straumann®

VITALITY MEETS BONE VOLUME

WITH STRAUMANN BONECERAMIC

Straumann® BoneCeramic™

COMMITTED TO
SIMPLY DOING MORE
FOR DENTAL PROFESSIONALS

THE VITALITY YOU NEED AROUND DENTAL IMPLANTS

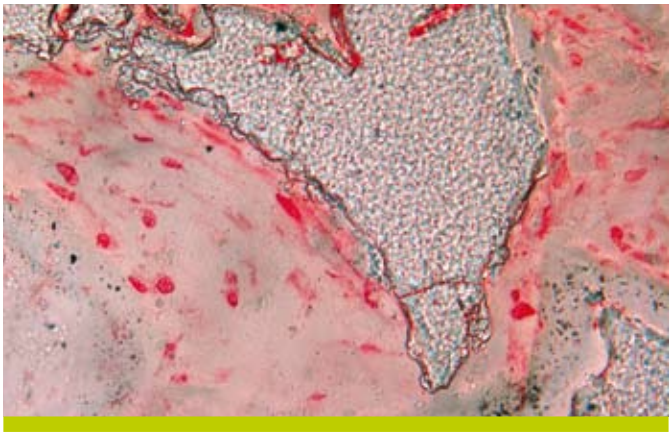


Image by PD Dr. F. Schwarz

Patient's own bone regeneration is a key factor to successful osseointegration of dental implants.

Straumann® BoneCeramic™ gradually resorbs and becomes substituted by new vital bone.

BONE VOLUME RESTORATION AND PRESERVATION FOR **THE DESIRED ESTHETIC OUTCOME**

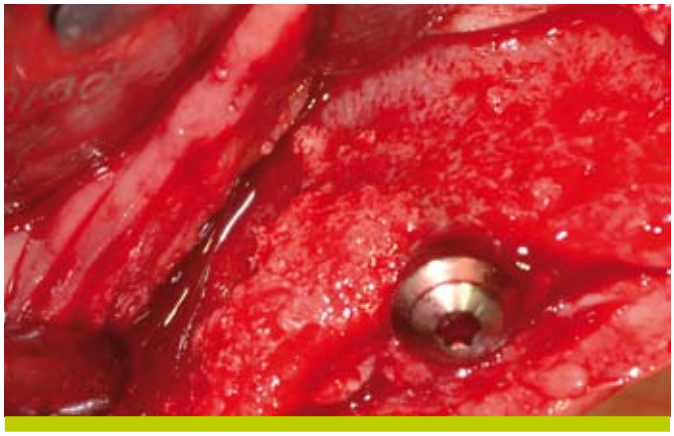


Image by Dr. N. Van Assche

Bone volume restoration and preservation are essential requirements in order to achieve esthetic results successfully.

Straumann BoneCeramic is engineered to support restoration and preservation of bone volume.

BONE FORMATION ACCOMPANIES STRAUMANN BoneCeramic DEGRADATION

Bone formation accompanies Straumann® BoneCeramic™ degradation *in vivo*[1,2]

