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RESEARCH ARTICLE

SUB-EPITHELIAL CONNECTIVE TISSUE GRAFT FOR PAPILLARY REGENERATION- A CASE SERIES

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ABSTRACT

Aim: The aim of this case series was to evaluate the efficacy of sub-epithelial connective tissue graft for papillary regeneration. **Background:** Loss of interdental papilla is multifactorial and creates diverse complications. Among them food lodgments, unaesthetic black triangle and subsequent periodontal diseases are most frequent. Sub epithelial connective tissue graft based papillary regeneration is thought to be the gold standard treatment option. It provides long term result with acceptable esthetics. **Case Description:** 3 patients reported with the papillary recession between two maxillary central incisors. Connective tissue graft was procured from hard palate and a pouch space was created on the recipient area. Gingiva papillary unit was coronally advanced and auto graft was secured with suture. 6 month evaluation showed an excellent papillary fill in all the 3 cases. **Conclusion:** sub-epithelial connective tissue graft still remains a valid and predictable therapeutic modality for papillary reconstruction. Auto graft based papillary soft tissue reconstruction provides esthetic result and meets the functional demand.

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INTRODUCTION

Periodontal disease in their various forms have affected mankind since immemorial. Among them gingival and papillary recession are the most common dental condition that has affected a large number of population. Healthy interproximal papilla plays a critical role to protect and maintain periodontal health. An open gingival embrasure, occurs due to deficiency of papillae beneath contact point of teeth create a diverse array of complication such as- food lodgment, plaque accumulation, unaesthetic appearance (Sharma, 2010). Thus loss of interdental papilla (IDP) has gain utmost importance from both patient and clinician's point of view due to its functional and esthetic concerns. Regeneration of IDP lost from either disease or previous periodontal surgical procedure especially at esthetic region is among the most difficult periodontal treatment. Over the years many surgical techniques have been proposed aiming for ideal papillary regeneration.

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Till date autogenous sub epithelial connective tissue graft (SECTG) remain gold standard as it provide predictability, long term recession coverage and superior esthetics (Chambrone et al., 2008). Aim of this case series was to evaluate the effectiveness of SECTG as a technique to reconstruct IDP up to 6 months.

Case Series: 3 patients (1 male, 2 females) reported to the clinic with a chief complaint of food lodgment & black space between 2 maxillary central incisors. Upon thorough examination patients were found systemically healthy and had no history of tobacco use. Nordland & Tarnow's class I papillary recession were found between teeth number 11-21 (Figure 1). Otherwise the gingiva appeared healthy with 2 -3 mm sulcus depth and bone sounding showed no evidence of interproximal bone loss. A thorough plaque control programme was performed and proper oral hygiene instructions were given. After 2 weeks patients were evaluated and detailed treatment plan was discussed with the patients. All the patients gave written consent for the necessary surgical procedure. Complete hemogram was done prior to surgery. On the day of procedure patients were instructed to rinse with 0.2% chlorhexidine gluconate for 1 min.



Figure 1. Pre-operative papillary recession between tooth no 11-21



Figure 2. Semilunar and sulcular incisions were made with 15 no blade



Figure 3. Whole gingivo-papillary unit was detached and coronally advanced with an orban's interdental knife



Figure 4. Palatal single incision was given for procurement of auto graft



Figure 5. Sub-epithelial connective tissue graft was procured into desired size



Figure 6. Autograft was placed into the recipient area and sutured



Figure 7. 15 days post-operative sutures and dressings were removed



Figure 8. 6 month post treatment result showing complete papillary fill between tooth no. 11-21

The surgical protocol emphasized complete asepsis and infection control. The area was anesthetized using 2% lignocaine with 1:80,000 epinephrines. A greater palatine nerve block was also given. After some time subjective and objective tests were performed to ensure the area was adequately anesthetized. A semilunar incision was made from disto-labial line angle of 11 to the disto-labial line angle of the 21. Then a sulcular incision was made around the mesial half of both the teeth (Figure 2). An orban interdental knife was then used to detach the gingivo-papillary unit from underlying connective tissue. The whole unit was pushed incisally to move the gingiva into coronally & to create a pouch space (Figure 3). To eliminate the dead space created by the coronal displacement, SECTG double the size of missing papillae height was harvested from the hard palate (approximately between distal surface of canine and mesial surface of 1st molar regions). Procurement of autograft was performed with single incision technique of SECTG (Figure 4, 5). Palatal site was sutured with 4-0 non resorbable black silk sutures. The SECTG was placed through the semilunar incision into the pouch space and sutured with interrupted 4-0 non resorbable black silk sutures (Figure 6). Primary hemostasis achievement was confirmed both on donor and recipient site. Periodontal dressing was placed on the surgical site and maintained for 15 days. Patients were prescribed with analgesic and anti-inflammatory (Diclofenac sodium, Serasopeptidase and Paracetamol combination drug) for 3 days, capsule amoxicillin 500mg for 5 days and 10ml of 0.2% chlorhexidine mouthwash twice daily. Instructions to follow a soft diet and not to attempt to incise with their anterior teeth were emphasized. 15 days after surgery pack & sutures were removed (Figure 7). All the 3 patients showed an excellent clinical outcome with complete papillary coverage. Palatal donor site also showed satisfactory healing. Follow-up was performed at 6 month and persistent result was found. Patients were overall satisfied with the outcome & their chief complaint was addressed (Figure 8).

