



Case Report

Management of multiple adjacent gingival recession defects using pouch & tunnel technique with different inter-positional materials– A report of two cases

Vijayalaxmi V Malali^{1,*}, Chandrashekhar Torangul²

¹Dept. of Periodontology, Military Dental Centre, Dehradun, Uttarakhand, India

²Dept. of Hospital Administration, Command Hospital, Pune, Maharashtra, India



ARTICLE INFO

Article history:

Received 29-07-2022

Accepted 02-08-2022

Available online 19-09-2022

Keywords:

Multiple

Adjacent

Gingival

Recession

Defects

ABSTRACT

Gingival recession is defined as the apical displacement of the marginal gingiva in relation to the cemento-enamel junction. It is a common clinical finding in individuals with good as well as those with a poor oral hygiene. It may affect a single tooth or multiple teeth simultaneously. Patients with multiple adjacent gingival recessions present as a major therapeutic challenge to the Periodontist, when it comes to balancing their esthetic and functional demands. Multiple adjacent gingival recession defects are associated with an extensive avascular surface. Furthermore, the clinician has to deal with the underlying anatomical factors such as thin gingival biotype, root prominence, root proximity and sub-optimal width of keratinized tissue. These factors make selection of surgical modality of treatment much more complex in contrast to the localized gingival recession defects. In the current report, we present two such cases of multiple adjacent gingival recession defects, managed by pouch and tunnel technique, using two different inter-positional materials namely the connective tissue graft and platelet rich fibrin.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Gingival recession is an apical shift of the gingival margin. The apical migration of the marginal tissue leads to exposure of the root surface. This in-turn leads to esthetic concerns, dentin hypersensitivity, root caries, and cervical wear. It is, paradoxically, a common occurrence in patients with a high standard of oral hygiene, as well as in periodontally untreated populations with poor oral hygiene. It affects a single tooth or multiple teeth simultaneously. In multiple adjacent recession defects, the avascular surface is more extensive. Further, the anatomical characteristics such as thin biotype, decreased keratinized tissue width, root prominence and root proximity make the choice of surgical treatment much more difficult compared to localized gingival recession defects. Hence, meeting the

esthetic and functional demands of patients with multiple gingival recession defects has been a major therapeutic challenge. Two such cases of multiple adjacent gingival recession defects managed by pouch and tunnel technique two different inter-positional materials connective tissue graft and platelet rich fibrin are discussed here.

2. Case Report 1

A 54 years old female patient reported to the Dept of Periodontology with a chief complaint of receding gum line and sensitivity in the upper front teeth since last 2 years. On general physical examination she was moderately built and nourished, well oriented to time, place and person. Intraoral soft tissue examination revealed a normal oral mucosa, except in the region of 11-14, 22-24 and 31-34. Millers' class I gingival recession was noted in relation to 11,12,13,21,22,23,24,31, 36,41,46. The marginal gingiva in

* Corresponding author.

E-mail address: viju_chandu@yahoo.com (V. V. Malali).

relation to these teeth showed mild to moderate gingival inflammation. After obtaining an informed consent, the routine urine and blood investigations were done and a treatment plan was formulated.

The patient was taken up for surgical treatment 4 weeks after a thorough scaling and root planing and plaque control instructions. Intraoral disinfection was done with 0.2% chlorhexidine mouth rinse prior to administering local anesthesia with lignocaine HCl (1:200000). After adequate anaesthesia of the region, sulcular incisions were made around 21, 11, 12 and 13. This incision separates the junctional epithelium and the connective tissue attachment from the root. A tunnel was then created beneath the papillae, keeping them intact and undermined to maintain their integrity, using small contoured blades and mini curettes. The papillae were then released from the underlying bone allowing them to be positioned coronally. An envelope full thickness pouch and tunnel were created and extended both apically and mesio-distally [Figure 1 A]. The amount of donor tissue needed was accurately determined. Accordingly, sub-epithelial connective tissue graft was harvested from the palate using Liu's class I incision to be used as the inter-positional material in this case.

The sub-epithelial connective tissue graft was then inserted into the pouches and tunnel on the recipient bed such that a portion of it covered the denuded root surface [Figure 1 B]. The mesial and distal ends of the donor tissue were secured with sutures and the gingival margin of the flap was coronally positioned and secured by horizontal mattress sutures [Figure 3 C]. The periodontal dressing was placed over the surgical site and oral hygiene instructions were given. The patient was prescribed amoxicillin 500mg, 400mg of ibuprofen thrice daily for 5 days and instructed to rinse twice daily with 0.2% chlorhexidine mouth rinse for 6 weeks postoperatively.



