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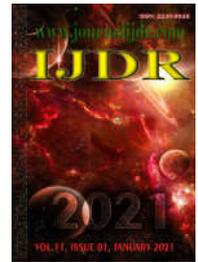
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RESEARCH ARTICLE

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CANINE REMOVAL INCLUDED WITH BILATERAL ACCESS IN JAM BODY ASSOCIATED WITH GUIDED

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ABSTRACT

Introduction: Canine impaction is a condition where the tooth cannot burst into the oral cavity. It has a higher prevalence in the maxilla, with recurrence in females. Its etiology is related to the lack of space for eruption, but it is suggested that it is a multifactorial problem. The most frequent treatment strategies are orthodontic traction or surgical removal. Early diagnosis and intervention are important measures to prevent intraosseous pathologies. **Objectives:** Report surgical therapeutic associations adopted to remove a included lower canine. **Case report:** A male patient, seen at the outpatient clinic of Faculdade Adventista da Bahia comes with an aesthetic complaint. In the intraoral clinical examination, the absence of element 33 was observed. On tomographic examination, impaction of the element 33, root tearing and horizontal position were noted. Exodontics was indicated, with coronectomy performed through the vestibular approach and removal of the remaining root through the lingual approach. After extraction, platelet-rich fibrin (PRF) was associated with bone graft to fill the bone defect, and the regenerated area was protected with PRF membranes. **Conclusion:** Computed tomography (CT) was fundamental in the treatment decision and helped in the surgical planning, since it reduced the risk of injuries to the adjacent structures. In addition, PRF, associated with the graft, provided a good prognosis.

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INTRODUÇÃO

Canine impaction, described as the condition by which the tooth cannot erupt, even after complete root formation, has been frequently reported in the literature, since the absence of this element affects not only aesthetics but also function during the process of chewing (Hyppolito *et al.*, 2011). The etiology is presented as multifactorial, given that several conditions have been described as precursors of canine impaction. Among these conditions, it is possible to highlight the lack of space where the rupture should take place, the long path of eruption of the element, early loss of the primary canine, genetic factors, pathological injuries, traumas, ankylosis and contra lateral transmigration,

specifically in the lower canines (James 2015); (Msagatiet *et al.*, 2013); (Domenico *et al.*, 2017); (Mcarter *et al.*, 2021). In addition, root laceration, an abnormality characterized by abnormal root curvature, also has a relevant influence on tooth impaction (Landim *et al.*, 2010). Regarding the prevalence of canine impaction, it is possible to observe that there is a greater predominance for the female gender (Landim *et al.*, 2010); (Jardim *et al.* 2012). Furthermore, it is well known that the upper canine is often more affected than the lower canine (Domenico *et al.*, 2017); (Vaid *et al.*, 2014); (Mcarter *et al.*, 2021), being able to be unilateral, bilateral and located by lingual, buccal or transalveolar. (Landim *et al.*, 2010). Regarding therapeutics, the time of diagnosis plays a crucial role in the treatment options and

in the prognosis of the impacted canine (Bertl *et al.*, 2018). This condition is commonly found in routine examinations and for the detailed study of these cases, several imaging methods have been used. However, "Cone Beam" computed tomography is the most accurate method, since it is a three-dimensional image exam and multiplanar reconstructions that provide essential anatomical details that assist in planning, prognosis and, consequently, in solving the case (Manzi *et al.*, 2011); (Viktorija *et al.*, 2018). The most frequent treatments for impacted canines are orthodontic traction or surgical removal (Domenico *et al.*, 2017); (Mcarter *et al.*, 2021) in his studies, points out that the most commonly used treatment for this condition is surgical removal, because, in addition to being considered easier and faster, canine impaction is usually diagnosed when its root is already well developed, which can complicate the repositioning of the element in the dental arch. When the stage of root development is favorable, orthodontic traction is planned to obtain the ideal function and aesthetics through the correct positioning of the tooth (Domenico *et al.*, 2017). When surgical removal is chosen, with the aim of promoting better healing of the bone store and patient comfort, guided regeneration techniques can be used. Currently, in dentistry, there have been great benefits of PRF, an autologous modality that presents itself as an optimized clot, generating growth factors that stimulate and attract stem cells to the injury site, in order to promote cell mitosis and induce angiogenesis and osteogenesis (Vivek *et al.*, 2011). The PRF, when associated with the allogeneic bone graft, leads to success in bone incorporation, in addition to reducing pain and inflammation, allowing, therefore, a better postoperative to the patient (Jing *et al.*, 2018). The objective of study was report the surgical treatment of an impacted mandibular canine with root laceration, highlighting the aid of cone beam computed tomography in the choice of treatment. Furthermore, we wanted to highlight the benefits of guided bone regeneration in the final result.

