



# OsteoBiol<sup>®</sup>

by Tecnos

## GTO<sup>®</sup>

THE **NEW STANDARD** OF EXCELLENCE IN BIOMATERIALS

*Collagenated heterologous cortico-cancellous bone mix + TSV Gel*

REGENERATION SCIENCE

INSPIRED BY NATURE



## A unique biotechnology

### TECNOSS®: A UNIQUE PROCESS THAT PROMOTES AND GUIDES NATURAL BONE REGENERATION

Tecnoss® developed and patented a unique biotechnology that prevents the ceramization phase of natural bone and preserves the tissue collagen, allowing an osteoclastic-type remodelling of the biomaterial similar to physiological bone turnover and delivering a product endowed with characteristics very similar to human bone<sup>(1)</sup>.

**The combination of these factors allows a consistent new bone formation and a close contact between neo-formed bone and biomaterial.**

### COLLAGEN: A KEY FACTOR FOR BONE REGENERATION

Collagen has a key role in bone regeneration process in that:

- a) it acts as a valid substrate for platelet activation and aggregation
- b) it serves to attract and differentiate the mesenchymal stem cells present in the bone marrow into osteoblasts<sup>(2,3,4)</sup>
- c) it increases the differentiation rate and activity of osteoblasts, if compared to bone marrow cells cultured on conventional culture dishes<sup>(5)</sup>
- d) it stimulates the activation of the platelets, osteoblasts and osteoclasts in the tissue healing process
- e) it promotes new vessels formation and therefore graft vascularization<sup>(6)</sup>

### OSTEOBIOL® DUAL-PHASE BONE MATRIX + TSV GEL: A UNIQUE COMBINATION FOR GRAFT STABILIZATION

Thanks to its innovative composition, OsteoBiol® TSV Gel can provide mechanical stability to OsteoBiol® GTO® granules during the grafting procedure. OsteoBiol® TSV Gel is then rapidly resorbed and does not influence the natural regenerative process.

At room and body temperature OsteoBiol® TSV Gel is gel-like: it does not harden but keeps a soft consistency that allows a stable sticky mixture with OsteoBiol® GTO® granules.

**OsteoBiol®**  
by Tecness

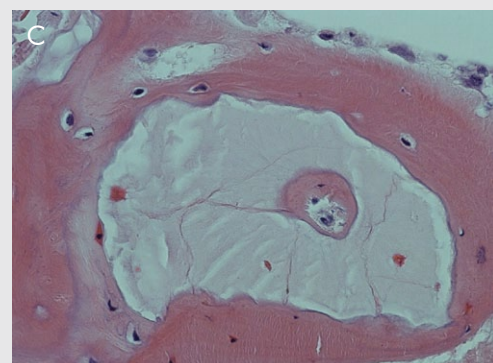
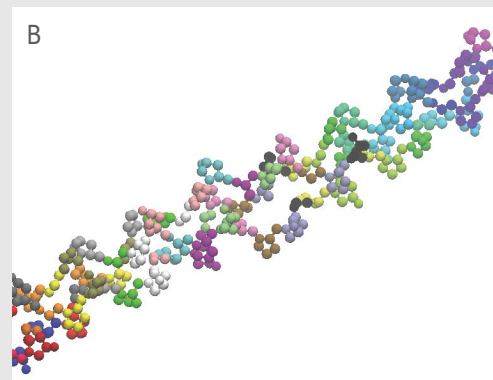


Fig. A | Source: Courtesy of Dr Patrick Palacci, Marseille, France

Fig. B | Collagen type I. Source: Tecness® Dental Media Library

Fig. C | Biopsy from upper jaw region retrieved at four months: magnification 40x  
Source: Biopsy by Dr Patrick Palacci, Marseille, France. Histology by Prof Ulf Nannmark, University of Göteborg, Sweden

(1) Figueiredo M et al. J Biomed Mater Res B Appl Biomater, 2010 Feb; 92(2):409-419

(2) Brunelli G et al. Eur J Inflamm, 2011, Vol. 9, no. 3 (S), 103-107

(3) Mizuno M et al. J Cell Physiol. 2000 Aug;184(2):207-13

(4) Mizuno M et al. Bone 1997 Feb;20(2):101-7

(5) Mizuno M et al. J Biochem. 2001 Jan;129(1):133-8

(6) Rombouts et al. Dent mater J, 2016 Dec 1;35(6):900-907



# The new standard of excellence in biomaterials



## CHARACTERISTICS

OsteoBiol® GTO® is a bone grafting material of heterologous origin. It is a mix of collagenated cortico-cancellous granules with a granulometry ranging from 600 to 1000 µm, properly mixed with OsteoBiol® TSV Gel, which is a mixture of heterologous type I and III collagen gel with polyunsaturated fat acids and a biocompatible synthetic copolymer diluted in aqueous solution.

