# Periodontal Plastic Surgery Using Free Gingival Graft

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**Displacement of the gingival soft tissue margin apical to the cementoenamel junction is named gingival recession. Multiple factors could lead to gingival recession such as mechanical trauma, inflammatory reaction of the gingiva, and orthodontic treatment; if the tooth is moved out of the alveolar bone envelope leading to alveolar dehiscence. Identifying and controlling the etiological factors are key to successful treatment. The management of gingival recession range from conservative monitoring to surgery.**

**A nineteen-year-old female patient with Miller's Class II recession in lower left central incisor (tooth number 31) was treated by free gingival graft surgery.**

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Gingival recession is the displacement of the gingival soft tissue margin apical to the cementoenamel junction, which results in the exposure of the root surface[1]. The prevalence of gingival recession among young adults is approximately 42%[2]. There are multiple etiological factors that can lead to gingival recession such as mechanical trauma due to vigorous tooth brushing, traumatic incisal relationship, foreign body trauma, aberrant frenal attachment, and iatrogenic damage by restorative or periodontal treatment. Other common factors are gingival inflammation associated with thin gingival biotype, periodontal disease, poor restorative margins, and orthodontic tooth movement outside the envelope of the alveolar bone. Gingival recession can cause dentine hypersensitivity, aesthetic concerns, and difficulty in plaque control leading to progressive attachment loss[1,3].

Miller's classification is used to assess and diagnose the recession defect: Class I: Marginal tissue recession not extending to the mucogingival junction. No loss of interdental bone or soft tissue; Class II: Marginal tissue recession extends to or beyond the mucogingival junction. No loss of interdental bone or soft tissue; Class III: Marginal tissue recession extends to or beyond the mucogingival junction, with periodontal attachment loss in the interdental area or malpositioning of teeth; Class IV: Marginal tissue recession extends to or beyond the mucogingival junction, with severe bone or soft tissue loss in the interdental area and/or severe malpositioning of teeth[4].

The management of these cases range from conservative management by monitoring and improving the oral hygiene to periodontal plastic surgery, which includes increasing the width of keratinized tissue around a tooth and covering any exposed root surface associated with a recession defect[5].

Free gingival graft (FGG) is full-thickness gingival graft harvested from the palatal tissue and stabilized against the recipient site to increase the width of the keratinized gingiva and root coverage in gingival recession cases[6].

In this case report, a patient with Miller's Class II recession was treated successfully with FGG. It was shown that full root coverage can be achieved in both Classes I and II Miller's classification[7].

## THE CASE

A nineteen-year-old female presented with gingival recession in tooth 31, see figure 1. She was concerned about the recession, which was associated with discomfort during brushing. There was no significant medical history. Dental history revealed that she had orthodontic treatment two years ago, and the patient noticed the recession during the orthodontic treatment.

No dentine hypersensitivity was detected, only the gingiva was sensitive during brushing. Intraoral examination revealed the presence of generalized gingivitis, and a labial recession associated with tooth 31, see table 2. The dentition was minimally restored with class I skeletal pattern and class I incisor relationship. Sensibility testing for tooth 31 was positive using electric pulp test, fremitus was negative and tension test revealed positive frenal pull on the marginal gingiva. The patient was diagnosed as generalized plaque-induced gingivitis, Miller Class II recession defect in tooth 31 and minimally restored dentition.

Oral hygiene was not satisfactory with full-mouth plaque score (FMPS) of 57%. Regular oral hygiene education (OHE) improved the FMPS for 5 months to 13%. In addition, a major reduction in the gingival inflammation was achieved. Gingival augmentation surgery including vestibuloplasty, frenectomy and root coverage was performed. The exposed root surface was debrided using ultrasonic scaler. Horizontal incision was made at the level of cementoenamel junction extending to the mid base of the papilla of the adjacent teeth; two vertical incisions joined with the horizontal incision were made in an apical direction demarcating the recipient bed area extending to the alveolar mucosa. De-epithelization of the demarcated recipient bed was achieved; undermining the inferior margins of the recipient site (vestibuloplasty) and frenectomy were performed concurrently.

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**Figure 1: Preoperative Photograph of the Recession in 31**

**Table 1: Tooth 31 Soft Tissue Examination**

| | |
|---|---|
| Height of recession | 5mm |
| Width of recession | 3mm |
| Keratinized gingiva | ●Not present apical to the recession defect<br>●2-3 mm width in the adjacent teeth |
| Pocket Depth | All surfaces ≤3mm |
| Interdental attachment loss | No interdental attachment loss |

An epithelial graft harvested from the palate upper right first and second premolar region 3mm thick, 10mm in length and 13mm in width. Oxidized regenerated cellulose (*SURGICEL*) sutured in the harvest site using 4-0 vicryl resorbable and cyanoacrylate tissue adhesive (PeriAcryl®) was applied to achieve hemostasis, see figure 2.