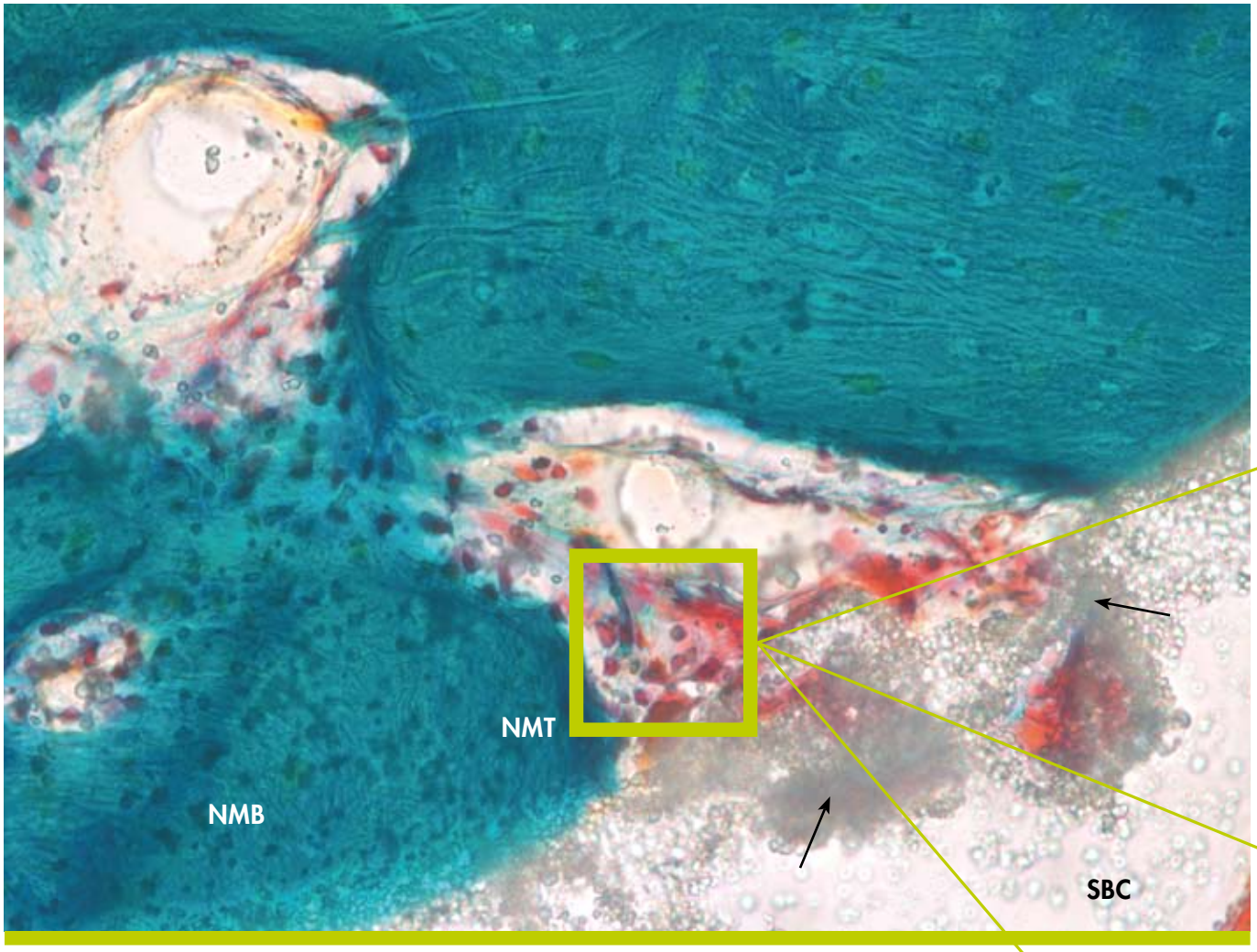


Image by PD Dr. F. Schwarz. Methyl Green staining, original magnification X 400

NMB: new mineralized bone

NMT: non mineralized tissue displaying osteogenetic activity

SBC: Straumann BoneCeramic particle

Arrows: Straumann BoneCeramic degradation (grey zones)

Images and data from a preclinical canine study by PD Dr. F. Schwarz.
Data on file.[2]

[1,2] *see studies overview on page 8*

Osteoid

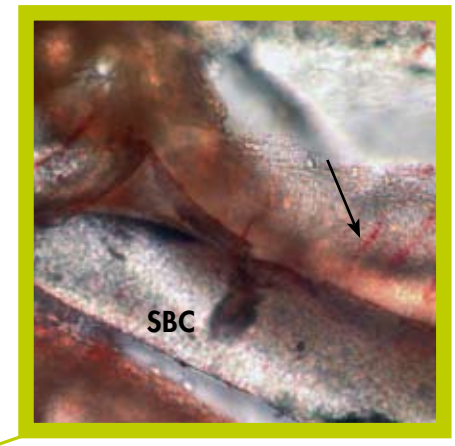


Image by PD Dr. F. Schwarz. Collagen type I staining, original magnification X 400

Collagen I fibres (arrow), a major component of the bone matrix, clearly indicate osteogenesis.

Osteoblasts

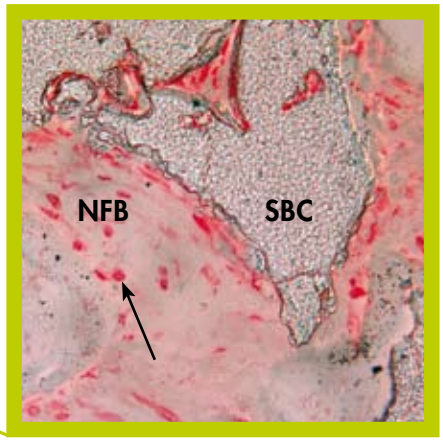


Image by PD Dr. F. Schwarz. Osteocalcin staining, original magnification X 400

Osteoblasts (arrow), cells responsible for bone synthesis, present in the new forming bone (NFB).

