

REINTERVENTION IN UNSATISFACTORY CORONECTOMY 7 MONTHS AFTER PROCEDURE: CASE REPORT

REINTERVENÇÃO EM CORONECTOMIA INSATISFATÓRIA 7 MESES APÓS PROCEDIMENTO: RELATO DE CASO

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ABSTRACT

Intentional partial odontectomy, coronectomy or deliberate vital root retention are nomenclatures used to describe a technique applied in specific situations when the roots of a tooth may be closely related to the inferior alveolar nerve. This technique has specific step-by-step instructions and requires planning and professional expertise. Usually, dentists have used this name to justify failures in attempts to completely remove a tooth, which is extremely wrong, because in these cases there has been rupture of periodontal ligament fibers, expansion of the bone plate and subsequent pain and inflammation may occur. The aim of this case report was to describe an unsuccessful attempt to perform coronectomy, which subsequently resulted in symptomatic pulpitis and bone resorption around the involved tooth, therefore requiring surgical reintervention so that the tooth could be completely removed.

KEYWORDS: Third molar, reoperation, postoperative complications, pericoronitis, inferior alveolar nerve.

RESUMO

Odontectomia parcial intencional, coronectomia ou retenção deliberada de raiz vital são nomenclaturas utilizadas para descrever uma técnica aplicada em situações específicas quando as raízes de um dente podem estar intimamente relacionadas ao nervo alveolar inferior. Essa técnica possui passo a passo específico e requer planejamento, destreza manual e experiência profissional. Normalmente, os dentistas têm utilizado esse nome para justificar falhas nas tentativas de remoção completa de um dente, o que é extremamente errado, pois nestes casos houve ruptura de fibras do ligamento periodontal, expansão da tábua óssea e posterior dor e inflamação podem ocorrer. O objetivo deste relato de caso foi descrever uma tentativa frustrada de realização de coronectomia, que posteriormente resultou em pulpite irreversível sintomática e reabsorção óssea ao redor do dente envolvido, necessitando, portanto, de reintervenção cirúrgica para que o dente pudesse ser completamente removido.

PALAVRAS-CHAVE: Terceiro molar, reoperação,

complicações pós-operatórias, pericoronite, nervo alveolar inferior.

1. INTRODUCTION

Freedman (1992)¹ described the intentional partial odontectomy in a case report article in which he states that until that moment, nothing in the literature had been written about the potential benefits of partial surgical odontectomy that involves removal of only the offending and/or potentially problematic segment of the tooth and leaving a vital root in place. However, the author made it clear that this type of procedure should only be performed in selected cases, in which maintaining the vital root represents less potential risk for the patient than try to completely remove the tooth.

Pogrel, Lee and Muff first described the technique using the name coronectomy, or deliberate vital root retention. They described it as a mean of removing the crown of a tooth but leaving the roots, which may be intimately related with the inferior alveolar nerve, untouched so that the possibility of nerve damage is reduced².

It is important to note that Pogrel, Lee and Muff described specific steps for this technique, ranging from preoperative medication, materials used and the minimum portion of tooth that must be removed¹. Likewise, Freedman, reinforce the fact that this kind of procedure has specific indications and advance planning and skill are needed². Procedures that failed, resulting in incomplete tooth removal, cannot be considered coronectomy, as they do not follow the same steps described for this technique.

The aim of this case report was to describe an unsuccessful attempt to perform coronectomy, which subsequently resulted in symptomatic pulpitis and bone resorption around the involved tooth, therefore requiring surgical reintervention so that the tooth could be completely removed.

2. CASE REPORT

A 22-year-old female patient presented to our school of dentistry reporting spontaneous, pulsating and acute pain that began 30 days ago, in the region of tooth 48, which had undergone a coronectomy procedure exactly 7 months ago. Anamnesis and clinical examination show no contraindication for removal of the third molar if needed, as well as the patient reported that she did not have any systemic disease, difficulty in healing or bleeding episode after past surgery procedures.

Panoramic x-ray and computed tomography allowed us to observe how tooth 48 looked like before the coronectomy procedure (Figures 1 and 2). The patient, a dentistry student at our college, also reported that before the procedure there were frequent episodes of pericoronitis in the region, which was the main reason that led her to seek professional care in a private clinic. Due to the close relationship between the tooth roots and the inferior alveolar nerve (Figure 2), the surgeon chose to perform a coronectomy of this tooth at that time, to avoid a possible damage to the nerve.



Figure 1. Panoramic radiograph showing tooth 48 before coronectomy procedure.

The coronectomy procedure was performed, and the region remained asymptomatic for 6 months until mild and sporadic spontaneous pain initiated, progressing over 30 days to severe and constant pain. A subsequent radiographic examination revealed that the dental fragment remaining after the coronectomy performed 7 months ago was larger than recommended by Pogrel, Lee, and Muff in 2004, and beyond that, the remaining roots did not seem to be at least 3 mm below the crest of the lingual and buccal plates in all locations.

