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Bone Augmentation and simultaneous implant placement

DSI Zenoss Bone Ring

INSTRUCTIONS FOR USE

INTRODUCTION

The **Bone ring** is an innovative solution for single-stage three-dimensional bone augmentation and implant placement. The simultaneous augmentation and implantation reduce treatment time compared to conventional bone block augmentation. In clinical practice, the application of bone graft ring blocks has been established as a reliable alternative to autogenous bone harvesting and alveolar ridge augmentation, thus avoiding donor-site morbidity and limitations in quantity.
DSI Zenoss bone ring is a sterilized graft cut into the shape of a ring for restoration defects of bone tissue. Characteristically, it is rapidly incorporated and subsequently remodelled into the patient's own bone.

SPECIFICATIONS

- Osteoconductive properties supporting natural and controlled tissue remodelling.
- Stable trabecular structure of the cancellous bone enables rapid revascularization.
- Natural collagen for excellent biocompatibility and flexibility.
- Standard sizes – recommended for **implant diameters** from:
  1. **3.0-3.5 mm:** Ø 6 mm, height 10 mm – **Ref: ZGR33160.**
  2. **3.3-3.75 mm:** Ø 7 mm, height 10 mm – **Ref: ZGR33170.**
  3. **4.0-4.5 mm:** Ø 7 mm, height 10 mm – **Ref: ZGR33174.**

The implant fixates the bone graft. The bone ring does not require fixation screws. Sub-gingival flap healing of the implants is recommended. Therefore, the **Zenoss bone ring** should only be used with bone level implants and is not compatible with tissue level and one-piece implants.

SURGICAL PROCEDURE AND GUIDELINES: SINGLE-TOOTH GAP & EDENTULOUS SPACE

1. Determine the diameter of DSI Zenoss bone ring.
2. Once the flap is lifted, the diameter of the defect can be determined using the trephine drill with an outer diameter of 6 or 7 mm. This measurement helps to determine which diameter of **DSI Zenoss bone ring** should be used, 6 or 7 mm.

> ***Note:*** *When determining the diameter of DSI Zenoss bone ring, the required mesiodistal distance of the implant to the adjacent teeth/implants must be strictly observed. At least 1 mm distance between the ring and adjacent teeth must be kept. An implant over 4.0 mm always requires a 7 mm* ***DSI Zenoss bone ring****. 3D diagnostics are recommended.*

3. Determine the implant position with the pilot drill.
4. Check the mesiodistal and orofacial implant position/implant axis for optimal aesthetic positioning of the implant. The use of a surgical tray is recommended.
5. Prepare the ring bed with the trephine.
6. Use a 6 or 7 mm trephine depending on the ring size chosen for the circular osteotomy. The preparation depth can be determined by the markings (2-10 mm, in 2 mm increments) on the trephine or by DPKOP depth probe. The depth of the **DSI Zenoss bone ring** bed is defined by the size of the defect. Bone chips can be removed using a blunt instrument and reintroduced in other regions of the augmentation site.
7. Straighten/decorticate the ring bed.
8. The is used on the bottom of the defect to achieve a uniform surface for implanting **DSI Zenoss bone ring** with a press fit.
9. Prepare DSI Zenoss bone ring. Use the diamond disc and the fixation tweezer to trim the bone ring to the required length.

> ***Note:*** *DSI Zenoss bone ring does not need to be rehydrated. The preparation of the ring bed using the instruments mentional provides close contact between bone ring and the bone bed, allowing blood to quickly perfuse the* ***DSI Zenoss bone ring****.*

10. Insert **DSI Zenoss bone ring** by press-fitting it in the prepared bone bed.

> ***Note:*** *A precise congruence of the ring base to the bone bed is critical for the primary stability of* ***DSI Zenoss bone ring*** *and implant.*

11. After inserting DSI Zenoss bone ring, the osteotomy for the implant is prepared through the bone ring according to the surgical procedure of the implant system used.

