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Case Report

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Treatment of Multiple Adjacent Gingival Recession by Modified Microsurgical Tunnel Technique (Mmtt) Using Connective Tissue Graft (Ctg) Harvested by A Novel Technique

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Abstract

Recession of gingiva leads to sensitivity, root caries and loss of esthetics. Numerous systematic reviews have deemed that a combination of coronally advance flap and connective tissue graft to be the gold standard for treatment of gingival recession. Quite recently minimally invasive recession coverage procedures are being experimented along with optical magnification. This helps in minimal tissue manipulation and precise adaptation of wound edges leading to faster and uneventful healing, thus bringing about a satisfactory clinical and patient outcome. In this case report a minimally invasive novel technique was used to harvest CTG, to cover multiple adjacent class I gingival recession in the lower anterior teeth by MMTT. The hallmark of this procedure is the maintenance of papillary integrity which prevents its shrinkage and the reflection of partial thickness flap on gingival surface which prevents alveolar resorption.

Keywords: *Gingival Recession, Connective Tissue Graft, Periosteum, Sutures, Microsurgery, Esthetics*

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Introduction

Minimally invasive periodontal plastic surgeries have come in a big way. The use of microsurgical instruments and optical magnification help in minimalistic manipulation of tissues and a more precise approximation of wound edges which results in faster and more esthetic healing.

In this case report a modified microsurgical tunnel technique (MMTT) outlined by Zuhr (2007) [1] was done to cover mandibular anterior multiple class I gingival recessions. This technique involves performing a partial thickness dissection involving the gingival and mucosal tissues and full thickness in the papillary areas. The connective tissue graft (CTG) in this procedure was harvested by a novel technique. All the procedures were accomplished using microsurgical instruments, optical magnification of 2.5X and newly developed tunneling instruments.

Case Report

A 35 year old male patient reported to the Department of Periodontology with the chief complaint of elongating teeth and sensitivity in the mandibular incisors for the past four months. Being in an esthetic region a minimally invasive technique was decided to cover the gingival recession.

After administration of local anaesthesia (LA) (lidocaine with 2% adrenaline, 1:20,000) intrasulcular incision was given in a partial thickness manner. The dissection was extended to the mucogingival junction (MGJ) of each tooth with the help of tunneling knives (#1 & #2). The papillae were reflected in a full thickness manner severing the alveologingival fibers, thus facilitating the coronal advancement of the entire gingivopapillary unit. Reflection was done only on the buccal aspect and not on the lingual aspect so as not to compromise the blood supply and to prevent subsequent papillary shrinkage leading to its eversion. Care was taken not to split the papilla. Maintenance of papillary integrity is of utmost interest in MMTT. The "pouch" created in the gingivo-papillary region was connected with the other teeth resulting in a "tunnel" using tunneling knives. The recipient area was kept moist with gauze filled with saline.

The donor area was decided to be the palatal aspect of right upper posteriors from distal aspect of 24 to mesial aspect of 27. A novel method of harvesting CTG was used. LA was administered around the donor area so as not to transfer the vasoconstrictor component to the recipient site. #15 blade was angled perpendicularly to the palate and an incision corresponding to the total width of recession was given with the blade being in contact with the bone. A mini periosteal elevator was used to raise a full thickness flap towards the palatal midline. The blade was angled parallel to the palate and a sharp incision was given to reflect a partial thickness flap. The reflection was continued till the length just short of the beveled portion of blade. At that point the blade was angled towards the palate to severe the CTG from the adjacent area. The same maneuver was carried at the mesial and distal ends. The CTG was harvested its edges were trimmed. Simple interrupted were used approximate the wound margins. A 5-0 suture was taken and passed through the "tunnel" created. It was engaged to one end of the CTG and the suture was again passed back through the tunnel. The CTG was guided through the "tunnel" by gently tugging at the suture ends and application of gentle finger pressure. After this vertical sling sutures engaging the CTG were placed in the papillary regions. Care was taken to engage the suture more apically in the lingual area to facilitate more coronal advancement. Periodontal pack was placed in the donor and recipient area.

Paracetamol 500 mg was prescribed to the patient on as when needed basis. Patient was advised to use 0.2% chlorhexidine solution for 2 weeks and refrain from brushing and pulling at the recipient site. Two weeks later, when the sutures were removed 32 showed partial coverage. After 45 days all the teeth showed complete coverage hinting at "creeping attachment".