OsteoBiol® GTO® is gradually resorbed and is extremely osteoconductive. Moreover, the granules' preserved collagen matrix facilitates blood clotting and the subsequent invasion of repairing and regenerative cells. These unique properties allow an

excellent rate of new bone formation, delivering adequate graft volume preservation, a healthy new bony tissue and ultimately, a successful implant rehabilitation.

## HANDLING

Available in two sizes (0.5 and 2.0 cc), OsteoBiol® GTO® is a ready-to-use pre-hydrated biomaterial and can be easily grafted to the defect site, directly injected from the sterile syringe. In this way, clinicians can skip the hydration phase with saline or blood, saving time and decreasing the risk of accidental exposure to pathogens.



OsteoBiol® GTO® shaped and ready to be grafted into the bone defect  
Courtesy of Dr Patrick Palacci, Marseille, France

The presence of OsteoBiol® TSV Gel ensures the optimal stickiness of the material, which is also easily adaptable to the recipient site and extremely stable.

## CLINICAL INDICATIONS OVERVIEW

OsteoBiol® GTO® has been conceived as a universal biomaterial, easily adaptable to any bone defect, in association with OsteoBiol® Evolution membranes or OsteoBiol® Lamina to protect the graft.

Nonetheless, thanks to its stickiness, it is particularly indicated for horizontal augmentation procedures (e.g. two-walls defects, when the crest is resorbed) and for socket preservation cases with compromised buccal plate.

During sinus lifting, OsteoBiol® GTO® can be directly applied through the bony window, helping the stabilization of implants in case of immediate placement.

OsteoBiol® GTO® can also be successfully used to treat peri-implant lesions and severe intrabony defects.

### Tissue of origin

Heterologous cortico-cancellous bone mix

### Tissue collagen

Preserved

### Physical form

Pre-hydrated granules and OsteoBiol® TSV Gel

### Composition

~ 80% granulated mix  
~ 20% OsteoBiol® TSV Gel

### Granulometry

600-1000 µm

### Re-entry time

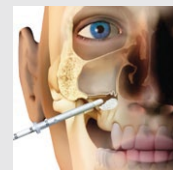
About 5 months

### Packaging

Syringe: 0.5 cc, 2.0 cc

### GMDN code

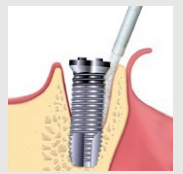
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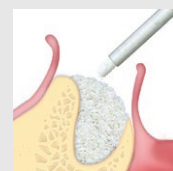
LATERAL ACCESS  
SINUS LIFT



