

DR HERMANN DERKS,  
WILFRIED LESAAR, DENTAL TECHNICIAN

Case report: Regenerative (GBR),  
implantological, and restorative  
reconstruction after four years.



Fig. 1: Clinical situation prior to extraction

## P ERIIMPLANT HARD/SOFT-TISSUE ESTHETICS FOR THE LONG TERM IN SINGLE-TOOTH IMPLANTS AFTER AUGMENTATION WITH BOVINE BONE REPLACEMENT MATERIAL

This report describes the loss of tooth 19 with a large horizontal bone defect and its treatment with guided bone regeneration (GBR) to fill the defect, an implantation, and a prosthetic restoration. The long-term clinical and radiographic results at four years are also shown.

### Key words

Tooth loss with reduced bone supply, GBR with bovine bone and membrane, implantation, esthetic restoration, long-term evaluation after four years.

### Introduction

For tooth loss resulting in edentulous spaces in the posterior area, numerous options are available in modern dentistry. Such cases were formerly treated prosthetically with a bridge once satisfactory healing of the extraction wound had been complete. One therapeutic alternative today is an implant-supported prosthetic restoration (crown). This results in substance

preservation in the adjacent teeth, and the consequential increase in buttresses spreads vertical muscle forces.

A prerequisite for implantation is an adequate amount of alveolar bone in both vertical and transverse dimensions. There is a substantial difference in treatment duration from what is required in classic bridge restorations and the demands on the clinician are sometimes high. The present case report describes the surgical/ prosthetic procedure of bone reconstruction of a buccal defect to enable the insertion of an endosseous implant. In addition, a long-term evaluation of the regenerated periimplant tissue is included.

### Case description

This is a 48-year-old patient treated with crowns and bridges 16 years previously according to his dental history. The patient had no functional complaints. In 1987, a root canal



Fig. 2: Radiograph prior to extraction



*Figs. 3 and 4: Bone loss after extraction of tooth 19*



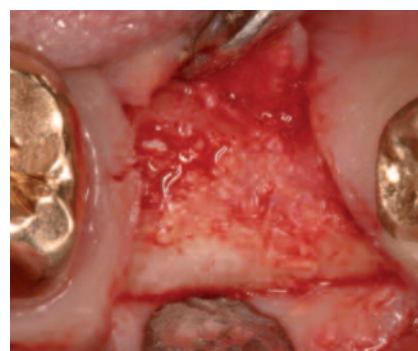
*Fig. 5: Panoramic image eleven months after GBR with 11-mm measuring wire*

procedure had been performed on tooth 19.

17 years after this treatment, the patient presented with symptoms at tooth 19. The clinical examination indicated a pressure-sensitive swelling in the tooth 19 region (Fig. 1). Probing enabled us to determine the presence of an open class II bifurcation. The radiograph (Fig. 2) revealed a large cavity around the root tip.

Tooth 19 was extracted along with the granulation tissue. This revealed a significant defect in the buccal alveo-

lar ridge (Figs. 3 and 4). Directly after extraction and removal of the inflamed tissue, a split flap, large enough to cover the alveolus and bone replacement material without tension, was prepared. The bone filler used was exclusively Bio-Oss. The augmentation was covered with a Bio-Gide double-layer resorbable membrane. The membrane was attached with two titanium nails apically and lingually with a 6/0 Gore mattress suture. Suturing was performed with a 6/0 Prolene running suture and a Gore 6/0 fixation (mattress) suture.



*Figs. 6 and 7: Clinical situation 11 months after GBR*



*Fig. 8: Post-implantation suturing*



*Fig. 9: Post-implantation panoramic radiograph*



*Fig. 10: Healing cap, cylindrical, one month in place*



*Figs. 11 and 12: Soft-tissue contour around the implant following removal of the healing cap*



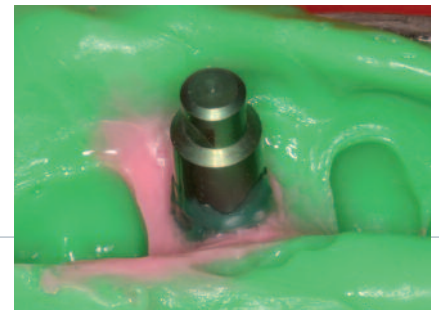
*Fig. 13: The inserted impression post, closed tray*



