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## Case Report Article

# Treatment of class II furcation defects with autogenous bone graft associated with Bichat's fat pad: case report

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## Abstract

**Introduction and Objective:** The periodontal treatment of teeth with furcation defect is clinically challenging. In cases of class II furcation defects, the regenerative surgery shows low morbidity and good prognosis when correctly indicated. The aim of the present study is to report a treatment option for class II furcation defect through autogenous bone graft associated with the Bichat's fat pad. **Case report:** A 59-year-old female patient was diagnosed with class II furcation defect in the left mandibular first molar. The treatment comprised surgical reconstruction of the defect with a combination of maxillary tuberosity bone graft and Bichat's fat pad. The clinical and radiographic follow-up of 180 days showed bone formation in the furcation area and absence of probing depth. **Conclusion:** An association of autogenous graft from the maxillary tuberosity with a Bichat's fat pad proved to be a safe, low cost, and effective therapy for the regenerative treatment of class II furcation.

## Introduction

Periodontal treatment of teeth presenting furcation defect is a clinical challenge. In the case of class II furcation, the options are the conservative, resective, and regenerative treatment [4]. When indicated, the regenerative surgery shows low morbidity and good prognosis, with success rates ranging between 83% and 100% after a follow-up period of notice of at least 5 years. However, it is necessary to identify the factors that may affect or limit the success of treatment [7]. It is of fundamental importance that the dentist knows the patient, general health, socioeconomic condition, and expectations, which are key factors for treatment indication. The perceived benefit of keeping teeth, for some patients, may be small, especially when they considered costs [5].

The success also depends on the individual characteristics of the patient, such as: potential for healing, probing depth, local factors, surgical factors, morphology, root anatomy, patient's patterns of oral hygiene, and the maintenance of periodontal therapy [15].

Periodontal regeneration is a viable therapeutic option for the treatment of various furcation defects, including class II defects which have a highly predictable scenario [1, 12]. Thus, one should consider this option before indicating the tooth extraction.

The application of a therapeutic approach using a barrier associated with bone graft aiming at bone neoformation demonstrates greater effectiveness on single therapeutic options [12]. Guided tissue regeneration with the use of biocompatible membranes aim at preventing the immediate migration of the epithelium to the surgical wound, allowing the proliferation of the periodontal ligament cells in the region. To replace the lost bone tissue, the autogenic bone graft is the gold standard [13]. The removal of the maxillary tuberosity grafts demonstrates greater simplicity and minimum complications compared to other intraoral donor sites [9].

Thus, this case report aimed to present a treatment option combining autogenic bone graft from the maxillary tuberosity and Bichat's fat pad for the treatment of class II furcation defect.

## Case report

A female patient, 59 years of age, search for treatment complaining of sensitivity during mastication of cold foods and difficulty of cleaning left mandibular first molar (tooth #36). During the anamnesis, she reported that lost several teeth when

she was younger and that considerably affected her self-esteem. She expressed a fear to lose any teeth.

At clinical examination, the tooth #36 was shifted to mesial position in relation to the tooth #34 because early dental loss of tooth #35. In addition, she was diagnosed with generalized severe chronic periodontitis. During the probing of tooth #36 with the aid of Nabers' probe, we observed a probing depth of 4 mm on furcation region associated with bleeding on probing. The other tooth surfaces showed probing depth greater than 6 mm with insertion loss and bleeding on probing.

The radiographic examination revealed a vertical defect of tooth #36 on mesial surface and a radiolucent area on the furcation region (figure 1), suggestive of class III furcation defect. However, as the probe Nabers partially penetrated the furcation, the diagnosis of class II furcation defect was considered.



**Figure 1-** Preoperative periapical radiograph

With the clinical and radiographic findings, we initially opted for a periodontal basic treatment. Forty days after the treatment, there was a negative response to treatment in the furcation of tooth #36. Considering the patient's complaints, we opted for the surgical reconstruction of the defect through autogenic bone graft associated with Bichat's fat pad. The donor bone grafting area of choice was the maxillary tuberosity.

