Case study

Comparingthe efficacy ofConnective Tissue Graft versus Periocol® - GTR membrane in the treatment of isolated gingival recession defects- Two case reports.

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Abstract

Gingival recession is an apical displacement of gingival tissue which leads to root surface exposure causing aesthetic problem, attachment loss, hypersensitivity, and root caries. CTG is a gold standard procedure while GTR is also an effective and predictable surgical approach for recession coverage. Periocol® is sterile, type I bioresorbable collagen membrane of fish origin. The aim of this study is to comparatively evaluate the treatment of Miller class I and class II recession defects of maxillary anteriors by using CTG or PerioCol®- GTR membrane.

To the author's knowledge this is the first study comparing the efficacy of CTG with Periocol® GTR membrane.Two patients were selected and subjected to two different techniques i.e CTG and Periocol® - GTR membrane. Evaluation was done on the basis of percentage gain in root coverage and increase in the width of keratinized gingiva. Optimal results were achieved in both the cases regarding clinical measurements of recession coverage although greater coverage was seen in patient treated with Periocol®.Both the treatment modalities can be utilized for gingival recession coverage but with limitations in both. Recession coverage with Periocol® can be used as another option besides CTG.

Introduction:

Gingival recession is a common manifestation in most populationswith more than 50% of the

population having one or more sites with gingival recession of 1mm or more. It is clinically manifested by an apical displacement of gingival tissue. It also leads to root surface exposure which causes major functional and aesthetic problems[1]. The most common cause of gingival recession is faulty tooth brushing; while other factors include dental plaque, high frenum pull, area of root prominence, iatrogenic factors and postsurgical gingival recession[2].

Langer & Langer[3] Introduced CTG in treating gingival recession, in which CTG combined with an overlying pedicle-graft were used. It is the gold standard procedure as it has various advantages like the graft having dual blood supply, i.e. from the recipient bed and from the overlying flap. It also has better colour matching to the adjacent gingiva and the prognosis of recession coverage has been excellent, as has been reported by **Langer and Langer**[4], **Edel**[4], **Broome and Taggart**[5], **Nelson**[6].

The concept of Guided Tissue Regeneration (GTR) was introduced by **Melcher 1976** and **Nyman et al 1986**[7] for treatment of periodontal defects.

GTR involves placement of either resorbable or non-resorbable barrier to seclude a space around the diseased root surface and allow cells from PDL and alveolar bone to repopulate the defect by refraining soft tissue cells from penetrating it[8].

Periocol® (Eucare Pharmaceuticals Pvt. Ltd, Chennai, India) is derived from specially controlled and certified animals and is highly purified to avoid any antigenicity.

Thus, in the present study, a comparative evaluation has been done for the treatment of Miller class I and Class II recession defects with CTG versus Periocol® - GTR membrane.To the author's knowledge this is the first study comparing the efficacy of CTG with Periocol® GTR membrane.

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Materials and Method

Patient selection

Two Patients were selected and randomly subjected to either of the treatment modalities namely Pericol® or CTG. Patient's medical history, dental history, personal history was taken and clinical parameters including Gingival Index (Loe and Silness, 1963), Plaque Index (Silness and Loe, 1964), Probing pocket depth (in mm) measured by UNC-15 periodontal probe using gingival margin as reference, Recession length and Width of keratinized gingiva (in mm) was measured by using UNC-15 periodontal probe. All parameters were recorded at baseline, 1 month and 3 months interval. Inclusion criteria included: i) Miller's Class I and class II gingival recession defect at the buccal aspect of maxillary incisors or canines ii) No previous periodontal surgery at the affected teeth. Exclusion criteria included i) Patient with history of any recent periodontal surgery in past 6 months ii) Pregnant and lactating patients iii) Smokers.

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<u>Surgical procedure</u>

Site 1 (subjected to CTG):

Donor Site:

Local infiltration anesthesia was administered using 2% lignocaine HCI with adrenaline (1:2,00,000). A horizontal incision was made 5-6 mm from the free gingival margins near the premolar area in the palate using three incisions(Trapdoor Technique)(Fig.1,2); followed by

two internal vertical incisions on either side. A graft thickness of 1.5 mm was prepared (Fig.3) and was placed on the recipient site.

Recipient Site:

Before the surgery, scaling and root planning was done. After anesthetizing, a sulcular incision was given and a pouch was created (Fig.4). The pouch was extended 3mm lateral to the recession defect and beyond the mucogingival junction apically. Then the CTG was placed (Fig.5) and the flap was coronally positioned to cover the recipient teeth and the area was sutured with 5-0 PGA/PLA anchored suture with composite button (Fig.6).

Site 2 (subjected to GTR):

At this site, the initial preparation of recipient site was similar to that of site 1(Fig.7). Two horizontal bevelled incisions (3mm in length) were given, mesial and distal to the recession defect located at a distance from the tip of the papillae followed by two vertical incisions extending to the alveolar mucosa. The flap was then reflected (Fig.9), Periocol® membrane was placed (Fig.10) and the flap was stabilized using sutures (Fig.11).

