

# Periodontal Microsurgical-Assisted Pouch and Tunnel Approach in Combination with Subepithelial Connective Tissue Graft for the Management of Class IIB and IIC Multiple Adjacent Gingival Recessions in Mandibular Anterior Segment

## Abstract

Gingival recession (GR) is an early and common clinical expression found in a majority of the population which increases with age. Different factors contribute to its etiology. It is a matter of concern for the patient which may be due to altered function and esthetics etc. Multiple conventional plastic surgical procedures are recommended for the management of GR depending on isolated or multiple GR. The present report described the plausible etiology of multiple adjacent GRs and classified it according to a new well-elaborated recession classification system proposed by Kumar and Masamatti, due to the limitation and applicability of most commonly used Miller's GR classification in the present clinical situation and its successful management through periodontal microsurgical-assisted pouch and tunnel approach in conjunction with subepithelial connective tissue grafting without any complication 6 months postoperatively.

**Keywords:** Multiple adjacent gingival recessions, ophthalmic microsurgical blades, periodontal microsurgery, pouch and tunnel, subepithelial connective tissue graft

**Sanjeev Kumar Salaria,  
Amit Khunger,  
Vikender S Yadav<sup>1</sup>,  
Garima Sharma**

Department of Periodontology and Oral Implantology, Surendera Dental College and Research Institute, Sri Ganganagar, Rajasthan, <sup>1</sup>Division of Periodontics, Centre for Dental Education and Research, All India Institute of Medical Sciences, New Delhi, India

## Introduction

In daily dental practice, clinicians are not only facing clinical challenges such as biological, functional, and esthetic issues related to oral structures but also try to institute therapeutic approach to achieve best outcome to reach patient's expectation. Gingival recession (GR) is one of the clinical situations that may be localized/generalized and associated with all/any of the above issues, for which patient seeks periodontal consultation. In spite of different conventional periodontal plastic surgical techniques proposed for the management of multiple adjacent GRs (MAGRs), predictable root coverage still poses a challenge for clinician as it is not clear, up to which extent a particular technique leads to cover the exposed root. Looking after the distinctive advantages of periodontal microsurgical over conventional approaches that were cited by Yadav *et al*,<sup>[1]</sup> the present case report of MAGR in mandibular anterior teeth was successfully managed through microsurgical-assisted pouch and tunnel technique (PTT) in combination with

subepithelial connective tissue graft (SCTG) with 78% mean root coverage (MRC) without any complication in former smoker patient up till 6 months postoperatively.

## Case Report

A 37-year-old male social tobacco user patient reported to the department of periodontology with a chief complaint of unaesthetic appearance due to blackening and elongation of lower front teeth for 3–6 months. Intraoral examination revealed nicotine stains, plaque and calculus deposits present w.r.t # 31, 32, 41. GR of 4, 9 & 5 mm extending short of and beyond mucogingival junction was observed with 1 mm of probing depth whereas tip of interdental papilla located between interproximal contact point and midbuccal cemento-enamel junction (CEJ) w.r.t #32, 31 & 41 respectively [Figure 1a-d]. Intra oral periapical X-rays (IOPA X rays) showed interdental bone loss w.r.t# 32, 41, and 31 [Figure 1e]. So diagnosed as case of Class II B and Class II C GR w.r.t #32 & 31, 41 respectively on the basis of Kumar and Masamatti<sup>[2]</sup> classification of GR. Routine

**Address for correspondence:**  
Prof. Sanjeev Kumar Salaria,  
Department of Periodontology  
and Oral Implantology,  
Surendera Dental College  
and Research Institute, Sri  
Ganganagar - 335 001,  
Rajasthan, India.  
E-mail: sksalaria@yahoo.co.in

### Access this article online

**Website:**  
[www.contempclindent.org](http://www.contempclindent.org)

**DOI:** 10.4103/ccd.ccd\_556\_18

### Quick Response Code:



**How to cite this article:** Salaria SK, Khunger A, Yadav VS, Sharma G. Periodontal microsurgical-assisted pouch and tunnel approach in combination with subepithelial connective tissue graft for the management of class IIB and IIC multiple adjacent gingival recessions in mandibular anterior segment. *Contemp Clin Dent* 2018;9:667-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, 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: [reprints@medknow.com](mailto:reprints@medknow.com)

investigations were normal. Phase I therapy was performed, and the patient was motivated and educated regarding plaque control and to quit tobacco habit, which he did too and reported with good oral hygiene after 2 weeks. Different periodontal plastic procedures (PPPs) were discussed in detail with their pros and cons, but the patient submitted signed consent in favor of microsurgery-assisted PTT with SCTG. Immediately under aseptic condition, local anesthesia administered and scaling and root planing was performed. Marginal gingiva epithelial lining apical to facial CEJ w.r.t #31, 32, 41 was removed and partial thickness pouch and tunnel was prepared under head mounted magnification system with the help of ophthalmic microsurgical disposable knives. SCTG harvested using trap-door technique. Donor site was packed with platelet-rich

