GBR and simultaneous implant placement in the mandible

Patient:
Male
82 years old, ASA I

Tooth position:
Posterior mandible, 46 (ADA #30)

Surgical solution:
Brånemark System MK IV TiUnite 5 x 11.5 mm
Xenogenic bone substitute and autogenous bone chips
creos xenoprotect collagen membrane
4.0 Vicryl sutures

Restorative solution:
NobelProcera Titanium Abutment and a screw-retained crown

Surgery date:
September 2, 2013

Total treatment time:
8 months

“The handling of the membrane is easy and at six months, we still see some remnants of the membrane which is very interesting for guided bone regeneration. Soft tissue healing seems predictable and I did not see any exposure of the membrane on all the cases we performed.”
Initial situation

A healthy patient presents at the private practice complaining of pain and chewing difficulty in the lower-right sextant.

Preoperative panoramic radiograph reveals extraction of 46 and 47 (#30 and 31) is indicated.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Treatment planning

CBCT scan three months post extraction of 46 (30).

CT scan confirming limited bone volume in the region of 46 (30).

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Implant placement and graft material preparation

A 4 mm vertical bone defect is evident after implant placement: Brånemark System MK IV TiUnite 5 x 11.5 mm.

The same access flap can be used for reconstructive surgery and autogenous bone harvest.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Graft material preparation

Bone chips collected by bone scraper.

A 50/50 mixture of xenogenic bone substitute and autogenous bone chips is prepared.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
The xenogenic bone material and autogenous bone chips are mixed.

The resorbable porcine collagen membrane creos xenoprotect is trimmed to cover the defect and the applied bone substitute.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
GBR procedure

The membrane is appropriately adjusted to cover the defect. It is also fixed to the buccal plate using two titanium pins.

The defect is completely filled with xenograft substitute and autogenous bone.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
GBR procedure

Blood from the surgical area is used to obtain optimal adaptation of the membrane to the bone defect.

Resorbable sutures are used to complete soft tissue coverage of the site.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Post-op radiograph

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Second stage surgery six months post-op

Access to the treated area reveals complete bone regeneration of the previous defect, and shows the width of new bone formation.

The cover screw is replaced by a healing abutment and resorbable sutures are placed.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Result of bone regeneration

Before.

After.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Final restoration

NobelProcera Titanium Abutment and veneered with dental ceramics; screw-retained implant-supported restoration.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni
Final result

Buccal view of final clinical situation at site #46 (30).

One-year post-op radiograph showing proximal bone stability at implant restoration. The two titanium pins used to fix the membrane were not removed at re-entry to avoid bone removal.

Case courtesy of Dr. Hadi Antoun and Dr. Michel Karouni