The Single Flap Approach in combination with Straumann® Emdogain® for the treatment of intrabony defects

Straumann®
Emdogain®

More than **2 million** patients treated

straumann
simply doing more

Introduction

The aim of periodontal reconstructive therapy is to preserve teeth by regenerating the hard and soft tissues lost due to periodontal disease or trauma.

Straumann® Emdogain® – used alone or in combination with bone-graft materials in periodontal surgery – has been demonstrated to promote the regeneration of cementum, alveolar bone and periodontal ligament and to yield to significantly higher CAL (Clinical Attachment Level) gains compared to open flap debridement alone.[1] Emdogain® is also patient-friendly and has been demonstrated to significantly reduce post-surgical pain and swelling, as well as improve wound healing.[2,3] The benefits of Emdogain® can be enhanced if it is used in combination with a minimally invasive surgical procedure such as the Single Flap Approach.

The Single Flap Approach[4] – developed by Prof. Leonardo Trombelli and colleagues - represents a simplified procedure that allows to surgically access intrabony periodontal defects by raising a single full thickness flap (either buccal or lingual, depending on the defect extension). The steps of the Single Flap Approach surgical procedure for the treatment of self-containing and non-self-containing intrabony defects are explained in the following pages.

Prof. Leonardo Trombelli

Prof. Leonardo Trombelli:

- Full Prof. and Chair, Periodontology and Implantology, School of Dentistry, University of Ferrara, Italy
- Director of the Research Center for the Study of Periodontal Diseases, University of Ferrara, Italy
- Director of the Operative Unit of Dentistry, University Hospital of Ferrara, Italy
- President of the Medical School, University of Ferrara, Italy

Active memberships:

- Italian Society of Periodontology
- Italian Society of Osseointegrated Implantology
- International Association of Dental Research
- International Academy of Periodontology
- Peer review panel member of the Journal Periodontology
- Editorial Board member for the Journal of Clinical Periodontology
- Private practice limited to Periodontology and Implantology

Straumann® Emdogain®

Enamel matrix derivative, 30mg/mL

Emdogain® is a unique, easy-to-apply gel containing an enamel matrix derivative of porcine origin. Long-term clinical studies have demonstrated its effectiveness in inducing predictable regeneration of hard and soft tissues lost to periodontal disease or trauma.

Emdogain® in numbers:

- Over 20 years on the market.
- Over 2 million patients treated.*
- Over 400 clinical and 800 scientific studies.
- 10 year studies in intrabony and recession defects.
- Extremely well tolerated.**

Straumann®
Emdogain®
More than **2 million** patients treated

Straumann® Emdogain®	
Art. No.	**Article**
075.098	Straumann® Emdogain® 0.15 mL, only as 5 pack
075.101	Straumann® Emdogain® 0.3 mL, single unit
075.102	Straumann® Emdogain® 0.7 mL, single unit
075.114	Straumann® Emdogain® 0.3 mL multipack, contains 3 x 0.3 mL Emdogain® and 3 x 0.6 mL PrefGel
075.116	Straumann® Emdogain® 0.7 mL multipack, contains 3 x 0.7 mL Emdogain® and 3 x 0.6 mL PrefGel
075.117	Straumann® Emdogain® PLUS, contains 1 x 0.7 mL Emdogain®, 1 x 0.6 mL PrefGel and 1x BoneCeramic (400 – 700) 0.25 g
075.203	Straumann® PrefGel 0.6 mL, contains 5 x 0.6 mL PrefGel

* Based on number of syringes sold.
**Based on a post-surgical complaint rate of 0.002%.

Treatment of a self-containing defect with Straumann® Emdogain®

The steps of the Single Flap Approach surgical procedure for the treatment of self-containing intrabony defects are explained in the following pages.

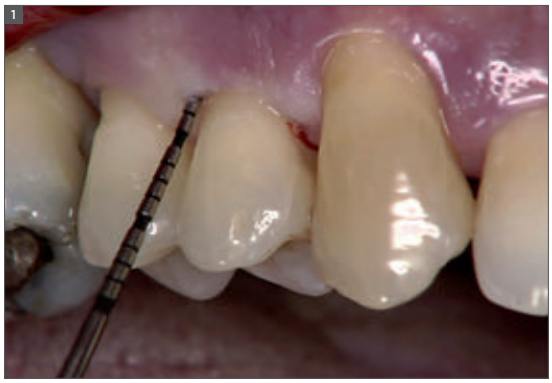


Fig. A1:
Carefully perform bone sounding to diagnose the extension of the defect. In this particular case a narrow, mainly 3 walled defect is present distal of tooth 14, thus the surgical access is performed by a buccal Single Flap Approach.

