Coverage Of Multiple Maxillary Gingival Recessions Using Coronally Advanced Flap With Subepithelial Connective Tissue Graft: A Case Report

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Abstract: Background: This case report describes treatment of multiple gingival recession with subgingival connective tissue graft and coronally advanced flap technique in treatment of maxillary teeth. Material And Methods: Connective tissue grafting was done in relation to upper right second premolar, first premolar, canine, right central incisor, left central incisor and left lateral incisor (#15,#14,#13,#11,#21,#22). A split thickness flap was elevated without disturbing periosteum in this region. The area between canine and second premolar was selected to harvest the graft. The graft was placed on the recipient bed and suturing was done. Result: Predictable root surface coverage could be obtained with use of coronally advanced flap and subepithelial connective tissue graft. Conclusion: Subepithelial connective tissue graft along with coronally advanced flap still stand as a gold standard treatment for gingival recession coverage.
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Key Words: Clinical Attachment Loss**,** Subepithelial Connective Tissue Graft, Gingival Recession, Coronally Advanced Flap, Root Coverage

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Introduction: Gingival recession is the displacement of the soft tissue margin apical to the cementoenamel junction (CEJ) with exposure of the root surface[1]. In periodontal disease, the interaction between bacterial host and immune response causes tissue degradation, alveolar bone resorption, and apical migration of the epithelium, which would result in periodontal pocket, gingival recession, or a combination of both. The distance between the CEJ and gingival margin gives an estimation of the level of recession.

There are many etiologic factors for recession such as periodontal disease, incorrect occlusal relationships. Aggressive tooth brushing, high frenal attachment, buccally placed tooth, improper tooth movement by orthodontic forces, improperly designed partial dentures, smoking, restorations, or chemicals[2]. These can appear as localized or generalized gingival recession.

Besides aesthetic inhibitions, gingival recessions is also associated with functional problems related to root exposure, such as dentinal hypersensitivity, plaque retention, gingival inflammation, root caries, alveolar bone loss and eventually tooth loss[3]. Many attempts have been made by different authors to provide an understandable classification system regarding gingival recessions. Miller[4] proposed a useful recession defect classification based on the height of the interproximal papillae and interdental bone adjacent to the defect area, and the relation of the gingival margin to the mucogingival junction. This classification is useful when deciding on treatment options. Nowadays, it is the most widely used.

Class I: Marginal tissue recession does not extend to the mucogingival junction. There is no loss of bone or soft tissue in the interdental area. This type of recession can be narrow or wide.

Class II: Marginal tissue recession extends to or apical to the mucogingival junction. There is no loss of bone or soft tissue in the interdental area. This type of recession can be subclassiied as wide and narrow.

Class III: Marginal tissue recession extends to or apical to the mucogingival junction. There is bone and soft tissue loss interdentally or malpositioning of the tooth facially.

Class IV: Marginal tissue recession extends to or apical to the mucogingival junction. There is severe bone and soft tissue loss interdentally or severe tooth malposition.

The key factors which determine the successful management of gingival recessions are the

identification of its etiologic agents and their elimination, the assessment of the degree of tissue involvement and last but not least, the selection and the careful implementation of the appropriate surgical procedure in order to achieve optimal root coverage, improved soft tissue aesthetics and reduced sensitivity.

The surgical root coverage techniques which are available right now, are: (i) Free epithelialised gingival graft, (ii) Subepithelial connective tissue graft, (iii) Semilunar flap, (iv) Coronally advanced flap, (v) Guided tissue regeneration[1].

Currently, for most of the soft-tissue augmentation surgeries, contemplating the confronts of soft-tissue augmentation techniques in periodontal plastic and implant surgery presently, free gingival graft has subsequently disappeared from the esthetic region, and its scope of use has been narrowed down to procedures increasing the keratinized tissue around teeth and implants in esthetically insignificant zones[4].

In 2010, a Cochrane systematic review has stated that, in cases where gain in keratinized tissue and root coverage is anticipated, the use of CTGs seems to be more successful than others, which was also supported by Chambrone and Tatakis in their systematic review who stated that subepithelial CTG provided the best outcomes for clinical practice because of its greater percentages of mean and complete root coverage and also significant increase of keratinized tissue[5,6]. Buti et al. in a meta-analysis also stated that coronally advanced flap + CTG might be contemplated as the gold standard in root coverage procedures[7].

For this reason, subepithelial connective tissue graft + coronally advanced flap was chosen as the procedure to be followed in this case.

