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Innovative Präzision
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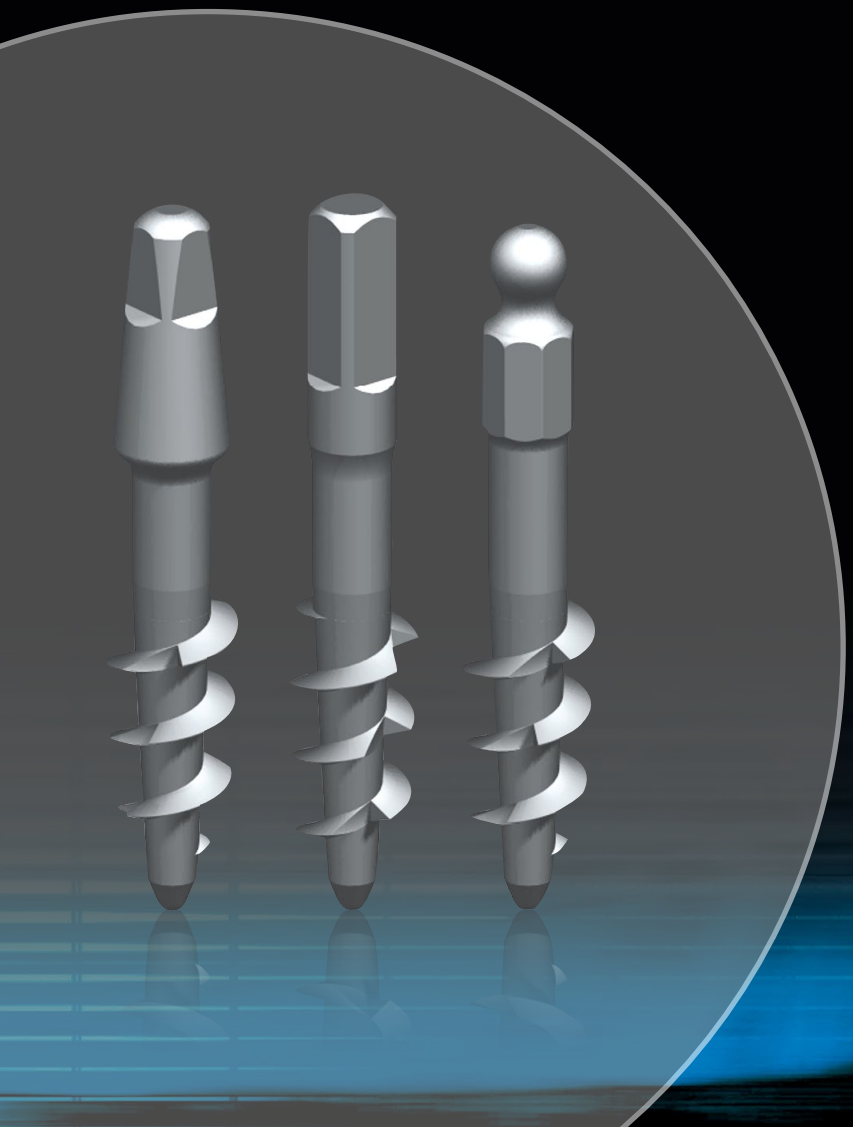

BICORTIC®
Surgical Manual

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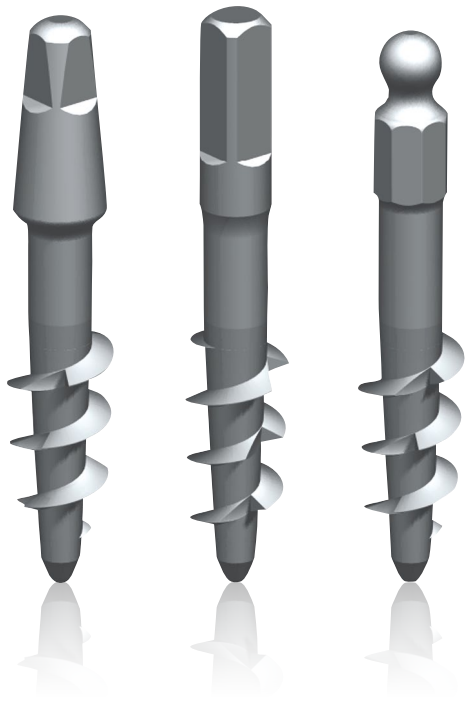
Introduction

The BICORTIC® implant is a one-phase selftapping screw implant combining function and design with a maximum of primary stability and a minimal surgical trauma.