Fig. A2:
Make an intrasulcular incision following the buccal gingival margin.

Fig. A3:
Make a butt-joint incision at the base of the papilla at the site of the intrabony defect.

If needed to gain adequate access to the defect, extend the flap mesially and distally by an intrasulcular incision and a beveled incision of the papilla on the adjacent teeth. The buccal papilla is maintained intact in order to preserve the contralateral vascularization and to facilitate healing for primary intention. Do not use vertical releasing incisions.

Fig. A4:
Raise a full thickness flap. In this case, due to the limited extension of the defect, the flap is raised on the buccal aspect only.

Fig. A5:
Remove the granulation tissue by means of a small periodontal Hirschfeld file.[i]

Fig. A6:
Debride the root surface by means of ultrasonic instrumentation.

The defect appears as a narrow, mainly 3-walled, self-containing intrabony defect. Due to the self-containing morphology, a regenerative approach with Emdogain® can be used without the addition of supportive graft biomaterials.

[i] The file should only be used to remove the granulation tissue but not to scale the root surface. The Hirschfeld file is also used to decorticalize the internal part of the intrabony defect in order to open the marrow spaces to facilitate the migration of mesenchymal stem cells from the bone marrow into the defect.

Treatment of a self-containing defect with Straumann® Emdogain®

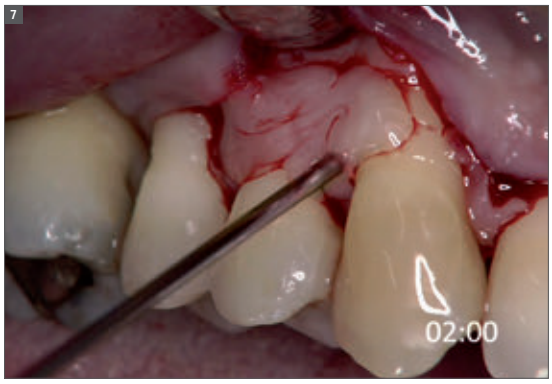
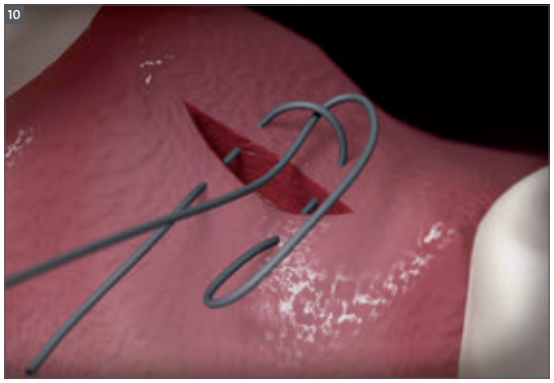


Fig. A7:
Apply Straumann® PrefGel® (EDTA) to the root surface and leave it for two minutes to condition the surface.

Fig. A8:
Remove Straumann® PrefGel® by thoroughly irrigating the surgical area with sterile saline.

Fig. A9:
Apply Emdogain® to the exposed, clean and blood free root surface by starting at the most apical bone level.[ii]

[ii] A blood free and clean root surface is important for the precipitation of amelogenins on the root surface. Therefore controlling the bleeding and reaching an appropriate level of hemostasis is necessary.



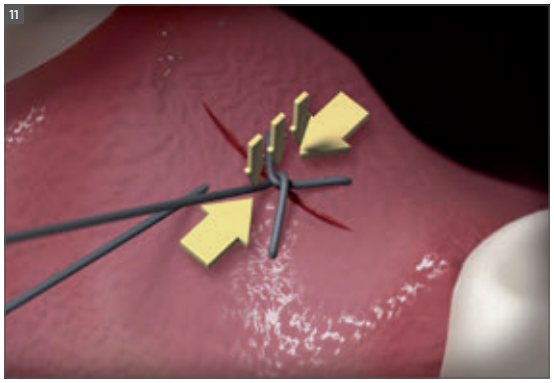


Fig. A10, A11:
Due to the narrow interproximal papilla, primary closure of the interdental area is ensured by a modified internal vertical mattress suture technique as introduced by Laurell.

