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CORONARY OPENING THROUGH THE BASTIEN TECHNIQUE IN THE LEFT MANDIBULAR FIRST PREMOLAR – CASE REPORT

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ABSTRACT

This study aims to present a clinical case in which the opening was performed using the Bastien technique in the left mandibular first premolar (34). On intraoral clinical examination, extensive caries on the buccal surface was found. The radiographic findings showed the presence of an area of a radiolucent area in the cervical third and an increase in the space of the periodontal ligament. The instruments recommended for root canal preparation were: Prodesign Logic 30.05. The filling was performed using the single-cone technique associated with BIO-C Sealer cement (Angelus) and the buccal wall was restored with Opus bulk fill flow (FGM) composite resin. It is concluded that the treatment with modified access by the Bastien technique, performed in the lower premolar with caries on the buccal surface, preserves healthy coronary dentin, determining clinical and radiographic success, which may represent an advantage in relation to dental longevity.

Keywords: Endodontics, Root canal opening, Root canal preparation.

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INTRODUCTION

Endodontic treatment plays a key role in preserving oral health, being crucial for restoring and maintaining the integrity of pulp and periapical tissues. Bastien opening emerges as a promising technique, offering access to root canals while preserving coronary structures. (Gonçalves et al. 2024). . Among the different endodontic access techniques, the Bastien opening stands out. The Bastien opening is especially suitable on the buccal surface, since this minimally invasive technique preserves the coronary structures while providing adequate access to the root canals. By preserving the coronary structures as much as possible during opening, the Bastien technique minimizes excessive tooth wear, especially in the buccal access region. This is particularly important for maintaining the structural integrity of the tooth and preventing potential complications such as coronary fractures. In addition, the Bastien opening allows a clear and direct view of the root canals on the buccal surface, making it easier to perform endodontic treatment accurately and efficiently. et al. 2020).

One of the main disadvantages is that this technique can be more difficult to master by less experienced professionals, due to its minimally invasive nature and the need to preserve coronary structures. Additionally, in cases of more extensive cervical injuries, opening Bastien may not be adequate, as it can compromise the integrity of the tooth and make it difficult to access root canals. Another disadvantage is that this technique may require more time and skill on the part of the professional, especially in complex cases that require more precise and wider access. Therefore, it is important to carefully consider the characteristics of the case and the experience of the professional when choosing the Bastien opening as an endodontic access technique (Siqueira Jr, Rôças, 2008).

Coronary opening is performed in order to access the root canal system. A satisfactory opening is essential to perform a good endodontic treatment, both in biomechanical preparation and filling. In addition to providing access to the canals, the coronary opening aims to prepare the pulp chamber in order to remove all the coronary pulp, even removing the pulp diverticula. The classic opening of maxillary incisors recommends an opening by palate, however, dental caries and existing restorations must be taken into account, and taking into account these factors the way in which the opening and access to the canals will be performed can be changed. Extensive caries lesions and non-carious lesions by buccal and the integrity of the tooth structure by palatine determines the performance of the buccal access in order to maintain the tooth structure by palate. This access is known as the opening or Bastien access, where the access is through existing cavities. (Fernandes et al. 2018).

The objective of this study was to describe a clinical case reporting coronary opening using the Bastien technique in the left mandibular first premolar (34) for structural preservation due to carious lesion in the vestibular region, followed by the execution of endodontic treatment

CASE REPORT

This study aims to present a clinical case in which Bastien was opened in a left mandibular premolar (34) that presented with a carious lesion in the vestibular, and subsequent endodontic treatment and temporary restoration of the dental element.

A 48-year-old male patient with no history of systemic diseases sought emergency care in a private office complaining of intense, spontaneous, pulsatile, well-localized pain and a sensation of tooth growth in tooth 34. On intraoral clinical examination, extensive caries on the buccal surface was found. The tooth responded positively to the vertical and horizontal percussion tests and negatively to the pulp sensitivity test to cold performed with Endo-Frost refrigerant gas (Roeko-Wilcos, Rio de Janeiro, RJ, Brazil). The radiographic findings showed the presence of an area of a radiolucent area in the cervical third and an increase in the space of the periodontal ligament (Figure 1).

Figure 1 - Area of a radiolucent area in the cervical third and increased periodontal ligament space.

Thus, the clinical diagnosis established for tooth 34 was pulp necrosis. As there was a remaining coronary structure preserved in all these teeth, a conservative approach to endodontic access was proposed for the treatment plan, starting from the region affected by vestibular caries. (Figure 2).

Figure 2 – Coronary opening by buccal

The patient signed an informed consent form agreeing to the treatment plan. To begin the procedures, he was asked to rinse 3 mL of 0.12% chlorhexidine digluconate solution (Periogard®. Colgate-Palmolive Ind. Com. São Paulo-SP, Brazil) for about one minute. Two tubes containing 2% lidocaine solution with adrenaline 1:100,000 (DFL, Rio de Janeiro, RJ, Brazil) were administered as local anesthesia for infernal and chin alveolar nerve block. The caries was removed by buccal Bastien's opening on the buccal surface, since this minimally invasive technique preserves the structures. This minimally invasive approach is especially suitable on the buccal surface, where the preservation of coronary structures is essential to maintain the structural integrity of the tooth and prevent complications, such as coronary fractures. After access and preparation of the pulp chamber, there was no presence of bleeding, according to the diagnosis, the tooth was necrotic. Because it was a tooth with pulp necrosis, abundant irrigation with 2.5% sodium hypochlorite was performed.

