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CASE REPORT

Use of Subepithelial Connective Tissue Graft for Root Coverage

[1]Harsha MB, [2]Veena HR, [3]Sheela Kumar Gujjari, [4]Deepak Prasad

[1]Senior Lecturer, Department of Periodontology, Dayanandasagar College of Dental Sciences, Bengaluru, Karnataka, India

[2]Senior Lecturer, KLE Society's Institute of Dental Sciences and Research Center, Bengaluru, Karnataka, India

[3]Professor, Department of Periodontics, JSS Dental College and Hospital, Mysore, Karnataka, India

[4]Principal, Professor and Head, Department of Periodontics, Farooqia Dental College, Mysore, Karnataka, India

Correspondence: Harsha MB, 865, 11th B Cross, 23rd Main, 2nd Phase, JP Nagar, Bengaluru-560078, Karnataka, India
Phone: 9845735007, e-mail: harshamb@yahoo.com

ABSTRACT

Until recently, periodontal therapy was predominantly focused on establishing biologically and functionally stable periodontium. The presence of mucogingival problems and gingival recession around anterior teeth exemplifies a situation in which a treatment modality that addresses not only biological and functional but also esthetic demands are required from the periodontist. The advent of procedure such as subepithelial connective tissue graft in the mid-1980s and its various modifications thereafter, have led to improved and more predictable outcomes of root coverage. Thus, the present day clinicians have become more capable of addressing the esthetic demands of their patients. This case report shows the usage of subepithelial connective tissue graft for root coverage of upper right first premolar, which shows successful root coverage with a stable result. The technique used here created a healthy, functional and esthetic gingival unit that appeared resistant to further breakdown at a 6-month follow-up.

Keywords: Gingival recession/therapy, Subepithelial connective tissue graft.

INTRODUCTION

Esthetics plays a very important role on a person's psyche. Therefore, restoring the lost esthetics forms an important aspect of cosmetic surgery, which in turn improves the patient's appearance and self-esteem. Gingival recession or marginal soft tissue recession is the displacement of the gingival margin apical to the cementoenamel junction.[1] Recession of gingival tissues from the root surfaces of teeth has long been a concern of many patients who feel that the "long-in-the-tooth" look is universally accepted as a sign of ageing and tooth loss.[2] Although gingival recession seldom results in tooth loss, its sequel, such as tooth hypersensitivity, root caries and esthetic concerns can be difficult to treat. The exposed root surfaces are also more prone to abrasion. Any one of these problems or a combination of these, along with patient's intense esthetic desire prompts the patient to seek treatment for gingival recession.

In the past, various treatment modalities, such as pedicle flaps, free gingival grafts and coronally repositioned flaps have been used in the treatment of gingival recession. The disadvantages of these techniques have led to development of subepithelial connective tissue graft (SCTG) procedures. The subepithelial connective tissue grafts have been highly predictable in gingival recession therapy with respect to a high percentage of root coverage, better healing and less postoperative discomfort at the donor site, when compared to free gingival grafts.[3]

CASE REPORT

A 24-year-old female patient reported with sensitivity, long clinical crown in relation to upper left first premolar. On examination, the upper left first premolar showed Miller's class I[4] gingival recession of about 5 mm with slight loss of tip of the interdental papilla. Inadequate width of attached gingiva was observed and the patient had noticed progressive recession since 5 months (Fig. 1). Due to the progressive recession, tooth hypersensitivity and esthetic concern of the patient, a root coverage procedure was suggested, which was accepted by the patient. The procedure involved usage of SCTG from the palate.

SURGICAL TECHNIQUE

Since the introduction of connective tissue graft, numerous techniques have been reported for the harvesting of donor tissue. A technique described by Bruno (1994),[5] for harvesting the

Fig. 1: Miller's class I gingival recession with inadequate width of attached gingiva on upper left first premolar

SCTG from the palate, was used in this case. The procedure and the benefits of the technique are discussed.

Preparation of the Recipient Site

The surgical area was prepared with adequate local anesthesia using 2% Lignocaine HCl containing 1:80,000 adrenaline. A trapezoidal flap was designed using the following incisions. Primary incisions were made in mesial and distal directions from the cementoenamel junction up to 1 mm of the proximal line angle of the adjacent teeth, leaving the interdental papilla intact. An intracrevicular incision and two vertical incisions were made in a trapezoidal form extending apically into the alveolar mucosa with the removal of epithelial tissue at the mesial and distal papillae.