Blood vessels

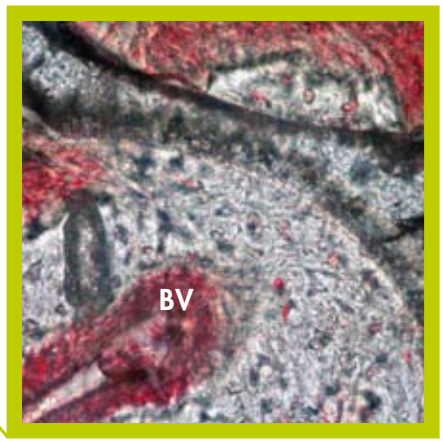
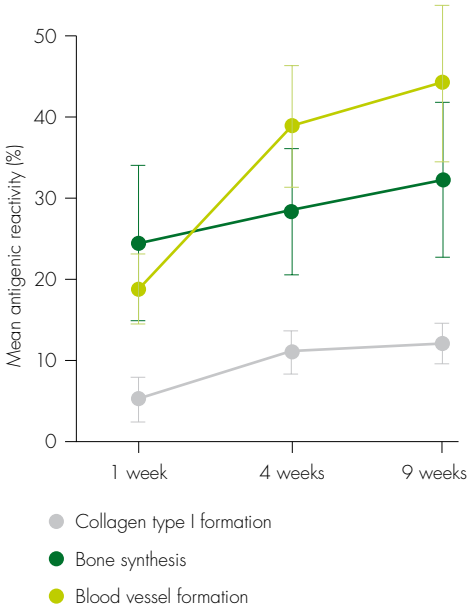


Image by PD Dr. F. Schwarz. Transglutaminase II staining, original magnification X 400

Blood vessels (BV) grow through Straumann® BoneCeramic™ augmented bone supplying nutrients for bone generation.

Sustained bone formation over healing time

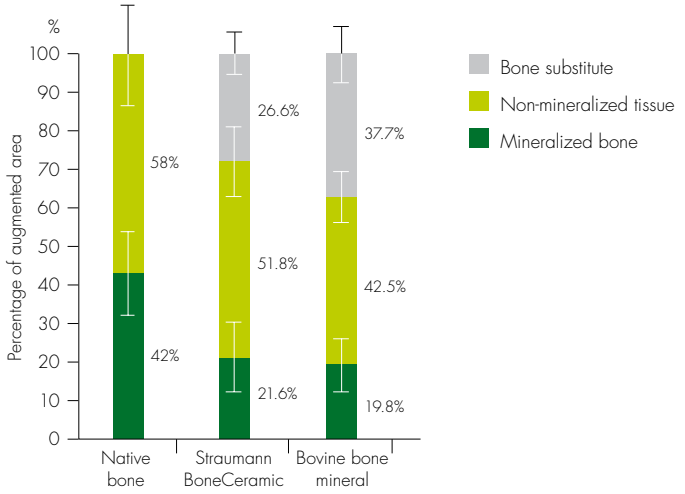
Antigenic reactivity indicating bone formation over time



DESIGNED TO PROMOTE GROWTH OF PATIENT'S OWN BONE

STRAUMANN BoneCeramic

- Significantly less residual bone substitute and more non-mineralized tissue (including bone marrow and connective tissue) with Straumann® BoneCeramic™, compared to bovine bone mineral, 6–7 months post augmentation, in sinus floor elevation[3]
- Equivalent new mineralized bone, in comparison to bovine bone mineral[3]
- Both Straumann BoneCeramic and bovine bone mineral are materials suitable for sinus augmentation followed by placement of dental implants



Composition of regenerated tissue 6–7 months post augmentation

- 28.35 % average newly formed mineralized bone with Straumann BoneCeramic versus 22.27 % with bovine bone mineral, between 6 and 8 months post augmentation ($p = 0.6024$)[4]
- Trend of increase in mineral bone formation over healing time with Straumann BoneCeramic[4]
- Bone vitality was 100% in all cores harvested[4]