fibrin and 3-0 silk suture. SCTG was slipped into the tunnel and secured in position with 5-0 vicryl suture [Figure 2a-l] and oral hygiene instructions given. Surgical site healed uneventfully 10 days postoperatively [Figure 3a] and sutures removed and maintenance therapy reinforced. At 3 months postoperatively scalloped gingival margins, with thick gingival biotype, good color esthetic was observed, along with 3, 7 and 4 mm of recession coverage w.r.t # #32 & 31, 41 [Figure 3b-e]. The MRC obtained was 78%, which remains static till 6 months postoperatively [Figure 4a-d]. The patient is extremely pleased with the outcome.

### Discussion

GR is defined as the displacement of the gingival margin apical to the CEJ.<sup>[3]</sup> Its prevalence varies from 3% to 100%, lower in younger, and increases with age. Multiple factors such as anatomic, occlusal, and parafunctional habits traumatic overzealous toothbrushing etc. play important role in the etiology of GR.<sup>[4]</sup> The exact etiology in this case of MAGR is not known, but it may be because of chronic interplay of improper brushing, poor plaque control, and tobacco use.

Although Miller's GR classification was extensively used, it will not applicable to the present case due to its limitations. So, looking after the comprehensive refinement of Miller's classification limitations as proposed by Kumar and Masamatti<sup>[2]</sup> classification of GR was utilized in the present case.

GR is a common problem need treatment to prevent complications such as dentinal hypersensitivity, root caries, and cosmetic problems. Although different PPPs were available for the management of GR, some resulted in unsatisfactory results. The reasons could be poor case selection, improper technique selection, inadequate root/



Figure 1: (a) tobacco stains and plaque deposits at multiple adjacent gingival recession site of #31, 32, and 41 with interdental papilla loss, (b-d) 5-, 9-, 4-mm gingival recession with respect to # 41, 31, and 32, respectively, and (e) intraoral periapical X-ray showed bone loss in lower anterior teeth

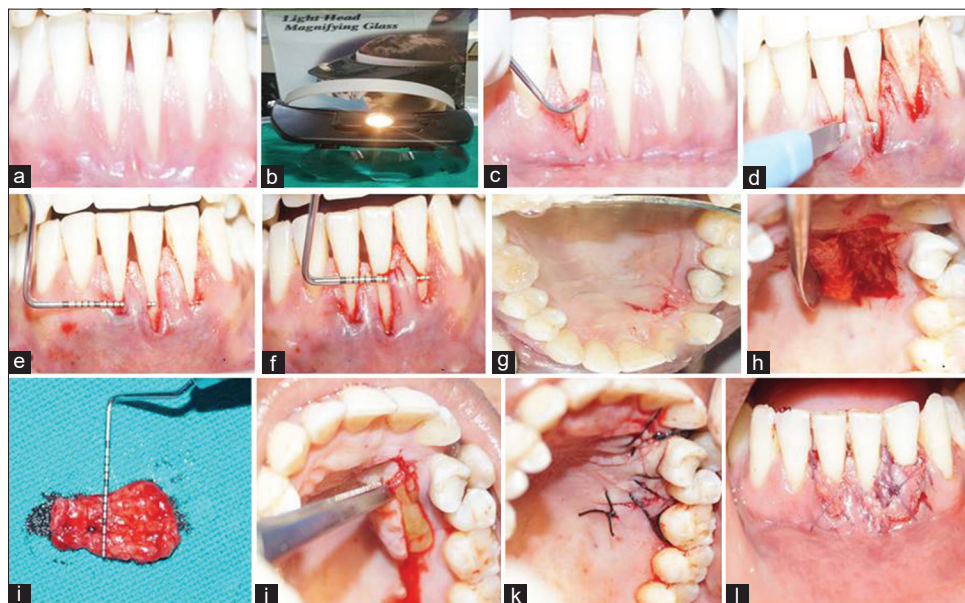
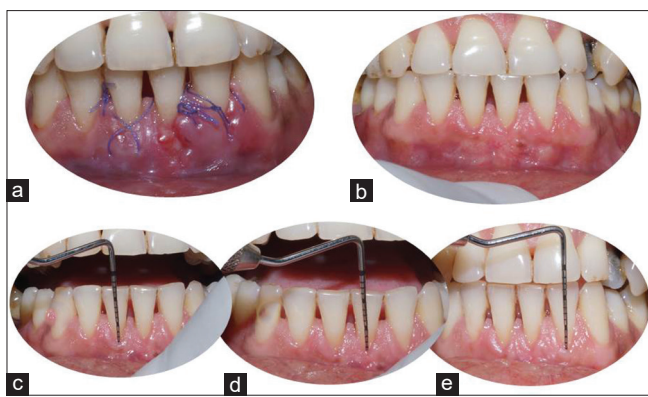


