

Case Report

Treatment of Localized Gingival Recession by using Amniotic Membrane along with Coronally Displaced Flap- A Case Report

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ABSTRACT:

Gingival recession is a complex phenomenon that may present numerous therapeutic challenges to the clinician. Over the years gingival recession has been treated by a number of surgical techniques. Recently, use of human amniotic membrane has been proposed in combination with surgical techniques. This article highlights on a case report in which amnion membrane along with coronally displaced flap has been used for root coverage in Miller class-II recession defect in mandibular anterior area.

Key words: Amniotic membrane, coronally displaced flap, recession, GTR, root coverage.

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Introduction:

Gingival recession is the term for the exposure of root surface due to apical migration of gingival margins. Many patients seek treatment because of concerns about esthetic appearance, root sensitivity, or fear of early loss of the affected teeth. However, other complications can also arise, such as root caries and tooth discoloration as it has a multifactorial etiology associated with anatomical factors, or physiological or pathological factors.¹ During the last decade, great studies have been made towards predictable coverage of exposed root surfaces. Different surgical techniques have been introduced to treat gingival recession including free gingival graft, laterally positioned flap, free connective tissue graft, coronally advanced flap with connective tissue graft. In patients with a residual amount of keratinized tissue apical to the recession defect, the coronal advanced flap may be recommended.

Coronally advanced flap accomplishes optimum root coverage with good colour blending and complete recovery of the original soft tissue marginal morphology. This procedure does not require a donor site. Despite having low morbidity, it proves to be unstable on long term. Therefore, Coronally Advanced Flap (CAF) alone is less than optimal

technique to achieve root coverage. Various adjunctive agents have been used to promote healing and to further enhance the clinical outcome. Guided Tissue Regeneration (GTR) based root coverage has emerged as an alternative treatment. It not only achieves similar clinical results to those of traditional root coverage procedures, but also demonstrates histological new attachment formation. The bio-resorbable membranes have overcome the need for second surgical procedure needed to remove non-resorbable membrane.²

Tinti and Vincenzi in 1990 used the principles of guided tissue regeneration (GTR) to obtain coverage of the denuded root surface along with regeneration of the entire attachment apparatus. Today, the concept of excluding the gingival epithelium with the mere use of barrier membranes has evolved to the incorporation of the correct signaling molecules like the growth factors and the presence of correct cell population like the stem cells, fibroblast, and cementoblast directly into the wound to promote regeneration. The clinical application of amniotic membrane for GTR, while fulfilling the current mechanical concept of GTR, amends it with the modern concept of biological GTR. Benefits of using this technique comprising amniotic

membrane, not only maintains the structural and anatomical configuration of regenerated tissues, but also contribute to the enhancement of healing through reduction of postoperative scarring and subsequent loss of function and providing a rich source of stem cells. In line with our proposal, it has been demonstrated that amniotic membrane enhances gingival wound healing properties and reduces scarring.¹ In this case report, amniotic membrane along with coronally displaced flap has been used for the management of gingival recession.

Clinical presentation: A 34 yrs old non-smoker male reported with chief complaint of tooth hypersensitivity in the left lower front tooth region since 4 months. On clinical examination, an isolated Miller class II recession was observed on buccal aspect of left lower central incisor along with shallow vestibule.(Fig.1)

The distance between the cemento-enamel junction and gingival margin was 5mm. and the distance between the gingival margin and the base of the pocket was 2 mm. Base of the pocket was extending above the mucogingival junction.



Figure 1: Pre-operative view

Treatment plan: A two stage treatment modality was contemplated. In the first stage, to increase the vestibular depth a vestibular extension procedure was planned. In the second stage, coronally displaced flap along with amniotic membrane was speculated to cover gingival recession.

Presurgical therapy: A general assessment of patient was made through history and routine laboratory investigations. The surgical procedure was explained to the patient and the informed consent obtained. Preparation of the patient included scaling and root planing and oral hygiene instructions. Patient was instructed to use Modified Stillman brushing technique.

Parameters assessed: Parameters were assessed with a manual periodontal probe. Following parameters were assessed at 3 months after the surgical procedure
Recession depth (RD)-distance between cemento-enamel junctions to the most apical point of gingival margin.

Probing depth (PD) - measured as the distance from the bottom of the pocket to the most apical portion of gingival margin.

Clinical attachment level (CAL)-measured from the cemento enamel junction to the bottom of the pocket (*Recession depth + probing depth*).