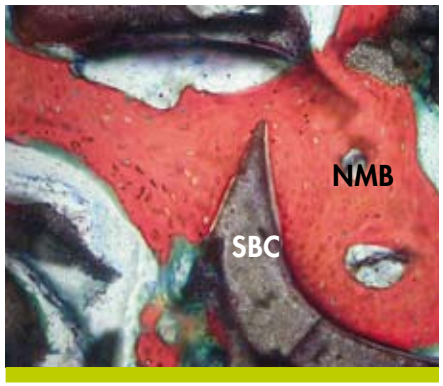


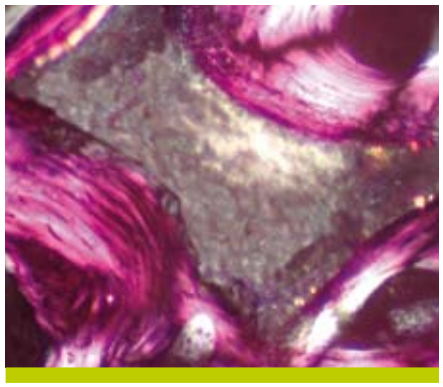
Image by Prof. Dr. S.J. Froum. Stevenel's blue and Van Gieson's picro fuchsin, magnification X 200 Reproduction authorized by International Journal of Periodontics & Restorative Dentistry

NMB: New mineralized bone

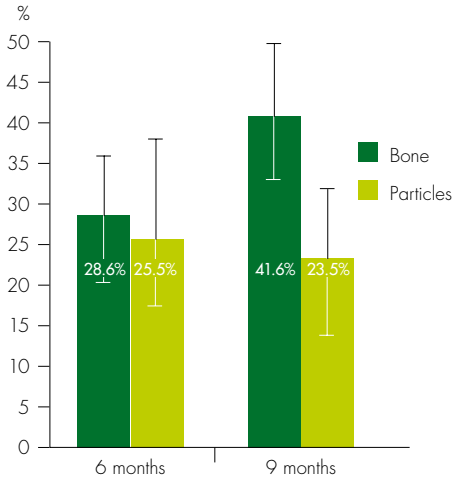
SBC: Straumann BoneCeramic

Osteoid: green staining

- Significant increase in mean bone area fraction over healing time with Straumann BoneCeramic in a mixed with autogenous bone, in sinus floor elevation[5]



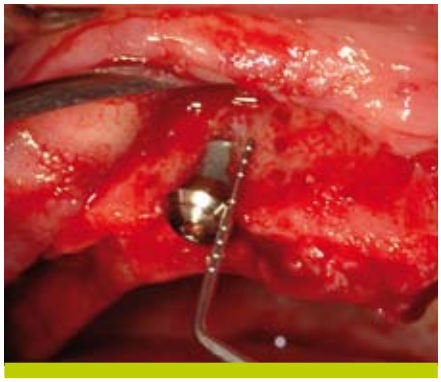
Polarized image displays osseointegration of Straumann BoneCeramic particle in lamellar type of bone, 6 months post augmentation Image by Prof. Dr. Z. Artzi. Paragon staining, original magnification X 600 Reproduction authorized by Clin. Oral Impl. Res

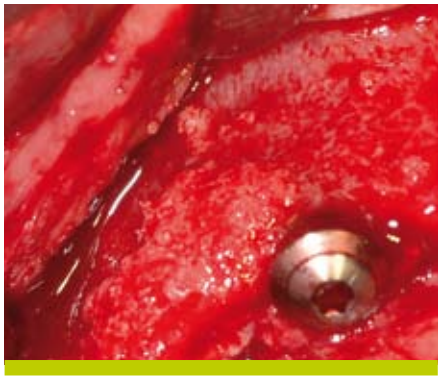


Mean bone area fraction, 6 and 9 months post augmentation

[3,4,5] see studies overview on page 8

BONE VOLUME RESTORATION AND PRESERVATION
FOR THE DESIRED ESTHETIC OUTCOME





Dehiscence-type defect before and 6 months after augmentation with Straumann BoneCeramic
Image by Dr. N. Van Assche

Periapical radiograph before treatment and 12 months after augmentation procedure
Image by Prof. Dr. G.-G. K. Zafiropoulos
Reproduction authorized by J. Periodontology

1. Extraction socket filled with Straumann BoneCeramic
2. Bone volume restoration 8 months post augmentation
Images by Dr. N. Mardas and Prof. N. Donos

In a prospective randomized controlled clinical study, Straumann® BoneCeramic™ in combination with autogenous bone has been observed to successfully promote the restoration of bone volume in dehiscence-type defects.[6]