Clinical Presentation: A 37 year old male patient with no systemic history visited department of Periodontology and Implantology at College of Dental Science and Research Centre, India with complain of receding gums in upper tooth region since past few months.

A comprehensive periodontal examination revealed a gingival recession over mid-facial surface of tooth #15,#14,#13,#11#21#22,#23,#24 (Fig.1.1 & 2.1).

Radiographic examination revealed no interdental bone loss, which gave the diagnosis of Miller class I facial gingival recession for tooth #15,#14,#13,#11#21#22,#23,#24.

Surgical Procedure: Before any treatment was conducted, the main eitiologic factor was identified as excessive and forceful tooth brushing and this habit was altered.

Before any incisions, the exposed root surface was carefully scaled and root planed. local anesthesia was administrated with 0.2% lignocain with epinephrine (1: 200000 adrenaline) was administrated by local infiltration method.

The coronally advanced flap procedure is initiated with the placement of two apically divergent vertical releasing incisions, extending from a point coronal to the CEJ at the mesial and distal line axis of the tooth #15,#14,#13 and apically into the lining mucosa (Fig.1.2). A split thickness flap is prepared by sharp dissection mesial and distal to the recession and connected with an intracrevicular incision. Apical to the receded soft tissue margin on the facial aspect of the tooth, a full thickness flap is elevated to maintain maximal thickness of the tissue flap to be used for root coverage (Fig.1.3).

Approximately 3 mm apical to the bone dehiscence, a horizontal incision is made through the periosteum, followed by blunt dissection into the vestibular lining mucosa to release muscle tension. The blunt dissection is extended buccally and laterally to such an extent that the graft is tension free when positioned at 2 mm coronal to the level of the CEJ.

The facial portion of the interdental papillae is de-epithelialized to allow for a final placement of the flap margin coronal to the CEJ. The tissue flap is coronally advanced, adjusted for optimal fit to the prepared recipient bed. The free gingival graft was obtained from palate using a aluminium foil template. After removal of free gingival graft from the palate, the free gingival graft was placed between two ice cream stick and was depitheliezed by slicing the epithelium.

The resultant sub epithelial connective tissue graft obtained had about 2 mm of thickness and was secured at a level 1-2 mm coronal to the CEJ by suturing the flap to the connective tissue bed in the papilla regions (Fig.1.4).

Additional lateral sutures are placed to carefully close the wound of the releasing incisions.

The surgery was uneventful, and the patient tolerated the procedure well. Post operative instructions included abstinence from mechanical plaque control in the surgical area for 3 weeks, soft foods during the same period, twice daily rinsing with chlorhexidine gluconate 0.2%, and NSAID every 4 to 6 hours, as needed for pain. No other medications were prescribed.

Postoperatively, the patient had no complaints, and he reported that he complied with the instructions given to him. Healing was uneventful, and the sutures were removed at 2 weeks (Fig 1.7). At 1 month, healing was progressing uneventfully, and the patient was executing appropriate plaque control. At that time, he was placed on a 3-month maintenance schedule. The patient returned 4 months after surgery for his regular maintenance visit. The clinical examination revealed complete root coverage on tooth #15,#14,#13 and absence of gingival inflammation.

