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CASE REPEORT

NOVEL TECHNIQUE OF APPROACH USING BICHAT'S FAT PAD IN GINGIVAL RECESSION OF CAIRO'S RT1, RT2, RT3:CASE SERIES

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Background: Gingival recession is a prevalent clinical condition where the gingival margin migrates apically, leading to esthetic issues, dentinal sensitivity, and compromised periodontal health. The application of autologous graft material like Bichat's Fat Pad (BFP) provides regenerative solution because of its abundant blood supply, simplicity in harvest, and potential for better healing. This case series assesses the effectiveness of BFP in treating gingival recession under Cairo's RT1, RT2, and RT3 classifications.
Objective: To assess the clinical outcomes of root coverage using BFP in recession defects with varying levels of tissue loss and interproximal bone support.
Materials and Methods: Three patients with gingival recession defects classified as RT1, RT2, and RT3 were treated with BFP grafts. Pre- and post-operative parameters like gingival recession depth (GRD), and percentage of root coverage (PRC) were recorded during a 6-month follow-up visit. The BFP was harvested using a minimally invasive procedure and positioned to the recipient site using a coronally advanced flap (CAF) technique.
Results: All three patients showed significant improvement in clinical parameters at the 6-month follow-up. In RT1 and RT2 defects, nearly complete root coverage (90–100%) was achieved with satisfactory color and tissue blending at the treated sites. The gingival recession depth (GRD) was markedly reduced, and no postoperative complications such as graft necrosis or infection were observed. In the RT3 defect, partial root coverage (approximately 50–60%) was obtained, though soft tissue thickness and healing quality improved noticeably. Overall, the use of the Bichat's Fat Pad (BFP) demonstrated predictable healing, stable attachment, and enhanced esthetic outcomes.
Conclusion: Buccal fat pad grafting is a promising method of gingival recession management, especially for RT1 and RT2 defects, with excellent root coverage and improved soft tissue regeneration. Outcomes in RT3 cases are restricted, presumably because of extreme interproximal tissue loss. Additional research with larger populations is warranted to confirm these results and investigate optimization methods for more severe recession defects.

Keywords: Gingival recession, Bichat's fat pad, buccal fat pad, keratinized tissue width, gingival thickness

INTRODUCTION

The 'Gingival phenotype' which denotes morphological characteristics of gingiva like thickness of gingiva, width of keratinized tissue [1] and the 'Periodontal phenotype' which includes entire periodontium (gingival phenotype + facial/buccal bone plate thickness [bone morphotype]). The characteristics

of gingiva depends on the underlying morphology of bone thereby gingival phenotype is comparable as periodontal phenotype.[1,2] A compromised periodontal phenotype can contribute to gingival recession.[3]

In routine clinical practice, gingival recession is frequently observed. The apical shift of the gingival margin[4,5] may result in poor esthetics. Clinically, it presents as exposed root surfaces, which may lead to esthetic concerns, dentinal hypersensitivity, plaque retention, and increased susceptibility to root caries. Management includes both non-surgical approaches, such as improving oral hygiene techniques and using desensitizing agents in mild cases and surgical interventions, such as grafting and non-grafting regenerative procedures to achieve root coverage and restore function and esthetics. Timely diagnosis and appropriate intervention are crucial for managing gingival recession effectively and preventing further complications.[6]

The Buccal fat pad also known as Bichat's fat pad (Fig. 1), as the French anatomist Xavier Bichat described this anatomical feature in 1801 as an adipose tissue ball.[7] Adipose tissue bags called buccal fat pads are specifically located along the anterior border of the masseter muscles on both sides of the face. The benefits of utilizing pedicled buccal fat pad (PBFP) include minimal to no donor site morbidity, low risk of complications and significant blood supply.[8] As a rich and accessible source of mesenchymal stem cells, buccal fat pad has been used to treat oral defects[9] and gingival recession which results in regeneration.[10] It has advantages of high vascularity; volume stability and ease of harvest helps in achieving soft tissue augmentation. The aim of this study to evaluate the clinical efficacy and feasibility of utilizing the pedicled buccal fat pad as an autologous graft material for managing gingival recession, focusing on root coverage outcomes, enhancement of keratinized tissue, and aesthetic integration.

