

SUCCESSFUL USE OF CORONALLY REPOSITIONED FLAP WITH A SUBEPITHELIAL CONNECTIVE TISSUE GRAFT USING STRAUMANN EMDOGAIN™



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Gingival recession is a common finding among patients and can lead to esthetic concerns, thermal sensitivity and/or root caries. Among the most common etiologies is mechanical trauma from aggressively brushing with force in combination with a thin gingival biotype susceptible to recession. Occlusal trauma and frenum pull are considered co-factors in the recession process.

Indications for root coverage include increased root sensitivity, root caries, abrasions, preprosthetic coverage and esthetic concerns of the patient.

Various grafting techniques have been developed to address this problem, including the transplantation of autogenous tissue in combination with a coronally advanced flap, pedicle flaps, guided tissue regeneration, and the use of allograft materials.

The goal of root coverage procedures is to gain complete root coverage and to restore the lost anatomic structures on the root surface. From a histological perspective, this includes new cementum, periodontal ligament and alveolar bone. The periodontal ligament is regenerated for a functional and esthetic result. Successful repair of the defect must fulfill the following criteria: root coverage to the cemento-enamel junction with a pocket depth no greater than 3 mm, absence of bleeding upon probing, adequate attached tissue and color blending with surrounding tissues.

Advances in technology have significantly improved the predictability of root coverage procedures. The use of enamel matrix derived proteins (EMD) in a polyglycol alginate (PGA) carrier in conjunction with a coronally repositioned flap^{1,2} or with an autogenous subepithelial

connective tissue graft have been shown to be an effective treatment modality with reduced morbidity for patients. EMD with PGA, commercially available as Straumann® Emdogain, has been shown to promote regeneration of periodontal tissues on previously denuded root surfaces^{1,2} and provide a more natural-looking result.¹ The technique allows clinicians to treat gingival recession with predictable results.³ Additionally, a full arch of multiple recession lesions can be treated in one appointment.

The following case report demonstrates the successful use of a coronally repositioned flap with a subepithelial connective tissue graft and EMD with PGA (Straumann® Emdogain™).

Case Report

A 50-year-old male presented with generalized Miller class II and III recession (**Fig 1**). Clinical exam found an 8 mm overjet and 7 mm overbite with class II occlusion and general crowding throughout. In the maxilla, #6 & #11 were most advanced with 8 mm recession and no attached tissue. Elsewhere in this arch, there were areas of 3-4 mm gingival recession. The mandible was quite advanced as well, with #22, 24, 27, 28, 29 & 30 most advanced (**Fig 2**). There was 6-7 mm of recession with a minimum of 1 mm, and no attached tissue on teeth # 22-30. Although connective tissue grafting is more predictable with Miller class I and II recession, we wanted to improve the quality of the gingival tissue and cover as much of the root structure as possible. The treatment plan was presented and the patient understood that additional grafting may be necessary to achieve optimal root coverage and tissue health.



Fig. 1
Full mouth, pre-operative



Fig. 2
Mandible, pre-operative



Fig. 3
Connective tissue harvested from palate



Fig. 4
Graft secured to recipient site with 5.0 chromic gut sutures

Two separate surgeries were performed, dividing the mouth into maxillary and mandibular arches. Local anesthetic was delivered and the sites were prepared with a split thickness flap. Intrasulcular incisions were made utilizing a 15C blade on the buccal aspect. Where possible interdental papillae were left untouched. Horizontal incisions mesial and distal to the defect were performed at the approximate level of the cemento-enamel junction. There was significant elevation and periosteal release of the recipient site and the flap was raised to a level that allowed free coronal displacement. The root surfaces were planed with a back-action hoe (periodontal chisel) and treated with Straumann® PrefGel™ to condition the roots. The graft was harvested from the corresponding side of the palate in the premolar and first molar area using parallel incisions (Fig 3). EMD in a PGA carrier (Straumann Emdogain) was applied to the site. The goal of using this material was to promote attachment and improve patient comfort. Emdogain was applied to all the exposed root and bone surfaces. The graft was secured to the recipient site using 5.0 chromic gut sutures (Fig 4) and surgical adhesive (Fig 5).

The patient was prescribed a five day dose pack of Medrol prior to the procedure and arnica montana was recommended to prevent inflammation and post-surgical swelling. A 0.12% chlorhexidine digluconate mouthrinse was utilized post-surgery in lieu of brushing the surgical site for 14 days. The patient was instructed to take 600 mg ibuprofen every six hours and supplement pain control with Tylenol 3 as needed.

The patient was followed for one month during the initial healing (Fig 6 and 8) and returned to the office at 8 months (Fig 7) and two years later to check the long term outcome (Fig 9). The patient healed without concern and slight, less than 1 mm recession remains on #8 & #9. Connective tissue has been reintroduced leaving the teeth supported and protected.

Conclusion

By adding Straumann Emdogain to the subepithelial connective tissue graft and coronally advanced flap procedure, a patient who presents with extensive full-arch gingival recession can be treated predictably while minimizing the number of appointments needed. Compared with previous treatment plans, this saves time and cost for both the patient and the periodontal office. In addition, Emdogain promotes the regeneration of the underlying support structures of the cementum, periodontal ligament and alveolar bone, helping to achieve the ultimate goal of complete root coverage and true regeneration.

Dr. Brian Huber received his dental degree from Northwestern University Dental School in Chicago, IL, and completed a General Practice Residency at the Medical College of Ohio in Toledo. He received his Certificate of Periodontics from the V.A. Medical Center simultaneously with his Master of Science Degree from Marquette University Dental School in Milwaukee, WI. Currently he maintains private periodontal practices in South Burlington, VT and Middlebury, VT. He is a member of many professional organizations including the Academy of Osseointegration, the American Academy of Periodontology, and is a member of the International Team for Implantology.

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Fig. 5
Graft secured to recipient site with sutures and surgical adhesive



Fig. 6
1 month post-operative, Maxilla



Fig. 7
8 month post-operative, Maxilla
Pre-operative, Mandible



Fig. 8
1 month post-operative, Mandible



Fig. 9
2 year post-operative Maxilla and Mandible

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