Figure 1.1: Pre OP

Figure 1.2: Incision

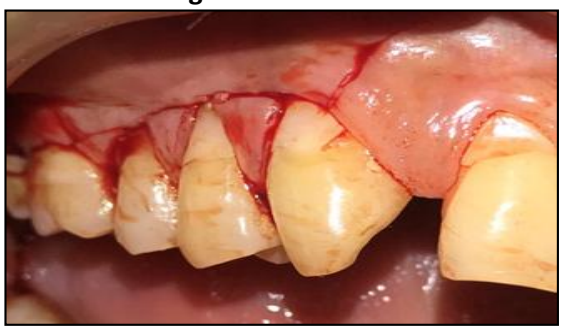

Figure 1.3: Reflection

Figure 1.4: Graft Stabilization

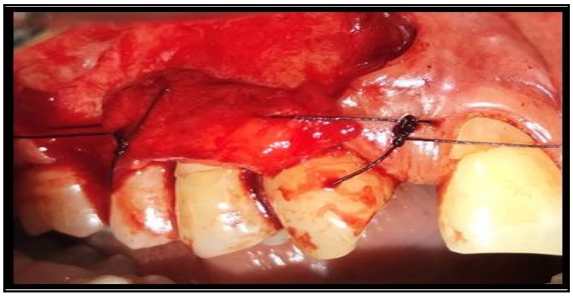

Figure 1.5: Suturing

Figure 1.6: 7 Day Post OP

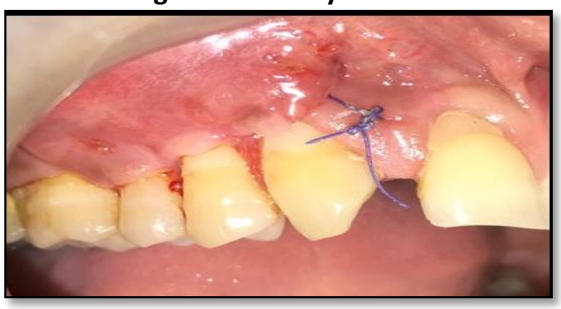

Figure 1.7: 21 Days Post OP

Figure 1.8: 6 Months Post OP

After 6 months patient underwent the same procedure in relation to #11,#21 and #22. The figure 2.1 to 2.6 shows the procedure for tooth #11,#21,#22, which shows pre-op view (figure 2.1), incision (figure 2.2), reflection (figure 2.3), graft stabilization (figure 2.4), suturing (figure 2.5), post operative follow up at 21 day (figure 2.6).

Figure 2.1: Pre OP

Figure 2.2: Incision

Figure 2.3: Reflection

Figure 2.4: Graft Stabilization

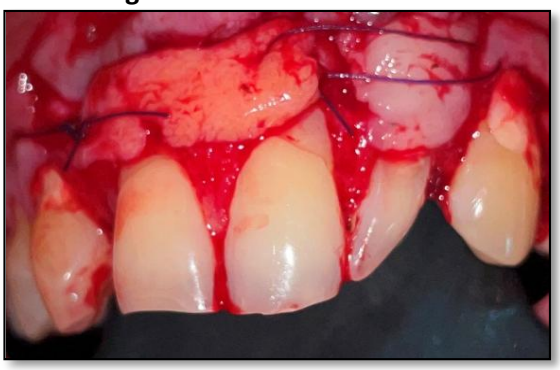

Figure 2.5: Suturing

Figure 2.6: 21 Days Post OP

Discussion: Gingival recession is an issue which is faced both by the clinician and the patient. In the current era, various treatment modalities are available. The ideal procedure to be chosen depends upon local anatomic conditions, choice of operator and patient's comfort.

The presence of adequate keratinized gingiva serves as a barrier to physical trauma and future progression of recession. There is no universal harmony on amount of attached gingiva for periodontal health, but it is common opinion that area with less than 2 mm of keratinized gingiva is more viable for recession[8].

A previous systematic review showed that the connective tissue graft (CTG) plus coronally advanced flap (CAF) is considered the gold standard technique in treatment of gingival recessions[9].

A possible explanation for the clinical efficacy of CTG may be related to the specific healing model of the procedure. In fact, the high stability of the wound over CTG is associated with graft vascularization which is originated from both the periodontal plexus and the overlying flap leading to a complete blood supply for the graft after 2 weeks[10].

There are various surgical techniques available for root coverage like rotational flaps, coronally advanced flap, free gingival graft, guided tissue regeneration, connective tissue graft and combination of these[11].

Buti et al. in a meta-analysis also stated that coronally advanced flap + CTG might be contemplated as the gold standard in root coverage procedures[7].

Pini-Prato et al.[12] have reported a creeping attachment post-surgically at sites where Gingival

tissue thickness was increased using connective tissue graft. Contradicting to these Wenstrom and Zucchelli[13] reported that the stability of the gingival margin obtained post-surgically is determined by an altered tooth brushing technique, which reduces tissue trauma rather than to the gingival dimensions.

The use of CTG has shown better ginigval thickness after healing in this case. The limitations of this approach are the volume of Connective tissue available.

The limited amount of connective tissue harvested during each visit and a second surgical site is required for graft, which in cases of multiple recessions are usually treated in several visits. This makes it incontinent for patient.

Furthermore, total time required for treatment is also more compared to its alternatives like alloderm and PRF (platlet rich fibrin), which do not require second durgical site.

Platelet rich fibrin has been claimed to enhance soft tissue healing, promote initial stabilization, revascularization of flaps and grafts in root coverage[14].

Scarano A et al. in 2009, studied the clinical and histologic effects of Acellular dermal matrix claimed to have acceptable results[15]. Though long term follow up are yet to be checked.

Conclusion: The results of this case report indicate that Connective tissue graft is preferred mode of surgery where multiple recessions is to be treated. The use of CTG also demonstrates better soft tissue thickness and shows gain of new attachment and enhanced aesthetics, which should be considered while treating a aesthetically challenging region.

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