Case Report
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Soft Tissue Augmentation with Free Gingival Graft: A Predictable Outcome after Nine Months

Dr. Rebika Shrestha,[1] Dr. Bhageshwar Dhami,[1] Dr. Deepa Aryal,[1] Dr. Sagun Regmi,[1] Dr. Min Bahadur Gurung[1]

[1]*Department of Periodontology and Oral Implantology, Kantipur Dental College and Hospital, Basundhara, Kathmandu, Nepal*

ABSTRACT

Width of attached gingiva is the distance between mucogingival junction and projection on external surface of bottom of gingival sulcus or periodontal pocket. Gingival recession is a prevalent clinical condition characterized by apical shift of marginal gingival tissue apical to cementoenamel junction, resulting in root exposure, dentinal hypersensitivity, compromised esthetics and increased susceptibility to plaque retention. Free gingival graft (FGG) is one of the most predictable method for augmenting keratinized tissue and enhancing gingival stability. This case report describes management of 21-year-old patient presenting with Cairo's Recession Type 2 in relation to lower front region of mouth using FGG.

Keywords:Free gingival graft; gingival recession; keratinized tissue; root coverage.

INTRODUCTION

Width of attached gingiva refers to the distance between mucogingival junction and projection on external surface of bottom of gingival sulcus or periodontal pocket.[1] Gingival recession is an apical shift of gingival margin in relation to cementoenamel junction (CEJ) and is accompanied by loss of attachment.[2] It is relatively uncommon among young adults.[3] Several treatment modalities exist, among which free gingival graft (FGG) is reliable technique for augmenting keratinized tissue and stabilizing marginal gingiva. Originally, this technique was described by Bjorn in 1963.[1] FGG involves harvesting keratinized epithelial and underlying connective tissue from donor site following transplantation to recipient site.[4]

Correspondence
Dr. Rebika Shrestha
Email: rebikaa2014@gmail.com

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CASE REPORT

A 21-year-old male patient reported with a chief complain of downward shifting of gums in lower front region of mouth attributed to orthodontic therapy for one year associated with occasional sensitivity. No relevant medical history reported. He had undergone orthodontic therapy and frenectomy two years back.

Intra-oral examination revealed thin gingival phenotype, recession height of 4 millimeter (mm) (Figure 1a), recession width of 2.5 mm (Figure 1b), probing pocket depth (PPD) of 1 mm, keratinized tissue width of 3mm (Figure 1c) and interproximal attachment loss is less than buccal attachment loss in relation to 31 (according to two- digit numbering system). Intra- oral periapical radiograph revealed horizontal interdental bone loss approximately 25% below CEJ (Figure 2). Thus, mucogingival defect was classified as Cairo's Recession Type 2. Under adequate local anesthesia (2% lignocaine, 1:2,00,000 Adrenaline), partial thickness recipient bed was prepared in relation to 31 by giving horizontal incision at level of CEJ, extending 3 mm mesially and distally from line angle of 31 and two vertical

Figure 1a: Pre- operative recession height.

Figure 1b: Pre- operative recession width.

Figure 1c: Pre- operative keratinized tissue width.

incision extending 6 mm apical to recession and de-epithelialization was done (Figure 3). Sterile tin foil template was made (Figure 4a). This template was then transferred to donor site 3 mm below gingival margin and was placed anterior to mesio- palatal line angle of maxillary first molar and posterior to rugae area to guide graft harvesting (Figure 4b). Under greater palatine nerve block, incision was given with no. 15 c blade to dissect partial thickness graft.

Following harvesting, graft was placed on normal saline and removed glandular and adipose tissue with castroviejo scissor. Therefore, graft was obtained of about 1.5 mm thickness (Figure 5a), 10 mm width (Figure 5b) and 8 mm height (Figure 5c). Bleeding from donor site was arrested and packed with collagen sponge dressing and sutured with criss- cross horizontal mattress suture and acrylic stent was placed to protect palatal wound (Figure 6a). Then, prepared graft was immediately adapted to recipient bed and secured with 6-0 vicryl suture with interrupted and parallel brace- like suture and horizontal mattress suturing technique (Figure 6b). Gentle pressure was applied with saline moistened gauze for five minutes to facilitate formation of thin fibrin clot formation and minimize dead space. Finally, sterile foil was positioned over site and non-eugenol periodontal dressing was applied.

Post- operative instructions were given and patient was advised to avoid tooth brushing at the surgical site for a period of two weeks. 0.2% Chlorhexidine mouth rinse (10 millimeter twice daily) was prescribed for fourteen days to maintain plaque control. For postoperative pain control, Ibuprofen 400 milligram was recommended for three days. At 14-day postoperative visit, periodontal dressing and suture were removed and satisfactory healing was noted (Figure 7a, 7b). Clinical evaluation at three months revealed successful healing (Figure 8). At nine months follow-up, complete healing was observed with soft tissue augmentation measuring 6 mm width (Figure 9a) and partial root coverage of 25% (Figure 9b). Donor site revealed complete healing (Figure 9c).

