

Otho- Perio Interrelationship In Treatment Of Localised Miller Class I Gingival Recession With Free Gingival Graft: A Case Report

**Dr Col Ravindra Manerikar¹, Dr Amit Mani ², Dr Shubhangi Mani³, Dr Shivani
Sachdeva^{4*} , Dr. Shriram⁵**

^{1,3}Rural Dental College, Pravara Institute Of Medical Sciences, India (Dept Of Orthodontics

^{2, 4,5}rural Dental College, Pravara Institute Of Medical Sciences, India (Dept Of Periodontology

email address:⁴ dr.shivani19@gmail.com

ABSTRACT

Gingival recession is a widespread periodontal issue that can be influenced by a variety of factors. It is necessary to achieve root coverage according to the patients' aesthetic concerns. Root coverage is achieved using a combination of grafting procedures and flap designs, such as the lateral pedicle flap, double papilla flap, oblique rotated flap, free gingival graft (FGG), coronally advanced flap (CAF), semilunar coronally repositioned flap, and subepithelial connective tissue graft (SCTG). Since 1968, when Sullivan and Atkins first identified them, free gingival grafts have been used to treat gingival recession. In this procedure, the graft is mounted directly on the recession site. In class I miller recession cases, this technique aids adequate success.

In this case report, a 22-year-old female patient was diagnosed with Miller class I gingival recession while seeking orthodontic treatment. For root coverage, a free gingival graft was used. The results obtained were satisfactory

Keywords:

Gingival recession, Free Gingival Graft, Mucogingival surgery.

1. Introduction

The recent awareness in aesthetics among patients has led to a refinement of mucogingival surgery expectations. Gingival recession occurs when the gingival margin shifts apically, exposing the root surface. ¹ Thermal and tactile sensitivity, aesthetic complaints, and a tendency for cervical root abrasion and root caries are all linked to marginal gingival tissue recession. ^{1, 2} Various etiologic factors that cause gingival recession.

Miller in 1985 introduced four classes based on the gingival margin level in relation to the mucogingival junction and the alveolar bone level.

1.1. Miller's classification is used to assess and diagnose the recession defect:

Miller PD in 1985 stated in "A Classification of Marginal Tissue Recession." as follows: ³

" Class I: Marginal tissue recession not extending to the muco-gingival 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.^[3]"

Within the framework of plastic periodontal surgery, several gingival recession treatment techniques have been established. These methods may be used either alone or in combination with others at the same time or in combination ^[4].

Pedicle soft tissue grafts and free soft tissue graft procedures are the two types of surgical procedures used to treat gingival recessions. ^[5]. The free gingival graft is one of these procedures

(FGG). The FGG technique has been used commonly in the past to treat gingival recession and has provided successful ratios ^[6-8]. A patient with Miller's Class I recession was successfully treated with FGG in this case report. It has been shown that complete root coverage can be achieved in both Miller's Classes I and II ^[9]

2. Case Study

A 19-year-old female patient was referred to the Rural Dental College, Loni's department of periodontology and implantology from the department of orthodontics and dentofacial orthopaedics for localised Miller's class I gingival recession affecting tooth #31. The patient was also concerned about the recession, and brushing made her feel uneasy.

Medical history was not significant in this case.. Crowding of maxillary and mandibular anteriors, as well as protrusion of maxillary anterior teeth and extreme crowding of mandibular teeth, were discovered during a thorough intraoral inspection. Trauma from occlusion was also present in this particular case. [Figure 1.a] There was no dentinal sensitivity on the recession site of tooth. Root prominence was also present on the root of tooth #31 and the tooth is buccally placed in the mandibular arch. Patient visited department of orthodontics and dentofacial orthopaedics 1 year back and was undergoing orthodontic treatment for protruded maxillary anteriors and for crowding with lower anteriors. Extraction of upper and lower first premolars was done so as to gain space for the correction of protruded maxillary anteriors and to treat the crowding of mandibular anteriors.



