Product Information

Allograft

Biomaterials@**Straumann®**
Because one option is not enough.

botiss maxgraft® bonering

PROCESSED ALLOGENIC BONERING

botiss maxgraft® bonebuilder

CUSTOMIZED ALLOGENIC BONE BLOCK

bone & tissue regeneration

botiss biomaterials

straumann
simply doing more

maxgraft® bonering

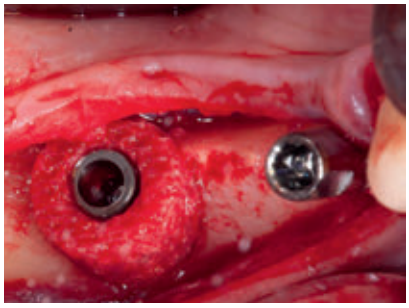
The maxgraft® bonering is a pre-fabricated ring of processed allogenic donor bone, which is placed press-fit into a trephine drill-prepared ring bed.

«I've been using the bone ring technique since 2005 and have so far successfully set more than 1000 autologous and 200 allograft bone rings. The clinical results do not show any difference between the autograft and the allograft bonerings. The use of the allograft rings is significantly less invasive than most other augmentation techniques and I can prevent the patient from needing a second procedure, and the healing time is reduced by around six months compared to a bone block.»

Dr. Bernhard Giesenhagen, implantologist and academic teaching partner at Johann Wolfgang Goethe-University, Frankfurt/Germany

PROPERTIES

Attribute	Description
Origin	The maxgraft® bonerings are manufactured from cancellous blocks originating from femoral heads explanted from living donors (hip total endoprosthesis).
Composition	Natural mineralized collagen
Porosity	Natural porosity of human cancellous bone (65-80 %)
Pore size	600-900 µm
Degradation kinetics	Fast graft incorporation and complete remodeling into patients' own bone. Newly generated bone will degrade if not loaded after healing period.
Healing/integration time	Approx. 6 months
Storage temperature	5-30 °C
Shelf life	5 years



Courtesy of Dr. Bernhard Giesenhagen, Kassel/Germany

FEATURES AND BENEFITS

Simultaneous bone augmentation and implant placement	The bone ring technique reduces the entire treatment time by several months compared to bone blocks, and it increases the possibility for shorter time-to-teeth and a reduction of the overall treatment costs.
Design	The ring design is ideally suited for the reconstruction of the anatomical shape of the jaw.
Osteoconductivity	The natural structure and composition of maxgraft® provides an excellent scaffold for osteointegration. High porosity and the physiologic content of human collagen account for the excellent osteoconductivity of maxgraft®. The natural bone structure allows complete integration of the implant due to the ingrowth of cells and blood vessels.
Biocompatibility	The cleaning process of maxgraft® products preserves the natural structure of both the mineral phase and the organic phase (collagen). Collagen attracts endothelial cells and osteoblasts by chemotaxis. This ensures quick incorporation and complete remodeling of the maxgraft® bonering.
Hydrophilicity	Interconnected pores and rough surface morphology are fundamental to good hydrophilicity. Due to their excellent hydrophilicity, the maxgraft® products absorb liquid quickly. Adhesion of proteins and signaling molecules from the blood further improves the biological properties of maxgraft®.
Volume stability	Clinical experience shows that the maxgraft® bonering has a high volume stability. (Publication in preparation)

Available in the following sizes

Code	Description	Product
BO-33160	maxgraft® bonering 3.3 L: 10 mm; D: 6 mm*	maxgraft® bonering (height 10 mm)
BO-33170	maxgraft® bonering 3.3 L: 10 mm; D: 7 mm*	
BO-33174	maxgraft® bonering 4.1 L: 10 mm; D: 7 mm **	

Instruments available as spare parts

Code	Description	Product
BO-33000	maxgraft® bonering surgical kit (containing all surgical instruments)	Instruments for the maxgraft® bonering technique
BO-33001	Pilot drill ∅ 2mm	
BO-33002	Trephine 6 mm	
BO-33003	Trephine 7 mm	
BO-33006	Planator 6 mm	
BO-33007	Planator 7 mm	
BO-33004	Diamond tulip	
BO-33005	Diamond disc	
BO-33010	Bonering fix	
BO-33008	Instrument rack	
BO-33009	Instrument tray maxgraft® bonering (must be ordered from botiss directly)	