Fig. 1: A-C: Mucogingival tunnel extending from 21 to 13; SCTG being inserted into the mucogingival tunnel and secured in place.

The case was reviewed after 02 weeks, the surgical site was irrigated with normal saline and sutures were removed, home care instructions were given. The healing of donor site and recipient site wounds were uneventful. The case is on follow-up [Figure 2 A & B].

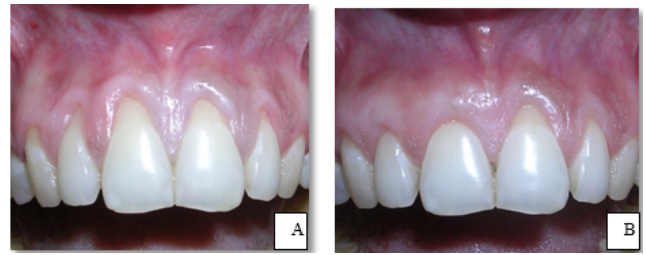


Fig. 2: A & B Pre-treatment and Post-treatment 06 months comparative photographs.

3. Case Report 2

A 49 years old female patient reported to the dept of periodontology with a chief complaint of receding gum line and sensitivity in the upper & teeth since last 2 years. On general physical examination she was moderately built and nourished, well oriented to time, place and person. Intraoral soft tissue examination revealed a normal oral mucosa, except in the region of 11-14, 22-24 and 31-34. There was a millers class I gingival recession in relation to 11,12,13,21,22,23,24,31, 32,33 and 34.

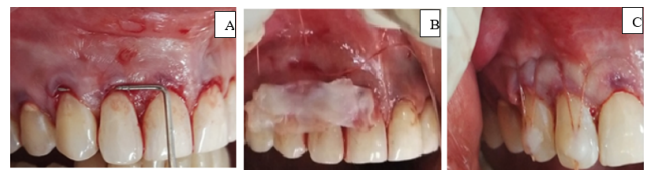


Fig. 3: A, B, and C Mucogingival tunnel extending from 21 to 13; PRF membrane being inserted into the mucogingival tunnel and secured in place.

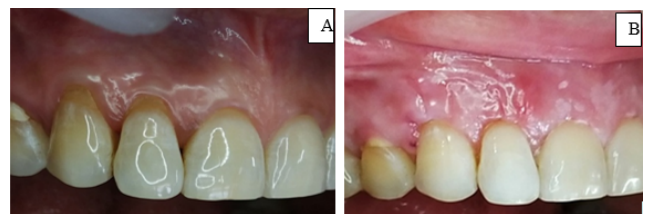


Fig. 4: A & B Pre-treatment and Post-treatment comparative photographs

The patient was taken up for treatment, oral prophylaxis was performed and oral hygiene instructions were given. After local anesthesia (1:200000) and intraoral disinfection with 0.2% chlorhexidine mouth rinse, a sulcular incision was made around mesial of 21,11,12 and 13. A mucogingival tunnel was then created beneath the papilla followed by a split thickness pouch apical to the papilla. This pouch was extended apically and mesiodistally. PRF was prepared by centrifuging 10 ml of patients intravenous blood without any addition of anticoagulant in a glass tube

at 3,000 rpm for 10 minutes using a table top centrifuge machine. After this, the PRF clot was transformed into a membrane through the compression between two sterile gauze pieces. This Platelet rich fibrin (PRF) membrane was used as the inter-positional material in this case [Figure 3], A, B & C.

The case was reviewed after 02 weeks and the healing was uneventful. The patient is on follow-up [Figure 4] A & B

4. Discussion

The treatment of gingival recession is becoming an important therapeutic issue from the viewpoint of esthetics. Improving esthetics during smiling or function is becoming the main aim of root coverage procedures.¹ Gingival recession is rarely localized to a single tooth, and no reports are available on the prevalence of single recession defects compared with multiple recession defects; nevertheless, clinical experience indicates a greater incidence of multiple gingival recessions. In the presence of multiple adjacent gingival recession defects, attempts should be made to minimise the number of surgeries and intraoral surgical sites. Also, the patient's demands to optimize the esthetic results must always be taken into consideration. Thus Multiple adjacent recession defects pose as a therapeutic challenge to the clinician.