Post operative instructions:

The patient was asked not to brush near the surgical site. Warm saline rinses was advised after 24 hours of surgery. Amoxicillin plus clavulanic acid 625mg combination was given for 5 days along with anti-inflammatory drug.

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Result:

Table 1. Gingival recession coverage in both the treatment modalities

	Pre-operative recession length	Post operative recession length	% gain in root coverage	Increase in width of keratinized gingiva
Periocol®	3mm	1mm	50%	25%
CTG	2mm	1mm	66.66%	25%

Gingival recession coverage in both the treatment modalities was satisfactory. Better soft tissue coverage was achieved in case of recession defect treated with CTG compared to area treated with Periocol®. Although, increase in the width of keratinized gingiva was same for both the cases.Both the treatment modalities can be utilized for gingival recession coverage but with limitations in both. In patients with thin gingival biotype, recession coverage using Periocol might be difficult. Secondly, the membrane has to be handled very carefully to prevent it from tearing during suturing. As discussed earlier, though CTG being a gold standard modality for recession coverage, it offers obvious disadvantage of second surgical site. So, considering the do's and dont's of both the techniques, the clinician should judiciously select the patient for either of the clinical modalities in order to obtain optimum results.

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Discussion:

An accurate diagnostic and interdisciplinary approach is necessary for obtaining improved, conservative and predictable results in esthetically compromised areas, like the anterior maxillary dentition.[9]The present case report was done to compare the efficacy of CTG and Periocol® GTR membrane in treating maxillary recession defect. Periocol® is a fragile GTR membrane which starts degenerating as soon as it comes in contact with body fluids. It is difficult to stabilize the membrane with suture while CTG has the disadvantage of second surgical site on which healing might get delayed due to clot dislodgement which might occur if the patient continuously hits the palate with his tongue which is not that frequent but it is one of the complications of CTG.

In a study done byRosetti et al[10]in which he found SCTG significantly better than those of the GTR procedure for keratinized tissue width, gingival recession height, root coverage, whereas, GTR was found to be statistically superior to SCTG when probing depth was evaluated at 18 months post-surgery. Similarly, Babuet al[11] compared bioresorbable collagen membrane with autogenous CTG for recession coverage and obtained a mean root coverage of 84.84% with CTG and 84% with collagen membrane.

Conclusion:

Both the modalities CTG and GTR procedure yields good results but can vary according tothe location of the tooth in oral cavity i.e canine being the corner teeth might not result in as good coverage as that can be achieved in the incisor teeth. CTG has the

limitation of requiring a second surgical site while Periocol has the limitation of it being fragile therefore suturing the membrane is an issue. In this study, better result was obtained with Periocol® in terms of recession coverage but to be conclusive on the efficacy of Periocol® in comparison with CTG requires more studies with larger sample size.

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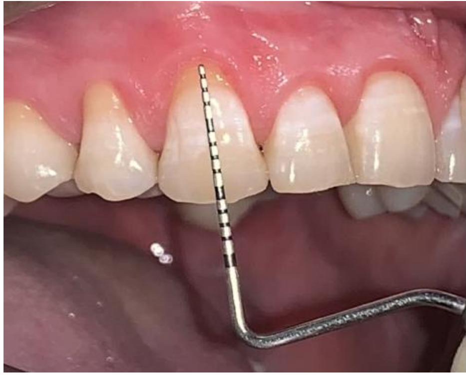

Fig. 1: Pre operative site

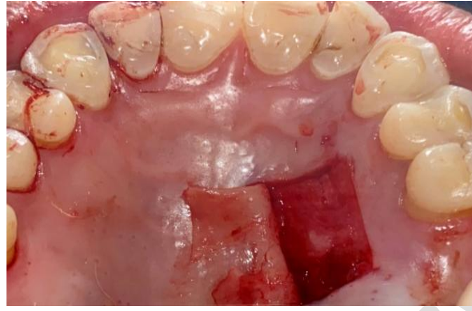

Fig. 2: Trapdoor epithelial flap reflected

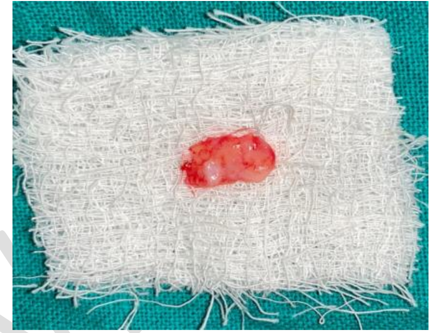

Fig. 3: Procured connective tissue graft

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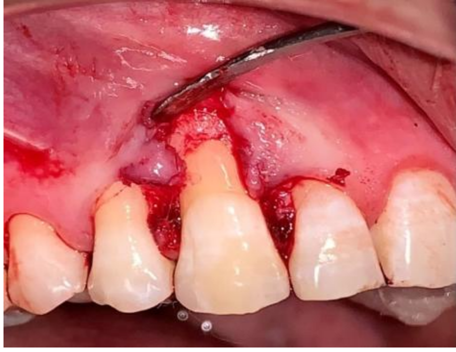

