FAQ

requently asked uestions

maxgraft® bonering

botiss
biomaterials

Where can I use the bone ring technique?

Which are the indications for the bone ring technique?

The maxgraft® bonering can be applied in the single-tooth gap, edentulous space, vertical augmentation (three-dimensional defect), extraction sites, and treatment of periimplantitis with severe bone loss. In addition, the bone ring technique can be used for sinus floor evaluation.

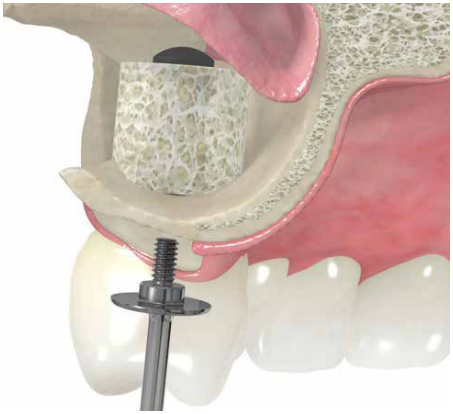
maxgraft® bonering in sinus floor elevation and single tooth gap with implant and closure and fixation cap

How does maxgraft® bonering work in the sinus lift?

Can I perform a one-stage procedure?

maxgraft® bonering is indicated for sinus floor elevation procedures when the residual maxillary bone height is less than 4 mm, but not less than 1 mm. The application is contraindicated when sinus floor thickness is less than 1 mm. The method combines the lateral window approach with crestal implant insertion.

With maxgraft® bonering, a one-stage procedure can be performed even in cases of very low residual bone height, and overall treatment time can be drastically reduced. Furthermore, a second surgical procedure becomes unnecessary, offering an alternative treatment option for patients who have concerns regarding multiple surgeries and long treatment times.



maxgraft® bonering in sinus floor elevation with implant and closure and fixation cap

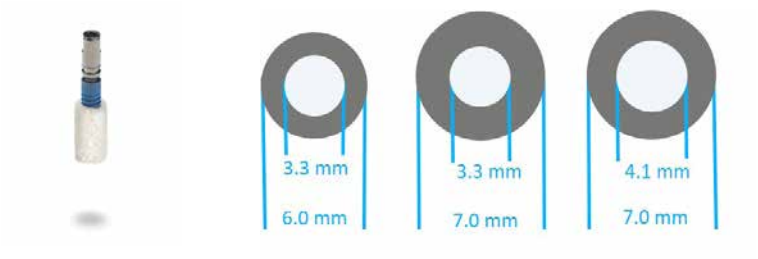
What kind of implant should be used with maxgraft® bonering?

The maxgraft® bonering is designed to be used with implants that are placed subgingivally. Therefore, maxgraft® bonering should only be used with bone level implants and is not compatible with tissue level and one-piece ceramic implants. The following table gives an overview of the suitable implant diameters for each size of maxgraft® bonering.

Art. No.	Product specification	Implants
33160	Outer Ø 6 mm / Inner Ø 3.3 mm	Ø 3.3–3.5 mm
33170	Outer Ø 7 mm / Inner Ø 3.3 mm	Ø 3.3–3.5 mm
33174	Outer Ø 7 mm / Inner Ø 4.1 mm	Ø 4.1–4.5 mm

If an implant with a larger diameter than the inside diameter of the ring (3.3 mm / 4.1 mm) is used, it is necessary to perform extraoral enlargement of the ring using a profile drill and the bonering fix tweezers available from Ustomed® Instrumente (ustomed.de / Product number: 10-823-160).

Note: The length of the implant chosen should be sufficiently long so that the implant is situated at least 3 mm deep in the residual alveolar bone.



Should maxgraft® bonering be rehydrated?

Before application, it is recommended to rehydrate maxgraft® bonering (10 min in saline solution).

Rehydration results in a bit more flexibility of the ring (especially for the 7 mm ring), therefore it is less prone to crumble or break and can be more easily adapted to the defect area. Above that, preparation of the ring bed using the maxgraft® bonering surgical kit ensures close contact of the bone ring to the vital bleeding bone, enabling fast bony integration of implant and bone graft.

maxgraft® bonering surgical kit

How much vertical height can be gained with maxgraft® bonering?