An initial blunt followed by a sharp dissection with a no. 15 scalpel blade was made to raise a combined full-partial thickness flap (Fig. 2). The flap was extended well beyond the mucogingival junction so that it exhibited no tension when pulled coronally beyond the cementoenamel junction. The root was thoroughly planned and any convexities of the root were reduced.

Graft Harvesting

After preparation of the recipient site, the donor area in the palate was anesthetized by block anesthesia of the greater palatine and nasopalatine nerve with 2% Lignocaine HCl containing 1:80,000 adrenaline. Bleeding points were made corresponding to the required length of the graft. The technique described by Bruno[5] was used to harvest the connective tissue graft (CTG) from the palate. The first incision was made perpendicular to the long axis of the teeth, approximately 2 to 3 mm apical to the gingival margin of maxillary teeth. The mesiodistal length of the incision was determined by the length of the graft necessary to cover the recipient site.

The second incision was made parallel to the long axis of the teeth, 1 to 2 mm apical to the first incision, depending on the required thickness of the graft. The incision was carried far enough apically to provide a sufficient amount of connective tissue to cover the denuded root and the adjacent periosteum of the recipient site. The donor tissue was removed from the palate as atraumatically as possible; two small vertical incisions were placed to facilitate the atraumatic graft retrieval (Fig. 3). The CTG was placed on a saline soaked gauze (Fig. 4), while the palatal wound was closed. A horizontal crossed suspension suture was used to stabilize the donor area (Fig. 5). The epithelial

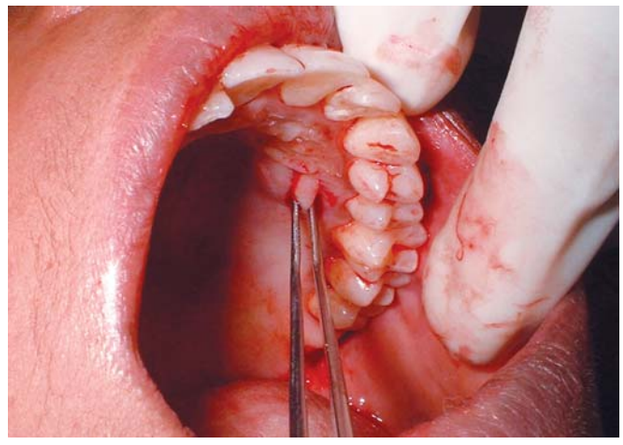

Fig. 3: Connective tissue graft retrieval

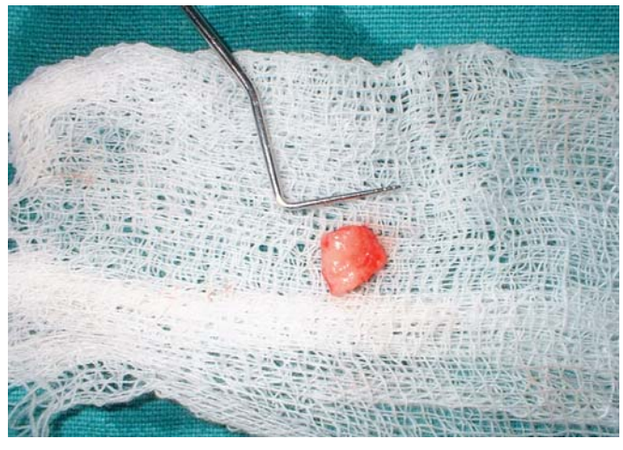

Fig. 4: Harvested connective tissue

Fig. 2: Combined full-partial thickness flap reflected beyond mucogingival junction