Fig. 4: Reflection at recipient site

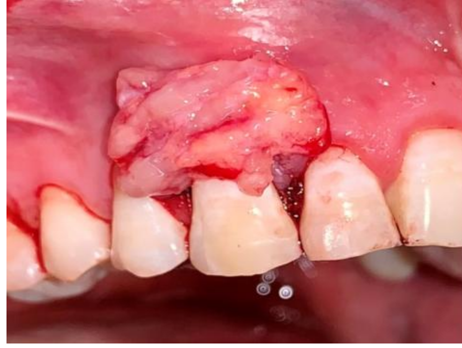

Fig. 5: Connective tissue graft placed at recipient site

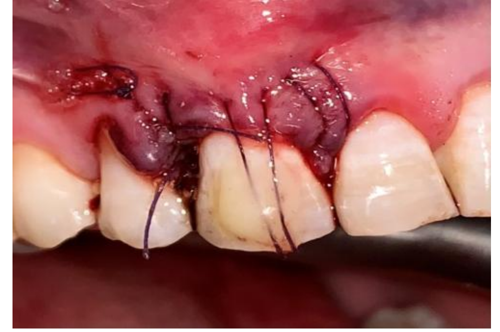

Fig. 6: Flap coronally anchored with composite button

Fig. 7: Post operative view

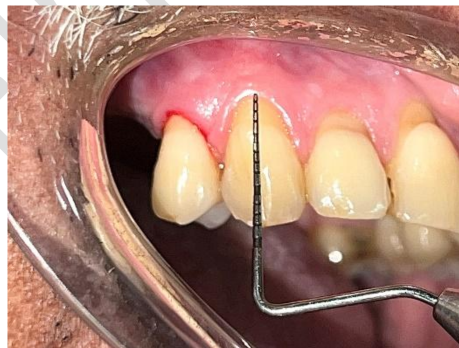

Fig.8: Pre operative site

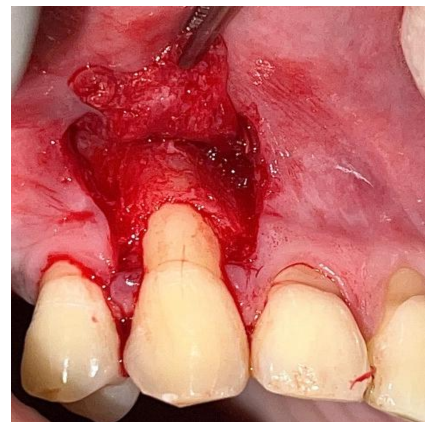

Fig. 9: Reflection at recipient site

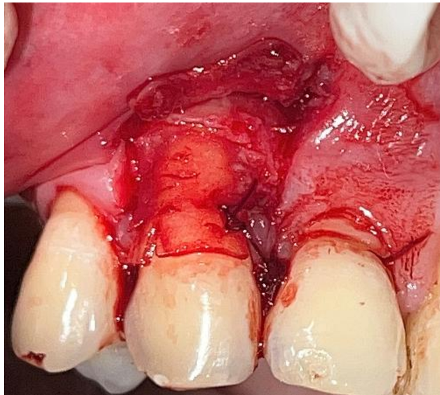

Fig. 10: Periocol® membrane placed and sutured

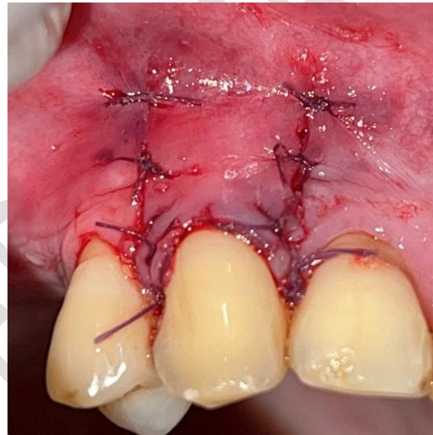

Fig. 11: Flap sutured

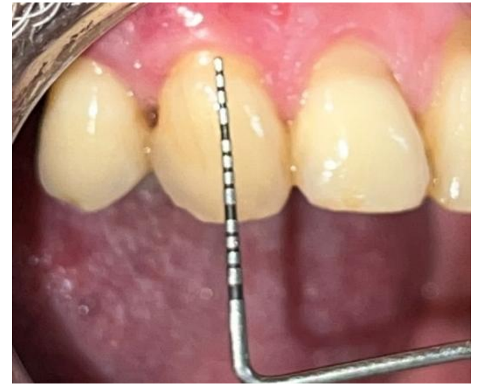

Fig. 12: Post operative site

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