According to clinical experience, a vertical bone gain of up to 4 mm above bone level is feasible.

More vertical height can be achieved in selected cases from surgeons with vast experience with the bone ring technique.

What are the anatomical requirements for the use of maxgraft® bonering?

A thin parallel-walled crest (<6 mm width) alveolar ridge, no matter in which area of the jaw, is a contraindication for the bone ring technique for the application for vertical augmentation, single-tooth gap, or edentulous space. In these cases, the quantity of bone is insufficient to anchor the implant.

Sinus floor elevation requires a two-stage surgical protocol if the residual bone height of the maxilla is less than 3 mm, or in cases with a subantral bone height of 3–6 mm where primary stability cannot be obtained.[1] With maxgraft® bonering, a one-stage procedure can be performed and overall treatment time drastically reduced.[2,3]

The maxgraft® bonering technique can be even used with a maxillary bone height of 1–3 mm, or if no primary stability can be obtained with direct implantation.

When determining the diameter of maxgraft® bonering, the required mesiodistal distance of the implant to the adjacent teeth/implants must be strictly observed. At least a 1 mm distance between the ring and adjacent teeth must be kept.

For more information see the maxgraft® bonering surgical guide:
https://www.botiss-dental.com/pdf/botiss_maxgraft_bonering_SurgicalGuide_EN.pdf

When is a closure and fixation cap used?

If maxgraft® bonering is not sufficiently stable and the implant alone does not provide sufficient primary stability of the ring, the bone ring can be secured, using a closure and fixation cap.

In sinus floor elevation with maxgraft® bonering, a closure and fixation cap is used to anchor the implant and the maxgraft® bonering to the residual bone. This provides primary stability during the healing phase and prevents the ring and the implant from moving into the sinus cavity.

maxgraft® bonering in sinus floor elevation with implant and closure and fixation cap

Is there a recommendation for the use of a membrane to cover maxgraft® bonering in respect of GBR?

Yes. Resorbable membranes act as a temporary barrier against the ingrowth of fast proliferating fibroblasts and epithelium into the defect and maintain the space for controlled regeneration of bone. The implant loading can then be performed minimally invasive. **The Jason® membrane, made from the porcine pericardium, is for example recommended with this technique as it provides a naturally long barrier function.**

What is the structure of
the bone ring in terms of
cortical and cancellous ratio?

maxgraft® bonering is processed from 100% cancellous bone to enable rapid vascularization and integration. All cancellous maxgraft® products originate from living donors by explantation of femoral heads (hip replacement) in certified procurement centers established, supervised, and managed by the C⁺TBA (Cells⁺Tissuebank Austria gGmbH). The C⁺TBA is a non-profit organization aiming to provide allografts for orthopedic and dental regeneration. As the biggest Austrian tissue bank in the area of musculoskeletal tissue, C⁺TBA is one of the few tissue banks that accompanies the whole process of its grafts, from tissue donation, procurement, and processing to distribution. Tissue donation will only be carried out after a donor‘s written consent.

If maxgraft® bonering is purely cancellous,
how can I prevent resorption
or collapse of the augmented site?

Due to the unique production process, there is no cortical layer on maxgraft® bonering.

Therefore, the augmentation site should be contoured with non- or slowly degradable granules (e.g., cerabone® with a particle size of 0.5–1.0 mm) and a membrane with a naturally long barrier function (e.g., Jason® membrane) to prevent resorption.

In this way, the bony support of the soft tissue in the augmentation area is maintained, ensuring a long-term aesthetic result.

Jason® membrane pinned over the augmentation area

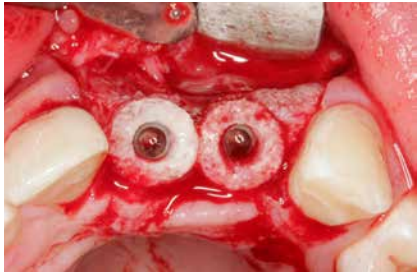
Should maxgraft® bonering be used with additional bone substitute materials?