Figure 1: **a** pre-operative intra - oral photograph; **b**: miller's class I recession pre-operative photograph **c**: recipient site; **d**: harvested free gingival graft; **e**: donor site with haemostatic agent (surgicel); **f**: free gingival graft and sutures placed; **g**: periodontal dressing given over tin foil.; **h**: healing of the graft after 9 months

Metal brackets placed on the tooth surface and mini- implants are placed in the apical portion, between the second premolar and first molar for additional anchorage. The upper molars are then held in place with the Trans-palatal arch, which is used to stabilise the position of these teeth during or after the movement of other teeth and the correction of cross-bite with 16 is completed. In half-way of the treatment retraction of maxillary anteriors is done using the T-loop anchorage with Temporary anchorage device (TAD). After that intrusion of mandibular anteriors is done using the Utility arch.

Before proceeding for surgical procedure oral prophylaxis was done. Oral hygiene of the patient is good. [Figure 1.b] There was no radiographic bone loss evident in Intra oral periapical

radiograph. Patient was informed about the surgical procedure and consent was also obtained from the patient.

The Free gingival graft was used as the treatment plan for the coverage of Miller's class I recession associated with tooth #31.

2.1. Recipient site preparation

Before starting with the surgical procedure, the patient was advised to use antiseptic mouth-rinse. Two horizontal incision lines are drawn at the level of the cervico-enamel junction to determine the vertical length of the recipient bed, and two vertical incision lines are drawn on both the mesial and distal sides to determine the mesio-distally dimensions of the recipient bed.. After preparing recipient site on the mesial and distal aspect bed is also prepared in the apical direction by deepening the vestibule. Vestibule is deepened 3-4 mm apical to recession. After vestibular deepening, epithelial layer is scrapped off with the help of BP blade #15. [Figure 1.c]

Root prominence was diagnosed tooth #31 so some amount of tooth layer is removed and the root is contoured. After root contouring the root surface is treated with tetracycline and root biomodification is carried out.

2.2 Donor site preparation

The palate is selected as the donor site for the treatment of gingival recession. Graft is harvested from the distal aspect of premolar. After selecting the donor site required local anaesthesia is given. After that length and width of the donor site is selected according to recession site. Once the dimensions are selected shallow incision lines are given to mark the donor site. Care should be taken not to exceed the incision deep so as to avoid the injury to greater palatine artery. Approximately 1.5- 2 mm of graft thickness should be achieved while harvesting the graft. [Figure 1.d] In this particular case a haemostatic agent was used to stop the bleeding from palatal region. [Figure 1.e] In some cases stent, custom retainers, sutures or other haemostatic agents can also be used

2.3 Placement of harvested graft on the recipient bed:

Following graft harvesting, the graft is positioned directly on the recipient bed, with the graft aligning with the incision lines indicated on the recipient bed. And in the apical portion, the graft is placed in the deepened vestibule. Care should be taken not to flip the harvested graft that is epithelial side should be on the external surface and connective tissue surface should be on the inner side. Sutures are used to stabilise the graft after it has been placed. In this case, a total of four sutures are required to keep the graft in place. Two sutures were given to the periosteum and two sutures are given in the coronal portion to immobilise the graft. [Figure 1.f] After suturing is done the dead space present in between the placed graft and the recipient bed should be closed by giving the slight digital pressure on the placed graft. In some cases more sutures would be required to immobilise the graft in its position. The main aim of the suturing is to keep the graft in its original adapted position throughout the healing process. If the suture fails to immobilise the graft, then the result of the surgical procedure is altered or the graft failure can occur.

After adaptation and suturing of the graft periodontal dressing is given. But before proceeding for the dressing a tin foil is cut in the shape of the graft so as to cover the graft surface. The main objective of placing the tin foil over the graft surface is to avoid the sticking of the graft to the given periodontal dressing and while removing the periodontal dressing in the follow-ups the graft should not be displaced or should not come out with periodontal dressing. The corners of

the tin foil are smoothened so as to avoid injury to the graft and surrounding tissue. [Figure 1.g] Periodontal dressing (Coe-pak) is given over the grafted site. Given periodontal dressing protects the harvested graft from external trauma and also stabilises the graft in its original positions.

Patient is recalled after 7 days for follow-up. Healing of the tissue is observed. The healing observed was uneventful. Site was carefully cleaned. Sutures were not removed as resorbable sutures were given. [Figure 1.h]

Periodontal dressing was given for the second time for next seven days and patient is recalled to check the healing. Figure 9 shows healing of the graft after 9 months and it was uneventful.