Closure & Fixation Caps

Code	Description	Product
024.2220S	NC Closure & Fixation Cap, ∅ 5.5 mm, Ti	Closure and Fixation Cap for bonering***
024.4220S	RC Closure & Fixation Cap, ∅ 5.5 mm, Ti	

* Can be used with implants with an outer diameter of 3.3 mm to 3.6 mm
** Can be used for Straumann® Bone Level Implants with a diameter of 4.1 mm
*** Use the Closure and Fixation Cap if the maxgraft® bonering is not stable after implant insertion

APPLICATION AND HANDLING

Anatomical requirements for the use of maxgraft® bonering technique

A thin alveolar ridge (no matter in which area of the jaw) is a contraindication for the maxgraft® bonering technique. In this case, the quantity of bone is insufficient to anchor the implant. The maxgraft® bonering technique with simultaneous sinus floor elevation (SFE) and implant placement is indicated if the residual maxillary bone height is less than 4 mm, but not less than 1 mm. These measurements are guidelines. Always consider the quality of the residual bone when using this technique. The BL or BLT Implant together with the Closure and Fixation Cap must have sufficient primary stability within the maxgraft® bonering and residual maxillary ridge. This is to ensure that these components remain firmly in place during the surgical procedure and healing phase.

Handling and rehydration of the maxgraft® bonering

maxgraft® bonerings are processed from human cancellous bone and should be handled with care. Avoid applying pressure on the material. maxgraft® bonerings do not need to be rehydrated. Excessive rehydration can result in a loss of structural integrity.

Preparation of the ring bed

Preparation of the ring bed using the maxgraft® bonering surgical kit ensures close contact of the maxgraft® bonering to vital bleeding bone. This leads to uptake of blood into the maxgraft® bonering and enables fast integration of both implant and bone graft.

Use of additional bone graft and a barrier membrane

The combination with xenogenic materials (cerabone®) offers the advantages of both materials. The biological potential of the maxgraft® bonering supports fast incorporation of graft and implant. The volume-stable cerabone® that is applied to fill void volumes and to overlay the graft acts as a barrier against resorption and improves the esthetic outcome.
Cover the entire augmentation area by a barrier membrane that has a long term barrier function (such as the Jason® membrane). Secure the membrane with pins to ensure positional stability.

Use of the Straumann® Bone Level and Bone Level Tapered Implants

To achieve sufficient primary stability, the implant should extend at least 3 mm into the residual alveolar bone ridge.
If the maxgraft® bonering technique is used with Bone Level Tapered Implants, the surgical procedure will depend not only on the bone quality but also on the residual bone. Insert the BLT Implant at least 3mm into the residual ridge through the maxgraft® bonering. This only applies for soft bone (type 3 or 4) and a residual bone height of 3 mm in an underprepared implant bed, so that primary stability can be achieved with the tapered apical section of the BLT Implant. If primary stability cannot be achieved with the BLT Implant, a switch to the Bone Level Implant is recommended.
We strongly recommend to also read the more detailed instructions provided in our brochure *"Basic information for the surgical procedure - maxgraft® bonering with Straumann® BL and BLT implants"*.

Use of the Straumann® Bone Level and Bone Level Tapered Implants for sinus floor elevation (SFE)

The maxgraft® bonering technique with simultaneous SFE and implant placement is indicated if the residual maxillary bone height is less than 4 mm, but not less than 1 mm. These measurements are guidelines. Always consider the quality of the residual bone when using this technique. The BL or BLT Implant together with the Closure and Fixation Cap must have sufficient primary stability within the maxgraft® bonering and residual maxillary ridge. This is to ensure that these components remain firmly in place during the surgical procedure and healing phase.