## Surgical Technique

Antisepsis was performed with 0.12% chlorhexidine digluconate. For the local anesthetic infiltration, the 4% articaine solution with epinephrine 1:100,000 was used for left inferior alveolar and buccal nerve block and subperiosteal anesthesia of posterior superior alveolar and Palatine nerve. First, two relaxing incisions were

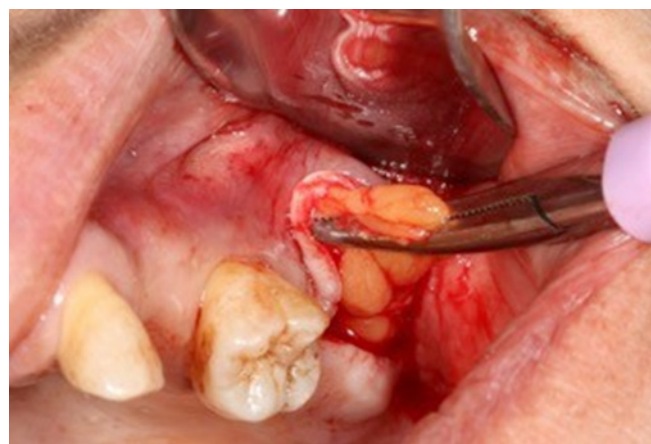
performed on the mesial and distal surfaces of tooth #36 with the aid of scalpel blade no. 15 c, followed by mucoperiosteal flap raise with the aid of the Molt elevator to expose the roots. New probing of the defect was performed, confirming the prior clinical diagnosis (figure 2). Then, we performed the removal of the granulation tissue of the region, scraping and planning of roots with Gracey curettes no. 11/12 7/8, and 13/14, followed by irrigation with saline and 0.12% chlorhexidine digluconate solutions.



**Figure 2** - Clinical probing previous to tissue regeneration, with 4 mm of probing

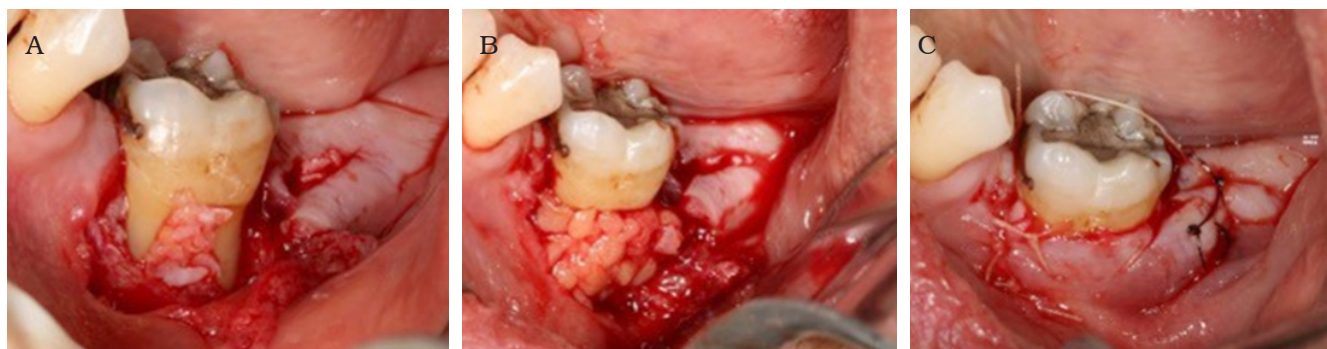
Next, the donor area was accessed through incision with a scalpel no. 15 c, on the left maxillary tuberosity followed by mucoperiosteal flap. Five millimeters of cortical bone was removed with the aid of a rongeur.

The same access was used for removal of Bichat's fat pad. Through tissue divulsion superiorly, the fat pad was exposed, picked with the aid of a hemostat and a portion with about 1.5 cm was removed (figure 3).



**Figure 3** - Removal of the Bichat's fat pad

The portion of bone that was removed was powered and placed in the bone defect in the furcation region to cover the defect (Figure 4A). This particulate bone was covered with the removed fat pad (Figure 4B), which was fixed to the tissues through absorbable suture. The flaps of the donor and receptor area were closed with nylon thread 5-0 suture (Figure 4 c).