3. Discussion

Various factors are responsible for causing the recession such as trauma from occlusion, orthodontic treatment, aberrant frenum and reduced vestibular depth, less thickness of the gingiva which hampered the plaque control. ^[10]

There are studies which suggests that the sites where width of keratinised gingiva is less than 2 mm, there the chances of gingival recession is more ^[11]. This could be a predisposing factor for the occurrence of labial gingival recessions during the orthodontic and/or retention phases. ^{12,13}

Various types of forces are applied to the tooth surfaces as well as the roots of the teeth, causing movement of the teeth such as intrusion, excursion of teeth, lateral, buccal, lingual/palatal movements, and tipping movements during space closure, which may lead to gingival recession or root surface exposure. In our case, recession was present before the orthodontic treatment because of trauma from occlusion but after the movement of teeth during orthodontic treatment the recession increased.

4. Conclusion

For the treatment of localised gingival recession, the free gingival graft procedure was selected. According to various reports, the success rate of the grafting procedure is about 70-85 percent after the procedure is completed ^(14, 15) While the surgical procedure's outcomes were based on a number of factors, we were able to achieve 90 percent root coverage in our case.

References

- [1] Camargo PM, Melnick PR, Kenney EB. The use of free gingival grafts for aesthetic purposes. *Periodontol* 2000 2001; 27:72-96.
- [2] Goldstein M, Brayer L, Schwartz Z. A critical evaluation of methods for root coverage. *Crit Rev Oral Biol Med* 1996;7: 87-98.
- [3] Miller Jr PD. A Classification of Marginal Tissue Recession. *Int J Periodont Rest Dent* 1985; 5:9.
- [4] Zucchelli G and I Mounssif. "Periodontal plastic surgery". *Periodontology* 2000 68.1 (2005): 333-368.
- [5] Tarnow D. "Clinical Periodontology and Implant Dentistry, 5th edition". *Implant Dentistry* 18.2 (2009): 101.
- [6] Sullivan HC and JH Atkins. "Free autogenous gingival grafts.3. Utilization of grafts in

the treatment of gingival recession”.Periodontics 6.4 (1968): 152-160.

- [7] Miller. “Root coverage using a free soft tissue autograft following citric acid application. Part 1: Technique”. The International Journal of Periodontics and Restorative Dentistry 2.1 (1982): 65-70.
- [8] Miller. “A classification of marginal tissue recession”. The International Journal of Periodontics and Restorative Dentistry 5.2(1985): 8-13.
- [9] Chambrone L, Tatakis DN. Periodontal Soft Tissue Root Coverage Procedures: A Systematic Review from the AAP Regeneration Workshop. Journal of Periodontology 2015;86: S8-51.
- [10] Cairo F, Nieri M, Pagliaro U. Efficacy of Periodontal Plastic Surgery Procedures in the Treatment of Localized Facial Gingival Recessions. A Systematic Review. Journal of Clinical Periodontology 2014; 41: S44-62.
- [11] Lang NP, Loe H. The relationship between the width of keratinized gingiva and gingival health. J Periodontol 1972;43: 623-7. doi: 10.1902/jop.1972.43.10.623
- [12] Kamak., et al. “The Effect of Changes in Lower Incisor Inclination on Gingival Recession”. The Scientific World Journal (2015): 193206.
- [13] M Renkema., Pet al. “Gingival labial recessions in orthodontically treated and untreated individuals: a case - control study”. Journal of Clinical Periodontology 40.6 (2013): 631-637.
- [14] Roccuzzo M, Bunino M, Needleman I, et al. Periodontal Plastic Surgery for Treatment of Localized Gingival Recessions: A Systematic Review. Journal of Clinical Periodontology 2002; 29:178-94.
- [15] Oates TW, Robinson M, Gunsolley JC. Surgical Therapies for the Treatment of Gingival Recession. A Systematic Review. Annals of Periodontology 2003; 8(1):303-20

Figure legend:

Figure 1: -

- 1.a: pre-operative intraoral photograph
- 1.b: pre-operative photograph showing miller’s class i recession
- 1.c: recipient site
- 1.d: harvested free gingival graft
- 1.e: donor site with haemostatic agent (surgicel)
- 1.f: free gingival graft and sutures placed.
- 1.g: periodontal dressing given over tin foil.
- 1.h: healing of the graft after 9 months