

## SUCCESSFUL USE OF CORONALLY ADVANCED 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 that are traumatic in nature include physical (including improper tooth brushing, surgery, and piercing), chemical, and thermal.<sup>4</sup> Less common etiologies include infection (e.g. herpes virus) and inflammation (periodontal disease). Like other etiologies, they likely require a susceptible host with, among other things, contributing anatomic factors, such as a thin gingival biotype, tooth arch discrepancy (large teeth often outside the facial bony housing) or prominent roots. Occlusal trauma and frenum pull are considered co-factors in the recession process.

Indications for root coverage include increased root sensitivity, root caries, abrasions, pre-prosthetic 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 advanced flap<sup>1,2</sup> (CAF) or with an autogenous sub-epithelial 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<sup>1,2</sup> and provide a more natural-looking result.<sup>1</sup> The technique allows clinicians to treat gingival recession with predictable results.<sup>3</sup> Additionally, a full arch of multiple recession lesions can be treated in one appointment.

The following case report demonstrates the successful use of a CAF with a subepithelial connective tissue graft (CTG) and EMD with PGA (Straumann Emdogain).

### Case Report

A 39-year-old male presented with generalized Miller Class I recession on teeth #6, #9, #11 and #12 (**Fig 1**). Tooth #6 (**Fig 2**) and #11 (**Fig 3**) were the most severe with approximately 5mm and 5.5mm of attachment loss, respectively. Tooth #9 presented with approximately 2mm of attachment loss and #12 (**Fig 3**) with approximately 3mm of attachment loss. Pocket probing depths were within normal limits (<3mm) in all sites.

In order to increase the amount of keratinized tissue, the treatment plan included an autogenous CTG together with the application of Straumann Emdogain. A single surgery was required to treat all sites. The patient was informed of the treatment plan and expected results and consented to treatment.

Prior to flap elevation, the tooth root was thoroughly debrided and Straumann® PrefGel® was applied to the root surface for approximately 2 minutes, before being rinsed with sterile saline (**Fig 4, 5**). Straumann Emdogain was applied to the root surface area (**Fig 6**) and to the harvested graft (**Fig 7**). The graft was measured compared to the sites on the maxillary left side (**Fig 8**). A flap was coronally advanced to cover the CTG (teeth #11 and 12). On teeth #7, 8, and 9, only EMD was applied under the CAF. The flap was sutured in place with 5.0 GORE-TEX® and 7.0 vicryl sutures were used for stabilization of the CTG (**Fig 9**). For tooth #6, a pouch technique was utilized to avoid the need for vertical releasing incisions. The connective tissue graft was sutured in place with 7.0 vicryl sutures (**Fig 10**).

Healing progressed uneventfully and at one week, there was no residual swelling or pain from the procedure (**Fig 11, 12**). Similarly, at 8 months, the patient presented with near complete root coverage and was very satisfied with the results (**Fig 13, 14**). One and a half years after treatment shows a consistent result (**Fig 15**). A Class V composite restoration on tooth #11 was added to restore the abfraction (**Fig 15, 16, 17**).

## 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 predictably treated in one appointment. Compared with previous treatment plans, this saves time and cost for both the patient and the periodontal office. In addition, Emdogain promoted 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.

**Paola Guglielmoni, DDS** earned her dental degree in her native Italy and worked as a general dentist in Genova. She moved to the USA and received her Doctorate of Dental Science from Loma Linda University where she also completed her Certificate in Periodontics and Masters Degree in Oral Biology.

Dr. Guglielmoni has served as an Assistant Clinical Professor in the Division of Periodontology at UCSF and is a member of several professional organizations including the American Dental Association, the American Academy of Periodontics, the Academy of Osseointegration and the California Society of Periodontists.



**Fig. 1**  
At time of diagnosis



**Fig. 2**  
Tooth #6 before treatment



**Fig. 3**  
Teeth #11 and #12 before treatment



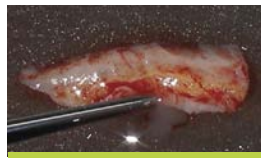
**Fig. 4**  
PrefGel applied to root surface



**Fig. 5**  
Application of PrefGel to tooth root



**Fig. 6**  
Application of Emdogain to tooth root



**Fig. 7**  
Emdogain applied to graft



**Fig. 8**  
Graft compared to sites



**Fig. 9**  
Sutured with 5.0 Goretex and 7.0 vicryl



**Fig. 10**  
Connective tissue graft #6  
Pouch technique no verticals sutured  
with 7.0 vicryl



**Fig. 11**  
Maxillary left side one week  
postoperative



**Fig. 12**  
Tooth #6 one week postoperative



**Fig. 13**  
Maxillary left side eight months  
postoperative



**Fig. 14**  
Maxillary right side eight months  
postoperative



**Fig. 15**  
One and a half years postoperative  
with composite restoration on tooth #11



**Fig. 16, 17**  
One and a half years postoperative

## References:

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