CASE REPORT

A 16-year-old male patient, ASA I, attended the school clinic at Faculdade Adventista da Bahia with the main complaint: "I want to use a orthodontic appliance because of the space in my tooth". On intraoral clinical examination, absence of the left mandibular canine, diastema, mesialization of the unit 34 and distalization of the unit 32 were observed. For a better diagnosis, a panoramic radiographic examination was requested in which it was possible to observe the element 33 impacted on the mandibular bone, which therefore ruled out the possibility of agenesis. Seeking a more accurate diagnosis, CT cone beam was requested, which confirmed the presence of the included tooth with marked root tearing. In an axial section, the element was presented horizontally with the crown more directed to the buccal surface and the root through the lingual.

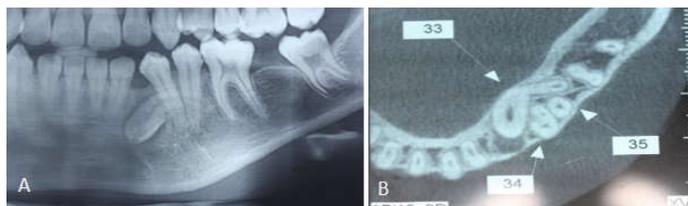


Figure 1. Imaging exams. A: panoramic radiography. B: axial section of cone beam computed tomography

After analyzing the imaging exams, it was observed that it was impossible to reposition the element in the arch through orthodontic traction, due to the sharp root angulation. The patient underwent tooth removal under local anesthesia, a Newman-type mucoperiosteal buccal flap was performed, which extended from

the distal papilla of element 36 to the central incisor region, where the relaxant was performed, preserving the lower lip. With the aid of retractors, the flap was stabilized inferiorly, in order to obtain a better view of the operative field. Between elements 34 and 32, five millimeters from the alveolar crest, the vestibular osteotomy was performed with high rotation and copious irrigation. After complete exposure of the crown, a coronectomy was performed in the neck region, followed by excision. To remove the remaining root, it was necessary to use a lingual access with an envelope flap, extending from the mandibular left first molar to the canine on the opposite side. This greater extension became necessary due to the absence of relaxers in this type of flap. A circular osteotomy similar to the one described above was performed until the exposure of the root portion, being succeeded by odontosection due to the marked laceration, and removal of the root remainder. Then, curettage and irrigation with saline was performed.



Figure 3. Bilateral access. A: Visualization of the crown after osteotomy through the vestibular. B: Bone store after coronectomy. C: Lingual bone store after root access and removal.

Since the canine has a large proportion, especially when compared to the other anterior teeth, and that its removal would result in an extensive bone defect, it was therefore proposed to use a heterogeneous graft that has a good conductive bone property, associated with the PRF, a material autogenous that enhances graft incorporation, accelerating the bone regeneration process. Subsequently, the graft was covered by PRF membranes to protect the grafted area, as well as to improve soft tissue healing.



Figure 4. Guided bone regeneration: A: heterogeneous bone graft and sectioned element. B: IPRF associated with the graft. C: bone store filled with grafting material. D: graft covered as PRF membranes

The flaps were repositioned on the bone and sutured with 4.0 nylon thread, starting with the relaxing interdental papilla, followed by the other papillae and the relaxing suture along its entire length. The patient progressed satisfactorily, without post-surgical complications. After six months, a panoramic radiograph was requested, in which it was possible to observe the complete bone neof ormation in the operated region.

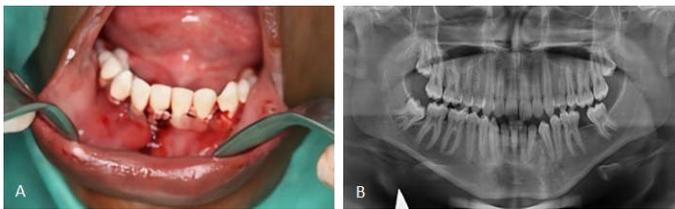


Figure 5. Simple stitch suture with 4.0 B nylon thread: Panoramic after six months showing excellent bone repair

DISCUSSION

Canine impaction is a common condition and is more prevalent in females. In the studies carried out by (Landim *et al.*, 2010), 61.11% of the affected patients were women. The upper canine is frequently affected, since, in certain circumstances, it does not have enough space, as the adjacent teeth are already in position. The mandibular canines, in most cases, do not have this limitation, as they erupt in a favorable order. (Vaid *et al.*, 2014) showed that the upper canine impaction is 1.5% -2.2% in the general population, and the incidence of mandibular canine impaction is only 1/5 of the upper canine. Unlike the statistics evidenced in the literature, the present study reports the case of a male patient affected in the mandible. Regarding the location and position of lower canine impaction, YU Hong-Bin *et al.* (Yu HB *et al.* 2019). Affirms that it is commonly deep, and most are impacted horizontally and with a great possibility of transmigration. In Michael H. Bertl's studies (Domenico *et al.*, 2017) 40.4% of the impacted mandibular canines had transmigration. In the report in question, the canine did not show transmigration, however, as prevalent in the literature, it presented in a horizontal position, crossing the roots of the premolars.

