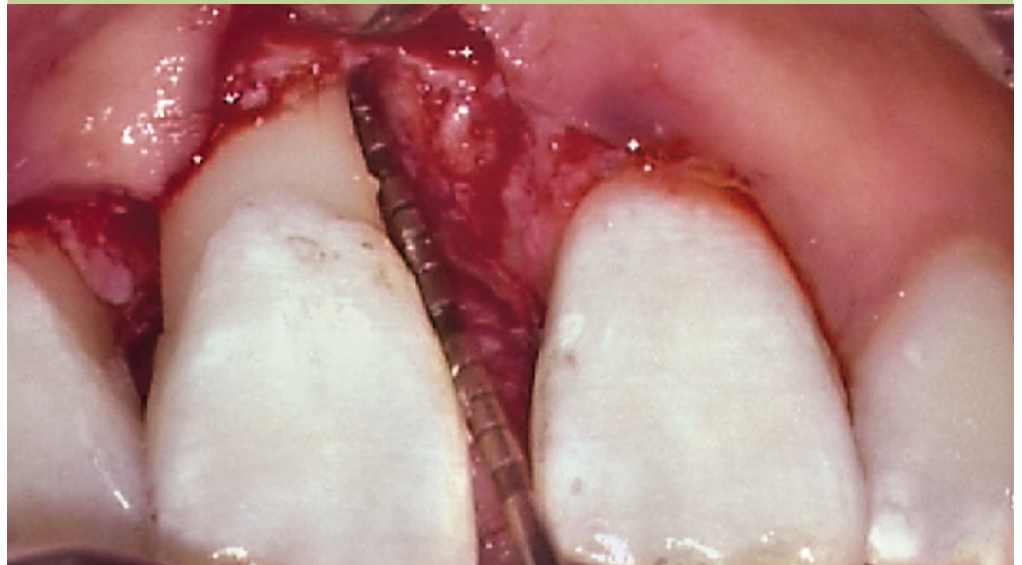


Periodontal Regeneration



Treatment concept of Dr. Pierpaolo Cortellini, Florence, Italy



- > Periodontal regeneration in an aesthetic area
- > Severe generalized periodontitis
- > Severe generalized gingival inflammation and large deposits of plaque
- > Deep (10 mm) and wide 1-wall intrabony defect

1. Indication profile

	Region	☒ aesthetic region	☐ non-aesthetic region
		☐ single tooth gap	☐ multiple tooth gap
	Bony situation	☒ bone defect present	☐ no bone defect present
	Soft tissue situation	☐ recession	☒ no recession
		☒ inflamed	☐ infected
		☒ thick biotype	☐ thin biotype
		☒ primary wound closure possible	☐ primary wound closure not possible
		☒ intact papillae	☐ impaired, missing papillae
		☒ adequate keratinised mucosa	☐ inadequate keratinised mucosa
			☐ uneventful
Further periodontal examination		☒ full mouth plaque score: 99%	
		☒ full mouth bleeding score: 100%	

Background information

Patient:

Male, 34 years old, referred to the practice for periodontal therapy.

First examination: January 2002.

Chief complaints: Inflammation, recurrent abscesses, pain, migration and hypermobility of tooth 11, bad breath. The patient was concerned with function, aesthetics, and preservation of teeth.

Anamnesis: Good general health, family history of periodontitis, never smoker, never treated for periodontitis.

Periodontal examination: Severe generalized gingival inflammation associated with the presence of large deposits of plaque and calculus, migration of tooth 11, purulence associated to tooth 11 and 41. Bad breath. Full mouth plaque score: 99%. Full mouth bleeding score: 100%. Presenting with 108 sites with probing depth ≥ 5 mm.

Diagnosis: Chronic generalized severe periodontal disease in a patient with family history for periodontitis and presence of large deposits of plaque and calculus.

Initial treatment plan: Cause related periodontal therapy, including motivation and instructions for home care, professional supra-gingival debridement and sub-gingival root planing. Re-evaluation for potential additional therapy.

Treatment objectives: Gain periodontal health, preserve teeth, improve function and aesthetics.

Re-evaluation: 1 month after completion of cause-related therapy the patient reported the complete resolution of bad breath, resolution of inflammation and purulence, resolution of pain, lower mobility associated to tooth 11. Tooth 11 appeared also slightly repositioned with respect to baseline migration. Full mouth plaque score: 17%. Full mouth bleeding score: 10%. Presenting now with 13 sites with residual probing depth ≥ 5 mm. Residual pockets were associated to teeth 16-17 and tooth 11. Radiographic examination showed the presence of a deep intrabony defect associated with tooth 11^{1,2,3,4,5}.

Surgical treatment plan: Flap surgery teeth 16-17; periodontal regeneration tooth 11.

2. Aims of the therapy

- › Aims of periodontal regeneration tooth 11: At re-evaluation, tooth 11 presented with residual pockets of 11 mm at the mesial side, 9 mm at the palatal side, and 7 mm at the distal side, associated with a deep and wide intrabony defect. Soft tissues were well preserved and represented by a consistent amount of thick attached gingiva. Periodontal regeneration was planned to reduce probing depth by increasing bone and attachment in order to avoid gingival recession and to reduce tooth hypermobility. Overall aims, therefore, were resolution of pockets, aesthetic preservation and function improvements^{6,7,8}.