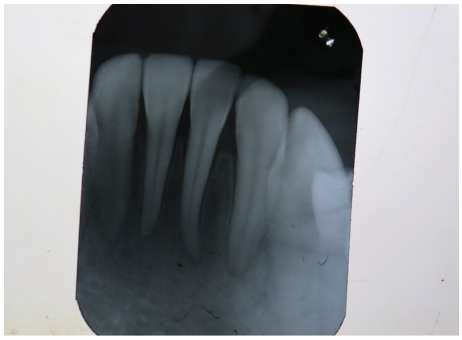

Figure 2: Intra- oral periapical radiograph showing inter-dental bone loss in relation to 31.

Figure 3: Prepared recipient bed.

Figure 4a: Sterile tin foil template measuring recipient bed.

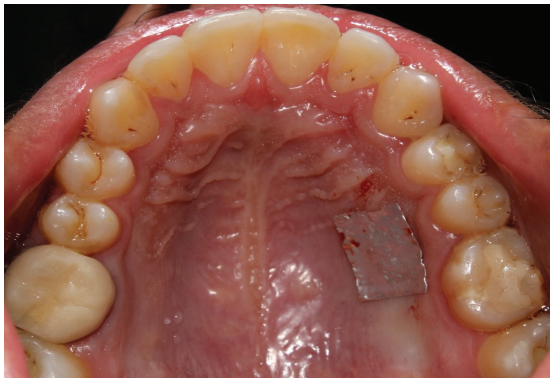

Figure 4b: Sterile tin foil template on palate.

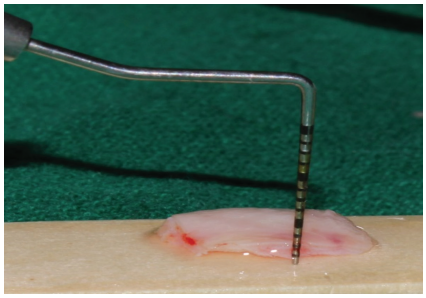

Figure 5a: Prepared graft with 1.5 mm thickness.

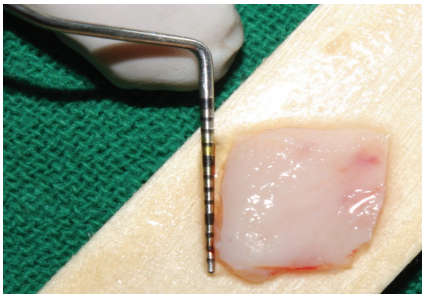

Figure 5b: Prepared graft with 10 mm width.

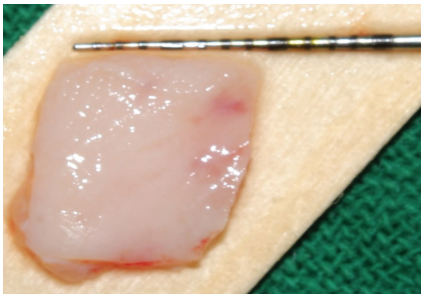

Figure 5c: Prepared graft with 8 mm height.

Figure 6a: Acrylic stent placed.

Figure 6b: 6-0 Vicryl suture placed on recipient bed.

Figure 7a: Healing at the recipient site after fourteen days.

Figure 7b: Healing at the donor site after fourteen days.

Figure 8: Healing after three months.

Figure 9a: Soft tissue augmentation measuring 6 mm width after nine months.

Figure 9b: Partial root coverage after nine months.

Figure 9c: Complete healing of the palatal donor site at nine months follow-up.

DISCUSSION

Gingival recession is not commonly observed in young adult population. Dhami et al. 2016 reported prevalence of 21.3% among 18- 25 years in Nepalese population.[3] This case presented with inadequate keratinized gingiva and gingival recession where FGG was selected to increase width of keratinized tissue and improve periodontal stability. Although FGG has esthetic limitations such as color mismatch and post-operative shrinkage, it remains highly predictable technique primarily indicated for enhancing tissue resistance and preventing further recession with

long-term stability.[5,6] Furthermore, compared with connective tissue graft procedures, FGG technically requires shorter surgical time.[7] Previous studies by Bjorn in 1963 have highlighted predictability of FGG in increasing width of keratinized gingiva.[1] The present case exhibited 6 mm increase in keratinized gingiva, supporting effectiveness of this technique and aligning with established literature.

In the current case, thin phenotype was evident. Long-term studies by Agudio et al. 2008, supports that FGG remain most reliable technique for enhancing soft tissue thickness with thin phenotype with increase of 4.2 mm of keratinized tissue width and 0.8 millimeter of coronal creep over 1 year follow up.[8] This highlights the role of FGG not only in increasing tissue width but also in improving soft tissue thickness and resistance to mechanical trauma.

Regarding root coverage, partial coverage corresponds with findings by Cairo et al. 2011, emphasizing Recession Type 2 cases inherently display partial root coverage due to interproximal attachment loss. Therefore, root coverage in this case is consistent with expectation.[9]

SUMMARY

Though FGG may not achieve maximal esthetic root coverage, still, it remains the technique of choice in periodontal plastic surgery, when primary objectives are to increase keratinized tissue, improve phenotype and ensure long-term stability, especially in mandibular anterior regions.

Conflict of interest: None.

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