Root tearing, depending on the degree of root curvature, can lead to the impaction of the involved element. It is not an uncommon condition (Landim *et al.*, 2010), when radiographically evaluating 14 included canines, noticed that 07 of these teeth (50%) presented root laceration. It is concluded that the etiology has no consensus in the literature. In the permanent anterior teeth, this occurrence has often been referred to trauma to primary teeth (Topouzeli *et al.*, 2010) However, Stewart (Stewart 1978) in his studies, had different conclusions (Hyppolito *et al.*, 2011), since only 22% of the 41 cases studied had reported trauma in childhood. However, it is important to emphasize that, many times, such an event is not remembered by the patient, as described in the anamnesis of the case report in question, or even the severity of the impact did not seem relevant. The analysis of preoperative image data is particularly important. As detected in the literature, cone beam computed tomography is gradually being applied in clinical practice, due to its diagnostic effectiveness (Hashimoto *et al.*, 2017). In this sense, it is relevant to highlight that its high contrast and spatial resolution (especially for small bones and structure details) enabled the exact location of the impacted canine (using 3D images) and the bilateral access (buccal, lingual) for the treatment. In addition, it can accurately display the adjacent relationship between the impacted canine and the surrounding anatomy.

Surgical removal is the most favorable choice for the treatment of the included mandibular canines, since the criteria for orthodontic traction (direction of the impacted tooth, the degree of root formation, the degree of tearing and the availability of space for the impacted tooth) makes this choice impossible (Tanaka, *et al.*, 2017). When chosen, surgical treatment must be cautious, as it can damage adjacent noble structures. In view of the numerous techniques, the surgeon must analyze the case in detail and choose less traumatic means. In addition, it is important to highlight that

the success of the treatment is related to the diversity of instruments, technique, experience, knowledge of the operator and complexity of each case (Rodrigues *et al.*, 2020). In the report presented, the patient had a good bone structure for orthodontic traction, however, the angulation of the root (90° with the sagittal plane) the sharp tearing and complete formation of the root made the procedure unfeasible. Thus, a bilateral access was considered by the surgeon and the removal was completed without complications. In order to optimize the healing after surgical treatment, PRF-BLOCK, the result of the association of IPRF with graft, has often been used. Similar to the choice of materials for guided bone regeneration and results described by this work, other researchers also had excellent prognosis with the use of PRF BLOCK and coverage with LPRF members (Cardoso *et al.*, 2015); (Radünz J *et al.* 2020). In the studies (Radünz J *et al.* 2020) in which 80% of the patients received L-PRF membranes after surgical treatment and 20% did not receive any membranes (Cardoso *et al.*, 2015). It was possible to observe that the patients who used the membrane had a complete tissue repair, 36% faster when compared to the one that was not used the membrane. Among the various indications for the PRF, it is worth noting that it is not only used in major reconstructions, but also in filling the bone store and socket after extractions (Kokdere *et al.*, 2015). The PRF allows significant postoperative protection of the surgical site and seems to accelerate the integration, maturation and remodeling, while increasing bone graft density (Borie *et al.*, 2015). With the use of PRF as a graft stabilizer, protector and enhancer, the results obtained can further prove what has already been studied and recorded in the literature, as in evolution of the patient it was possible to observe a complete regeneration of the bone cavity in a short period after the removal of the canine.

CONCLUSION

Computed tomography is an essential auxiliary exam, both for choosing the best treatment and for the correct planning of tooth extraction with root laceration, since it has reduced the risk of injury to the mental nerve and damage to adjacent teeth. In addition, surgical planning, linked to the use of Platelet Fibrin-Rich, provided good prognosis, greater speed and capacity for tissue regeneration, reduction of pain and inflammation, allowing a better postoperative to the patient.

REFERENCES

- Bertl MH, Frey C, Bertl K, Giannis K, Gahleitner A, Strbac GD. (2018) Impacted and transmigrated mandibular canines: an analysis of 3D radiographic imaging data. Springer Link. 2018; 13(3):1-11.
- Borie E, Olivé D, Orsi I, Garlet K, Weber B, Beltrán V, Fuentes R. (2015) Platelet rich fibrin application in dentistry: a literature review. Int J Clin Exp Med 2015;8(5):7922-7929.
- Cardoso ML, Lopes SM. (2015) IFibrinaria e plaquetas e leucócitos (I-prf). Diminuindo a morbidade em procedimentos de reconstrução tecidual aisorais [Monografia]. Nova Friburgo: Faculdade de Odontologia da Universidade Federal Fluminense;
- Domenico D, Simone P, Rachele R, Diletta G, Marco M. (2017) Impacted and transmigrated mandibular canines incidence, aetiology, and treatment: a systematic review. Eur J Orthod; 39(2): 161–169.
- Hashimoto K, Kawashima S, Kameoka S, Akiyama Y, Honjaya T, Ejima K, Sawada K. (2007) Comparison of image validity between cone beam computed tomography for dental use and multidetector row helical computed tomography. Dentomaxillofac Radiol; 36:465-471.