The BICORTIC® implant achieves a stable and permanent anchorage in healthy bone immediately after insertion, with a minimal bone preparation of only 2 mm for the shaft diameter. The deep selftapping threads guarantee an excellent primary stability, while the cutting notches on the threads allow an atraumatic preparation process without compression of the bone. After final insertion, the shaft of the BICORTIC® implant rests passively within the crestal bone since occlusal forces are transmitted to the bone by the threads. Bone resorption does not take place as a rule.
The variety of the one-phase BICORTIC® implant encompasses the lengths of 13/16/19/21/23 mm in the diameters of 2.5/3.5/4.5 mm and the choice of square, round and ball head abutment.
The BICORTIC® implant can be used as single tooth replacement (square head) and bridge or bar abutment (round head) in the anterior, the canine and the premolar region of the maxilla and the mandible. The implant with ball head serves to anchor total prostheses in the maxilla and mandible.

The BICORTIC® implant can be applied for late implantation, the delayed immediate and also the immediate implantation.
For insertion as immediate implant in extended fresh extraction sites or in neighbouring defects without infection, an additional augmentation is recommended. Furthermore, we recommend to add augmentation material (e.g. BioVin® Bovine Bone) to the insertion site if the implant shaft does not completely fill in the bony defects, and to cover the site with a membrane (e.g. BioVin® Collagen Membrane). The cortical support allows an immediate stability of the BICORTIC® implant, thus enabling a healing without complication at direct implant to bone contact.



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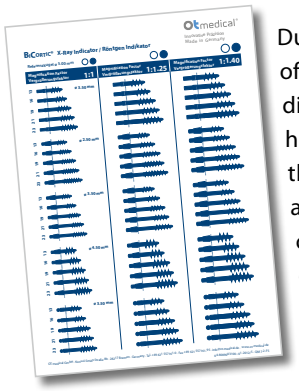
Preparation for Surgery

A complete clinical examination should precede each implantation. A panoramic radiograph (OPG) is required for a precise diagnostic, using a lab-prepared X-ray template guide. With the aid of an X-ray indicator, the optimal length and diameter of the implant can be determined for the region in question prior to surgery. The indicator in the corresponding magnification factor of the radiograph unit is placed onto the radiograph.



During surgery a sufficient number of implants in different lengths and diameters should be available on hand, since at the time of exposure of the alveolar jaw bone the true bone anatomy is revealed which allows the choice of the implant size in optimal dimensions.

Three-dimensional CT or DVT radiographs are additional diagnostic aids for a considerably more precise implant planning.

Model or computer-aided surgery templates based on a virtual surgical planning at the computer, are recommended in many cases. This will allow a highest possible safety for the doctor and also the patient, and the choice of the suitable implant dimension during the surgery is not necessary with this procedure.

The Surgical Tray

The surgical tray is compact and well accessible and contains all drills and tools required for the insertion of BICORTIC® implants of 2.5 mm to 4.5 mm diameter. Please note the Surgical Tray Instructions for Use.

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Indication Variety

The interforaminal region of the mandible allows an application of the BICORTIC® implant practically without limitation and achieving bicortical support without problems.
The indication is limited bilaterally in the mandible distal of the mental foramen, due to the process of the mandibular nerve, as well as in the maxilla in the area of the sinus cavities.
BICORTIC® implants with a diameter of 2.5 mm are especially suitable for interim insertion to relief the primary implants during the healing process or as support implant. This implant diameter is not suitable for use as an immediate implant. In principle, a connection with additional implants or natural abutments is imperative.
The 3.5 mm diameter BICORTIC® implants are especially indicated for replacement of mandibular incisors and the lateral incisors in the maxilla. BICORTIC® ball head implants with a diameter of 3.5 mm should be used only in the interforaminal region if bicortical support can be achieved.
Implants of 4.5 mm diameter are especially suitable for immediate insertion in fresh alveolar sockets of the premolar region of maxilla and mandible.