Leave the sutures in place for 14 days.
A chlorhexidine regimen needs to be maintained for 4 weeks. Any trauma to the interproximal papilla by brushing should be avoided for 2–3 weeks. The patient has to be enrolled in a stringent maintenance regimen.

Watch the full movie at
http://www.straumann.com/en/videos/regeneration/trombelli/en.html

Treatment of a non-self-containing defect with Straumann® Emdogain® and a bone substitute

The steps of the Single Flap Approach surgical procedure for the treatment of non-self-containing intrabony defects are explained in the following pages.

Fig. B1:
Carefully perform bone sounding to diagnose the extension of the defect. In this particular case the defect is interproximal with a concomitant involvement of the buccal cortical plate. Therefore, a Single Flap Approach with a buccal flap elevation only is performed.

Fig. B2:
Make an intrasulcular incision following the buccal gingival margin.

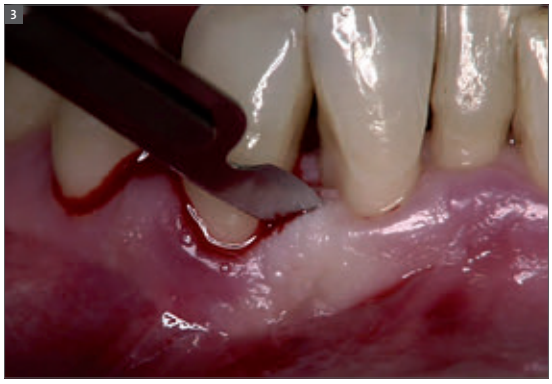


Fig. B3:
Make a butt-joint incision at the base of the papilla at the site of the intrabony defect.

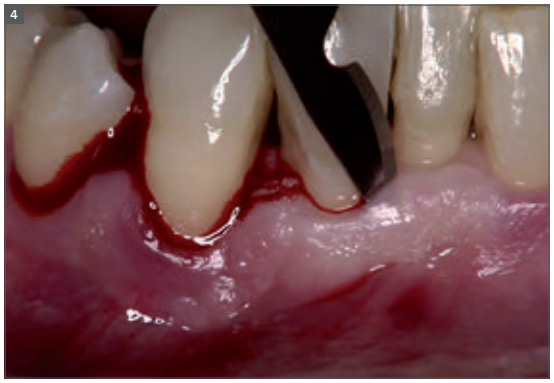


Fig. B4:
The mesio-distal extension of the incision is determined by the ability to access the defect and perform an accurate root and defect debridement.

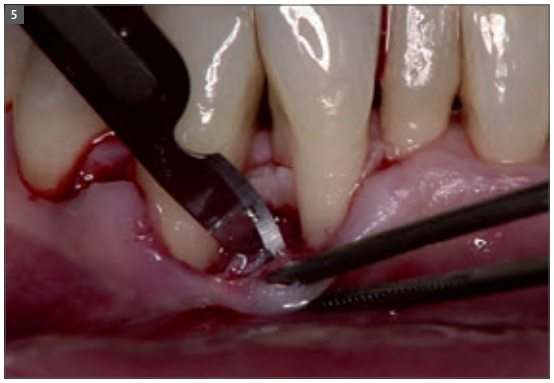


Fig. B5:
In some cases, a beveled incision of the papilla on the adjacent teeth is necessary to be able to access the defect. Do not use vertical releasing incisions.

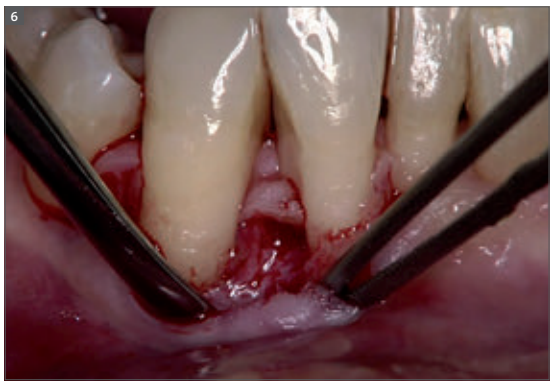


Fig. B6:
Raise a full thickness flap for a proper surgical access to the root surface defect.

