

# Use of regeneration material in the treatment of periodontitis and for recession cover

Jürgen Pleul

## Initial situation

A 46-year old patient, a nonsmoker in good general health, presented to the author's office with gingival bleeding, slight tooth loosening and partial gingival recession. Clinical examination showed grade 1 tooth mobility at 12 and 11. Teeth 15 and 25 had been treated with root fillings and classical stump abutments and metal ceramic crowns about 20 years ago. The patient had no symptoms since then with these teeth. Tooth 38 was elongated in absence of an antagonist. Secondary caries was visible. In 13 there was a cervical acrylic filling and Miller class 1 gingival recession at 13, 14 and 15. On probing there was a tendency to localized bleeding and a PSI index of 3 with pocket depths of 6 and sometimes 8 mm indicating the need for periodontal treatment in the posterior region (Figure 1). Horizontal and vertical bone reduction was apparent on X-ray (Figure 2); subgingival tartar was present. The diagnosis was chronic periodontitis /gingival recession.

## Treatment planning and implementation

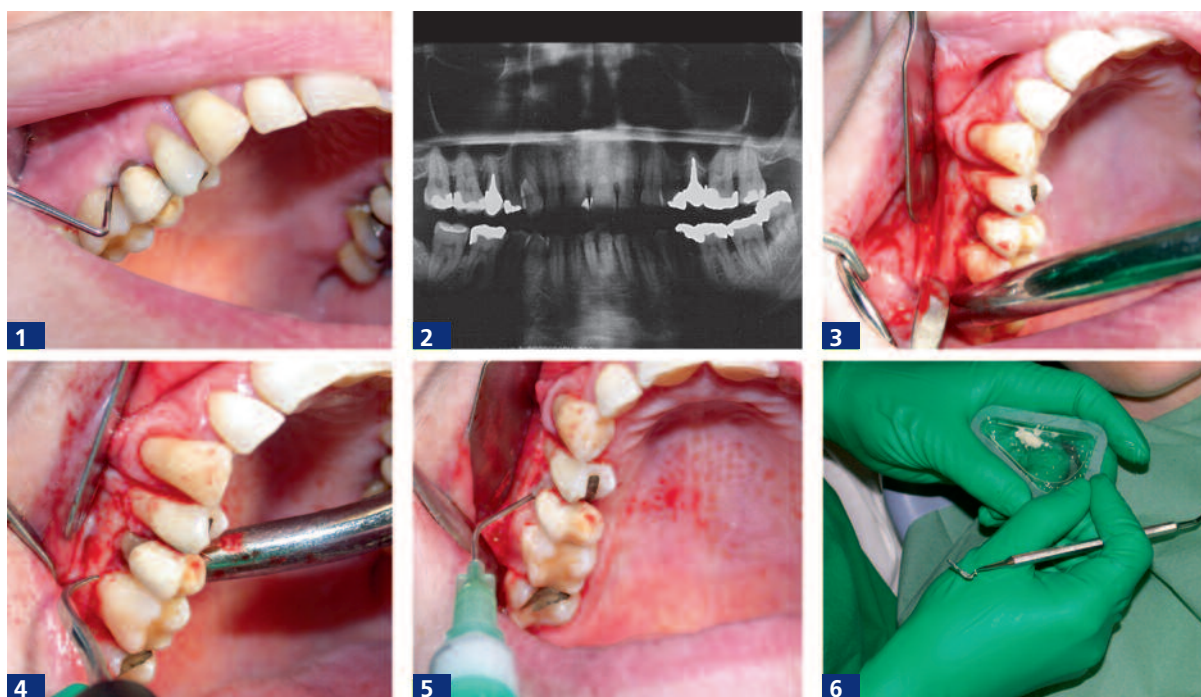
The patient initially underwent intensive preliminary treatment. Tooth 38 was not worth preserving and was extracted. The premature occlusion contacts at 12 and 11 were eliminated. The patient was advised on tooth

brushing techniques appropriate to the recession. After extensive tartar removal and professional tooth cleaning and oral hygiene instruction with follow-up, the conditions for further periodontal treatment were met. The patient was motivated. SRP (scaling root planing) of the jaws was performed under local anesthesia. About 2 months after the conclusion of the closed procedure, the patient had re-evaluation and further professional tooth cleaning.