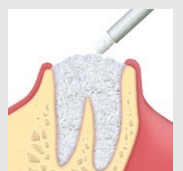
INTRABONY DEFECTS



PERI-IMPLANT  
LESIONS



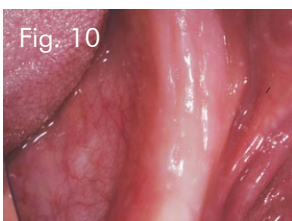
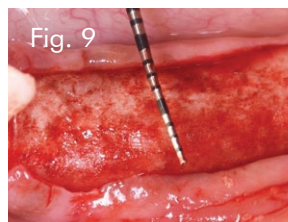
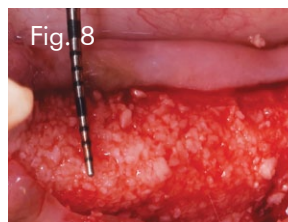
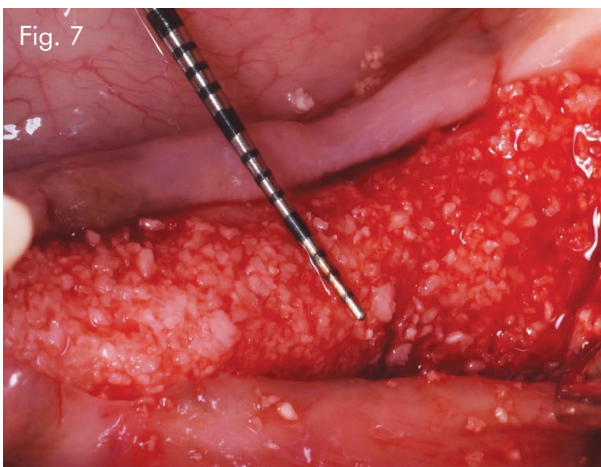
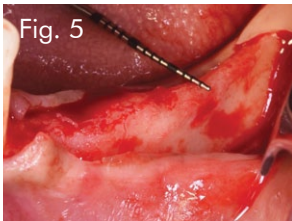
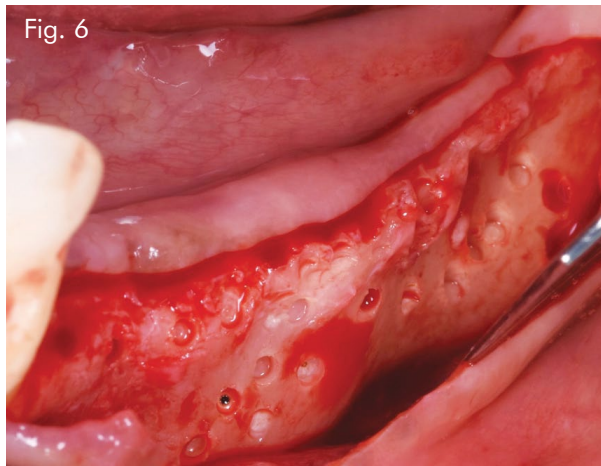
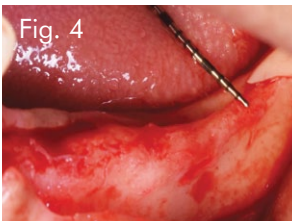
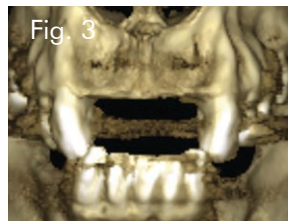
HORIZONTAL  
AUGMENTATION