**Figure 4** - Transoperative period A) bone graft placement within the furcation; B) use of Bichat 's fat pad as membrane for GTR technique over the bone graft; C) suture of the flap coronally positioned and covering the entire grafted area

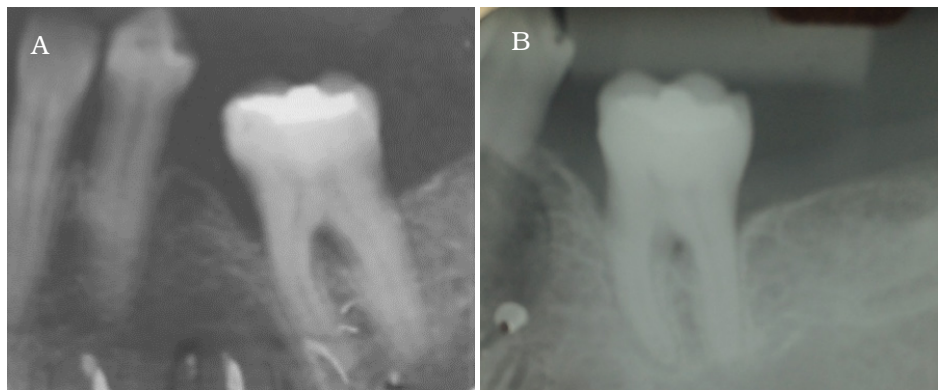


For the postoperative period, the following oral medications were prescribed: Amoxil 875 mg BD (12/12 H for seven days), Celestone 4 mg (12/12 H for 2 days), Lisador 500 mg (6/6 H for 5 days). We also prescribed 0.12% chlorhexidine digluconate mouthrinse solution for 2 minutes (12/12 h for 15 days). The sutures were removed 15 days after surgery. There was good healing of soft tissue in the region (figure 5).



**Figure 5** - Intraoral aspect 15 days after the procedure

The radiographic following-up to check bone formation was performed postoperatively at 60 and 180 days. There was an increase in radiopacity on the furcation (Figure 6-A and B), suggesting a partial bone neoformation on the area. Clinically, neither increased probing depth nor bleeding on probing was observed.



**Figure 6** - A) Periapical radiograph after 60 days; B) periapical radiograph after 180 days

## Discussion

The treatment of furcation defects is a central component of periodontal therapy. According to a systematic review of Reddy *et al.* [12], is histologically proven by many studies the periodontal regeneration after application of combined regenerative therapy for the treatment of mesial-buccal and distal-buccal class II furcation defects in maxillary molars and buccal or lingual furcation defects in mandibular molars.

Another study [6] showed that several surgical approaches for the treatment of class II furcation defects promote high rates of long-term survival of the multi-rooted teeth.

The new therapies proposed for tissue regeneration aim at preventing the extraction of teeth with furcation defects and all losses associated with it. However, the indication of these therapies rely on important questions of security and cost effectiveness to consider this treatment decision

[10]. In this present case report, the financial limitation of the patient was considered to indicate the autogenous bone grafting.

Previously, the literature suggest that class II furcation defects have success with the combined treatment modalities, by associating the guided tissue regeneration and bone graft [3, 11]. Therefore, we associate the Bichat's fat pad with maxillary tuberosity bone. This case report demonstrated effectiveness of the technique by the characteristics of increasing in radiopacity of the defect on the following-up radiographs and the decreasing in the probing depth. In relation to the option for the donor site, bone grafts of maxillary tuberosity feature excellent wound healing due to bone osteoconduction [8], are technically simple to remove, with low morbidity [9], and are an excellent option for small amounts of bone.

The use of Bichat's fat pad for closing of oroantral communications, fistulas, reconstruction of maxillary defects, closure of primary fissures, and coverage of mucous defects is already established [14, 16]. A subsequent tissue alteration is noted, with evidence of tissue formation of epithelial and underlying fibrous connective tissue [2]. The technique for removal of Bichat's fat pad proved to be simple and secure with the use of the access for bone graft removal. However, the handling of the fat pad for positioning and suture demanded a greater technical skill because the fat pad is friable.

To obtain predictable results in regenerative treatment of furcation defects, it is also imperative that adverse systemic and local factors are evaluated and controlled. The rigorous postoperative care associated with subsequent support periodontal therapy is essential to achieve long-term sustainable regenerative results [12]. The patient did not smoke, or have any systemic comorbidities, parafunctional habits; she received periodic hygiene instructions and periodontal control.

The extraction of tooth #36 would have led to many losses for the patient, such as loss of vertical dimension and loss of bone structure in the region, because of the remodeling process. Thus, the conservative option for the repair of the furcation defect proved to be an excellent alternative treatment, with a good postoperative evolution and resolution of the patient's complaints.

## Conclusion

An association of autogenous graft from the maxillary tuberosity with a Bichat's fat pad coverage proved to be a safe, low cost, and effective therapy for the regenerative treatment of class II furcation.

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