Equivalent defect fill as compared to bovine bone mineral 6 months after augmentation.[6]

Significantly greater gain of clinical attachment and hard tissue formation with Straumann BoneCeramic compared to autogenous bone alone in interproximal intrabony defects.[7]

Equivalent vertical bone growth and relative bone gain compared to bovine bone mineral 12 months post augmentation.[7]

In a prospective randomized controlled clinical study, Straumann BoneCeramic, in tooth extraction sockets, successfully supported ridge dimensions preservation.[8]

Statistically significant less reduction in the bucco-lingual ridge dimension with Straumann BoneCeramic than with bovine bone mineral, 8 months post augmentation. Equivalent width of the buccal and palatal/lingual bone plate and equivalent distance (height) of the alveolar bone crest at the mesial- and distal-central aspects of the socket relative to the CEJ of neighboring teeth, with Straumann BoneCeramic compared to bovine bone mineral, 8 months post augmentation.[8]

[6,7,8] *see studies overview on page 8*

STRAUMANN BoneCeramic

EXCELLENT HANDLING, REPRODUCIBLE QUALITY

Straumann® BoneCeramic™ is a fully synthetic and biocompatible product. Its manufacturing process is engineered to result in homogeneous phase distribution to support homogeneous resorption. The synthetic nature of Straumann BoneCeramic together with a controlled production process guarantee quality consistency and batch-to-batch reproducibility.

Straumann BoneCeramic rapidly absorbs fluids, forming a granular putty. The wetted granules adhere to the application instrument and subsequently fit the bony defect. Straumann BoneCeramic mixes well with sterile saline solution, autogenous blood and bone.

Ordering information

Art. No.	Article	Dimensions
070.203	Straumann BoneCeramic 400 – 700	Granule size: 400 – 700 microns Unit size: 0.25 g Volume: approx. 0.3 ml
070.204	Straumann BoneCeramic 500 – 1000	Granule size: 500 – 1000 microns Unit size: 0.5 g Volume: approx. 0.95 ml
070.205	Straumann BoneCeramic 500 – 1000	Granule size: 500 – 1000 microns Unit size: 1 g Volume: approx. 1.9 ml

TECHNICAL SHEET

Straumann® BoneCeramic™ is a fully synthetic bone graft substitute indicated for filling and/or augmenting intraoral/maxillofacial osseous defects:

- bony defects of the alveolar ridge
- tooth extraction sites
- sinus floor elevation
- intrabony periodontal osseous defects and furcation

Optimized morphology

With its optimized porosity, Straumann BoneCeramic is designed to favor vascularization, osteoblast migration and bone deposition. High porosity and minimum amount of material leave maximum space for new bone.

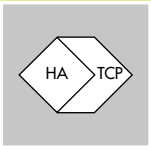
Gradual resorption

Straumann BoneCeramic consists of hydroxylapatite and β-tricalcium phosphate in a homogenous composite. β-tricalcium phosphate resorbs faster than hydroxylapatite, becoming replaced by natural bone. Hydroxylapatite prevents excessive resorption and preserves bone volume which are critical to achieving a successful esthetic result[9].

Reproducible quality and safety of synthetic products

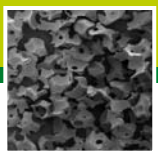
Straumann BoneCeramic is a fully synthetic and biocompatible material. It mixes well with sterile saline solution, autogenous blood or bone. Straumann BoneCeramic rapidly absorbs fluids, forming a granular putty which adheres to the application instrument and fits the bony defect.

Biphasic calcium phosphate



- 60% hydroxylapatite
- 40% β-tricalcium phosphate

High porosity



- Total porosity: 90%
- Interconnected pores
- Pores size: 100–500 µm

Granule dimensions

Two available granule sizes

- 400–700 µm
- 500–1000 µm

Excellent wettability and handling

- Absorbs fluids, forming a granular putty
- Adheres to the application instrument
- Conforms to the bony defect