BICORTIC® implants with an insertion depth of 13 mm are suitable for use in alveolar sockets of the premolars above the mandibular nerve for immediate or delayed immediate implantation.

In addition to multiple anatomical indications, the BICORTIC® implant can be used for lateral incisor sites (where the natural tooth was missing), at loss of the central incisors due to an accident, or in cases of severe atrophy in the maxilla and mandible.

Immediately after insertion, the BICORTIC® implant, if anchored transapically with cortical support and sufficient primary stability, can be provided with a temporary crown placed out of occlusion.

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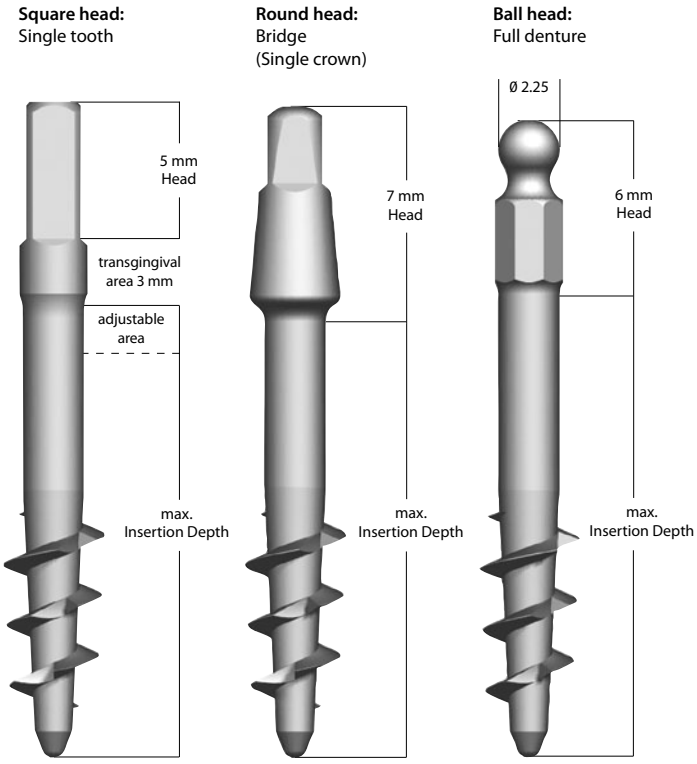
Three implant heads at choice

Three implant head variations are available, according to the remaining space and considering the esthetic or economic requirements.

Square head:
Especially for small gaps, and ideal for small interdental gaps to the neighbouring teeth as for the lower incisors and the upper lateral incisors, the adjustable square head implant is recommended. Since only the square head BICORTIC® implant can be adjusted after insertion below the square head, the use of this implant type is indicated if there are severe deviations between implant and crown axis. When using the implant driver and a suitable holding tool for fixation of the implant, the implant head can be readjusted in the mouth according to the requirements.

Round head:
The round head implant can be used for a normal space situation as single tooth replacement or especially as bridge abutment which facilitates the insertion of the bridge due to the conical shape. The round head can be trimmed in the laboratory after impression taking. The round head cannot be adjusted.

Ball head:
Ball head implants can be inserted as an economic variation after final healing for stabilization of a full denture on preferably 4 (interforaminal) implants in connection with the retention cap Dalbo® Plus elliptic or the O-ring housing incl. O-ring.



Indications

- **with 2.5 mm diameter:**
  Suitable as an interim implant for relief of the primary implants during the healing process, or as support implant. Not suitable for an immediate implantation. In principle, a connection with other implants or natural abutments is imperative.
- **with 3.5 mm diameter:**
  Suitable for replacement of mandibular incisors and the lateral incisors in the maxilla.
- **with 4.5 mm diameter:**
  Suitable as single tooth or series implant in maxilla and mandible in the anterior, canine and premolar area. Can be used as immediate implant.