*Fig. 14: Impression post, closed tray, with impression cap mounted on top*



*Fig. 15: View from above of the green color-coded impression cap. Apically, the pink impression material forms a correct border around the impression cap*



*Fig. 16: The inserted lab analog*



*Fig. 17: Master cast with gingival mask*



*Fig. 18: The unfinished titanium abutment*



*Fig. 19: The customised titanium abutment*

The mattress suture was first placed and then tightened with two knots, and then the running Prolene suture was attached. Afterwards, the Gore suture was pulled back over the two knots, the tension on the running suture was released, and fastening was completed with a third knot. This procedure lessens the likelihood of wound dehiscence. The Gore suture was removed after seven days, the Prolene suture after 14 days. The further course of healing was uneventful.

Eleven months later, a CAMLOG® SCREW-LINE implant, diameter 6.0 mm, length 11 mm, was inserted at tooth 19 (Figs. 5–9). After implant insertion and a healing phase of four months, the implant was exposed and a cylindrical healing cap was screwed in (Fig. 10).

The healing cap was removed again after one month (Figs. 11 and 12). The transfer impression was made with a closed tray, and the wax-up was prepared (Figs. 13–17).

Individualisation of the titanium abutment and fabrication of the final metal-ceramic crown were performed in the dental office laboratory (Figs. 18–22). Next followed the try-in and attachment of the implant-supported crown (Figs. 23–25).

The titanium nails were left in place after discussion with the patient (see Fig. 25).

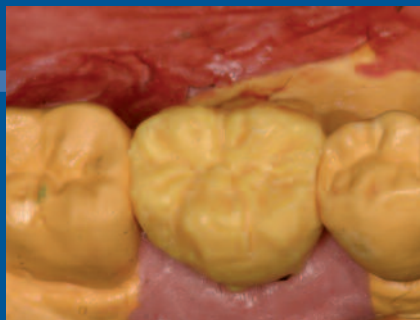


Fig. 20: Wax-up of tooth 19



Fig. 21: Form-fit transfer of the wax-up in metal ceramic



Fig. 22: Occlusal view ceramic



Fig. 23: Healing cap and soft-tissue area prior to insertion of the crown



Fig. 24: Metal-ceramic crown in situ directly after insertion



Fig. 25: Follow-up panoramic image after crown insertion



Fig. 26: Four years after insertion, the periimplant result is clinically stable and the gingiva is free of inflammation and well attached

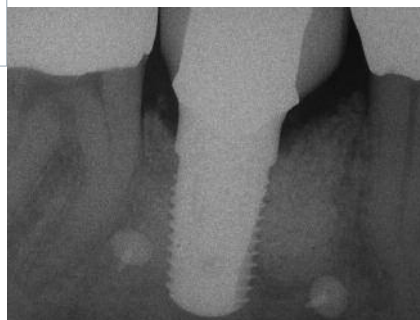


Fig. 27: Radiographic follow-up four years after insertion shows the apparent stability of the periimplant tissue (see Fig. 26)



Fig. 28: The buccal pocket depth four years after the insertion measures 2 mm in the defect area

## Long-term result

Four years after the insertion of the crown, a clinical and radiographic follow-up exam with pocket depth probing was performed and documented (Figs. 26–28). A stable peri-implant situation, non-inflamed gingiva, normal pocket depths (buccal pocket depth measured in the area of the defect: 2 mm) and no loss of vertical bone level (so far as a radiograph permits this to be stated) were found. The radiograph also showed residual Bio-Oss.

## Summary

This clinical case describes the regenerative potential of Bio-Oss in treating a transverse alveolar ridge defect. Eleven months after GBR, the clinical situation and radiographic check demonstrated new alveolar bone and Bio-Oss still present. Clinical and radiographic follow-up examinations four years after crown insertion show the remarkable stability of the periimplant tissue.

## Contact address:

Dr. Hermann Derks  
Steinstraße 12  
D-46446 Emmerich  
[www.drderks.de](http://www.drderks.de)