Esthetic Root Coverage by Sub Epithelial Connective Tissue Graft Microsurgery: A Case Report

Anuja Chandra¹, Hoti Lal Gupta², Pradeep Kumar³
¹Post-graduate Student, Department of Periodontics and Oral Implantology, Rajasthan Dental College and Hospital, Jaipur, Rajasthan, India, ²Professor and Head, Department of Periodontics and Oral Implantology, Rajasthan Dental College and Hospital, Jaipur, Rajasthan, India, ³Reader, Department of Periodontics and Oral Implantology, Rajasthan Dental College and Hospital, Jaipur, Rajasthan, India

Gingival and periodontal diseases have afflicted humans since the dawn of history. One of the most common esthetic and functional concerns associated with periodontal tissues is marginal tissue recession. About 75% of 30- and 31-year-old individuals exhibit gingival recession, mainly at facial surfaces. Various techniques have been introduced to the field of cosmetic periodontology since Grupe and Warren first described the "lateral positioned flap" to improve the appearance of one's smile and boost confidence. Here, we present a case of sub epithelial connective tissue graft, one of the most versatile microsurgical procedures with a 65-98 mean percentage of root coverage, where limitation factors include amount of avascular root surface and interdental periodontal attachment levels.

Keywords: Esthetics, Marginal tissue recession, Microsurgery, Root coverage, Soft tissue graft procedures

INTRODUCTION

The displacement of soft tissue margin apical to the cement-enamel junction with exposure of root surface is known as “marginal tissue recession.”¹ It has been the most accepted term because the tissue showing the problem can be the alveolar mucosa instead of the gingiva.² Several etiological factors may account for recession’s appearance such as traumatic tooth brushing, tooth malpositioning, frenum and bridle insertions, periodontal disease, orthodontic movement, restorations with subgingival overhanging margins, maladapted crowns, extractions of adjacent teeth, bone dehiscence, and iatrogenic factors.³

Miller established the clinical classification of marginal tissue recession in the year 1985: Class I – The recession does not reach the mucogingival junction without loss of interproximal tissue; Class II – The recession reaches or surpasses the mucogingival junction without loss of interproximal tissue; Class III – Loss of interproximal tissue is seen, and the proximal gingival tissue is apically to the enamel-cementum junction and coronally to the recession; and Class IV – Proximal gingival tissue is at the recession base level. The higher the periodontal tissue loss (Miller’s Class III and IV), the worse the prognosis related to root coverage amount obtained after surgery.¹

The sub epithelial connective tissue graft is one of the most versatile and predictable periodontal plastic surgical procedures. It consists of bilaminar reconstruction of the gingiva using both free and pedicle connective tissue layers to preserve graft viability over denuded root surfaces (Nelson, 1987; Harris, 1992). Improved root coverage is seen because of the dual supply of blood. The aim of this study is to describe a case report using sub epithelial connective tissue graft as well as to show the technique’s success predictability when well indicated.

CASE REPORT

A 25 years systemically healthy patient who is a non-smoker reported to Department of Periodontology and Oral Implantology with a chief complaint of dentinal hypersensitivity in respect to 31 and esthetic deficiency with the same. Clinically, tooth presented a marginal tissue recession that extended until the mucogingival junction with the lack of probing depth ≥2 mm, and there was no evidence of interproximal bone loss. The probable etiological factor was defined as traumatic tooth brushing. Therefore, the recession was classified as Miller’s Class II,
and thus, complete root coverage was anticipated by sub epithelial connective tissue graft.

**Treatment**

Phase I periodontal therapy was carried out, esthetic root coverage by sub epithelial connective tissue graft microsurgery was planned and patient’s consent for the same was taken. After administration of local anesthesia, thorough root planning was executed to remove contaminated and exposed cementum (Figure 1).

The recipient site was prepared with a partial thickness gingival flap elevation (Figure 2). Interdental papillae were de-epithelized, and the donor connective tissue was harvested from under a flap created in the ipsilateral palate (Figure 3). The palatal flap was then re-approximated and sutured for primary intention closure (Figure 4).