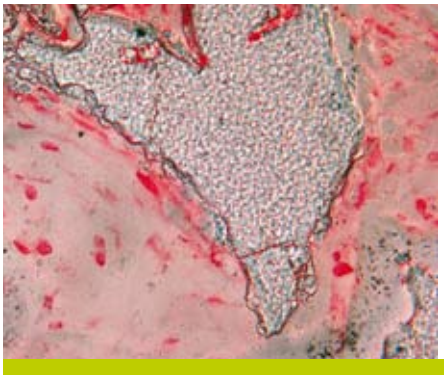
[9] *see studies overview on page 8*

STUDIES

STRAUMANN BoneCeramic

	Reference	Study Type	Indication
1	Schwarz F *et al.* Guided bone regeneration at dehiscence-type defects using biphasic hydroxyapatite + beta tricalcium phosphate (BoneCeramic) or a collagen-coated natural bone mineral (Bio-Oss® Collagen): an immunohistochemical study in dogs. Int J Oral Maxillofac Surg. 2007 Dec; 36(12): 1198-1206.	■ Preclinical canine study ■ 6 animals, 24 dehiscence-type defects ■ Split mouth design ■ Use of a resorbable membrane	Dehiscence-type defects
2	Schwarz F *et al.* Immunohistochemical characterization of wound healing at two different bone graft substitutes. A pilot study in dogs. Data on file.	■ Preclinical canine study ■ Split mouth design ■ 6 animals, 24 dehiscence-type defects ■ Use of a resorbable membrane	Dehiscence-type defects
3	Cordaro L *et al.* Maxillary sinus grafting with Bio-Oss or Straumann® BoneCeramic™: histomorphometric results from a randomized controlled multicenter clinical trial. Clin Oral Implants Res. 2008 Aug; 19(8): 796-803.	■ Prospective, randomized, multicenter clinical study ■ 37 patients, 48 sinus floor elevation procedures ■ Use of a collagen resorbable membrane	Sinus floor elevation
4	Froum SJ *et al.* Histomorphometric comparison of a biphasic bone ceramic to anorganic bovine bone for sinus augmentation: 6- to 8- month postsurgical assessment of vital bone formation. A pilot study. Int J Periodontics Restorative Dent. 2008 Jun; 28(3): 273-81.	■ Prospective, blinded, randomized, controlled pilot study ■ Split mouth design ■ 12 patients, 21 sinus floor elevation procedures ■ Use of a collagen resorbable membrane	Sinus floor elevation
5	Artzi Z *et al.* Histomorphometric assessment of bone formation in sinus augmentation utilizing a combination of autogenous and hydroxyapatite/biphasic tricalcium phosphate graft materials: at 6 and 9 months in humans. Clin Oral Implants Res. 2008 Jul; 19(7): 686-92.	■ Prospective clinical study ■ 28 patients, 28 sinus floor elevation procedures ■ In combination with autogenous bone ■ Use of a collagen resorbable membrane	Sinus floor elevation
6	van Assche N *et al.* BoneCeramic as alternative for Bio-Oss in the treatment of bony dehiscencies along implants. EAO 2007. Data on file.	■ Prospective, randomized controlled clinical study ■ Split mouth design ■ 14 patients, 28 extraction sockets ■ In combination with autogenous bone ■ Use of a collagen resorbable membrane	Dehiscence-type defects
7	Zafiropoulos GG *et al.* Treatment of intrabony defects using guided tissue regeneration and autogenous spongiosa alone or combined with hydroxyapatite/beta-tricalcium phosphate bone substitute or bovine-derived xenograft. J Periodontol. 2007 Nov; 78(11): 2216-25.	■ Single-masked, non-randomized, case-control clinical study ■ 65 patients, 93 intrabony defects ■ In combination with autogenous bone ■ Use of a resorbable membrane	Periodontal intrabony defects
8	Mardas N *et al.* Socket preservation with synthetic bone substitute or a bovine xenograft. IADR 2008. Data on file.	■ Prospective, single blind, randomized, controlled clinical study ■ 26 patients, 26 extraction sockets ■ Use of a resorbable membrane	Alveolar ridge dimensions preservation
9	Jensen SS *et al.* Evaluation of a novel biphasic calcium phosphate in standardized bone defects: a histologic and histomorphometric study in the mandibles of minipigs. Clin Oral Implants Res. 2007 Dec; 18(6): 752-60.	■ Preclinical study in minipigs ■ 16 animals, 128 mandibular bony defects ■ Use of a non resorbable membrane	Mandibular bony defects

THREE REASONS TO CHOOSE STRAUMANN® BoneCeramic™



Bone vitality that is critical around dental implants

Bone volume restoration and preservation are critical for the desired esthetic outcome

Excellent handling, reproducible quality

www.straumann.com

STRAUMANN GUARANTEE

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