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ABSTRACT

Connective tissue has been used successfully in the treatment of gingival recession. In the mid-80s and late 90s, the periodontal literature presented various techniques such as free gingival graft, pedicle flaps, sub-epithelial connective tissue graft, acellular dermal matrix graft, and guided tissue regeneration to cover denuded root surface. Currently, connective tissue grafting is reliable treatment for esthetic root coverage. This paper presents a qualitative assessment of a surgical technique that uses a connective tissue graft, including a portion of epithelium in the shape of defect. This procedure enhances the healing of the covered root surface, increases the thickness of the soft tissue and improves esthetics. The criteria used for evaluation were: color, volume, texture and blending. This evaluation had demonstrated encouraging results from an esthetics view point.

Keywords: periodontal plastic surgery, connective tissue graft, epithelial collar
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INTRODUCTION:

When esthetic is a concern it is essential to have a good soft tissue to tooth relationship to ensure an ideal emergence profile. The goal of periodontal plastic surgery is to correct and re-establish such a relationship. This goal is achieved with periodontal plastic procedure that may be classified as pedicle soft tissue graft procedure and free soft tissue graft procedures^{1,2}. The success of the connective tissue graft resides firstly in its flexibility, as patients have one or more areas to harvest connective tissue from such as palate or tuberosity and secondly the graft receives a double blood supply at the receipt site from the underlying connective tissue base and from the overlying recipient flap. In addition, the donor site is a closed wound that makes the post-operative healing more comfortable for patients³. From a surgical point of view, the use of a connective tissue graft allows clinicians to cover extended areas of recession and/or multiple recession sites.

This paper will focus on the esthetic outcome of these procedures, evaluating postoperative root coverage, color, volume and texture of the grafts sites⁴. The assessment for these values was as follows.

- 1) Color matching: very different, similar, the same as.
- 2) Volume: decreased, same and increased.
- 3) Texture: different, similar, and same.

CASE PRESENTATION:

A 32 year old male patient reported to the department of Periodontics and Oral Implantology for the treatment of root hypersensitivity in relation to 43 that had deep and wide class –II gingival recession. The preliminary soft tissue records and oral prophylaxis was performed. Tooth 43 had 1 mm of keratinized gingiva and 5 mm of vertical recession width of 2 mm, (FIG.-1).



Figure 1: Pre-operative Measurements

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Local anesthesia was first administered to the recipient site and then the donor site. The recipient site was then prepared by creating a split thickness flap using a scalpel 15 no. Blade (FIG.2).



Figure 2: Prepration of Recipient Bed

The soft tissues were horizontally dissected in the interproximal papillae at the level of cemento enamel junction and created a split thickness bed apically for the whole length of the surgical blade thus creating minimal wound disturbance. The palatal donor site was then marked with a thin point marker and using a scalpel 15 no. Blade (FIG. 3)



Figure 3: Incision On Donor Site

the connective tissue graft with epithelial collar was then harvested (FIG. 4).



Figure 4: Harvested Ct Graft With Epithelial Collar

The harvested graft was then immobilized over the recipient bed and sutured using resorbable sutures vicryl 5-0. The overlying flap was then sutured in place leaving only the epithelial collar of the connective tissue graft exposed (Fig.5).



Figure 5: Ct Graft Sutured In Place

The patient was given postoperative instruction especially with respect to a soft diet and oral hygiene such as a wiping the area with a cotton tip dipped in chlorhexidine for 10 days. Normal hygiene practices were resumed after 14 days follow-up.

The patient was recalled every month for follow up and oral hygiene was reinforced at each visit. However, for tooth 43 the keratinized gingiva increased from 1 to 4 mm (exact size of the epithelial inlay) for 100% root coverage. Additional evaluation of the color match showed the 'same as' the surrounding tissues. The texture was the 'same as' the neighboring teeth. Even the mucogingival line remained consistent with its original position. The 6 month recall visit showed 100% root coverage (FIG.6).



Figure 6: 6 Months Post-Operative Showing 100% Root Coverage

Discussion

Gingival recessions are common problems in periodontal practice today. There are many causes for gingival recessions and there are also numerous different surgical procedures to manage this problem such as free gingival grafts, laterally sliding flaps, coronally positioned flaps, connective tissue grafts, guided tissue regeneration, and tissue engineering^{1, 2, 3}. The techniques presented in the literature in the past 50 years have proved to be effective in pursuing the goal of covering exposed root surfaces. In 1987, Nelson⁵ used a subpedicle connective tissue graft for the treatment of deep recessions ranging from 7 to 10 mm in depth, then treated 29 teeth, and followed these for up to 42 months and found an average of 88% root coverage. In 1992, Harris introduced a connective tissue and partial thickness double pedicle graft, treating 20 patients with 30 recessions; with this technique root coverage of 100% was obtained in 24 of 30 defects, 80% of the time⁶. In all of the treated defects the root coverage was to within 0.5 mm of the CEJ. The mean percent root coverage was 97.4%. All of the described procedures similar results in terms of the per root coverage, therefore, it was confirmed that most of these periodontal plastic surgical procedures are viable options for the surgeons. The surgical technique described in the current article modifies the connective tissue graft by adding a customized area of epithelium necessary to fit into the area of recession. Careful measurements are carried out before harvesting the graft; the shape of the area of recession is evaluated in width, depth, and thickness of the residual surrounding tissue. The first assessment is about the width, depth, and shape of the area of recession. These measurements are transferred to the palate and the first incision will design the epithelial shape of the connective tissue graft. The second assessment is about the thickness of the soft tissue in the area of the recession. By placing the periodontal probe at a 90 degree angle to the root surface, the thickness of the residual tissue is evaluated. This measurement guided the depth of the incision in the palate, where the first incision at the periphery of

the epithelial collar had the depth as measured in the thickness of the residual tissue. The overall size of the connective graft with its connective component is about four times the size of the epithelial area extending about 4 to 5 mm in width and 3 to 4 mm in depth to evenly restore the thickness and volume. The graft is thinner in the pouched edges to give an even thickness of the soft tissue around the receded area. The sutures (depending on the soft tissue thickness) will simply stabilize the two layers of tissue and try to close the gaps and line epithelium against epithelium to ease the bridging from the existing epithelial cells and the one of the graft. The case presented in this paper exemplified good gingival and esthetic scores. The correct thickness of the gingival tissue was restored achieving perfect mimicry of the grafted tissue for complete root coverage. Also the blending of the old and the newly grafted tissue can be seen without any marked scar lines, therefore increasing the width of the keratinized tissue without showing differences in color and texture. The excellent results achieved in this case warrant a comparative study to confirm such results and compare them with other graft procedures without the epithelial component.

Conclusion:

This paper introduces a modification of the conventional technique for harvesting a connective tissue graft. The size, shape, and thickness of the graft are predetermined by the recession. The design of the flap depends on the thickness and amount of interdental papillae present. The epithelium serves as an 'inlay' in the initial phase of healing, favoring the bridging of the epithelial cells on the exposed area and maintaining the thickness of the graft and surrounding tissues in an even fashion. This modified surgical technique leads to a successful esthetic result.

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