The interpositional sub epithelial connective tissue graft was then placed on the recipient site and covered with the gingival flap (Figure 5).

**Follow-up**

Follow-up was done at intervals of 1, 2, 3, and 6 months. Complete root coverage and enhanced gingival esthetics were obtained after the 1st month of surgery itself, and this result was stable 6 months post-treatment (Figure 6).

**DISCUSSION**

This procedure is the single most effective way to achieve predictable root coverage with a high degree of cosmetic enhancement. Historically, the underlying gingival connective tissue has been shown to be a viable source of cells for repopulating the epithelium (Karring and colleagues, 1971) and a somewhat predictable source for increasing the zone of keratinized gingiva (Edel, 1974; Becker and Becker, 1986).

Langer and Langer (1985) published an article that introduced and outlined the indications and procedures necessary for achieving success with the subepithelial connective tissue graft (SCTG). Nelson (1987) modified the procedure somewhat to further enhance clinical predictability (≥90%). The technique gains its clinical predictability by use of a bilaminar flap (Nelson 1987;
Harris, 1992) design to ensure graft vascularity and a high degree of gingival cosmetics from the secondary intention healing of the connective tissue graft. This seems to avoid the “tire patch” look often associated with free gingival grafts (FGGs). Jahnke and colleagues (1993) in comparing FGG to SCTGs, found the connective tissue graft to be significantly ($P < 0.03$) more effective than the FGG.

The choice of the adequate technique and the long-term success of the procedure depend on the careful evaluation of the defect type, recession’s etiology, operator’s ability, presence of keratinized tissue, tissue width, predictability, single or multiple gingival recessions, healing, esthetic result, and risk factors.3

One step procedure with minimal palatal trauma and increased graft vascularity are positive aspects of sub epithelial, connective tissue graft microsurgery. Notwithstanding, this methodology also exhibit disadvantages: Need of a greater amount of tissue than the required for covering the area due to the contraction suffered by the tissue, from the surgery to its functional incorporation within the receptor site;4 and difficulty of standardization of the graft thickness, which may result in esthetical alterations.5 Accordingly, these aspects must be observed during the surgical procedure.

In a comparative evaluation of recession coverage with sub epithelial, connective tissue graft using macrosurgical and microsurgical approaches, it was observed that clinical attachment level gain in recession coverage done with microsurgical procedure was slightly better.6

Rotenberg and Tatakis7 studied dimensional changes during early healing after sub epithelial connective tissue graft procedure and observed an increase in bucco-lingual tissue dimensions which subsided by the end of the 2nd post-operative week. The clinical significance of the observed substantial post-operative increase in bucco-lingual tissue dimensions is that appropriate suturing technique and flap design, as well as proper pre-operative planning to accommodate any dental appliances worn by the patient, are necessary to avoid impingement on the healing tissue.

CONCLUSION

Due to the high predictability of root coverage in Miller’s Class I and Class II and dual blood supply for graft’s nutrition, better maintenance of root coverage could be achieved. However, this technique presents less predictability for root coverage in Miller’s Class III and IV recessions because of the difficulty of graft’s adaptation and nutrition which may result in necrosis. Case selection is foremost important criteria for a successful treatment. Furthermore, several mucogingival conditions may occur concurrently, necessitating the consideration of sequencing or combining surgical techniques.

ACKNOWLEDGMENT

The author wishes to acknowledge Dr. Rohithashwa Adyanthaya, Principal, Professor and Head, Department of Endodontics and Conservative Dentistry for his encouragement and constant support.

REFERENCES


How to cite this article: Chandra A, Gupta HL, Kumar P. Esthetic Root Coverage by Sub Epithelial Connective Tissue Graft Microsurgery: A Case Report. IJSS Case Reports & Reviews 2015;2(7):16-19.

Source of Support: Nil, Conflict of Interest: None declared.