MATERIALS AND METHODS

This study was an observational case series of 6 months. A total of 3 patients with chief complaint of receding gums in upper left or right back tooth region were selected with an age range of 30–60 years including both gender from the outpatient clinic of the Department of Periodontology and Oral Implantology.

The participants were evaluated for the following clinical parameters: Recession depth (RD), % of root coverage at baseline and 6 months postoperatively. The materials used in this study includes, mouth mirror, periodontal probe (William's probe), retractor, #15 or #15C surgical blade, scalpel handle (Bard-Parker), periosteal elevator, hemostatic forceps, needle holder, resorbable suture.

The inclusion criteria include Cairo's RT1, RT2, RT3 recession [Fig. 2 - a, b, c] in maxillary molar regions, 30 to 60 years, both genders and systemically healthy individuals with no contraindications for minor oral surgery. The Exclusion criteria include Grade II & III mobility, history of smoking or tobacco use within the last 6 months, patients with history of previous recession management on the same site, patient underwent buccal fat pad removal and any cosmetologically procedures.

Figure _2. - a) Cairo's RT1 recession ,b) Cairo's RT2 recession , c) Cairo's RT3 recession

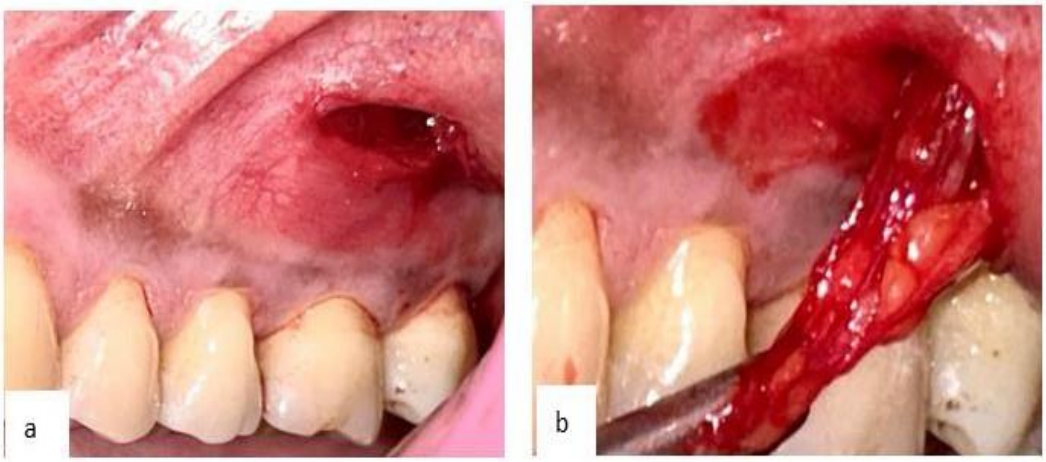
CASE REPORTS

Case 1: Patient with Cairo's RT 1 gingival recession of 2mm in the maxillary left back tooth region involving 26 was reported to the department of periodontics [Fig 1a]. Phase 1 therapy was performed, patient asked to maintain oral hygiene, review after 1-week.

