

STRAUMANN® EMDOGAIN – FOR GINGIVAL RECESSION TREATMENT

Recession treatment with Coronally Advanced Flap technique (CAF) and Straumann® Emdogain



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One of the challenges in the treatment of gingival recession is to achieve esthetically pleasing and long-term stable recession coverage with keratinized tissue of sufficient thickness.

The use of pedicle flaps without tissue grafts can be applied for root coverage in different modifications. In the past, the Coronally Advanced Flap technique (CAF) has proven to be a predictable method for recession coverage with reproducible, mostly satisfactory esthetic results. However, long-term effectiveness and height of keratinized tissue remains a concern.

The combined use of the Coronally Advanced Flap technique with Straumann® Emdogain leads to an increased amount of keratinized tissue, improved soft tissue healing and reduced reoccurrence of the recession, making the use of the more traumatic connective tissue graft in many cases unnecessary.

It is less prone to complications than the alternative methods with the use of membranes and also leads to fewer complications and less pain than with free tissue graft techniques with a second palatal wound.

Nonetheless, for a successful and esthetically gratifying treatment, the correct surgical approach should also be taken.

Requirements

A prerequisite for full recession coverage is the complete presence of the approximate papillae region (Miller class 1 and 2). The height of the remaining keratinized tissue should be at least 1 mm to ensure a high predictability of the results (Fig. 1). Keratinized tissue thickness above 1 mm positively correlates the clinical results, especially in deep recession defects¹.

Negative influences such as smoking as well as incorrect tooth brushing technique should be discussed before the treatment.

The coronally advanced flap should not be put over crowns or prosthetic restorations, but may be placed over a clean dentin surface that was previously covered by a restorative material. Here, a minimal traumatic surgical approach with fine surgical instruments is essential.

¹ Berlucchi et al. *J Periodontol.* 2005;76:899–907.



Fig. 1 – Preop. 4 mm recession at tooth 13, covered with composite filling. The keratinized tissue appears to be larger than 1 mm.

*Minimal height of keratinized tissue ≥ 1 mm



Fig. 2 – Preoperative planning of the incisions according to the height of the recession (green line).

*Area of filling material to be reduced



Fig. 3 – Horizontal intracrevicular incision made at the recession.



Fig. 4 – The two releasing incisions extend to the mucogingival junction corresponding to the line angles.



Fig. 5 – The mucoperiosteal flap is released over the mucogingival line. The epithelium in the papilla region is removed and the connective tissue is exposed. The area of de-epithelization has been highlighted.



Fig. 6 – Horizontal releasing incision in the periosteum at the base of the flap.

Surgical Approach

The use of the correct surgical technique has a significant influence on the clinical outcome.

During preoperative planning, incisions are determined according to the recession height. At the start: Injection of local anesthesia with vasoconstrictor into the interdental papilla or marginal gingiva should be avoided.

Scaling and root planing of the exposed root surface is essential and must be carried out meticulously. All existing fillings such as composite fillings must be removed or reduced so that the remaining margin of the filling extends to the desired new tooth length (Fig. 2). If judged appropriate, prominences can be reduced.

A full thickness flap is elevated around the recession. Care should be taken to create a shape of the new papillae.

A horizontal intracrevicular incision is made at the recession (Fig. 3) and extended with two divergent releasing incisions to the mucogingival junction corresponding to the line angles (Fig. 4).

The interdental papillae are preserved as much as possible. Their facial proportion is de-epithelized to create a connective tissue bed (Fig. 5). A horizontal releasing incision is made in the periosteum at the base of the flap (Fig. 6). It is essential that any muscle tension is eliminated, so that flap covering of the recession stays tension-free (Fig. 7). The flap should passively extend to or slightly over the cemento-enamel junction (CEJ).

Straumann® PrefGel, a saline solution, and Straumann® Emdogain are set up to allow application in rapid sequence. The root surface can then be conditioned with 24% EDTA (Straumann® PrefGel) for two minutes and thoroughly rinsed with sterile saline. Straumann® Emdogain is immediately applied to fully cover the exposed and conditioned root surface preventing contamination through saliva or blood (Fig. 8). Excess Straumann® Emdogain can be applied to the wound area, as it has been reported by clinicians to enhance wound healing².

The coronally advanced flap is secured to the de-epithelized papilla region with sutures at the level of the cemento-enamel junction. The use of monofilament 5/0 material or smaller is recommended. Supporting sutures must be placed to stabilize the flap (Fig. 9). If the papilla regions are very thin, and flap stabilization cannot be ensured, the use of a sling suture technique is advisable.

In the postoperative phase, the patient is advised not to brush the area and to rinse twice daily with chlorhexidine (0,12%) for two weeks.

Depending on wound healing, topical application of chlorhexidine or careful mechanical tooth brushing should be performed afterwards. Sutures can be removed after 7–10 days (Fig. 10).

² McGuire et al. *J Periodontol.* 2003;74:1110–1125.



Fig 7. – It is essential that the flap is tension-free and covers the recession.



Fig 8. – Immediate application of Straumann® Emdogain after root conditioning.



Fig 9. – Supporting sutures must be placed to stabilize the flap.



Fig. 10 – Suture removal nine days post-op. The flap remains in place and is well vascularized.



Fig. 11 – Clinical appearance five weeks post-op. The flap is well integrated and appears in a practically mature state.



Fig. 12 – Three years post-op, the complete coverage is obvious. The premolars have also been treated and restored with new crowns.

When discussing established surgical procedures for recession coverage like CAF, the combination with Straumann® Emdogain offers a user-friendly method to improve the clinical and esthetic outcome, a technique that can be performed in daily practice, with highly consistent and reliable long-term results^{3, 4}.

³ Spahr et al. *J Periodontol.* 2005;76:1871–1880. ⁴ Moses et al. *J Periodontol.* 2006;77:195–202.