



The Use of Endodontic File in Periodontal Osteoplasty: Case Report

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Received: April 07, 2021; ; **Published:** April 24, 2021

Abstract

Osteoplasty performed in periodontal surgery procedures for the purpose of clinical crown lengthening is frequently performed in the dental clinic. Several surgical instruments are required at this stage, such as Ochsenbein chisel, Buck, Schluger and Sugarman periodontal files, and surgical and diamond drills. However, in some clinical cases, the insertion of these instruments is compromised, mainly by the narrowing of the interproximal space between teeth. The purpose of this article is to present a case in which the endodontic file technique was used in the interproximal osteoplasty procedure. The inherent characteristics of the technique were discussed, as well as advantages and disadvantages.

Keywords: *Crown Lengthening; Osseous Resection; Osteoplasty; Periodontal Surgery*

Introduction

Periodontal surgeries for crown lengthening purposes are frequently performed in the dental clinic [1-4]. These surgical procedures, be done performed for aesthetic or functional scopes, should be performed in a personalized manner for each patient, taking into consideration their facial characteristics, relationship between teeth, soft tissues, and indication [5-7].

Periodontal surgeries with the purpose of clinical crown lengthening present several variations in technique, depending on each case and the need for the indication. As an example, the osteoplasty technique can be referenced. Osteoplasty consists in the cautious removal of bone adjacent to the root remnant, whose objective is to establish the appropriate bone morphology, providing

satisfactory physiological and aesthetic aspects [2,5,8]. Usually, wears are performed on the bone adjacent to the tooth using surgical or diamond burs or periodontal files suitable for removing periodontal bone tissue [2,8,9]. However, when it is not possible to use the instruments mentioned above, there is a gap in the professional activity of the dental surgeon. The purpose of this article is to present a case in which the endodontic file technique was used in the osteoplasty procedure. The inherent characteristics of the technique were discussed, as well as advantages and disadvantages.

Case Report

An African-descendent female patient, 49-year-old came to the clinic with an indication for periodontal surgery to clinical crown lengthening on tooth 15 in order to make a new fixed partial denture.

Clinically, the patient presented with a small unilateral removable partial denture in the edentulous region on tooth 14 and a veneer crown on tooth 15 (Figure 1).



Figure 1: Indication of periodontal surgery for clinical crown lengthening to make and replace the crown on tooth 15.

Radiographically, the absence of tooth 14 was observed and tooth 15 with a cast metal core and a veneer crown. Periodontal health and lack of adaptation between the veneer crown and the root remnant of tooth 15 were observed. Satisfactory endodontic treatment was observed (Figure 2).

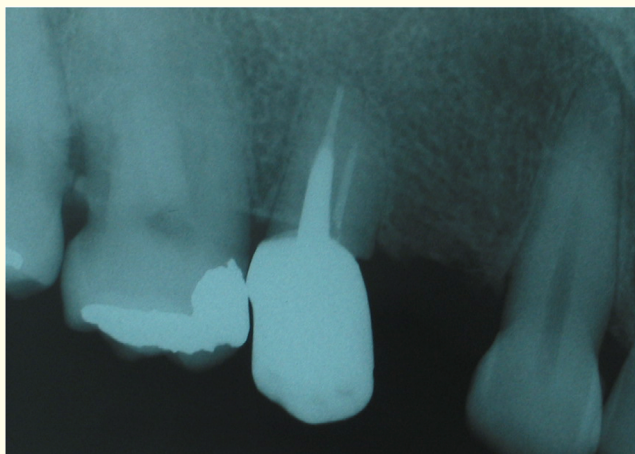


Figure 2: Lack of adaptation between the veneer crown and the root remnant of tooth 15.

No systemic alterations were reported. The patient was oriented about the indication and surgical procedure, elucidating her doubts. The patient gave consent for the procedure to be performed.

The veneer crown was removed (Figure 3A). Under local infiltrative anesthesia, an intrasulcular incision was made between the distal buccal and palatal surfaces of teeth 13 to the 16 (Figure 3B), followed by periosteal detachment and flap separation (Figure 3C). Osteoplasty was easily performed on the buccal, palatal and mesial surfaces of tooth 15 with a surgical drill. However, on the distal surface, between teeth 15 and 16, there was no space for insertion of the surgical drill or Buck, Schluger or Sugarman periodontal files. Osteoplasty was then performed using the endodontic K-file #40, held by the needle holder, and performed by back and forth movements, similar to a saw, until the desired amount was reached (Figure 3D). The region was abundantly washed with cooled saline solution. The region was properly sutured (Figure 3E).