## Surgical procedure, treatment of periodontitis

Open periodontal treatment was performed by quadrants under local anesthesia. The first quadrant was documented photographically as an example. Using microsurgery, the horizontal marginal and vertical incisions were made with a double-sided scalpel blade. When constructing the flap, the assistant must use atraumatic retraction and suction techniques (Figure 3). This allows optimal flap design and appropriate handling of all the regeneration materials employed. Largely bloodfree operation fields provide a good overview and vision of the surgical areas and guarantee safe removal of the subgingival tartar deposits in the deep pockets and creation of biocompatible root surfaces (Figure 4). Using this procedure, we divided the papillae with a small papilla elevator and carefully dissected the flap further with the elevator. With the SRP treatment, the granulation tissue on the alveolar bone and in the bone defect was removed. In order to cover the recession in the region

*Dr sc med Jürgen Pleul MD  
info@zahnarztpraxis-dr-pleul.de  
Private practice in Zwickau/Germany*



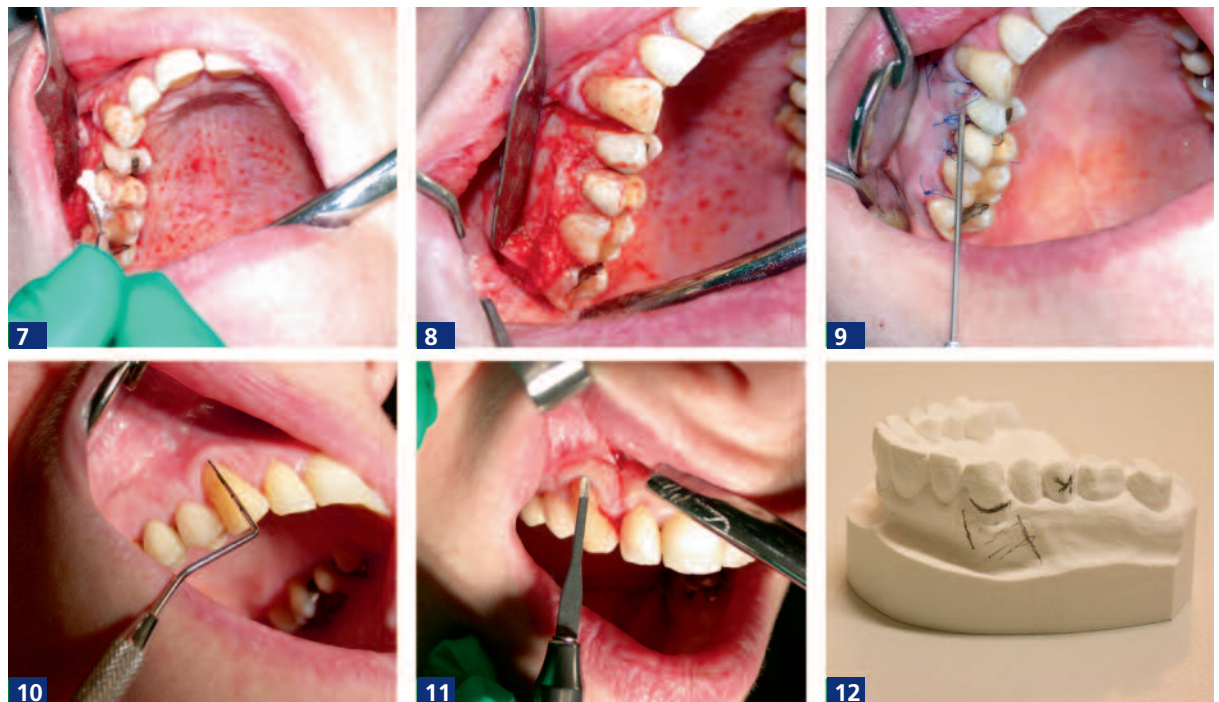
**Figure 1:** Gingival recession and pocket depth of up to 8 mm in the posterior region of 13, 14 and 15.  
**Figure 2:** Preoperative radiograph shows horizontal and vertical bone reduction.  
**Figure 3:** Atraumatic retraction and suction technique by the assistant.  
**Figure 4:** Removal of the subgingival tartar deposits.  
**Figure 5:** Conditioning the root surface for 2 min with PrefGel.  
**Figure 6:** BoneCeramic mixed with Emdogain has a material consistency suitable for application