DISCUSSION

The primary goal of periodontal therapy is to maintain natural dentition in health and function while achieving an optimal esthetics. The concept of autogenous soft tissue grafting for papillary recession coverage is found dated back in 1996 when Han & Takei (Han, 2000) proposed the use of SECTG. Over the years several techniques such as surgical reconstruction with free gingival graft, Roll surgical technique (Beagle, 1992), Jemt surgical technique (Jemt, 1997), use of autogenous bone and connective tissue graft, use of titanium tags have been proposed depending upon the degree of recession. Despite of advances and refinements in the techniques, improvement in armamentariums successful papillary coverage still presents a therapeutic dilemma among the clinician. Regeneration of IDP is one of the most difficult regenerative procedures due to its critical anatomy and morphology, which receives only a minor blood supply. Han & Takei (Han, 2000) showed a decrease in papillary recession height at 6 months. Jaiswal et al. (2010) reported a mean gain in papilla height of 2.6 mm, the mean reduction of horizontal distance of 2.2 mm and vertical distance of 2.8 mm at 6 month using SECTG with a coronally advanced flap. Shruthi et al. (2015) compared Robert Azzi technique with Han and Takei technique & showed a statistical significant improvement of papillary height in both the groups. But on comparison, no technique was superior to the other ($p = 0.427$ and 0.369 at 6 and 12 months respectively).

Alka Kaushik (Alka, 2014) reported a statistically significant ($p=0.005$) improvement of mean distance from contact point to gingival margin at 1st, 3rd and at 6th months. Robert Azzi (2001) in 2001 and Muthukumar et al. (2016) in 2016 showed successful root coverage as well as papillary coverage using autogenous osseous and SECTG in a case report. Nemcovsky et al. (2001) where they showed an improvement of papilla index score (PIS) from baseline to 6 month. SECTG has been regarded as a reliable and predictable method and provided a satisfactory outcome since long, thus became a popular alternative for clinicians. Over the last decades, the SECTG has become the backbone of various treatment options e.g. gingival recession coverage, existing or impending ridge deficiencies, management of peri-implant tissue anomalies, treatment of furcation involvement and thin deficient keratinized gingiva.

Currently, the SECTG is considered the gold standard for soft tissue correction and augmentation procedures which is supported by the findings of Hürzeler et al.¹² in 1999 and Bouchard¹³. Major advantages of the SECTG include non-immunogenic, inexpensive, versatile, ease of availability and predictability of outcomes. Though it creates a second surgical site, being an autograft risk of any disease transfer is totally eliminated. Literature has showed any allograft carries some, largely unquantifiable, risk of disease transmission. Another advantage of SECTG suggested in literature is excellent colour matching & surface topography with the neighbouring soft tissues, thus provides esthetics at same times. The various harvesting techniques that have been proposed resulted in different graft characteristics, in terms of both size and histologic composition. Palatal site which was easily accessible for SECTG was chosen for this case. Tarnow et al. (1986) in 1992 showed that regeneration of the connective tissue at donor site occurs in about 2-3 months. If the patient requires multiple grafting, the same donor site can be re-entered and more tissue is harvested every 2-3 months.

Conclusion

The use of SECTG for papillary regeneration has been tried since long. Also the use of various allograft membranes has been tried. The surgical techniques regarding the use of SECTG showed plenty of variation described by clinicians. One has to opt for a best treatment option depending up on the clinical situation. This case report showed SECTG can be successfully treat and maintained up to 6 month for papillary coverage.

Clinical Significance: Auto graft based papillary soft tissue reconstruction provides esthetic result and meets the functional demand.

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