**Figure 2: The Harvested Site Immediate Postoperative**

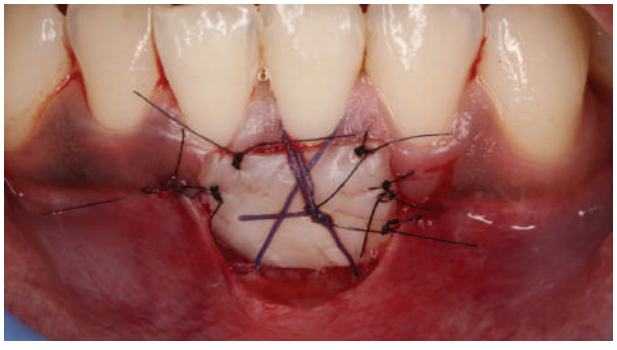

**Figure 3: The Recipient Site Immediate Postoperative**

**Figure 4: The Harvested Site after One Week**

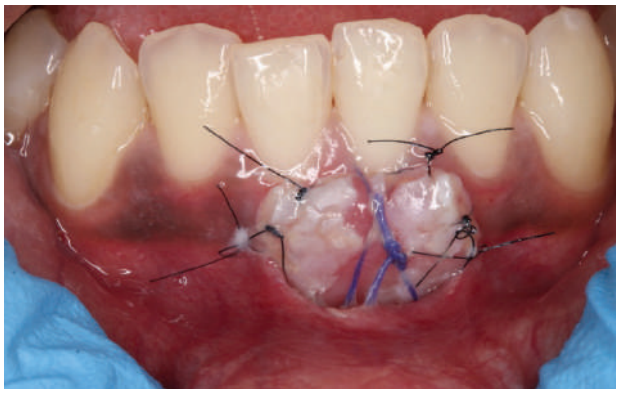

**Figure 5: The Recipient Site after One Week**

**Figure 6: The Recipient Site after Three Weeks**

**Figure 7: The Recipient Site after One Year**

The graft was sutured in the connective tissue bed using 6-0 polypropylene monofilament non-resorbable suture and 4-0 vicryl resorbable suture, with no tension and complete adaptation to prevent movement of the graft during the healing phase, see figure 3.

The patient was seen one week postoperatively, see figures 4-5. A white sloughing on the graft developed. After three weeks, the sutures were removed from the recipient site which revealed satisfactory early healing, see figure 6. Oral hygiene and healing were assessed at 1 month, 3 months, 6 months and 1-year follow-up, see figure 7. The sutures in the palate were removed after 1 week. At 1-year follow-up, the soft tissue remodeled itself, the gingival contour and gingival margin were re-established, and 100% root coverage was achieved. However, the main disadvantage was the color mismatch between the graft and the surrounding tissue. This was not a major issue because the treated site was not visible during smiling.

## DISCUSSION

Multiple factors contributed to the recession in this case: orthodontic treatment, the presence of frenal pull and the restricted anatomy (shallow vestibule, thin gingival biotype) which hampered the plaque control.

During orthodontic treatment, the tooth is subjected to movement; sometimes this movement can push the tooth out of the alveolar bone causing bone dehiscence, which may lead to gingival recession. In our case, the orthodontic treatment, the thin gingival biotype and insufficient keratinized gingiva contributed to the gingival recession.

The initial stage of the treatment was to improve the FMPS and monitor the recession defect by oral hygiene measures. Initially, the prognosis was poor due to the poor plaque control. Achieving adequate plaque control, non-inflamed tissue around the recession and no interdental attachment loss have increased the predictability of the complete root coverage[7].

FGG was chosen for the following reasons: a shallow vestibule, frenal attachment and lack of attached gingiva at the recession defect. The graft must be immobile and tension free after suturing to allow healing without being disturbed during lip movement[8]. The drawback was the aesthetic outcome as there was a color mismatch; luckily this was not visible during smiling.

Based on systematic reviews, the success of complete root coverage using epithelial free gingival graft is 70-85%[9,10]. In our case, 100% root coverage was achieved. Even though the connective tissue graft is the recommended procedure, the selection of surgical technique will depend on many preoperative factors and the clinical presentation of the defect[11].

## CONCLUSION

**Patients with single gingival recession can be managed either conservatively by OHE and monitoring or by periodontal plastic surgery; the decision is made based on the clinical presentation and patient signs and symptoms. Our patient was managed surgically to address the patient complaints. The result after one year was satisfactory in terms of patient satisfaction and complete root coverage.**

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