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Bone Preparation

Step by step instructions for the preparation

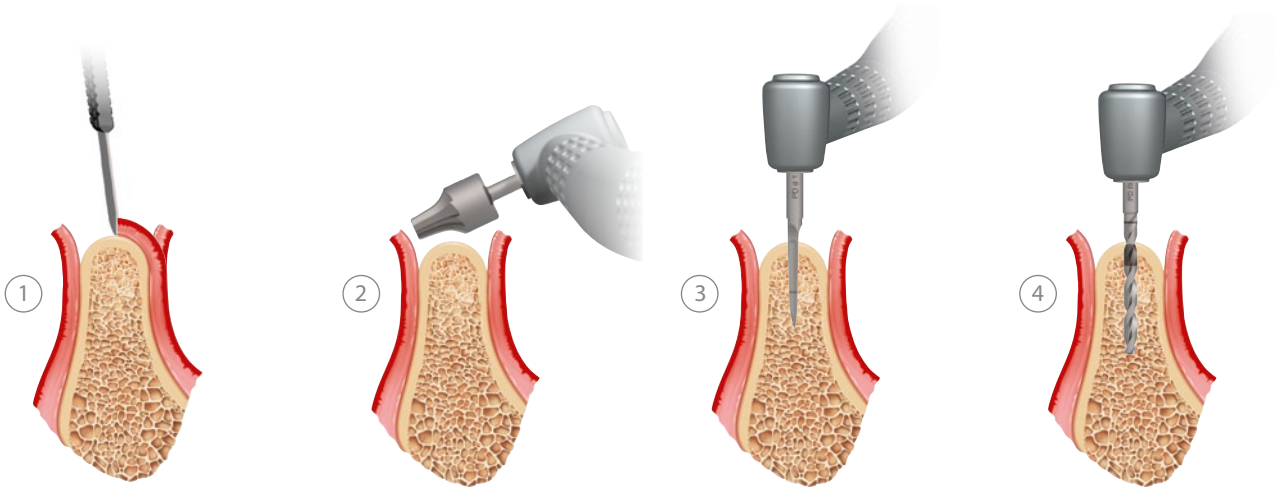
All drills are with external irrigation and do not contain an internal cooling (which would be difficult to clean). The drills are moved carefully up and down within the jaw bone. Bone chips should be collected thoroughly and used for an augmentation if required.

Step 1: Exposure
BICORTIC® implants are inserted after exposure of the alveolar crest. The individual incision technique is subject to the situation as assessed by the doctor.

Step 2: Preparation of the alveolar crest
If the exposed jaw bone shows an unfavorable contour for insertion, such as very small or sharp-edged extensions, these can be removed by using the bone trephine in order to create a corresponding level for insertion of the implant.

Step 3: Perforation of the cortical plate
With pilot drill 1, the cortical bone plate is perforated in exact horizontal positioning and precise axis direction. This drill is a very pointed and sharp triangular drill which facilitates the first drill application considerably as compared to a conventional round drill (recommended torque: 1,200 rpm).

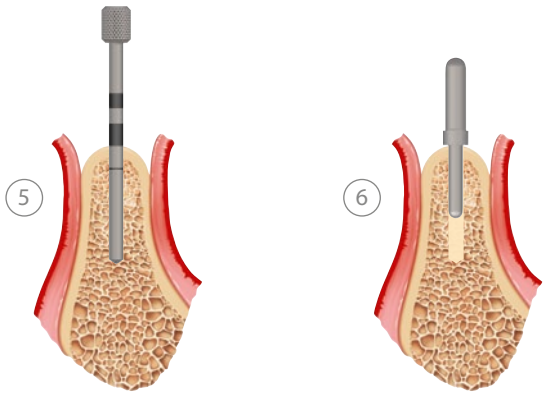
Step 4: Pilot drilling
The first drilling down to the required depth is performed with the 2.0 mm pilot drill 2. This drill is laser graduated in accordance with the implant lengths (13/16/19/21/23 mm) (recommended torque: 1,100 rpm).