Figure 1. Bichat's/Buccal fat pad

Surgical procedure

Local anesthesia was given with 2% lignocaine hydrochloride with epinephrine (1:200,000). The recipient site was flapped with a full-thickness flap employing sulcular incision. A horizontal 1-2 cm incision was provided through the buccal mucosa and at the base of the mucoperiosteal flap that was running backward from over the maxillary first molar [Fig. 3a]. The incision must be lateral to the Stensen's duct (parotid duct) to prevent injury. With the help of hemostatic forceps blunt dissections were performed to reach the BFP capsule. While doing that, attention must be paid not to injure the surrounding tissues, such as the facial artery and buccal branches of the facial nerve. Pedicle buccal fat pad was anchored by minimal retraction of the fat pad out of its capsule with forceps and to be left exposed to the area of recession for improved survival and integration by perpetual vascularization [Fig. 3b]. Exposing the pedicle outside the flap, the fat pad emerges directly from the bottom of the horizontal incision, and positioned over the denuded root surface [Fig. 3c, d]. Resorbable sutures have been utilized to position the buccal fat pad and fixate it to the nearby tissues with minimal tension. The PBFP were draped over approximated by the advanced flap and fixed with sutures, Suture the buccal mucosal incision using interrupted sutures [Fig 3e]. Periodontal dressing was placed. Comparative analysis of pre-op [Fig. 3f] and post-op [Fig. 3g] performed after 6 months.