Recent advancements in periodontal plastic surgery have led to an increasing popularity of microsurgical tunneling flap procedures. The tunnel procedure for root coverage was initially introduced in 1994 and termed the supra-periosteal envelope technique. Various modifications to this technique have evolved over the years. The unique characteristic of this procedure is that the interdental papillae are intact and the no vertical incisions. This has a tendency to produce better esthetic outcome. The technique being minimally invasive in nature, also results in negligible post-operative discomfort at the recipient site.^{2,3}

This surgical approach allows various inter-positional materials to be placed into the tunnel, enabling added advantages in root coverage. In our cases we have used two different inter-positional materials namely subepithelial connective tissue graft (SECTG) and platelet-rich-fibrin (PRF) membrane. Subepithelial connective tissue graft placement reportedly shows increased predictability of total root coverage and is regarded as the standard approach for the management of multiple gingival recessions.^{4,5} A recent systematic review that included 23 clinical trials on Miller's class I and II recession defects treated with SECTG, concluded that SECTG provided significant root coverage, clinical attachment and keratinized tissue gain, and stated that SECTG is considered the "gold standard" procedure in the treatment of recession-type defects.⁵ The same authors, in their consecutive Cochrane systematic reviews, stated that cases where both root coverage and keratinized tissue gain

are expected, the use of SECTG seems to be ideal. Root coverage achieved with SECTG procedures remains stable over the long term.^{6,7}

Though SECTG is the gold standard grafting technique in root coverage, it is also associated with complications such as increased patient morbidity due to second surgical site and limited tissue availability. Due to this alternative grafting materials have been explored such as GTR membrane, PRF membrane, Alloderm etc. PRF as an alternative soft tissue grafting material has various advantages over the SECTG.⁸ A study comparing SECTG and PRF has concluded that the PRF group exhibited early vascularization of the wound and its usefulness in management of recession defects.⁹

In the present case report both the inter-positional materials used SECTG and PRF membrane with the pouch and tunnel technique have given good post-operative results in terms of root coverage achieved, keratinized tissue gained and color match of the recipient area to adjacent tissues.

5. Conclusion

Both the inter-positional materials employed for the treatment of multiple recession defects along with pouch and tunnel technique as the surgical modality in this case report have demonstrated effective results in terms of root coverage. Root coverage could be achieved irrespective of the number of recessions and the presence or absence of a secondary surgical intervention. However, whether the advantages of SECTG as an inter-positional material overpowers the advantages of the PRF membrane is yet to be ascertained. Further long-term, multi-center clinical trials with split-mouth designs comparing the two and analyzing the histology of the attachment achieved.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Wennstrom JL. Proceedings of the 1st European Workshop on Periodontology. *Ann Periodontol.* 1994;4(1):193-209.
2. Aroca S, Keglevich T, Nikolidakis D, Gera I, Nagy K, Azzi R, et al. Treatment of class III multiple gingival recessions: a randomized clinical trial. *J Clin Periodontol.* 2010;37(1):88-97.
3. Allen AL. Use of the suprapariosteal envelope in soft tissue grafting for root coverage. II. Clinical results. *Int J Periodont Restor Dent.* 1985;14(4):715-20.
4. Dembowska E, Drozdziak A. Subepithelial connective tissue graft in the treatment of multiple recession. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2007;104(3):1-7.
5. Chambrone L, Chambrone D, Pustiglioni FE, Chambrone LA, Lima LA. Can subepithelial connective tissue grafts be considered the gold standard procedure in the treatment of Miller Class I and II recession-type defects. *J Dent.* 2008;36(9):659-71.

6. Chambrone L, Sukekava F, Araújo MG, Pustiglioni FE, Chambrone LA, Lima LA. Root coverage procedures for the treatment of localised recession-type defects. *Cochrane Database Systematic Rev.* 2009;15(1):7161–4.
7. Chambrone L, Sukekava F, Araújo MG, Pustiglioni FE, Chambrone LA, Lima LA. Root-coverage procedures for the treatment of localized recession-type defects: a Cochrane systematic review. *J Periodontol.* 2010;81(2):452–78.
8. Jankovic S, Aleksic Z, Milinkovic I, Dimitrijevic B. The coronally advanced flap in combination with platelet-rich fibrin (PRF) and enamel matrix derivative in the treatment of gingival recession: a comparative study. *Eur J Esthet Dent.* 2010;5(3):260–73.
9. Cheung WS, Griffin TJ. A comparative study of root coverage with connective tissue and platelet concentrate grafts: 8-month results. *J Periodontol.* 2004;75(12):1678–87.

Author biography

Vijayalaxmi V Malali, Graded Specialist

Chandrashekhar Torangul, Senior Advisor

Cite this article: Malali VV, Torangul C. Management of multiple adjacent gingival recession defects using pouch & tunnel technique with different inter-positional materials– A report of two cases. *IP Int J Periodontol Implantol* 2022;7(3):132-135.