Surgical procedure:

Step 1: Vestibular extension procedure:

After proper isolation of the surgical field, the operative sites were anaesthetized using 2% xylocaine hydrochloride with adrenaline (1:200000).A horizontal incision was made using a #15 blade at the mucogingival junction retaining all of the attached gingiva. Flap was reflected sharply, dissecting muscle fibres. A strip of periosteum was then removed at the level of mucogingival junction, causing a periosteal fenestration. Periodontal dressing (Coe pak) was placed over the wound. Post operative instructions were given to the patient. Periodontal dressing was removed after 7 days. (Fig.2)



Figure 2: Three months after vestibular extension

Step 2: After 3 months, coronally displaced flap along with amniotic membrane was done.

After proper isolation of the surgical field, the operative sites were anaesthetized using 2% xylocaine hydrochloride with adrenaline (1:200000). An intrasulcular incision was made using 15 or 11 no. blades on the buccal aspect of the involved tooth. This incision was horizontally extended mesiodistally to dissect the buccal aspect of the adjacent papillae, avoiding the gingival margin of the adjacent teeth. Two oblique releasing incisions were carried out from the mesial and distal extremities of the horizontal incisions beyond the mucogingival junction. A trapezoidal full thickness flap was raised with a periosteal elevator towards the mucogingival junction. A full thickness flap was limited to 3 to 4 mm beyond the marginal bone crest and the continuous partial thickness flap was extended apically until the flap could be passively repositioned coronally from the cemento-enamel junction. Adjacent papillae were then de-epithelized to provide a connective tissue bed for coronally positioned flap. (Fig.3)Amniotic membrane (Tissue Bank, Tata Memorial Hospital and Research Centre, Mumbai) was

trimmed to cover the entire recession defect. The flap was then coronally positioned to completely cover the membrane and secured by using 4-0 bioabsorbable suture. Periodontal dressing (coe-pak) was used over the surgical site.

Post operative care: Amoxicillin 500mg thrice a day was prescribed for 5 days. Ibuprofen 400mg thrice daily and Vitamin-B complex, 1 capsule daily was also prescribed for 5 days were prescribed. Patient was recommended to follow all the normal oral post operative hygiene instructions. Patient should rinse the oral cavity with 0.12% chlorhexidine digluconate mouthrinse for two weeks. Patient was advised to avoid pulling on their lips to observe the surgical site. Both dressings and sutures were removed 10 days after surgery. Post-operative follow up was done for three months.

Results: The site showed 5mm gain in CAL and 4mm reduction in recession and 1mm reduction in probing depth at 3 months. The gingival tissue showed no signs of inflammation at final evaluation. (Fig.3)



Figure 3: Post-operative view

Discussion: Root coverage is a successful and predictable procedure in the treatment of gingival recession in periodontics. Various surgical procedures have been described to treat gingival recessions. The coronally positioned flap has long been used as a method of gaining root coverage ever since it was introduced by Norberg O (1926). It has been shown to be easy, more predictable and reliable surgical root coverage procedure. Avoidance of second surgical site in the palate, optimal root coverage, good color blending of the treated area with respect to adjacent soft tissues and recuperation of the original morphology of the soft tissues margin can be predictably accomplished using this surgical approach. But the connective tissue attachment achieved by the coronally positioned flap is not stable over long periods.² Various adjunctive agents have been used to promote healing and to further enhance the clinical outcome. Several studies have shown the effectiveness and predictability of GTR for root coverage. Histologically, new bone and cementum with

inserting fibers have been shown to form after recession coverage by GTR.¹ Amnion membrane is a composite membrane consisting of a pluripotent cellular element embedded in a semi permeable membranous structure, which is a placental derived tissue containing collagen. Human amnion lines the innermost portion of the amniotic sac is 100-200 μ in thickness. It is an immune tolerant structure. Also, the existence of pluripotent stem cells possessing the ability of transdifferentiation to other cellular elements of periodontium makes it suitable for GTR. Excellent revascularization and provision of rich source of stem cells demonstrate that Amnion membrane enhances gingival wound healing. The basement membrane contains collagen type III, IV and V and cell adhesion bioactive factors including fibronectin and laminins (mainly Laminin 3). It helps in soft tissue healing, modulates angiogenesis, cicatrization, epithelization and facilitated migration.² In the present study, there is a gain in clinical attachment and increase in width of keratinized gingiva with a minimal decrease in probing depth. Similar results were seen in the study done by Chakraborty S et al (2015)⁴, Sharma A et al (2015)¹, Shah et al (2014)⁵, Joshi CP et al (2017)⁶, Bansal P (2018)². Since, it is a single case report and short duration of follow up, further long term research needs to be considered in future.

Conclusion: Within the limits of the study it may be concluded that placement of amnion membrane in recession defects can be used to restore the functional properties of labial gingiva of teeth by repairing gingival defect and reestablishing the continuity and integrity of zone of keratinized gingiva. However, it is important to emphasize that this is a short term report and longitudinal clinical studies with large sample size are needed to provide evidence of amnion capacity for and impact on wound healing, soft tissue reconstruction especially in periodontal therapy.

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