of teeth 14 and 15 with the prepared mucoperiosteal flap at the same time, we made a horizontal relieving incision in the periosteum at the base of the flap. This was then replaced as a trial to see whether slitting the periosteum allowed the flap to be replaced without tension while covering the recession in the area of teeth 14 and 15. After drying the operation area of 17, 16, 15 and 14 as much as possible, Straumann® PrefGel was used on the root surfaces (Figure 5). The surfaces were then irrigated intensively with sterile saline. Immediately thereafter, Straumann® Emdogain was applied directly to the root surface. The assistant mixed the remaining half of the Straumann® Emdogain 0.7 ml with Straumann® BoneCeramic 0.25g 400–700 µm. Mixing it and keeping it in a triangular blister pack enables the dentist to remove the material in optimal proximity to the patient (Figure 6). The regeneration material was now introduced in portions to the operation field. The outstanding material consistency of Emdogain/BoneCeramic allows lost areas of bone to

be modeled (Figures 7, 8). After inspecting the operation field, the mucoperiosteal flap was then replaced without tension over the recession areas of 14 and 15 as far as the crown margin of the old prosthetic restoration and was secured with monofilament atraumatic 5.0 Marilone suture. The wound margins were covered with Emdogain acting as a wound dressing (Figure 9). A control X-ray was then taken. The patient was discharged home with appropriate instructions on what to do during the next few days and with a Straumann information leaflet. Wound healing was uneventful.

### High-quality filling therapy and denture fabrication

When wound healing was complete in the first quadrant, tooth 16 was filled and prosthetic restoration of teeth 14 and 15 with all-ceramic crowns was performed. The crown margin is within the newly created margin.



**Figure 7:** Filling the defect with the BoneCeramic-Emdogain mixture, after application of Emdogain to the root surface.  
**Figure 8:** Modeling the lost bone areas with the BoneCeramic-Emdogain mixture.  
**Figure 9:** Covering the wound margins with the rest of the Emdogain in the form of a wound dressing.  
**Figure 10:** Miller class 1 6 mm recession at 13.  
**Figure 11:** Use of microsurgical instruments to raise the mucoperiosteal flap.  
**Figure 12:** Preoperative incision planning using a plaster model.

### Recession treatment with coronal advancement flap

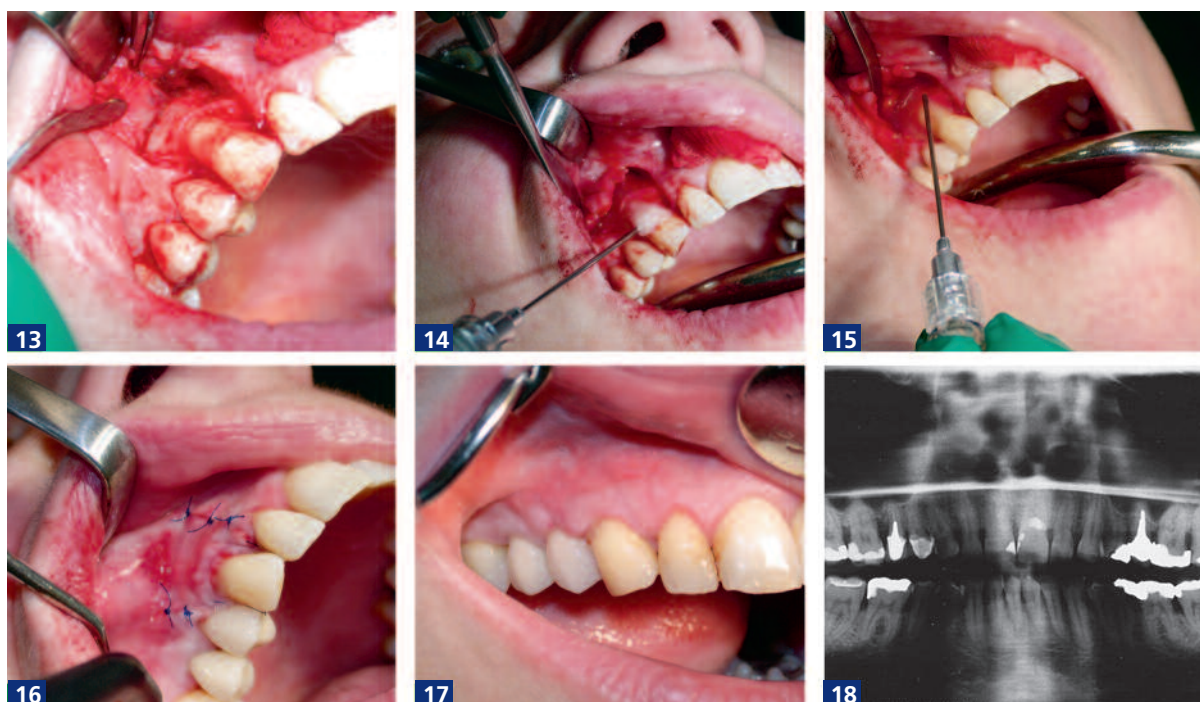
When oral hygiene was good and the conservative and prosthetic restoration was complete, recession cover at 13 was undertaken (Figure 10). The old cervical acrylic filling was removed under local anesthesia and a corresponding mucoperiosteal flap was raised using microsurgical instruments. A horizontal sulcus incision in region 13 and vertical incisions mesial and distal to 13 were made with a double-sided scalpel to form the flap (Figure 11). The incisions were simulated preoperatively on a plaster model (Figure 12). Using a minimally traumatic operation technique, the periosteum was slit at the base of the flap (Figure 13). The connective tissue was exposed at the papillae by de-epithelializing. The flap was then placed at tooth 13 to check whether the recession could really be covered without tension. Immediately after using Straumann® PrefGel