- Hyppolito JOP, Paies MB, Filho ROV, Florian F, Vieira EH. (2011) Tratamento cirúrgico de canino incluído em mento: relato de caso. *Rev Odontol UNESP*; 40(1): 42-46.
- James RP. (2015) Princípios de tratamento de dentes impactados. In: James RP, Edward E, Myron RT. *Cirurgia Oral e Maxilofacial Contemporânea*. Rio de Janeiro: Elsevier. p.143-173.
- Jardim ECG et al. (2012) Condutas Terapêuticas para Caninos Inclusos UNOPAR. *Cient Ciênc Biol Saúde*; 14(1):51-56.
- Jing Z, Xue L, Xiaolin S, Manlin Q, Minghan C, Lihua Y. (2018) Bone regeneration around immediate placed implant of molar teeth with autologous platelet-rich fibrin: Two case reports. *Medicine Baltimore*; 97 (44):30-58.
- Kokdere N, Baykul T, Findik Y. (2015) The use of platelet-rich fibrin (PRF) and PRF mixed particulated autogenous bone graft in the treatment of bone defects: An experimental and histomorphometrical study. *Dent Res J (Isfahan)*; 12(5): 418-424.
- Landim FS, Freitas GB, Rocha NS, Caubi AF, Vasconcellos RJH. (2010) Avaliação clínico-radiográfica dos caninos após tratamento orto-cirúrgico. *Rev. Cir. Traumatol. Buco-Maxilo-Fac: Camaragibe*; n.4:103-110.
- Manzi FR, Ferreira EF, Rosa TZS, Valerio CS. (2011) Peyneau PD. Uso da Tomografia Computadorizada para Diagnóstico de Caninos Inclusos. *Rev Odontol Bras Central*; 20(53): 103-107.
- Mcarter HSA, Rocha ATM, Barboza DA, Fialho VP, Vieira TSLS. (2021) Tratamento de dentes inclusos em proximidade a cavidade nasal e seio maxilar: relato de caso. *Revista Odontológica de Araçatuba*, v.42, n.1, p. 33-37.
- Msagati F, Simon ENM, Owibingire S. (2013) Pattern of occurrence and treatment of impacted teeth at the Muhimbili National Hospital. *BMC Oral Health*; 13(37):1-6.
- Radünz J et al. (2020) [homepage na internet]. Reconstrução de maxila atrofica utilizando enxerto alógeno e fibrinária e plaquetas e leucócitos [acesso em 14 out 2020]. Disponível em: www.fgm.ind.br
- Rodrigues MFB, Rocha LLA, Acioly RF, Carvalho DC, Rocha CCL, Rocha RCL (2020). Exodontia de caninos inclusos: relato de dois casos. *Braz. J. of Develop*; 6 (7): 44918-44926.
- Stewart DJ. (1978). Dilacerate unerupted maxillary central incisors. *Br Dent J*. Oct 17; 145(8):229-33
- Tanaka E, Hasegawa T, Hanaoka K, Yoneno K, Matsumoto E, Dalla-Bona D. 2006. Severe crowding and a dilacerated maxillary central incisor in an adolescent. *Angle Orthod*; 76: 510-8.
- Topouzelis N, Tsaousoglou P, Pisoka V, Zouloumis L. (2010) Dilaceration of maxillary central incisor: a literature review. *Dent. Traumatol*. 2010; 26: 335-341.
- Vaid NR, Doshi VM, Kulkarni PV and Vandekar MJ. (2014) A traction arch for impacted mandibular canines and premolars. *J Clin Orthod*; 48: 191-195.
- Viktorija G, Donata J, Kristina K. (2019) Diagnostic methods and treatment strategies of impacted maxillary canines: A literature review. *Stomatologija. Baltic Dental and Maxillofacial Journal*; 21(1): 3-12.
- Vivek G, Vivek KB, Singh GP, Ashish M, Rhythm B. (2011) Regenerative Potential of Platelet Rich Fibrin In Dentistry: Literature Review. *Asian Journal of Oral Health & Allied Sciences*; 1(1):22-28.
- Yu HB et al. (2019) A clinical analysis of 11 mandibular impacted canines. *international journal of clinical and experimental medicine*; v. 12, n. 9:11504-11510.