Discussion

Coronally advanced flaps involve the use of vertical and horizontal incisions. This leads to compromised blood supply and hence loss of esthetics. The elevation of a full thickness flap is also a risk for resorption of bone [2]. Thus Raetzke (1985) [3] performed the first "envelope" procedure to cover recession defects. Allen (1994) [4] performed the supraperiosteal tunneling by modifying the above technique for multiple adjacent gingival recession. Zabaleugi (1999) [5] extended the partial thickness dissection beyond mucogingival junction to facilitate the coronal advancement of gingivopapillary unit. Tozum (2003) [6] modified Zabalegui's technique by performing a full thickness dissection. Thus Zuhr (2007) [1] gave a simple technique to achieve predictable and long term root coverage.

The minimalistic approach of this technique maintains the blood supply which preserves the esthetics. The use of a "tunneling" approach eliminates the need of vertical incisions which preserve the lateral blood supply. Reflection of partial thickness flap at the mucosal surface preserves the native periosteum which prevents resorption of bony architecture [2]. It also ensures better nutrition for the CTG from underlying periosteum and overlying flap.

Langer and Langer (1985) [7] harvested CTG by "trapdoor" technique. The use of two vertical and one horizontal incision to raise a flap over a large area increases the patient's morbidity. So Hurzeler (1999) [8], Allen (2000) [9] and Kumar (2013) [10] harvested CTG by "single incision" technique. In this case report a modification of the above methods is done to harvest CTG.

The use of harvesting CTG by this novel technique helps in reflection of periosteum without splitting it. Not splitting the periosteum results in minimal bleeding. By this technique the periosteal layer is incorporated in the CTG which leads to better recession coverage. A minimal portion of CTG is kept exposed coronal to the gingival margin to facilitate establishment of keratinized tissue but also to prevent graft necrosis. The use of 5-0 sutures helps in further minimizing surgical trauma. Vertical sling sutures are preferred to minimize the tensional forces generated by mandibular musculature.

Conclusion

In the world of today's periodontal plastic surgery (PPS), patient's esthetics and morbidity play a major role. Minimally invasive PPS are becoming the norm. The present case report describes how a minimalistic approach to treat gingival recession can lead to uneventful healing and also preservation of esthetics.

Summary

Why is this case new information?

- To the best of our knowledge this is a new method of harvesting connective tissue graft

What are the keys to successful management of this case?

- Modifying the patient's brushing habits. Maintenance of optimum oral hygiene.
- Minimal reflection using tunneling knives. Partial thickness reflection to be done on the gingival and mucosal surfaces. Splitting of interdental papilla to be avoided. Full thickness dissection to be done in the papillary area.
- Harvesting CTG in a minimalistic manner to reduce post-operative morbidity.

What are the primary limitations to success in this case?

- Presence of a thin biotype (< 0.8 mm) in the recipient site will make it difficult to make a partial thickness dissection.
- Usage of CTG requires a secondary surgical site which may not be acceptable to some patients.
- Since the preparation of the recipient and donor site is a blind procedure there runs a risk of tissue perforation.

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References

1. Zuhr O and Dent M. "Covering of Gingival Recessions with a Modified Microsurgical Tunnel Technique: Case Report". *The International Journal of Periodontics and Restorative Dentistry* 27.5 (2007) 457–463.
2. Pfeifer JS. "The reaction of alveolar bone to flap procedures in man". *Periodontics* 20 (1965): 135–140.
3. Raetzke PB. "Covering Localized Areas of Root Exposure Employing the "Envelope" Technique". *Journal of Periodontology* 56.7 (1984): 397-402.
4. Allen AL. "Use of the Supraperiosteal Envelope in Soft Tissue Grafting for Root Coverage. I. Rationale and Technique". *The International Journal of Periodontics and Restorative Dentistry* 14.3 (1994): 217–227.

5. Zabalegui I. "Treatment of Multiple Adjacent Gingival Recessions with the Tunnel Subepitheliai Connective Tissue Graft: A Clinical Report". *The International Journal of Periodontics and Restorative Dentistry* 19.2 (1999): 199–206.
6. Tözüm TF and Dini FM. "Treatment of adjacent gingival recessions with subepithelial connective tissue grafts and the modified tunnei technique". *Quintessence International* 34.1 (2003): 7-13.
7. Langer B and Langer L. "Subepithelial Connective Tissue Graft Technique for Root Coverage". *Journal of Periodontology* 56.12 (1985): 715–720.
8. Hürzeler MB and Weng D. "A Single-Incision Tectinique to Harvest Subepittielial Connective Tissue Grafts from the Palate". *The International Journal of Periodontics and Restorative Dentistry* 19.3 (1999): 279-287.
9. Lorenzana ER and Allen EP. "The Single-Incision Palatal Harvest Technique: A Strategy for Esthetics and Patient Connfort". *The International Journal of Periodontics and Restorative Dentistry* 20.3 (2000): 297–305.
10. Kumar A., *et al*. "Modified single incision technique to harvest subepithelial connective tissue graft". *Journal of Indian Society of Periodontology* 17.5 (2013): 676-680.