Treatment of a non-self-containing defect with Straumann® Emdogain® and a bone substitute

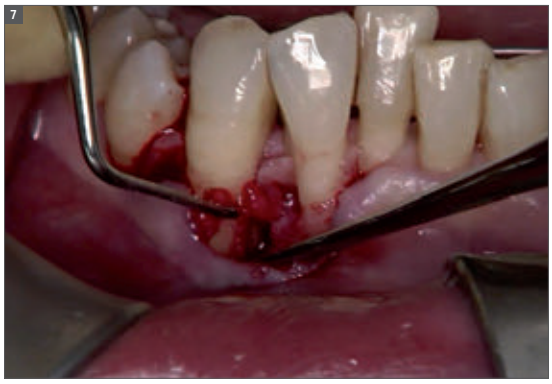


Fig. B7:
Remove the granulation tissue from the defect using a small periodontal Hirschfeld file.[iii]

Mechanically clean the root surface with an ultrasonic scaler. If the defect appears as a wide, mainly 1–2 walled, non-self-containing defect, use a combination of Straumann® Emdogain® and bone substitute.

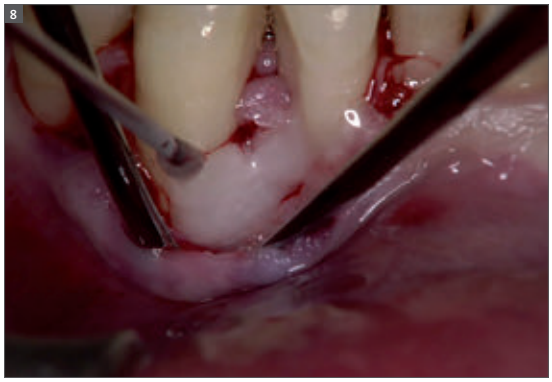


Fig. B8:
Apply Straumann® PrefGel® to the root surface and leave it for two minutes to condition the root surface.

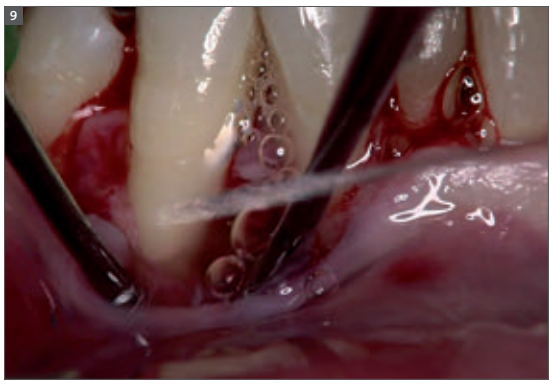


Fig. B9:
Remove Straumann® PrefGel® by thoroughly irrigating the surgical area with sterile saline.

[iii] The file should only be used to remove the granulation tissue but not to scale the root surface. The Hirschfeld file is also used to decorticalize the internal part of the intrabony defect in order to open the marrow spaces to facilitate the migration of mesenchyma stem cells from the bone marrow into the defect.

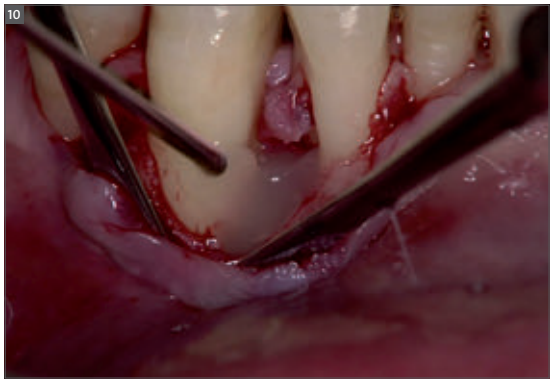


Fig. B10:
Apply a first layer of Emdogain® to the exposed, clean and blood free root surface by starting at the most apical bone level.[iv]

Fig. B11:
Premix your bone substitute with Emdogain®.

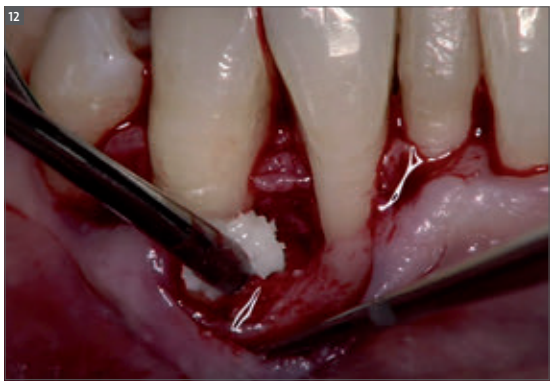


Fig. B12:
Fill the intraosseous component of the defect with bone substitute mixed with Emdogain®.