Bone Preparation

Step 5: Control 1
The prepared depth is now checked by using the 2.0 mm depth gauge.
The upper laser markings (13/16/19/21/23) correspond with those of the pilot drill.

Step 6: Control 2
If the implant bed preparation was made without using a guide and a parallel alignment of the implants is required, the parallel indicator should now be used. This is placed into the preparation with the thin 2.0 mm shaft side and indicates the axis direction for orientation of additional preparations.



Insertion

Step by Step Instructions for Insertion

In principle, the rule applies: The more spongy the bone is, the larger the implant diameter should be. The implant is affixed to a covering plug. When inserting as immediate implant into fresh infection-free extraction sites, the bone should be carefully cleaned by curettage prior to the complete insertion of the implant, and the site augmented in the area of the threads if required.
The anatomical limits for the insertion direction must be strictly observed. The final position of the implant head must allow the gingival healing up to the abutment base and keep the implant head free for a cementation. Be careful not to contaminate the implant and augmentation site and surrounding gingiva by temporary cement.

Step 1: Primary Fixation
Remove the implant by pulling off the cover cap from the acrylic vial and place the implant directly into the preparation which has ideally filled with blood. Perform the first screw-in movements with the cap. After the first few rotations, remove the cap from the implant and replace by the Implant Driver with mounted Finger Key.

Step 2: Complete insertion
With the Implant Driver, continue to rotate with slight apical pressure and using forward and backward movements until the round shaft which is below the implant head remains approx. 1.5 mm to 1.0 mm above the alveolar crest level – according to the gingival thickness – in order to guarantee an optimal gingival adaptation up to the implant head base.

For BICORTIC® implants with square or round head the corresponding Implant Driver should be used, and for the implants with ball head the Driver Octagon.
The self-tapping function of the implant into the prepared bone channel is favored by the conical thread system and the cutting notches on the threads to find reliable and stable support, without the necessity of a pre-cutting procedure with a bone tap.

The implant should be inserted only by manual forward and backward rotations at slight apical pressure.
One complete turn of the marked Implant Driver represents approx. 2 mm insertion depth.
During the insertion of BICORTIC® implants of 4.5 mm into fresh extraction sockets, we recommend to apply fine structured augmentation material into the bone preparation (e.g. BioVin® Bovine Bone).

Insertion

Step 3: Paralleling or adjusting
(only for BICORTIC® implants with square head)
When the implant has been inserted, the shaft below the square head must be held with a suitable instrument while the implant head may be bent into the desired position by placing an Implant Driver, however, not exceeding 20°. Please note that the adjustment may be made only below the transgingival area and that the implant may be bent only once in one direction for stability reasons.

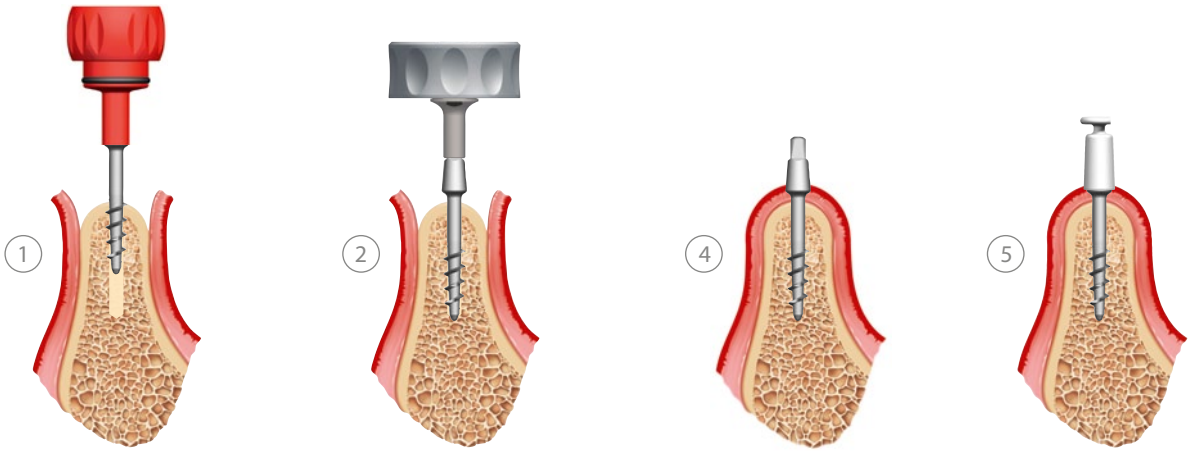
Step 4: Wound closure
When closing the mucosa, please pay attention to keep the sutures free of tension. The implantologist may choose the type of suture technique.