Figure 2: (a) Two-week post phase I therapy showed good plaque control, (b) head-mounted magnification system utilized, (c-f) root planing, followed by ophthalmic knife-assisted pouch and tunnel recipient-site preparation, (g-k) sub epithelial connective tissue graft (SCTG) harvesting utilizing trap-door technique and donor area secure with platelet-rich fibrin and 3-0 black silk suture, and (l) subepithelial connective tissue graft secured at recipient site by 5-0 vicryl suture



**Figure 3:** (a) Ten-day postoperative healing of surgical site, (b) three-month healing of surgical site with good color esthetic, knife-edge gingival margins, and thick gingival tissue with stippling present, and (c-e) probing depth of 1 mm with 4, 7, and 3 mm of recession coverage with respect to #41, 31, and 32

recipient-site preparation, insufficient height of interdental bone and soft tissue, poor surgical technique etc.<sup>[5]</sup>

Till date, autologous SCTG is most popular and researched technique when used at deficient site with various bilaminar procedures (BLPs) resulted in predictable and for successful root coverage, due to dual blood supply from periosteal or osseous bed and overlying flap which helps in revascularization of flap,<sup>[6]</sup> but reduced lateral and papillary blood flow to the graft under flap due to buccal flap incision limited the early esthetics which was undesirable after BLP.

To avoid these incisions, later on, Allen in 1994<sup>[7]</sup> proposed the supraperiosteal envelope technique by performing a tunnel approach in the management of multiple adjacent recessions; its advantages are less tissue reflection, less scarring, increased vascularity, and better graft adaptation and security.<sup>[8]</sup>

In addition to the above, looking after the distinctive advantages of microsurgery such as increased vascularization of the grafts, a significant increase in width and thickness of keratinized tissue, relatively better percentages of root coverage, and improved esthetic outcome, etc., compared to the conventional PPP,<sup>[1]</sup> periodontal microsurgical assisted pouch and tunnel technique with SCTG was utilized in the current case of MAGR and achieved 78% MRC with excellent esthetic outcome in the present report. As this is the first case report of Class IIB and IIC, MAGR was treated by microsurgery-assisted PTT with SCTG to the best of our knowledge; thus, while interpreting the outcomes, it has to be kept in mind that direct comparisons with other reports are not possible. However, the result comparable to the report of Aroca *et al.*<sup>[9]</sup> achieved MRC of 82%–83% Miller's Class III MAGR treated by modified coronally advanced tunnel, enamel matrix derivatives, and SCTG at 1-year follow-up.

## Conclusion

Microsurgery-assisted PPPs should be preferred as it is least traumatic, increase vascularity, and chances of graft survival thereby resulted in excellent outcome comparable to conventional PPPs, but at the same time, multiple



**Figure 4:** (a) Six-month healing of surgical site showed no change in clinical finding observed at 3-month follow-up, (b-d) Healthy gingival margins, with thick gingival biotype, good color esthetic was observed, along with 4, 7 and 3 mm of recession coverage w.r.t # 41,31m &32 with 1 mm of sulcus depth

long-term randomized controlled trials on large sample size are utmost required for reconfirmation.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Yadav VS, Salaria SK, Bhatia A, Yadav R. Periodontal microsurgery: Reaching new heights of precision. *J Indian Soc Periodontol* 2018;22:5-11.
2. Kumar A, Masamatti SS. A new classification system for gingival and palatal recession. *J Indian Soc Periodontol* 2013;17:175-81.
3. Wennstrom JL, Zucchelli G, Pini Prato GP. Mucogingival surgery. In: Lang NP, Karring T, editors. *Clinical Periodontology and Implant Dentistry*. 5<sup>th</sup> ed. Oxford, UK: Blackwell Munksgaard; 2008. p. 955-1011.
4. Khuller N. Coverage of gingival recession using tunnel connective tissue graft technique. *J Indian Soc Periodontol* 2009;13:101-5.
5. Dani S, Dhage A, Gundannavar G. The pouch and tunnel technique for management of multiple gingival recession defects. *J Indian Soc Periodontol* 2014;18:776-80.
6. Greenwell H, Fiorellini J, Giannobile W, Offenbacher S, Salkin L, Townsend C, *et al.* Oral reconstructive and corrective considerations in periodontal therapy. *J Periodontol* 2005;76:1588-600.
7. Allen AL. Use of the supraperiosteal envelope in soft tissue grafting for root coverage. I. Rationale and technique. *Int J Periodontics Restorative Dent* 1994;14:216-27.
8. Tözüm TF. A promising periodontal procedure for the treatment of adjacent gingival recession defects. *J Can Dent Assoc* 2003;69:155-9.
9. 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;37:88-97.