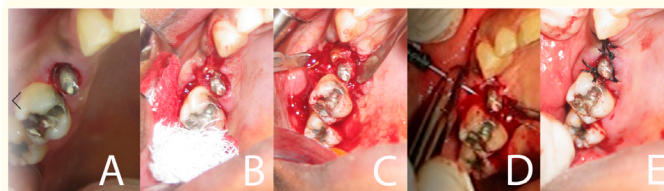


Figure 3: Removal of the veneer crown (A). Intrasulcular incision between the distal surfaces of teeth 13 to the 16, through buccal and palatal faces (B). Periosteal detachment and flap separation (C). Use of endodontic K-file #40, held by the needle holder to perform the osteoplasty, with back and forth movements, similar to a saw (D). Suture of the region (E).

Analgesic (dipyrone), anti-inflammatory (nimesulide), and antibiotic (tetracycline) drugs were prescribed postoperatively.

The patient was evaluated after 7 days and the sutures were removed. The patient reported no pain, bleeding, or other post-surgical complaints.

After 3 weeks of the procedure, the patient was evaluated and referred to the dental surgeon to continue with the confection of the new fixed partial denture (Figure 4).



Figure 4: Reevaluation and referral to continue with the making of the new fixed partial denture.

Discussion

Clinical crown lengthening surgery associated with osteoplasty is indicated for patients with excessive gingival exposure during smiling; disharmony between the size of teeth; previously to the treatment of subgingival carious lesions, root resorption, crown or root fractures, and prosthetic restorations; biological space recovery; apical flap replacement; exostoses; debridement of infra-osseous root surfaces; reduction or removal of bone walls; leveling of interproximal craters [2,6,8-11].

On the other hand, this surgical procedure is contraindicated in patients with systemic diseases or conditions; pregnant or lactating women; smoking; regions with less than 3 mm of keratinized gingiva; patients who use medications that promote gingival overgrowth; previous surgeries in the same area; uncontrolled periodontal disease; lack of patient compliance for adequate oral hygiene; use of an fixed orthodontic appliance; teeth with periodontal pockets [8,9,12,13].

Some techniques employed during the clinical crown lengthening surgical procedure may contribute to the success of the final treatment. Therefore, patients who require the creation of an adequate positive contour, when associated with flap placement on the intact bone crest, may benefit from the osteoplasty techni-

que. Furthermore, osteoplasty is advantageous in cases where flap surgery has been performed, but there has been difficulty in interproximal adaptation of the flap. In this case, the reduction of unsupported bone in the interproximal region and the creation of vertical grooves can improve flap adaptation, reducing the risk of ischemic necrosis [2,8,9]. Another advantage of performing the osteoplasty technique is the formation of the expected minimum depth of the gingival sulcus [9,14]. Finally, osteoplasty contributes to a favorable clinical appearance, since bone thickness influences soft tissue conformation and the final appearance of the teeth [2,5,8].

Although the osteoplasty technique presents several benefits when correctly indicated, the disadvantages when performing this procedure may be related to excessive bone resection, which will result in unwanted root exposure; the accumulation of bacterial plaque in these regions, particularly in the region of the furcations of the posterior teeth, resulting in periodontal disease; the risk of creating root dehiscences [5,10,15].

During the periodontal surgical procedure, it is necessary to use different instruments that vary according to their indication and purpose. Therefore, it is extremely important for the dental surgeon to know them and use them when necessary. The quantity and variety of selected instruments should be minimal, aiming the objectivity and function of each one of them [8].

Among the instruments selected are scalpel handles for disposable surgical blades (#12D, 15 or 15C) or fixed blade (Kirkland and Orban scalpels); periosteal detacher; tissue retractors; tissue forceps; tissue scissors; needle holder; hemostatic forceps; suture scissors; besides the usual clinical instruments, such as Carpule syringe; mouth mirrors; graduated periodontal probe; explorer; clinical forceps; scrapers; curettes; spatula for application of surgical cement; saliva and blood aspirator [8,9,13,15]. Specifically for bone surgeries, Buck, Schluger and Sugarman periodontal files; Ochsenbein chisels; and surgical and diamond burs are recommended. Additionally, the use of saline solution for cleaning and irrigation and surgical cement to cover the surgical wound is recommended [2,6,8,9,11,12,14,15].