Note:
When the insertion of the implants is complete, an X-ray control radiograph should be taken.

Step 5: Impression taking
For impression taking of the implants with square and round head, the doctor can choose the pertaining impression cap of acrylic. The impression of the ball head is taken directly, without using an impression cap.

Note:
The impression cap is made of burn-out acrylic and is suitable also as modeling base for the dental laboratory.

Note for temporary dentures:
When preparing an immediate temporary restoration with an acrylic crown, we recommend to prepare the crown in slightly smaller shape and to affix this to the neighbouring teeth by a stable connection.
When planning a total denture on BICORTIC® ball head implants, the denture base must be generously trimmed at the sites of the implant heads and replaced from time to time by non-hardening lining material during the healing phase.



Healing time

The healing time depends on several different factors:

- Bone quality D1-D4 (mandible/maxilla)
- Implant surface
- Time of insertion (immediate/immediate delayed/late)
- Age and state of health of the patient
- Augmentation process if required

  etc.

In general, the healing time of the BICORTIC® implant with machined surface is as follows:

- 3 months in the mandible,
- 6 months in the maxilla

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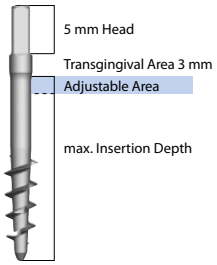
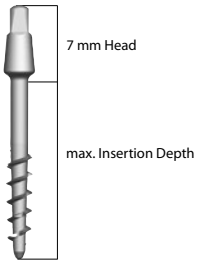
BICORTIC® Implants

Implants with Square Head



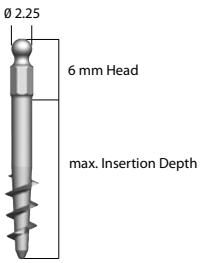
Diameter	Insertion Depth	Thread Count	Art-No.
3.5 mm	13 mm	4	04-1350131000
3.5 mm	16 mm	4	04-1350161000
3.5 mm	19 mm	5	04-1350191000
3.5 mm	21 mm	5	04-1350211000
3.5 mm	23 mm	6	04-1350231000

Implants with Round Head



Diameter	Insertion Depth	Thread Count	Art-No.
2.5 mm	13 mm	4	04-1250132000
2.5 mm	16 mm	5	04-1250162000
2.5 mm	19 mm	6	04-1250192000
2.5 mm	21 mm	7	04-1250212000
2.5 mm	23 mm	8	04-1250232000
3.5 mm	13 mm	4	04-1350132000
3.5 mm	16 mm	4	04-1350162000
3.5 mm	19 mm	5	04-1350192000
3.5 mm	21 mm	5	04-1350212000
3.5 mm	23 mm	6	04-1350232000
4.5 mm	13 mm	4	04-1450132000
4.5 mm	16 mm	4	04-1450162000
4.5 mm	19 mm	5	04-1450192000
4.5 mm	21 mm	5	04-1450212000
4.5 mm	23 mm	6	04-1450232000

Implants with Ball Head



Diameter	Insertion Depth	Thread Count	Art-No.
3.5 mm	13 mm	4	04-1350133000
3.5 mm	16 mm	4	04-1350163000
3.5 mm	19 mm	5	04-1350193000
3.5 mm	21 mm	5	04-1350213000
3.5 mm	23 mm	6	04-1350233000

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