(Figure 14) and drying, Straumann® Emdogain (Figure 15) was applied to the exposed root surface. The flap was stabilized with monofilament atraumatic 5.0 Marilone (Figure 16). The wound margins were again covered with the rest of the Emdogain. The patient was discharged again according to the above criteria. The sutures were removed 10 days postoperatively and the wound was uninfamed.

The patient was then transferred to our internal recall for supportive periodontitis therapy (SPT). About 3 months after the periodontitis treatment, the patient suffered an accident with polytrauma and was ventilated for a prolonged period.

The clinical situation about 6 months after recession cover and approx. 12 months after surgical periodontitis treatment with regeneration is shown in Figure 17 and Figure 18 shows the radiographic appearance.





**Figure 13:** Slitting the periosteum at the base of the flap using a minimally traumatic operation technique.

**Figure 14:** Conditioning the root surface with PrefGel for 2 minutes.

**Figure 15:** Application of Emdogain after thorough irrigation of the site with NaCl solution.

**Figure 16:** Stabilization of the flap with atraumatic sutures (5.0 Marilone).

**Figure 17:** Clinical appearance 6 months after recession cover and approx. 12 months after surgical periodontitis therapy.

**Figure 18:** Radiographic appearance approx. 12 months after surgical periodontitis therapy.

### Treatment outcome and conclusion

The patient is very happy with her treatment outcome. The marginal and papillary gingiva are pale pink. The texture and contour of the gingiva are normal with no more gingival bleeding. The recessions are covered. We were handicapped at 15 by the presence of crown margins that limited the extent of possible recession coverage. Surgical periodontitis therapy (17,16,15,14) was performed in the first phase at the same time as coronal advancement of the mucoperiosteal flap (15,14). The second phase consisted of conservative and prosthetic restoration (16,15,14) and the third step was cover of the recession at 13. Further impressions for prosthetic restorations were therefore not necessary. Overall, an esthetically attractive result was achieved. This complex case documentation shows that the use of Straumann® Emdogain with BoneCeramic in surgical periodontitis therapy and

Straumann® Emdogain in the treatment of recession is a user-friendly technique in routine practice. These operations can be performed by appropriately trained dentists in the dentist's office. The materials should be used exactly according to the manufacturer's instruction and the surgery should be performed with trays equipped according to QM checklists. Loupes were used during all the surgical procedures. In combination with established surgical methods such as the access flap in periodontitis surgery and coronally advanced flap for recession coverage with regeneration material, very good clinical and esthetic results can be predicted with certainty. These results are stable long-term with regular supportive periodontal therapy and patient cooperation.

*Reprinted with permission from TARGET 2/09*