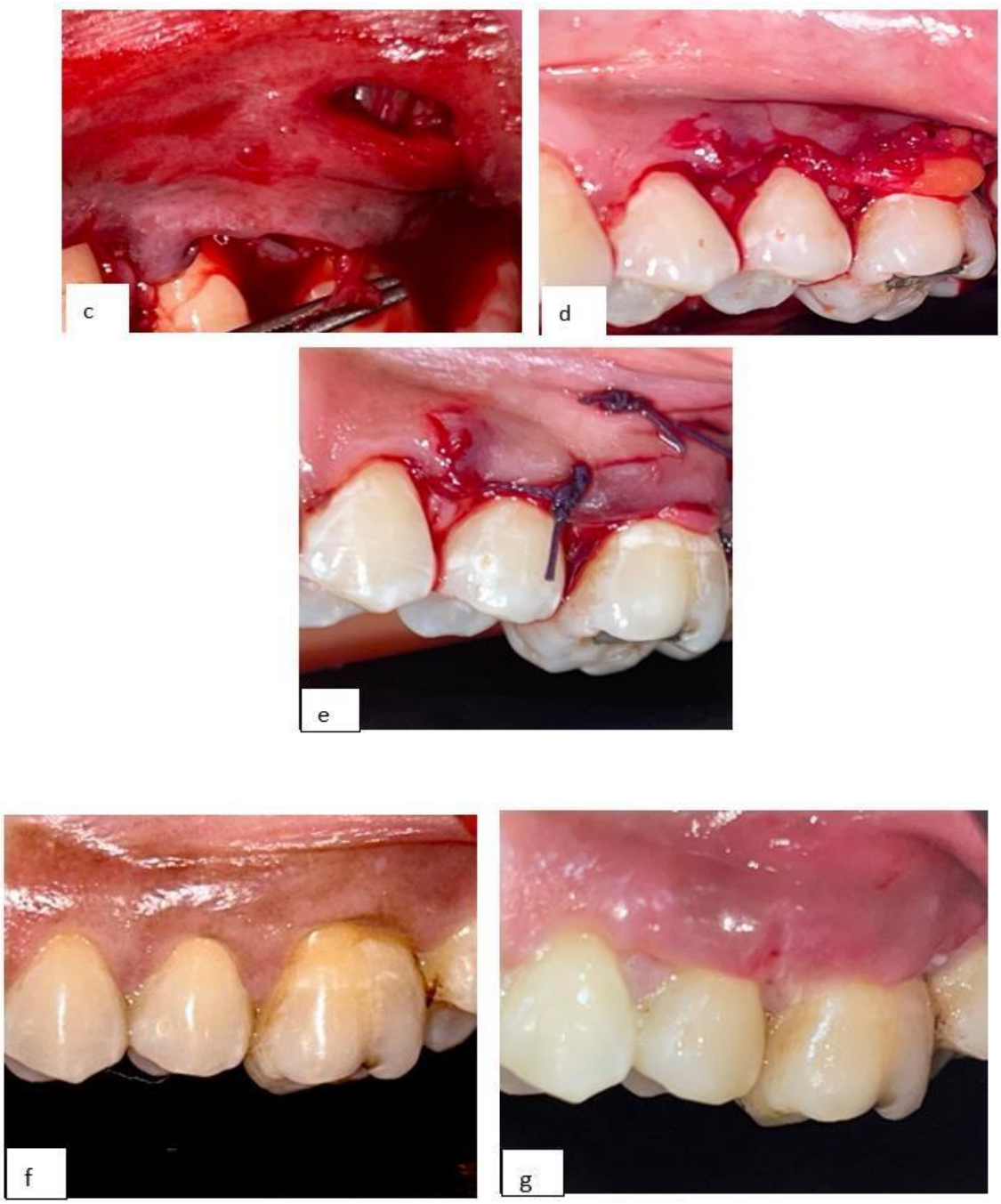


Figure 3. a) horizontal incision of 1-2 cm was given through the buccal mucosa,
b) Pedicle buccal fat pad secure by gentle pull of the fat pad out of its capsule using forceps,
c) the buccal fat pad directly exits from the base of the horizontal incision and covered by flap without exposing to oral cavity
d) placed over the denuded root surface
e) flap approximated coronally and sutured.
f) pre-operative image shows 2mm of recession in 26,
g) post-operative image shows complete root coverage in 26

CASE 2: Patient with Cairo's RT 2 gingival recession of 3mm in the maxillary left back tooth region involving 26 was reported to the department of periodontics [Fig. 1b]. Phase 1 therapy was performed. The surgical procedure was performed as same as the case above discussed.
Antibiotics and analgesics were prescribed. Postoperative instructions for periodontal surgery were given. Suture removal performed after 2 weeks. Comparative analysis of pre-op [Fig. 4a] and post-op [Fig. 4b] performed after 6 months.

g) post-operative image shows complete root coverage in 26

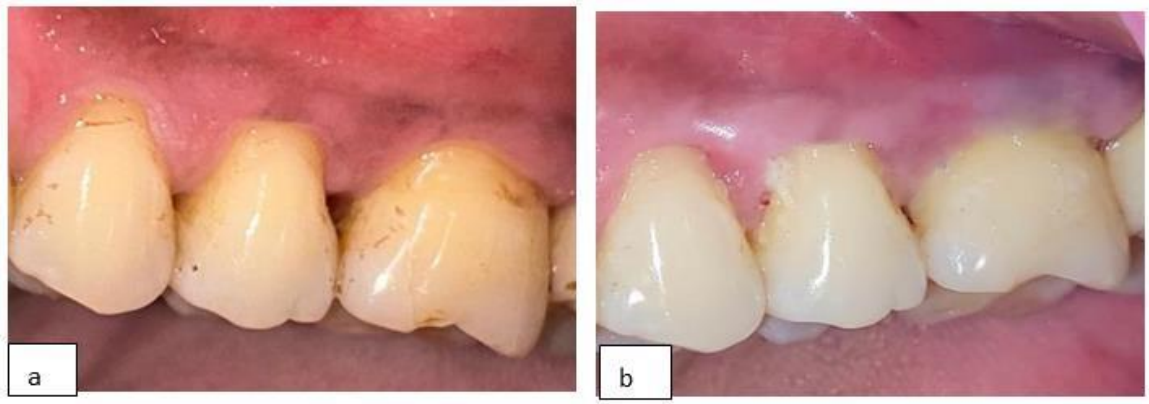


Figure 4 a) 3mm of recession in relation to 26 preoperatively
b) 0.5mm of recession in relation to 26 postoperatively.