[iv] A blood free and clean root surface is important for the precipitation of amelogenins on the root surface. Therefore controlling the bleeding and reaching an appropriate level of hemostasis is necessary.

Treatment of a non-self-containing defect with Straumann® Emdogain® and a bone substitute

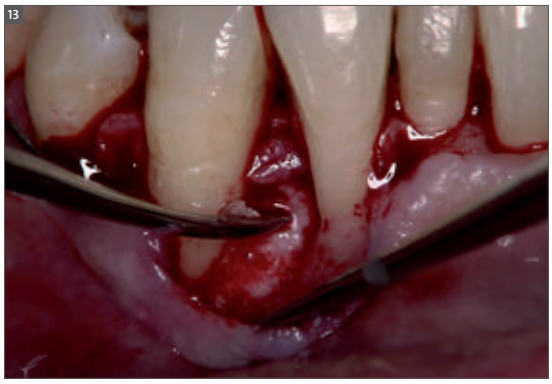


Fig. B13:
Fill the intraosseous component of the defect with bone substitute mixed with Emdogain®.

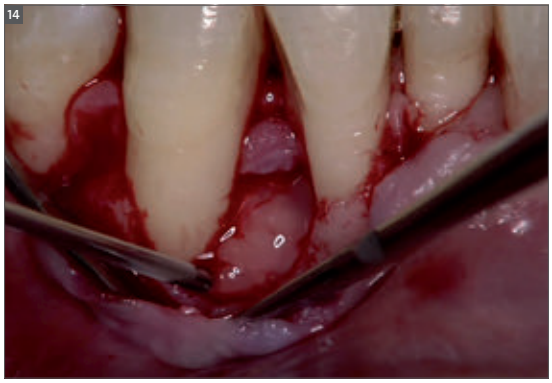


Fig. B14:
Apply a second layer of Emdogain® to the exposed root surface and on top of the bone substitute that will be in contact with the soft tissues of the repositioned flap.

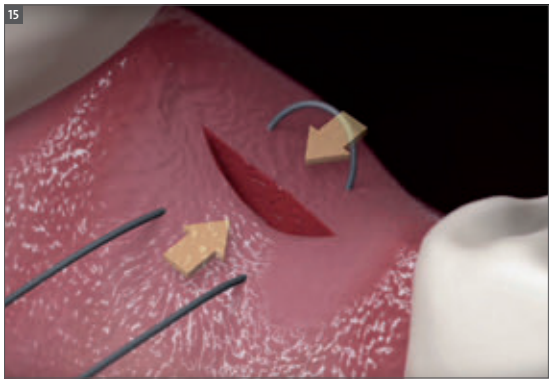
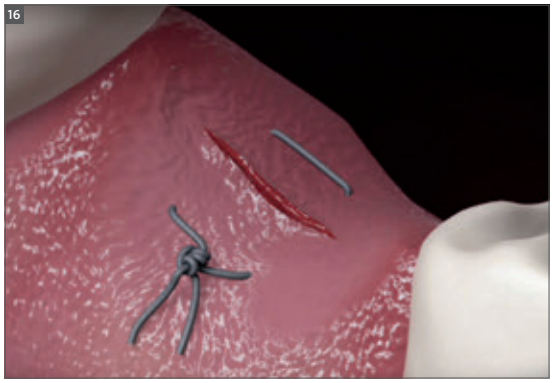


Fig. B15, B16:
Make an internal mattress suture 5 mm apically to the incision to approximate the flap and place it on its original position.



Place a second internal mattress suture more coronally in order to ensure wound closure and primary intention healing of the flaps. Use additional interrupted or internal mattress sutures to close the adjacent areas of the defect.

Leave sutures in place for 14 days.
A chlorhexidine regimen should be maintained for four weeks. Trauma to the interproximal papilla due to brushing should be avoided. The patient must be enrolled in a stringent maintenance regimen.

Watch the full movie at
http://www.straumann.com/en/videos/regeneration/trombelli/en.html

Further reading

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