Microsurgical treatment of gingival recession by subepithelial connective tissue graft: a case report

Maj Vikas Dhir*, Lt Col AK Jha*

MJAFI 2011;67:293–295

INTRODUCTION

The goal of the treatment for gingival recession coverage is to restore the tissue margin to the cemento-enamel junction (CEJ) and to create a normal gingival sulcus with a functional attachment. Over the years, numerous surgical techniques have been practiced to correct gingival recession since its introduction by Norberg in 1926.

The advent of subepithelial connective tissue graft for root coverage has demonstrated high degree of success. The advantages of this technique are dual blood supply to the graft, better aesthetics, increased keratinised tissue width, and better post-operative healing in the donor site.¹

Periodontal microsurgery for periodontal plastic surgery was introduced by Dr. Shanelac and has proven to be an effective means of improving predictability in periodontal aesthetic procedures. The surgical microscope enhances complete visualisation of the operative field and provides superior magnification and better optical performance compared with dental loupes.²

CASE REPORT

A 22-year-old female patient came to the Department of Dental Surgery with chief complaints of sensitivity to cold food/fluids in lower front tooth for last one year and an unpleasant look. The patient was systemically healthy. Patient had undergone orthodontic treatment a year back. On examination, there was gingival recession in 41 with vertical component 7 mm, probing depth 1 mm, clinical attachment level 8 mm, and keratinised gingiva 1 mm. Plaque was present and marginal gingiva was inflamed in 41.

Diagnosis

Miller's class-II gingival recession in 41.

Treatment Plan

Phase-I therapy followed by maintenance. Phase-II therapy consisted of coronally advanced flap with subepithelial connective tissue graft using microsurgical technique.

Presurgical Preparation

Patient was motivated and educated about the surgical procedure and oral hygiene instructions were given. Thorough scaling and root planning was done. Patient was called on recall visits to assess her oral hygiene and gingival status. Informed consent was taken from patient.

Surgical Procedure

Recipient Site 1

Baseline data was recorded preoperatively with vertical component of gingival recession as 7 mm, horizontal component 5 mm, probing depth 1 mm, CAL 8 mm, and keratinised gingiva 1 mm (Figure 1). An operating microscope adjusted to 6× magnification as per the instructions given by manufacturer was used for the entire procedure. After administration of local anaesthesia, a partial thickness flap was created with two vertical incisions placed at least one-half to one tooth wider mesio-distally than the area of gingival recession. The coronal margin of the flap was started with a horizontal sulcular incision to preserve all existing

Figure 1 Pre-operative photograph.

*Graded Specialist (Periodontology and Oral Implantology), ADC (R & R), Delhi Cantt., *Associate Professor (Periodontology and Oral Implantology), O/o DGDS, Delhi.

Correspondence: Maj Vikas Dhir, Graded Specialist (Periodontology and Oral Implantology), ADC (R & R), Delhi Cantt. – 10.
E-mail: vikasdhir2002@yahoo.com

Received: 06.03.2010; Accepted: 19.07.2010
doi: 10.1016/S0377-1237(11)60066-X

radicular gingiva. The interproximal papillae were left intact. Care was taken to extend the flap to the mucobuccal fold without perforations, which could seriously affect the blood supply. Thorough root planning was done. The concavity in the root was reduced with air-rotor hand piece.

Donor Site

A second surgical site was created on the palate. After administration of local anaesthesia, CTG was procured using Liu Class I Type B incision.³ A horizontal incision was made approximately 5 mm from the gingival margins of the maxillary teeth to the desired width. It was continued apically as an inverse bevel towards alveolar bone. A second parallel horizontal incision was made 1½ mm coronal to the first incision. It was continued apically until it meets the base of the original incision. The palatal bone was scored to enable the operator to remove the connective tissue wedge. The connective tissue and epithelium between the two horizontal incisions are excised and all adipose tissue removed. The palatal flap was sutured back into position with polypropylene 4-0 immediately after taking the donor tissue.¹

Recipient Site II

The connective tissue graft was placed over the denuded roots and sutured in place. It was sutured to the underlying connective tissue interproximally using 6-0 vicryl. The partial thickness, recipient flap was positioned coronally in a manner to cover as much of the graft as possible and sutured in this position (Figure 2). No attempt was made to completely cover the graft as this would create an excessive pull on the vestibular fold. Periodontal dressing was applied to the recipient site, and the patient was instructed in normal post-surgical management. A periodontal dressing along with palatal stent was given on the palate.