> ***Note:*** *The length of the implant chosen should be sufficiently long so that the implant is at least 3 mm deep in the residual alveolar bone. Enlargement of the inner ring diameter to match the size of the implant used can be performed (extraorally).*

12. Place the implant through DSI Zenoss bone ring. The implant fixates the ring in the jawbone.

> ***Note:*** *The implant should be placed approximately 1 mm below the surface to compensate the possible resorption of the bone ring.*

13. Round off the edges of DSI Zenoss bone ring using a diamond tulip bur to prevent perforation of the soft tissue.
14. Add bone substitute material to cover defects, if necessary. **DSI Zenoss bone graft** is recommended.
15. The defect should be covered with a non- or slowly resorbable membrane. Cover the graft with a barrier membrane and close the wound in a tension-free manner.

Healing time is approximately six to eight months until final restoration.

PREOPERATIVE ASSESSMENT AND PRECAUTIONS

- Patient selection is critical to the outcome of the surgical procedure.
- Special attention should be paid to patient-related risk factors that may affect bone healing: Patients with uncontrolled diabetes and heavy smokers (> 10 cigarettes a day) should be excluded from this procedure.
- The soft tissue situation should be carefully evaluated; in some cases, it might be beneficial to perform soft tissue augmentation prior to bone ring surgery.
- Any inflammation and infection should be treated before surgery.
- Antibiotic treatment should be started one-day pre-op.
- Professional dental cleaning and chlorhexidine rinses before surgery are recommended for optimal operating conditions.

SURGICAL PRECAUTIONS AND POST-OP CARE

Tension-free wound closure is the key to every augmentation; therefore, sufficient mobilization of the flap should be achieved; this is essential for vertical augmentations. Mattress sutures are recommended to remove tension from the lip and the facial muscles and avoid micro-movements within the augmentation site.

Sutures:

- 4-0 Apical mattress sutures/single sutures.
- 5-0 Free gingival grafts.
- The sutures are removed approximately ten days after surgery.
- Mattress sutures are removed approximately three weeks after surgery.
- No pressure should be exerted on the healing site from a temporary prosthesis; in the first three weeks, it is recommendable to renounce any temporary provision.

Advise patients to:

- Avoid mechanical stress on the augmentation site; no solid food and excessive tooth brushing in the first days post-op.
- Abstain from physical exercise in the first week after surgery
- Be examined immediately if inflammation or dehiscence is detected.

HEALING TIME

Healing times are approximately six months in standard bone ring 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. X-ray or CBCT scan follow-up is recommended.

RE-ENTRY AND COMPLICATION MANAGEMENT

Thorough and regular follow-ups are essential to discover infection and dehiscence as soon as possible (three days, week, and two weeks after surgery).
In case of dehiscence, the exposed graft needs to be removed to an extent so that bleeding occurs. The wound margins should be trimmed and mobilized again for wound closure. Additionally, a pedicled connected tissue graft (CTG) can help to close the augmentation area. If the flap keeps reopening, removal of the implant should be considered.
In all cases, patients should be treated with antibiotics systemically and the area should be rinsed with chlorhexidine locally.

STERILITY:
Double packaging (Blister + vial) sterilized by gamma radiation.

STORAGE:
Do not use after the expiry date mentioned on the outer package.
Store in a dry and dark place in tightly closed containers at temperature (+5°C…+25°C).
Avoid contact with moisture! Sterile product. Do not re-use.

PACKAGING:

DSI Zenoss	Type	Size	Recommended for implant	REF
	Ring	Ø 6 x L 10 mm	Ø 3.0-3.5	**ZGR33160**
	Ring	Ø 7 x L 10 mm	Ø 3.3-3.75	**ZGR33170**
	Ring	Ø 7 x L 10 mm	Ø 4.0-4.5	**ZGR33174**






STERILE R

ATTENTION! The sterility of the product cannot be guaranteed if the package bears evidence of damage, has been opened previously or wet.

Failure to comply with the conditions of storage leads to a change of the working characteristics of the material and decrease the shelf life of the material. The manufacturer is not responsible for any loss of quality caused by the failure to comply with terms of transportation, storage and use established by the manufacturer for this product. Responsibility for the use of the material for purposes other than those specified by the manufacturer falls on the user.