Contraindications

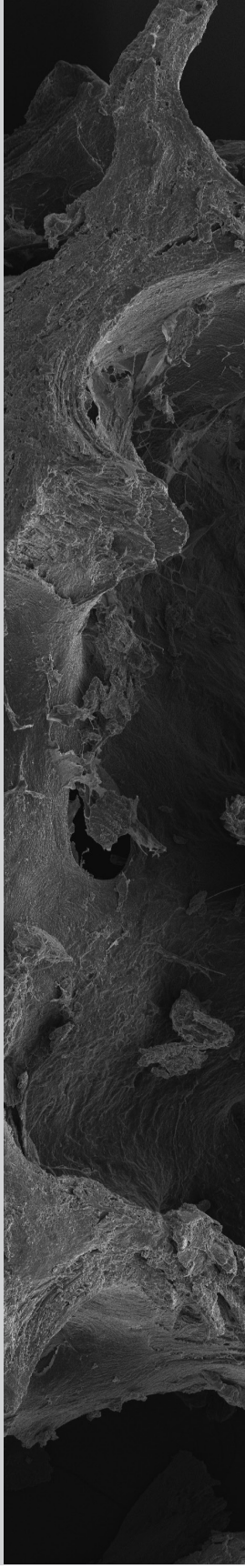
The maxgraft® bonering technique with simultaneous SFE and implant placement is contraindicated when the residual maxillary bone height is less than 1 mm.

Use of the Closure and Fixation Cap

Secure the maxgraft® bonering using the Closure and Fixation Cap if the seating of the maxgraft® bonering is not sufficiently stable or the implant provides insufficient primary stability of the bone ring.
In the sinus floor elevation technique, the Closure and Fixation Cap is used for fixing the implant and maxgraft® bonering to the residual bone to provide primary stability during the healing phase.

Re-entry

The maxgraft® bonering is fixated directly with a suitable implant and provides excellent primary stability. Load the implants no earlier than 6 months after implantation to enable proper incorporation.
Please note that the regenerated bone is susceptible to natural remodeling. To avoid resorption of the bone graft caused by a lack of mechanical load, do not overly delay the final restoration.



Recommended for

The maxgraft® bonering is recommended for implantology and oral surgery:

- Vertical augmentation (3-dimensional defects with low-grade horizontal augmentation)
- Single-tooth gap
- Edentulous space
- Sinus lift (only in combination with a closure and fixation cap to secure the implant/the bone ring).

For further information please visit
www.straumann.com

botiss maxgraft® bonebuilder

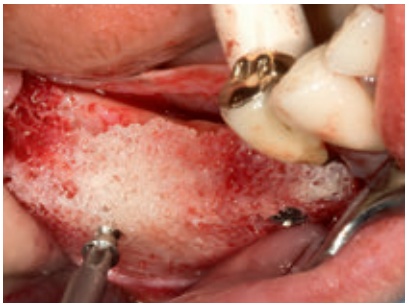
The maxgraft® bonebuilder is a new innovative, customized allogenic bone block which is individually designed and adjusted to the desired 3-dimensional bone contour.

« The CADCAM prefabricated allogenic bone blocks (maxgraft® bonebuilder – delivered sterile) offer a new option for managing patients with 3-dimensional (horizontal and vertical bone loss) and other difficult bone defects with a minimum of trauma. Outstanding results can be achieved especially in the esthetic zone in the maxilla thanks to the volume maintenance of the blocks. »

Dr. Oliver Blume, maxillofacial surgeon, oral surgeon, implantologist, Praxis im Tal, Dr. Back & Blume, Munich/Germany

PROPERTIES

Attribute	Description
Origin	The maxgraft® bonebuilder is manufactured from cancellous blocks originating from femoral heads explanted from living donors (hip total endoprosthesis).
Composition	Natural mineralized collagen
Porosity	Natural porosity of human cancellous bone (65–80 %)
Pore size	600–900 µm
Degradation kinetics	Fast graft incorporation and complete remodeling into patients' own bone. Newly generated bone will degrade if not loaded after healing period.
Healing/integration time	Approx. 6 months
Storage temperature	5–30 °C
Shelf life	5 years