In some cases, there is an absence of space between the crowns and roots of teeth, where the insertion of periodontal files (Buck,

Schluger or Sugarman), surgical drills and diamond drills for bone tissue removal are compromised. Primarily, Pedron, *et al.* (2007) suggested the use of endodontic K-file to perform interdental osteotomy in hard to reach areas. It was recommended to hold the instrument with a needle holder or hemostatic forceps to facilitate access to these areas, as was presented by us in this case. This technique basically presents as an advantage when there is the unavailability of periodontal files or surgical burs, or because of the lack of access to very specific instruments, or because there is no trans-surgical access, for lack of space. As a disadvantage, the possibility of endodontic file fracture was highlighted [4].

Conclusion

Osteoplasty is a procedure that can be part of periodontal surgery for clinical crown lengthening. It can be performed with several surgical instruments, among them Buck, Schluger and Sugarman periodontal files, Ochsenbein chisels and surgical and diamond drills. When, due to the impossibility of using these instruments because of the small space between teeth and roots, the endodontic K-file technique can be used in the interproximal osteoplasty procedure, achieving a satisfactory result and helping the dental surgeon in these cases.

Bibliography

1. Albugami R, Ajeebi A, Alokaili SN. The Important Considerations and the Clinical Assessment Proceeding Crown Lengthening Surgery: Revisited Review. *Scientific Archives of Dental Sciences*. 2020;3(9):2642-1623.
2. Marzadori M, Stefanini M, Sangiorgi M, Mounssif I, Monaco C, Zucchelli G. Crown lengthening and restorative procedures in the esthetic zone. *Periodontol 2000*. 2018;77(1):84-92.
3. Park JB. Restoration of the Severely Decayed Tooth Using Crown Lengthening with Simultaneous Tooth-Preparation. *Eur J Dent*. 2010;4(2):197-201.
4. Pedron IG, Kaba SC, Shinohara EH. Compromised insertion. *Br Dent J*. 2007;202(7):368.
5. Polack MA, Mahn DH. Biotype change for the esthetic rehabilitation of the smile. *J Esthet Restor Dent*. 2013;25(3):177-186.
6. Goyal MK, Goyal S, Hegde V, Balkrishana D, Narayana AI. Recreating an esthetically and functionally acceptable dentition: A multidisciplinary approach. *Int J Periodontics Restorative Dent*. 2013;33(4):527-32.
7. Nethravathy R, Vinoth SK, Thomas AV. Three different surgical techniques of crown lengthening: A comparative study. *J Pharm Bioallied Sci*. 2013;5(Suppl 1):S14-S16.
8. Lang NP, Lindhe J. *Tratado de Periodontia Clínica e Implantologia Oral*. Rio de Janeiro: Editora Guanabara Koogan, 2018:1051.
9. Domínguez E, La Rocca AP, Valles C, Carrió N, Montagut L, Alemany AS, Nart J. Stability of the gingival margin after an aesthetic crown lengthening procedure in the anterior region by means of a replaced flap and buccal osseous surgery: a prospective study. *Clin Oral Investig*. 2020;24(10):3633-3640.
10. Kina JR, Santos PH, Kina EFU, Suzuki TYU, Santos PL. Periodontal and prosthetic biologic considerations to restore biological width in posterior teeth. *J Craniofac Surg*. 2011;22(5):1913-1916.
11. Papalexiou V, Novaes Júnior AB, Macedo GO, Luczyszyn SM, Muglia VA. Preprosthetic periodontal surgery in the proximal area with modification of the col area: results following the reestablishment of the contact point. *J Periodontol*. 2006;77(11):1856-1862.
12. Hamasni FM, Majzoub ZAK. Effect of patient- and surgery-related factors on supracrestal tissue reestablishment after crown lengthening procedure. *Quintessence Int*. 2019;50(10):792-801.
13. Perez JR, Smukler H, Nunn ME. Clinical evaluation of the supraosseous gingivae before and after crown lengthening. *J Periodontol*. 2007;78(6):1023-1030.
14. Newman MG, Takei HH, Klokkevold PR, Carranza Jr FA. *Carranza Periodontia Clínica*. Rio de Janeiro. Editora Guanabara Koogan, 2016:1324.

15. Cairo F, Graziani F, Franchi L, Defraia E, Pini Prato GP. Periodontal plastic surgery to improve aesthetics in patients with altered passive eruption/gummy smile: a case series study. *Int J Dent.* 2012;837658.

Volume 4 Issue 5 May 2021

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