Panoramic radiograph shows element 43, including crossing of the mandibular midline.

Figure 2. Lateral teleradiography shows the presence of the included dental element 43 located in the mandibular base.

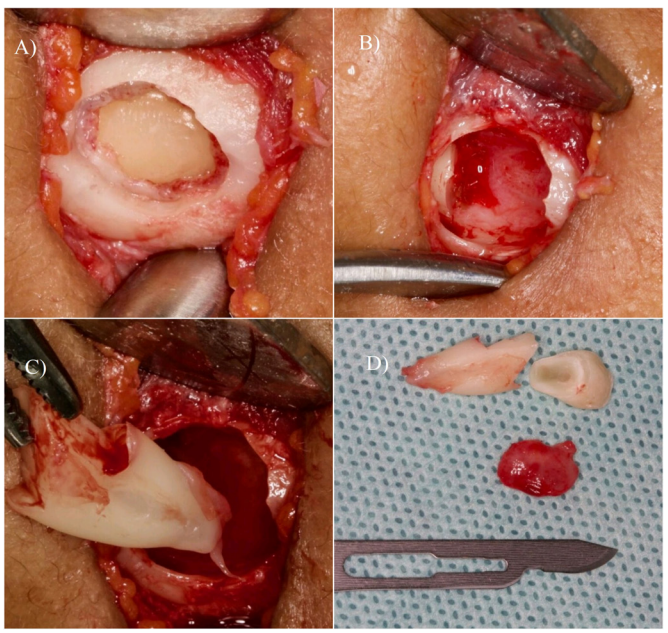

Figure 3. A) Ostectomy and exposure of the crown of the tooth, B) tooth incision to facilitate removal of the tooth, B and C) The crown was removed with a lift in a root sequence, D) Removal of the pericoronary hood.

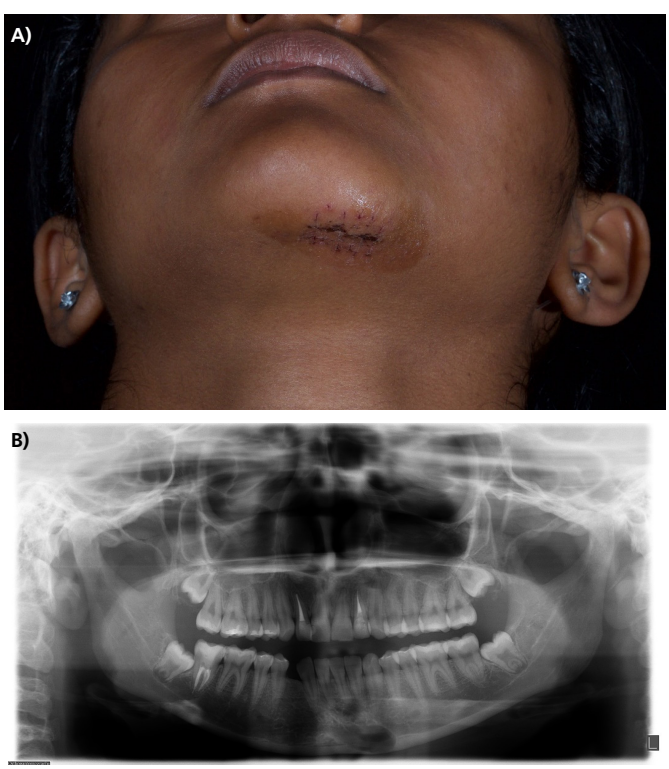

Figure 4. Our patient on postoperative day 7 showing good cicatricial appearance. Panoramic radiography on postoperative day 7.

Over the seven-day postoperative period, the patient reported no pain or somatosensory changes. Her postoperative edema was minimal, and the sutures were maintained with good cicatricial appearance and without phlogistic signs. After this, the skin sutures were performed (figure 4A). On panoramic radiography 7 days after surgery, we could visualize a bone shop (figure 4B). The patient remained in follow-up for a period of 2 years, wherein she exhibited a smooth skin line scar (Figure 5A) and bone growth in the surgical shop (figure 5B).