The current radiographic image also depicted an extensive radiolucent area surrounding the entire dental remnant, with a larger presentation in the distal and

apical portions. Additionally, there was an absence of bone formation in the area previously occupied by the removed dental crown (Figure 3).

This likely facilitated communication of the dental remnant with the oral environment, leading to periodontal and root canal contamination, leading to the reported painful symptoms.



Figure 2. Computed tomography cross-sections indicating the proximity of a large part of tooth 48 to the inferior alveolar nerve.

Due the unsatisfactory attempts at coronectomy that occurred previously and the limited bone structure in the angle of the mandible, largely occupied by the tooth, the decision was to complete removal of the dental remnant by an experient surgeon.



Figure 3. Panoramic radiograph taken 7 months after coronectomy.

The procedure for tooth removal was then carried

out under local anesthesia, with a mucoperiosteal flap and a vertical incision delimited mesially by the interproximal of teeth 47 and 46, and distally by the ascending ramus of the mandible. Osteotomy was performed to enhance access in the region, allowing subsequent Seldin elevators use without force, thereby avoiding mandibular ramus fracture. The immediate post-extraction dental alveolus can be noted in Figure 4, where the exposed inferior alveolar nerve is seen and highlighted by blue arrows. Abundant irrigation was performed, and the surgical wound was closed primarily.

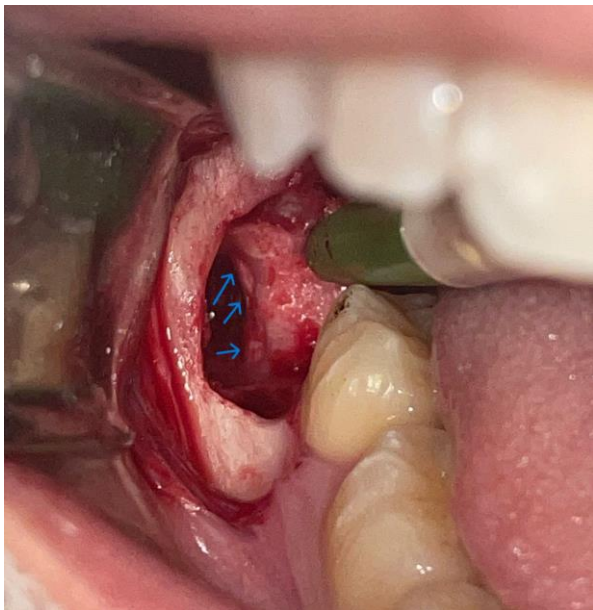


Figure 4. immediate post-extraction dental alveolus with the exposed inferior alveolar nerve highlighted by blue arrows.

Another panoramic radiograph was taken 7 days after the final procedure for complete removal of the dental remnant (Figure 5).



Figure 5. Panoramic radiograph taken 7 days after the surgical procedure for complete removal of the dental remnant.

In the days following extraction, the patient reported reduction in painful symptoms, and on the 7th day post-procedure, only common third molar extraction symptoms persisted, such as mild trismus.

3. DISCUSSION

Recently, Peixoto *et al.* (2024) published a meta-analysis showing that coronectomy is associated with a decreased risk for inferior alveolar nerve injury [OR (Odds Ratio): 0.14; 95% CI (confidence intervals); P= .0001], decreased pain (OR: 0.97; 95% CI; P= .01) and alveolitis (OR: 0.38; 95% CI; P= .01) when compared to complete tooth extraction³. However, the likelihood of requiring reintervention with coronectomy is much higher according Peixoto *et al.*³ (OR: 5.38; 95% CI; P = .01), and Barcellos *et al.* (5.1% of cases)⁴, just like the case reported in our study. Also in relation to our study, neither after the coronectomy performed 7 months ago nor after the complete tooth removal performed recently, any significant injury to the inferior alveolar nerve appears to have occurred. This is evidenced by the absence of temporary paresthesia in both cases.

In our study, pain was the cause for reintervention, which began and progressed from 6 to 7 months after coronectomy procedure. Literature indicates that mean time until the second procedure was 10.4 months. Pain represents 9.52% of reintervention cases and root exposure (53.33%), infection (10.47%) and enamel residue (9.52%) are the other main reasons⁴.

4. CONCLUSION

Coronectomy procedure requires advanced planning and skill to perform. An unsuccessful procedure that led to spontaneous fracture of part of the tooth after an attempt to remove it completely cannot be considered a coronectomy, but rather a failure in execution. Coronectomy is a relatively safe procedure and is associated with decreased post-surgical risk of inferior alveolar nerve injury, however, reintervention requiring is much higher,

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