3. Surgical procedure



Fig. 1 Baseline photograph: evidence of severe gingival inflammation, associated with plaque and calculus accumulation, and migration of tooth 11.



Fig. 2 Re-evaluation photograph: resolution of the gingival inflammation. Tooth 11 slightly repositioned (partial spontaneous resolution of the pathological migration).



Fig. 3 Tooth 11 after cause-related therapy presenting with a slight residual migration and no gingival recession. The gingiva is thick and the interdental papillae well preserved.

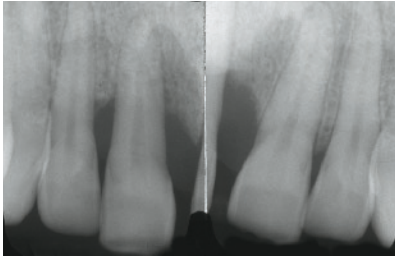


Fig. 4 The baseline radiograph shows the presence of a deep and wide intrabony defect involving the mesial and also the distal side of tooth 11.



Fig. 5 Pre-operative slide showing the 11 mm mesial pocket. Local anesthesia has been delivered on the buccal and lingual area.

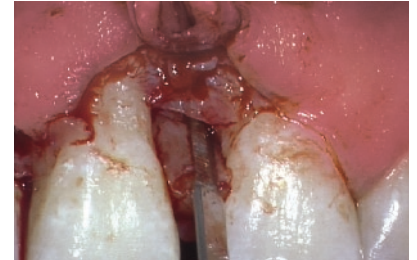


Fig. 6 A modified papilla preservation incision has been performed between teeth 11 and 21 (wide interdental space), while a simplified papilla preservation flap has been preferred between teeth 12 and 11 (narrow interdental space) ^{9,10,11}.

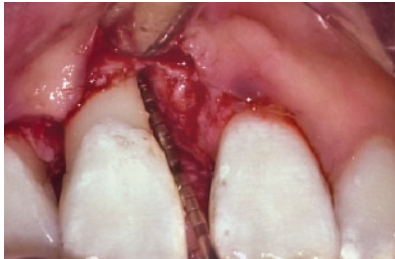


Fig. 7 The flap design involves tooth 12 (distal angle). After elevation of a full thickness buccal and lingual flap, a deep (10 mm) and wide 1-wall intrabony defect associated to tooth 11 is evident ^{1,2,12,13}.



Fig. 8 After careful debridement and root planing, a bio-resorbable collagen barrier membrane (Geistlich Bio-Gide®) has been adapted and positioned around tooth 11 ¹⁴.



Fig. 9 A deproteinized bovine bone mineral (Geistlich Bio-Oss®) is implanted to fill the intrabony defect and support the collagen barrier membrane. The use of a combined approach (barrier and filler) has been chosen in this case to support the gingival tissues in the presence of a non-supportive wide 1-wall intrabony defect ^{13,14,15,16,17}.

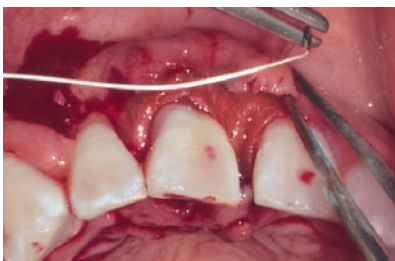


Fig. 10 After membrane adaptation, a split thickness incision has been performed on the buccal flap associated with a vertical releasing incision distal to tooth 12 to increase flap mobility and allow primary closure.



Fig. 11 Primary closure of the flap has been achieved with multilayer internal mattress sutures. The interdental space between 11 and 21 has been closed with 3 levels of sutures ^{12,18}.

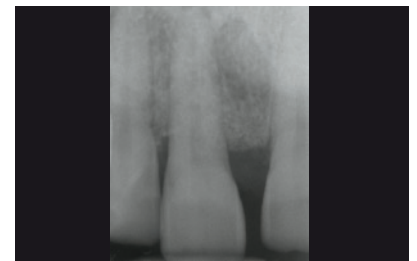


Fig. 12 Post-operative radiograph, showing the intrabony defect filled by the implanted material.



Fig. 13 Primary closure maintained after 1 week, at suture removal.



Fig. 14 Re-evaluation at 1 year. The tooth 11 has spontaneously realigned, no gingival recession has occurred, and the mobility is completely resolved. A 4 mm residual probing depth is evident, along with a 7 mm attachment level gain as compared to baseline with a good preservation of the interdental soft tissues ^{14,19}.



Fig. 15 The 1-year radiograph shows the resolution of the intrabony component of the defect.



Fig. 16 Re-evaluation after 6-years. The tooth 11 is completely and spontaneously realigned. The patient refers good comfort and function and is fully satisfied with aesthetics ^{20,21,22}.



Fig. 17 Radiograph taken 6-years after regeneration, showing the stability of the defect resolution.

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Suppliers

- Blades: Swann-Morton #15, Swann-Morton LTD, Sheffield, England and Micro USM 6900, Sable Industries, Vista CA, USA
- Sutures: Gore-tex CV-6 P6K23A needle RT – 13 and CV-7 P7K13A needle RT – 11, W.L. Gore & Ass, Flagstaff AZ, USA

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