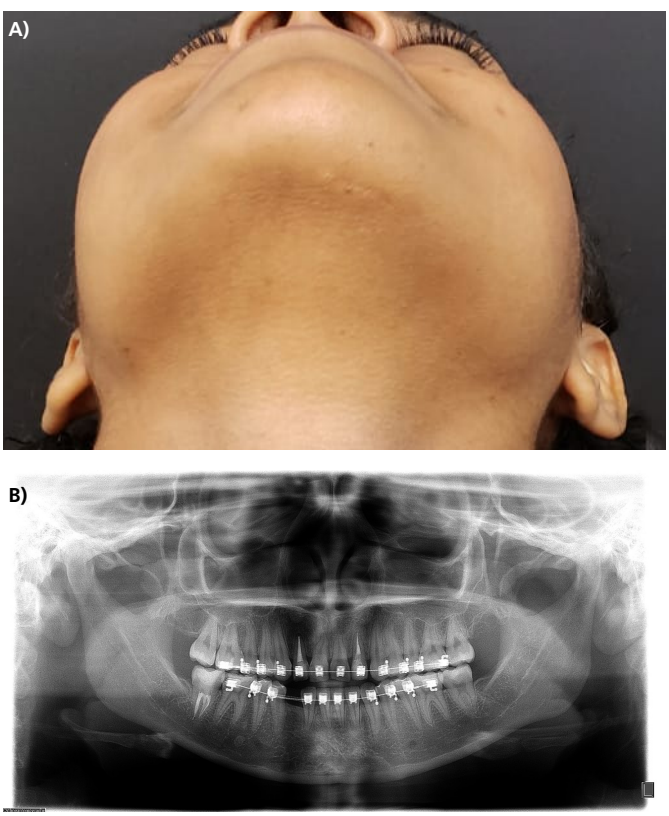

Figure 5. A) Our patient at a 2-year follow-up appointment showing good cicatricial appearance, B) Panoramic radiography after 2 years of control.

DISCUSSION

Transmigration is a rare dental anomaly that affects only the mandibular canines [12]. Canine migration most frequently occurs in the mesial direction, crossing the mandibular symphysis by lodging on the opposite side of the arcade [10].

Lower impacted canines are less common than impacted third molars, maxillary canines, and mandibular premolars [13,14]. The mandibular canines are impacted in approximately 0.1% of cases [15]. In a retrospective study of 94 impacted lower canines, found transmigration in approximately 40.4% of impacted lower canines [16]. However, in some cases, they can occur bilaterally [17].

Etiological factors and the various mechanisms of transmigration are poorly understood [18], but include factors such as the absence of a dental arch space [19], supernumerary teeth, loss of primary teeth, hereditary factors, endocrine disorders, trauma [20], cysts, and tumors [21]. Agenesis of the lateral incisor can lead to medialization of deciduous canine teeth; thus, not providing guidance for the eruption of permanent canines [22].

Costello [5] and Joshi [1], reported that mandibular canine transmigration is more common in females, as with our patient. Another investigation reported that transmigrated canines were approximately twice as prevalent in females, compared to males [23]. Another study indicated that the left side canine is more frequently affected than the right-side canine (1.6: 1) [15].

Our cases exhibited a type 2 canine transmigration, as per Mupparapu's classification scheme [7], where the canine appears horizontally and near the lower border of the mandible, below the apex of the incisors. Plakwicz et al. [23], examined 93 patients with transmigrated canines and found that type 2 migrations occurred in 23.7% of cases. With respect to age, they found that only 25% occurred in individuals older than 15.5 years [23].

Treatment options for transmigrated lower canines include autogenous transplantation, orthodontic traction, and radiographic observation [3,7,10,24-25]. Impacted teeth can cause external radicular scarring and may damage adjacent teeth; thus, radiographic monitoring is indicated [26]. The great majority of included teeth can be surgically removed, due to the failure potential of other treatment mediums [27], and may be performed using either intra- or extra-buccal access [15].

Intra-buccal access for teeth at the base of the mandible can be complicated by limited spacing, difficult visualization, and ostectomy of a large bone volume [24]. In rare cases, extra-buccal access is used because it provides a better operative field for transmigrated canine removal [24]. In the present study the transmigrated canine was located vestibularly and near the mandibular base, thus indicating

a more conservative ostectomy in the region. The extraoral approach has several disadvantages including the possibility of nerve damage and aesthetic complaints [28]. In the present study, no motor or somatosensory complications of extra-buccal surgical access were observed.

CONCLUSION

Canines located near the base of the mandible are rarely discussed in the literature, compared to impacted upper canines due to their relative rarity. Inclusive teeth are usually asymptomatic, and therefore typically identified only during routine radiographic examinations. Our case was treated via surgical removal with extra-buccal exposure due to the impossibility of orthodontic traction. Treatment depends on detailed clinical and radiographic planning, the surgeon's technical-scientific abilities, the age of the patient, and the position of the canines.

Collaborators

LAP SOUTO, is responsible for the conduct of the case, bibliographic review. D MENESES-SANTOS, for the bibliographic review, CMC RODRIGUES, for the photographs and image formatting. CJ SILVA, for the scientific review of the article. FS ROCHA, by the scientific and critical review of the article. MCP SILVA, chief surgeon responsible for the case and review of the article.

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Received on: 3/3/2019
Approved on: 26/6/2019