ALVEOLAR  
REGENERATION



## Excellent graft stabilization



### CASE REPORT

#### Horizontal augmentation

Sex: **male** | Age: **37**

**Fig. 1** Severely resorbed crest - lateral view  
**Fig. 2** Severely resorbed crest - anterior view

**Fig. 3** CBCT scan showing the extremely resorbed knife-edge crest

**Fig. 4-5** Crestal width 2 mm

**Fig. 6** The crestal bone is perforated to stimulate blood flow into the graft

**Fig. 7-8** The application of OsteoBiol® GTO® results in horizontal ridge augmentation

**Fig. 9** Application of OsteoBiol® Lamina before suturing

**Fig. 10** Healed tissues after 9 months. Crestal width 5,5 mm

**Fig. 11** X-ray taken after 12 months showing well integrated implants. Implants Ø 3,5 mm

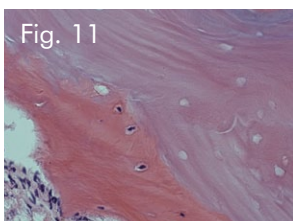
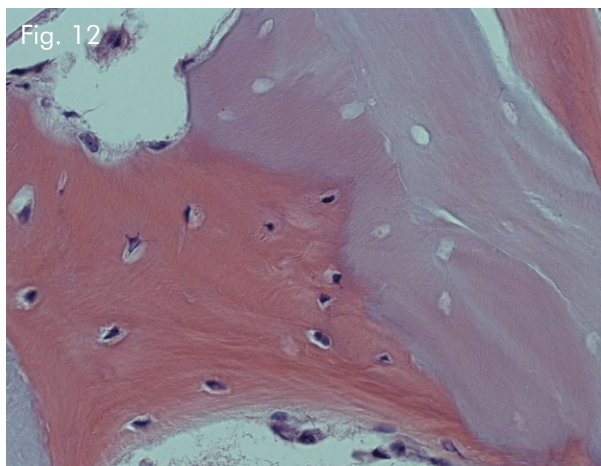
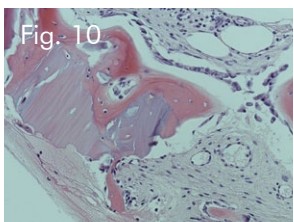
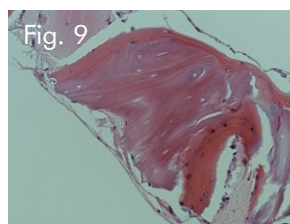
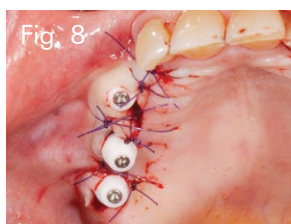
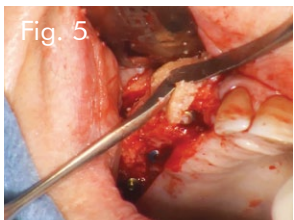
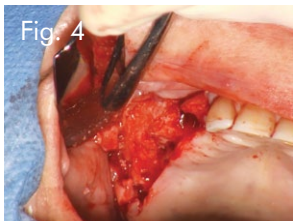
**Fig. 12** Final prosthetic restoration

Documentation provided by  
Dr **Roberto Rossi**  
M.Sc.D in Periodontology, Genova, Italy  
e-mail: [drrossi@mac.com](mailto:drrossi@mac.com)

Bone substitute: **OsteoBiol® GTO®**  
Barrier: **OsteoBiol® Lamina**



# Excellent graft stabilization



## CASE REPORT

### Treatment of Posterior Maxilla Sinus Elevation

Sex: **female** | Age: **70**

**Fig. 1** Severely atrophic maxilla requiring a sinus lift procedure

**Fig. 2** Osteotomy and elevation of the Schneiderian membrane

**Fig. 3** Augmentation of the sinus floor using OsteoBiol® GTO®

**Fig. 4** The augmented site is ready for immediate implant placement

**Fig. 5** Compaction of OsteoBiol® GTO® into the sinus and around the implants

**Fig. 6** View of the grafted sinus

**Fig. 7** Placement of the healing abutments 4 months later

**Fig. 8** Sutures, occlusal view

**Fig. 9-10** Biopsies from upper jaw region retrieved at four months

**Fig. 11-12** Histologies at higher magnification: osteocytes in the lacunae can be observed

Documentation provided by  
Dr **Patrick Palacci**  
Brånemark Osseointegration Center  
Marseille, France  
e-mail: patrick@palacci.com

Histologies by Prof **Ulf Nannmark**  
University of Göteborg, Sweden

Bone substitute: **OsteoBiol® GTO®**

# GTO®

## THE **NEW STANDARD** OF EXCELLENCE IN BIOMATERIALS

*Collagenated heterologous cortico-cancellous bone mix + TSV Gel*

Made in Italy



Tecross s.r.l. is an innovative, globally active company that develops, produces and documents premium-quality xenogenic biomaterials by the brands Tecross® and OsteoBio®.

Its 20 years of research led to its patent-protected production process that ensures neutralization of antigenic components in order to achieve biocompatibility, while preserving the natural collagen matrix inside the biomaterial.

Tecross® products comply with highest quality standards such as ISO 10993, ISO 13485 and 93/42/EC.

**osteobiol.com**

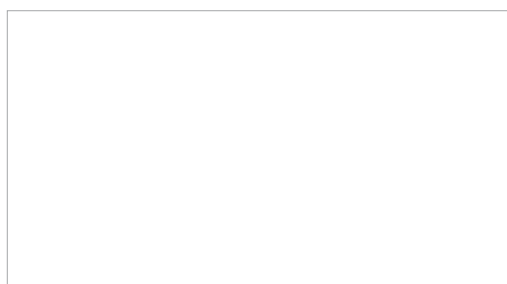
Authorized Distributor

**Tecross® Dental**

Via Livorno, 60  
10144 Torino | Italy  
Tel +39 011 2257396  
Fax +39 011 2257398  
info@tecross-dental.com

**osteobiol.com**

International Sales & Marketing



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