CASE 3: Patient with Cairo's RT 3 gingival recession of 7mm in the maxillary left back tooth region involving 16 was reported to the department of periodontics [Fig. 1c]. Phase 1 therapy was performed. The surgical procedure was performed as same as the case above discussed.

Antibiotics and analgesics were prescribed. Postoperative instructions for periodontal surgery were given. Suture removal performed after 2 weeks. Comparative analysis of pre-op [Fig. 5a] and post-op [Fig. 5b] performed after 6 months.

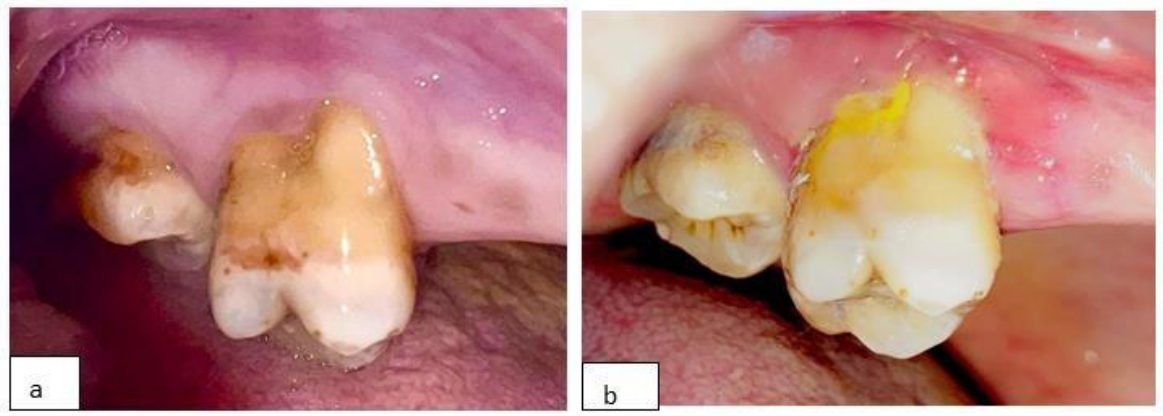


Figure 5. a) 7mm of recession in relation to 17 preoperatively,
b) 5mm of recession in relation to 17 postoperatively.

CALCULATIONS

Follow-up visits were performed on all patients regularly at baseline (before surgery) and 6 months. The percentage of root coverage of each case was calculated by the following formula:

$$PRC = \frac{\text{Postoperative GR - Preoperative GR (baseline)}}{\text{Preoperative GR (baseline)}} \times 100$$

Case 1

$$PRC = \frac{2-0}{2} \times 100 = 100\%$$

Case 2

$$PRC = \frac{3-0.5}{3} \times 100 = 83\%$$

Case 3

$$PRC = \frac{7-5}{7} \times 100 = 28\%$$

To calculate the average percentage root coverage (PRC) across multiple cases, use the following formula:

Average PRC= Sum of the individual PRC/ Number of cases The average percentage root coverage across these three cases is 70.33%.

RESULTS

By evaluating the root coverage outcomes using buccal fat pad, the percentage of root coverage (PRC) was calculated for three patients postoperatively. The individual results have shown significant gain in root coverage. In case 1 with Cairo's RT1 recession which was 2mm preoperatively achieved complete root coverage postoperatively, percentage of root coverage results 100% using buccal fat pad. In case 2 with Cairo's RT2 recession which was 3mm of recession depth preoperatively results in significant reduction of 2.5mm postoperatively, percentage of root coverage results 83% using buccal fat pad whereas in case 3 with Cairo's RT3 recession which was 7mm of recession depth preoperatively results in 5mm of recession depth postoperatively, percentage of root coverage results only 28% using buccal fat pad. The average PRC across all three cases was 70.33%, indicating a high overall success rate with variability depending on individual patient factors and site-specific characteristics.