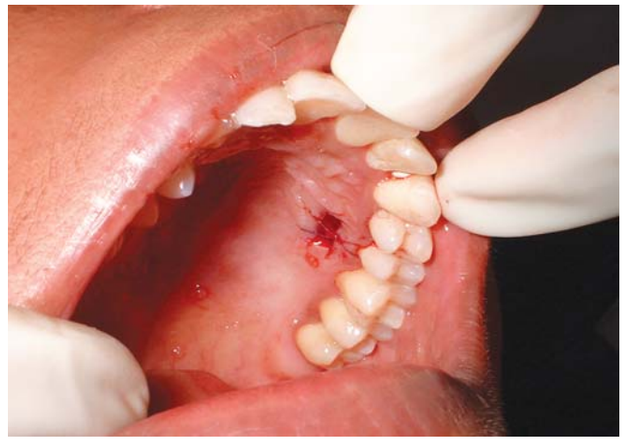

Fig. 5: Palatal wound closed with horizontal crossed suspension suture

collar was removed and discarded. The connective tissue graft trimmed to the mesiodistal dimension was placed on the recipient site and secured in position with 5-0 vicryl sutures (Fig. 6). Then the overlying full-partial thickness flap was positioned over the connective tissue graft with no tension on the flap, using sling sutures, into the mesial and distal papillae covering as much of the connective tissue graft as possible (Fig. 7). Postoperative instructions were given. Patient was recalled after 9 days for review. The healing on both donor and recipient sites was uneventful. The donor site wound healed completely within 2 months. Successful root coverage along with excellent color match was noticed 6 months following surgery on the recipient site (Fig. 8).

Fig. 6: Connective tissue graft sutured on the recipient site

Fig. 7: Flap coronally repositioned and sutured

Fig. 8: Six-month postoperative view showing excellent color match, improved contour and stable root coverage

DISCUSSION

Root coverage forms an important part of periodontal therapy. Obtaining root coverage has become more predictable with advances in the understanding of soft tissue healing, and the search for the best technique has led to a lot of improvement in surgical procedures aimed in this direction. These procedures may be accomplished for functional reasons or purely esthetic reasons with patients requesting, and at times demanding root coverage.

The connective tissue graft was first used by Edel[6] to increase the width of keratinized gingiva. Subsequently, the connective tissue graft has been used for augmenting ridge deficiencies,[7] furcation involvement,[8,9] reconstruction of collapsed interdental papillae[10] and peri-implant tissue management.[11]

The use of connective tissue graft for gingival recession therapy was first reported by Langer and Langer[12] in 1985 for both single and multiple adjacent teeth. Since then, a lot of modifications in the technique for retrieving and use of subepithelial connective tissue graft have been reported with improved and more predictable root coverage.[13-15] With these newly developed techniques, clinicians are now more capable of addressing the increased esthetic demands of their patients.

The SCTGs have been highly predictable in gingival recession therapy with respect to a high percentage of root coverage, better healing and less postoperative discomfort at the donor site when compared to free gingival grafts. The success of which can be attributed to the double blood supply at the recipient site from the underlying periosteum and the overlying recipient flap.[12] The progressive recession, esthetic concern of the patient, dentinal sensitivity and thin gingiva were the reasons for choosing a root coverage procedure in the present case. The autogenous SCTG was harvested from the patient's palatal mucosa using the technique described by Bruno.[5] The anterior and posterior extensions of the donor site were limited by canine and palatal root of the first molar region. Studer et al[16] have demonstrated that the palatal root of the first molar represents a natural barrier to graft harvesting because the tissue is thinnest in this area. The lateral extension was formed by a horizontal line 2 to 3 mm from the marginal gingiva of the maxillary teeth. The medial extension was restricted by the neurovascular bundle. According to Reiser et al[17] the neurovascular bundle could be found at a distance of 7, 12 and 17 mm from the palatal cementoenamel junction of the maxillary posterior teeth depending on whether the palatal vault is classified as shallow, average or high.

In the present case, following graft retrieval, the epithelial collar was removed and SCTG was secured onto the recipient site. Bouchard et al[18] compared two types of connective tissue grafting procedures with one retaining the epithelial collar and the other discarding it. They reported that no significant difference concerning root coverage could be seen. Although greater keratinized tissue augmentation was observed with the technique that retained the epithelial collar, esthetic results were better with the technique in which the epithelial collar was removed and completely covered with a coronally repositioned flap.

The present case has shown successful root coverage along with an excellent color match with the adjacent gingiva. Progressive recession had stopped with an improved esthetics. The donor site, palatal wound healed uneventfully. All the problems, which existed in the beginning, were solved satisfactorily by the usage of the above technique.

CONCLUSION

A technique that minimizes patient discomfort and maximizes functional and esthetic aspects has to be chosen to meet the challenges that exist while treating a case of gingival recession. In the present case, the patient had problems of dentinal hypersensitivity, progressive recession and compromised esthetics. The procedure used in this case resulted in the development of a healthy, functional and esthetic gingival unit that appeared resistant to further breakdown ultimately satisfying the patient.

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