Courtesy of Dr. Michele Jacotti, Brescia/Italy

FEATURES AND BENEFITS

Easy to apply	The patient-individualized allogenic block grafting material is delivered sterile and • is ready to be applied in surgery • is designed to fit perfectly to the recipient site • reduces risk of infection compared to a bone block, because repetitive intra- and extraoral handling can be avoided • saves chair-time and pain medication compared to autologous blocks.
Osteoconductivity	The natural structure and composition of maxgraft® provide an excellent scaffold for osseointegration: • High porosity and the physiological content of human collagen account for the excellent osteoconductivity. • Maximum contact area between the graft and the bone supports fast vascularization and integration of the graft.
Preservation of mineral and organic phase of the bone	The cleaning process of maxgraft® products preserves the natural structure of both the mineral phase and the organic phase (collagen). Collagen attracts endothelial cells and osteoblasts by chemotaxis. This ensures quick incorporation and complete remodeling.
Hydrophilicity	Interconnected pores and rough surface morphology are fundamental to good hydrophilicity. Due to the excellent hydrophilicity, the maxgraft® bonebuilder absorbs blood quickly. Adhesion of proteins and signaling molecules from the blood further improves the biological properties of maxgraft®.
Volume stability	Clinical experience shows that the maxgraft® bonebuilder has a high volume stability.

Available in the following sizes

Code	Description	Product
BO-PMla	Individualized allogenic bone graft, maximum dimensions 23x13x13 mm	maxgraft® bonebuilder

APPLICATION AND HANDLING

Indication
maxgraft® bonebuilder can be used in all stable situations in which an augmentation with a bone substitute material is indicated, and is especially beneficial in indications in which extensive horizontal and limited vertical augmentation (up to 4 mm) is desired.

- Block grafting in extensive horizontal/vertical defects where a predictable outcome cannot be achieved by application of bone substitute particles
- Complex 3-dimensional reconstruction of large defects
- Augmentation in the esthetic region, where support of the soft tissue by the bone is required to ensure a long-term stable esthetic result.

Rehydration
maxgraft® bonebuilder does not need to be rehydrated. Excessive rehydration prior to transplantation may compromise the physical properties of maxgraft® bonebuilder and should therefore be avoided.

Preparation of the augmentation site prior to fixation of maxgraft® bonebuilder
Perforate the cortical layer of the bone prior to fixation of maxgraft® bonebuilder to induce bleeding, which leads to the translocation of blood and growth factors into the grafting area.
For more information visit www.botiss-bonebuilder.com.

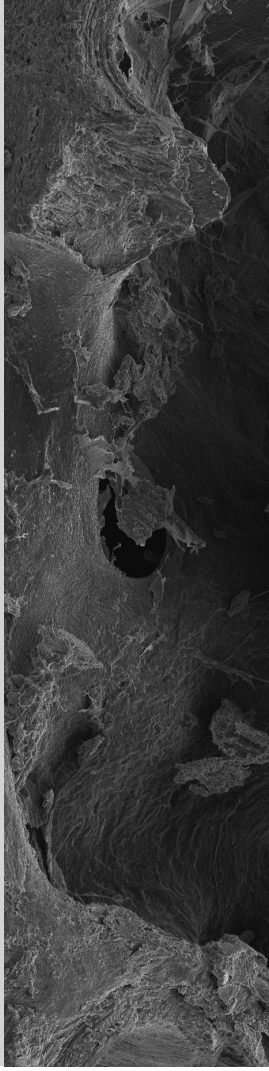
Combination with xenograft or synthetic bone graft
Additional void volume should be filled with particulate grafting material (e.g. cerabone®, maxresorb® or Straumann® BoneCeramic) to improve the esthetic outcome and to protect the soft tissue.

Guided bone regeneration (GBR)
Cover the maxgraft® bonebuilder with a resorbable barrier membrane for GBR (e.g. collprotect® membrane or Jason® membrane) to prevent ingrowth of soft tissue into the bone graft.

Fixation of the maxgraft® bonebuilder
Fix the maxgraft® bonebuilder with screws for osteosynthesis, preferably with flat-headed screws to avoid perforation of the surrounding soft tissue (such as the Straumann® Bone Block Fixation 1.5 mm). Application of excessive force may cause damage to the maxgraft® bonebuilder.

Volume stability
Due to its close similarity to native bone, maxgraft® will be degraded by osteoclasts if not loaded after the healing period.

Re-entry
Depending on the defect size, the graft will be steadily incorporated within 5-6 months.



Recommended for

The maxgraft® bonebuilder is recommended for implantology, oral and maxillofacial surgery:

- Extensive bone defects
- Atrophic maxilla/mandibula
- Horizontal/vertical augmentation

For further information please visit
www.straumann.com

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