Post-surgical Care and Follow-up

The patient was instructed to rinse two times daily with a 0.12% chlorhexidine gluconate solution for the first postoperative month. Antibiotics and anti-inflammatory analgesics were prescribed for five days after surgery. The patient was seen on seventh postoperative day to remove the periodontal dressing

and sutures. The patients were recalled regularly. Normal plaque control techniques were resumed. There was a gain in attached gingiva with 6 mm of root coverage achieved in 41 at 12 months (Figure 3).

DISCUSSION

Gingival recession is one of the most common aesthetic problems. Surgical techniques to correct gingival recession were introduced by Norberg in 1926 by using coronally repositioned flap. Since then different modalities were introduced for root coverage.

One of the most predictable and commonly used procedures is subepithelial connective tissue graft for root coverage, which has demonstrated high degree of success. The advantages of this technique are dual blood supply to the graft, better aesthetics, increased keratinised tissue width, and better postoperative healing in the donor site.¹ Improved colour blending, reduced morbidity in donor site, and high degree of clinical success are the other advantages.⁴ Studies show mean defect coverage ranging from 57% to 98%.⁵

Microsurgery is defined as refinement in operative technique by which visual acuity is enhanced through the use of surgical operating microscope. Operating microscope provides the highest optical resolution with the most efficient illumination. It allows for easily changing working magnification and provides adjustable working distance.⁶

Periodontal microsurgery introduces the potential for a less invasive surgical approach in periodontics. It permits preparation of hard and soft tissue wound surfaces to have butt-joint wound approximation, which encourages primary wound healing and enhanced periodontal regeneration. It provides more accurate and atraumatic handling of tissues to enhance wound healing. Microsurgery entails the use of specifically designed microsurgical instruments to minimise trauma. For primary wound closure, microsutures ranging between 6-0 and 9-0 are used to approximate wound edges, which minimises gaps or voids at the wound edges. This encourages rapid healing with less postoperative inflammation and less pain. Periodontal microsurgery for these

Figure 2 Stabilization of connective tissue graft.

Figure 3 Postoperative at 12 months.

procedures was used as it has been proven as an effective means of improving predictability in periodontal aesthetic procedures.

CONCLUSION

A microsurgical technique has practical application especially in the field of periodontal plastic surgery. It reduces tissue trauma, aids in early postoperative healing, and increased comfort to patients.

REFERENCES

1. Langer B, Langer L. Subepithelial connective tissue graft technique for root coverage. *J Periodontol* 1985;56:715–721.
2. Shanelec DA, Tibbets LA. Periodontal microsurgery. *Dental Clinics North Am* 1998;42:339–359.
3. Chiun LL, Weisgold AS. Connective tissue Graft: a classification for incision design from palatal site and clinical case reports. *Int J Periodontics Restorative Dentistry* 2002;22:373–379.
4. Zabalegui I, Sicilla A, Cambra J, Gil J, Sanz M. Treatment of multiple adjacent gingival recessions with tunnel subepithelial connective tissue graft: a clinical report. *Int J Periodontics Restorative Dentistry* 1999;19:199–206.
5. Oral reconstructive and corrective considerations in periodontal therapy [informational paper]. *J Periodontol* 2005;76:1588–1594.
6. Shanelec DA, Tibbets LA. Recent advances in surgical technology. In: *Clinical Periodontology* 9th ed, Newman MG, Takei HH, Carranza FA, eds. Philadelphia: WB Saunders 2004:876–881.