Yes, in all cases non- or slowly degradable granules should be used to contour the defect.
The application of maxgraft® bonering with cerabone® combines the advantages of both materials: the biological potential of maxgraft® bonering induces fast incorporation and remodeling, whilst cerabone®, a volume stable bone substitute material, provides protection against resorption and improves the aesthetic outcome.

For more information about the bone ring technique:
https://www.botiss-dental.com/pdf/botiss_maxgraft_bonering_SurgicalGuide_EN.pdf
https://www.youtube.com/watch?v=5Co23jtLAuY

If two implants are supposed to be placed very close to one another, what are the options with maxgraft® bonering?

In case the defect site is too small to place two bone rings next to each other, it is possible to place one ring first, and while preparing the recipient site for the second ring, extract part of the first bone ring. Nevertheless, we advise keeping at least a 1 mm distance between the ring and adjacent teeth or implant.



Two close placed maxgraft® bonering

What is the recommended healing time until restoring the implant?

Healing times are approximately six months in standard bone ring procedures and eight months in sinus floor elevation procedures.

The exact amount of time must be estimated individually by the surgeon depending on the location, type, and extent of the defect. The age of the patient should also be considered, as significant variations in patients of different age have been reported in terms of new bone formation.[4] Immediate loading procedures are not recommended due to a lack of primary stability.

How can the maxgraft® bonering be cut to the required length?

maxgraft® bonering has a length of 10 mm. **In order to trim maxgraft® bonering to the desired length, it is recommended to use diamond disks for cutting whilst holding the maxgraft® bonering with the bonering fix tweezers available from Ustomed® Instrumente (ustomed.de / Product number: 10-823-160).**

For more information about the bone ring technique:
https://www.botiss-dental.com/pdf/botiss_maxgraft_bonering_SurgicalGuide_EN.pdf
https://www.youtube.com/watch?v=5Co23jtLAuY

How fragile are maxgraft® bonerings?

What should be kept in mind for handling?

maxgraft® bonering is processed human cancellous bone and should be handled with care. Applying pressure on the material should be avoided.

It is recommended to rehydrate maxgraft® bonering. Rehydration results in a bit more flexibility of the ring (especially for the 7 mm ring), therefore it is less prone to crumble or break and can be more easily adapted to the defect area.

maxgraft® bonering in bonering fix tweezers

Which instruments are necessary for the maxgraft® bonering technique?

The maxgraft® bonering surgical kit includes all instruments necessary for the preparation of the recipient site and adaptation of the maxgraft® bonering.

For the application in the sinus, the bone ring can be kept in place in the sinus cavity with special tweezers: bonering tweezers sinus, available from Ustomed® Instrumente (https://www.ustomed.de/bone-ring-tweezers-sinus-10-824-165-bo).

maxgraft® bonering surgical kit

How often can I use the maxgraft® bonering surgical kit?

Ustomed®, the producer of the instruments, does not define a maximum limit for the performance and reprocessing cycles. The service life of the maxgraft® bonering surgical kit is determined based on its performance and handling.
Typically, each rotating instrument can be used for at least 10 times. The speed of the instruments should not exceed 800 rpm.

Literature:

1. S. Katsuyama and S. Jensen, “ITI Treatment Guide. Sinus Floor Elevation Procedures,” Quintessence, vol. 5, 2011.
2. B. Giesenhagen, “Vertical Augmentation with Bone Rings,” Edi, vol. 3, pp. 2–6, 2006.
3. D. Flanagan, “Cylindrical Ringbone Allograft to Restore Atrophic Implant Sites: A Pilot Study,” J. Oral Implantol., vol. 42, no. 2, pp. 159–163, Apr. 2015.
4. J. Nissan, V. Marilena, O. Gross, O. Mardinger, and G. Chaushu, “Histomorphometric analysis following augmentation of the anterior atrophic maxilla with cancellous bone block allograft.,” Int. J. Oral Maxillofac. Implants, vol. 27, no. 1, pp. 84–9, Jan. 2012.