DISCUSSION

Gingival Recession have been a prevalent clinical condition seen in patient populations. It has become essential to treat severe gingival recession due to an increase in the aesthetics and functional demands. Various treatments were performed to achieve the root coverage particularly autogenous soft tissue grafts (e.g., connective tissue grafts, free gingival grafts) have been considered as a gold standard. Dani et al. concluded in a study that SCTG using the pouch and tunnel technique produces far better, more consistent results with complete root coverage.[11] In 1982, Langer et al. described the SCTG technique in detail for ridge augmentation later in 1985, he conducted a study and emphasized this technique in covering the gingival recessions along with pedicle flap on both single and multiple adjacent teeth which results in 2-6mm of root coverage follow up of 4 years.[12]

The basic concept of pedicle grafts is the lateral movement of donor tissue across an adjacent defect. The advantage of pedicle flap is that preserving its original apical blood supply ensures that the tissue remains alive even when placed over an avascular root surface.[12] "Laterally positioned pedicle graft", originally described by Grupe and Warren in 1956[13] performed for Miller's class 1 and class 2 gingival recession and results in leaving behind thick keratinized band of tissue. Even though the conventional techniques like autogenous grafts connective tissue grafts (CTG) and free gingival grafts (FGG) have been historically considered as the golden standards for gingival recession treatment, they are most commonly accompanied by donor site morbidity, are not ideally available, and also their survival depends solely on re-vascularization. Hence, in the present study pedicled buccal fat pad were used, well-vascularized overcomes the majority of these drawbacks. Its use prevents a second surgical site, thereby reducing patient discomfort and postoperative complications. In literature search, studies have been proven significant increase in keratinized tissue width with the use of buccal fat pad. Between baseline and 6-month follow-up, El-

Haddad and El-Shall (2017),[14] Deliberador et al. (2015),[15] evidenced significant increase in WKG in the BPF groups.

In the current study, pedicled buccal fat pad have been used along with tunneled flap in the site of recession there were significant reduction in recession depth and the average percentage of root coverage shows 70.33% postoperatively. Similar to the study, Deepa and Kumar[16] in 2018 reported 89.30% of root coverage using the pedicle buccal pad fat group. On contradictory, Monika et. al[17] in 2020 recorded the percentage of root coverage 46.78% in treating class 3 and 4 gingival recessions whereas in this study shows the lower percentage of root coverage 28% using buccal fat pad in Cairo's RT3 recession compared to RT1 and RT2.

The results of this case series highlight the need for further research to establish standardized protocols for using the BFP in periodontal therapy. Larger-scale studies with longer follow-up periods are required to validate these findings and determine the long-term stability of the graft.

Conclusion: BFP grafting is a promising approach for gingival recession management, particularly in RT1 and RT2 defects, providing excellent root coverage and enhanced soft tissue regeneration. However, outcomes in RT3 cases are limited, likely due to severe interproximal tissue loss. It has abundant vascularity, and regenerative properties make it a viable alternative to traditional grafting techniques, particularly in cases where donor site morbidity is a concern.

What is new about this study?

The novelty lies in this study is the technique of approach by utilizing the pedicled buccal fat pad exits directly from the base of the horizontal incision and meticulously positioned over the denuded root surface, where the graft was completely covered by a coronally advanced flap without exposing to oral cavity. This approach provides additional protection to the graft, reducing the risk of contamination, enhancing healing, and improving long-term outcomes.

ADVANTAGES:

Improved Graft Protection: The flap coverage shields the buccal fat pad, enhancing the success rate and minimizing complications.

Enhanced Vascularity: The pedicled nature of the graft maintains its blood supply, promoting faster and more reliable healing.

Reduced Morbidity: Avoidance of secondary donor sites minimizes patient discomfort and postoperative complications.

DECLARATIONS

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Competing Interests:

The authors have no competing interests to declare.

Ethical Approval:

The study was approved by the appropriate ethics committee and conducted according to relevant guidelines and regulations.

Informed Consent:

Not applicable.

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