The instruments recommended for root canal preparation were: Prodesign Logic (Easy Equipamentos Odontológicos, Belo Horizonte, MG, Brazil) with the respective tips and tapers 30.01, 30.05. The choice of these types of instruments was based on the fact that they are memory-controlled files with great flexibility and significant resistance to cyclic fatigue

The preparation of the cervical and middle thirds was performed with the Prodesign Logic 30.05 instrument with about 4 mm below the provisional working length (CTP) driven by an X-Smart Plus endodontic motor (DenstplyMaillefer, Baillagues, Switzerland) at continuous rotation of 950 rpm and torque of 4 Ncm, following what is recommended by the manufacturer. Abundant irrigation with 2.5% NaOCl at all stages of treatment. The excess irrigating substance was removed for odontometry checking, which in turn was performed electronically through the Propex II device (Denstply-Maillefer). After establishing the actual working length (CRT), the 30.01 instrument designed for the glide path maneuver was introduced and activated with a speed of 350 rpm and torque of 1 Ncm, with inflow and outflow movements along the entire length of the root canal until patency was obtained,

exceeding the tooth apex by 1 mm. The preparation of the apical third in the CRT was performed using the 30.05 instrument. For agitation of the irrigating substances NaOCl at 2.5% and EDTA (ethylenediaminetetraacetic acid) at 17% (Biodinâmica, Ibiporã, PR, Brazil), the Easy Clean instrument (Easy Equipamentos Odontológicos, Belo Horizonte, MG, Brazil) was used, a single-use plastic file that cleans the walls of the root canal system by agitating and friction of its blades inside the canal, especially in the apical third, improving the disinfection and penetration properties of the root canal. endodontic cement.

The protocol followed (according to the manufacturer) was: at a speed between 10 and 15 thousand rpm the instrument was introduced into the channel completely filled with irrigating solution respecting 3 cycles of 20 seconds of NaOCl at 2.5%, 3 cycles of 20 seconds of EDTA at 17% and finally, again, 3 cycles of 20 seconds of NaOCl at 2.5%. Subsequently, the root canal drying was performed with 35.05 absorbent paper cones (Tanariman, São Paulo, SP, Brazil) compatible with the Prodesign Logic system.

The filling was performed using the single-cone technique associated with BIO-C Sealer cement (Angelus) and the buccal wall was restored with Opus bulk fill flow (FGM) composite resin. (Figures 3 and 4).

Figure 3 – Adaptation of the single cone

Figure 3 – Canal filling and restoration

DISCUSSION

The endodontic opening is not set in stone. Endodontic accesses can be modified in different clinical situations, such as: mandibular or maxillary incisors with a lot of incisal

wear, caries in the buccal or palate. The coronary opening is performed in order to access the root canal system through the pulp chamber. For a good result in endodontic treatment, the opening must be satisfactory, accompanied by a correct management of the biomechanical preparation and an efficient filling. Although the coronary opening of the mandibular premolar recommends an access opening, always made through the occlusal surface, it is necessary to analyze the complications that may exist, the occurrence of dental caries and whether there are already existing restorations. Taking these factors into account, it is possible to change the way in which the coronary opening and access to the root canals will be performed. Large carious lesions, non-carious lesions by vestibular and the integrity of the dental structure by occlusal, can be determining factors in performing the buccal access to keep the tooth structure more preserved. This access is known as the Bastien opening or access, where the access is through existing cavities (Santos et al. 2024).

The Bastien opening technique proved to be effective in preserving coronary structures and accessing root canals. However, it is important to consider its limitations and challenges, especially in cases of complex anatomy. The success of endodontic treatment depends on an accurate diagnosis, proper planning, and careful execution. The correct application of techniques and the appropriate choice of instruments are essential to achieve satisfactory clinical results and promote the patient's oral health in the long term. (Gonçalves et al. 2024).

However, despite the advantages offered by Bastien's openness, it is important to consider its limitations and challenges (1). Less experienced professionals may face difficulties in mastering this technique due to its minimally invasive nature and the need to preserve coronary structures. Additionally, in cases of extensive cervical injuries, Bastien opening may not be the best option, as it can compromise the integrity of the tooth and make it difficult to access root canals (3). In these cases, it is essential to carefully evaluate the individual characteristics of the patient and opt for the most appropriate technique to ensure the success of endodontic treatment. In the clinical case, a successful adaptation of the Bastien opening technique was observed, even in a case of extensive carious lesion in the vestibular region. This highlights the importance of clinical skill and the adaptation of the technique to the specific characteristics of the case to overcome possible challenges and ensure satisfactory results. (Siqueira Jr, Rôças, 2008). The anatomical complexity of the premolars can also pose an additional challenge during endodontic treatment.

The choice of endodontic instruments also plays a crucial role in the success of the treatment (Oliveira et al.2018). The use of nickel-titanium (NiTi) metal alloys and limes with

specific taper allows a more adequate and conservative preparation of root canals, contributing to satisfactory clinical results. The combination of NiTi alloys and limes with specific taper represents an important strategy to optimize clinical outcomes and ensure the quality of endodontic treatment (Leonardi et al. 2011).

Proper endodontic diagnosis and treatment are essential for clinical success. In the case presented here, the Bastien opening technique demonstrated its efficacy in preserving the coronary structures and providing access to the compromised root canals. The integration between the theory discussed in the literature and its practical application in the clinical environment highlighted the importance of adapting the technique to the individual characteristics of the patient. In addition, the careful choice of endodontic instruments and the management of the anatomical complexities of the premolars contributed to the success of the treatment. These results emphasize the relevance of accurate diagnosis, proper planning, and accurate execution of endodontic treatment to ensure satisfactory clinical outcomes and long-term oral health.

CONCLUSION

It is concluded that the treatment with modified access by the Bastien technique, performed in the lower premolar with caries on the buccal surface, preserves healthy coronary dentin, determining clinical and radiographic success, which may represent an advantage in relation to dental longevity.

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