KAI
knee arthrodesis implant

surgical technique
KAI
knee arthrodesis implant

The arthrodesis implant system is developed and manufactured in conjunction with the university hospital in Muenster, Germany

Table of Contents

Introduction ............................................................................................................... 3
Surgical technique ................................................................................................... 4
Implants and instruments........................................................................................ 11
Important medical information................................................................................. 13

Nota Bene: The described surgical technique is the suggested treatment for the uncomplicated procedure. In the final analysis the preferred treatment is that which addresses the needs of the individual patient.
KAI knee arthrodesis implant

Introduction

The KAI offers a femoral valgus angle of 7° and a tibial flexion angle of 5°. The adjustment of the implant enables the system to be used on both sides, left and right.

The implant tibial and femoral components are connected through a taper fit and are secured against rotation by a tooth mechanism.

The stems are available in three lengths: 140, 170 and 200 mm. The overall lengths of the implant are consequently 280, 340 and 400 mm.

The stems have an unilateral flattening over the entire length which allows to inspect the position of the stems intraoperatively. The flattening also prevents the rotation of the stems in the cement mantle.

The unique connecting mechanism allows an implantation without additional bone resection and offers the correction of the lateral and medial rotation after implantation.

With the scale on both implant components the correct implant depth can be checked.

The system allows free interchangeability of all femoral and tibial components. It is to be used with cement only.

Both femoral and tibial components are combined with PMMA centralizers.
Surgical technique

Incision and explantation of a failed implant.

Open the knee joint in the usual manner. If a failed knee implant has to be revised. Start with the explantation of the components. Generally the femoral and tibial bone preparation can be done independently. This technique describes the femoral preparation first.

Femoral bone preparation

Lock the femoral rasp (fig. 2) of the appropriated length which has been determined preoperatively by screwing it onto the impactor (fig. 1).
**Preparation of the femoral canal**

Insert the rasp into the femoral canal (fig. 3).

Make sure that the marking at the front of the rasp shows the correct orientation (fig. 4):

- **V-L** ventral left for a left knee
- **V-R** ventral right for a right knee.

Unlock the femoral impactor. Leave the femoral rasp in place for the trialing (fig. 4).
Tibial bone preparation

Mount the tibial rasp (fig. 6) of the appropriated length which has been determined preoperatively by screwing it onto the tibial impactor (fig. 5).
Preparation of the tibial canal

Insert the rasp into the tibial canal (fig. 7). Make sure that the marking at the front of the rasp shows the correct orientation (fig. 8):

Ventral left for a left tibia
Ventral right for a right tibia.

Unlock the impactor but leave the tibial rasp in place for the trialing (fig. 8).
**Trial reduction**

Please perform a trial reduction by combining the femoral and tibial rasps (fig. 9).

After trialing remove all instruments and start debridement of the femoral and tibial bone.
KAI knee arthrodesis implant

Implantation of the femoral component

Combine the femoral implant with the femoral implant impactor.

Secure the impactor by locking the 3,5mm screw by using the locking wrench (fig. 10).

Cementing technique

It is recommended to cement the prosthesis in two stages.

Please insert cement into the femoral canal and insert the femoral implant (fig. 11).
Implantation of the tibial component

Combine the tibial implant and the tibial implant impactor (fig. 12). Insert bone cement and the implant into the tibial bone (fig. 13).

Please combine the implants while the cement on the tibial side is not hardened, that makes the reduction easier.

The rotational alignment can be readjusted after cement hardening (fig. 14).
Please prevent any mal rotation of the foot. Change the rotation if necessary by readjustment of the femorotibial locking mechanism (fig. 14). If the rotational alignment is correct, lock the screw of the implant.

It is possible to insert the implant into the bone, a fusion of the knee can be initiated. Sometimes the remained condylar bone is used to fill the gap.

figure 12

figure 13

figure 14
KAI knee arthrodesis implant

**IMPLANTS**

**Femoral implants**
- 4550-0140 140mm
- 4550-0170 170mm
- 4550-0200 200mm

**Tibial implants**
- 4550-1140 140 mm
- 4550-1170 170 mm
- 4550-1200 200 mm

**INSTRUMENTS**

**KAI instrument tray**
7999-4550

Instruments shown above have to be ordered separately. Please find the listing on the next page.
INSTRUMENTS

Impactor for KAI femoral component
4550-1012

Impactor for KAI tibial component
4550-1011

Impactor for femoral rasp
4550-2010

Impactor for tibial rasp
4550-2020

Hex wrench 3,5 mm
7608-1035

Rasp for femoral component
4550-2140 140 mm
4550-2170 170 mm
4550-2200 200 mm

Rasp for tibial component
4550-3140 140 mm
4550-3170 170 mm
4550-3200 200 mm

Handle for medullary plug
7512-4001
To restore the anatomical function of the skeleton it is necessary to obtain optimal results. In order to minimize the danger of postoperative complications different factors must be considered, i.e. the anatomical stress situation, the soft tissue basis and the planning and a precise surgical technique are necessary to obtain optimal results. In order to minimize the danger of postoperative complications.

1. Insufficient blood supply caused by preceding surgical techniques and other complications can occur if the following instructions and warnings are not considered and followed.

2. The implants are to be handled with care at all times, in order to avoid damage of the prepared implant surface. Cutting, bending or scratching of the component surfaces can considerably reduce their stability and resistancy against fatigue and wear. Even not directly visible defects can cause stress conditions within the implant, which can be of importance to the dynamic stress within the body - possibly lead to implant loosening, bending, fissure and/or breakage and/or preceded myositis. The risk of a myositis ossificans is increased by preceding surgeries or acute infections.

3. After insertion of the stem, its plate must be flush against the resected bone. It is important to resect the bone plane, horizontal to the medullary canal. Intraoperative cement hardening any device component loosening, distortion or fracture. Before insertion, the implant must be carefully checked to make sure that there is no damage or modification and that the correct size has been selected.

4. The introducing instruments must correspond to the presented or removed, even if they appear undamaged danger of implant breakage due to excessive stress.

5. All of the KAI implants and instruments are packaged separately. They should only be accepted by hospitals and physicians if supplied in their original packaging and with an original label.

6. Prior to closure, the surgical site should be thoroughly cleaned of the bone chips, extraneous cement, ectopic bone, etc. Foreign particles at the metal-plastic interface may cause excessive wear and for friction.

Postoperative

1. Postoperative patient care, detailed instructions and warnings by the physician are of major importance. To enhance the healing process an external support of the operated arm is recommended for a limited time.

2. Active and passive movement must be carried out with extreme caution.

3. Postoperative therapy should support the healing process and prevent the arm from being submitted to excessive stress.

4. Patients are to be reminded repeatedly of the necessity to reduce activity as recommended by their physician.

Special user information

Never reuse implants which have already been implanted or removed, even if they appear undamaged danger of implant breakage due to internal material fatigue.

Packaging and labelling

Each of the KAI implants and instruments is packaged separately. They should only be accepted by hospitals and physicians if supplied in their original packaging and with an original label.

For reasons of safety, protection and identification all implants should always be kept in cool and dry environment in their unopened packagings.

Sterilization

The implants of the KAI system have been sterilized by gamma irradiation min. 25kGy in vacuum and are supplied in protective covers. Please always check the packages for perforation or other damage prior to surgery.

Restereilization of PE-components is not permitted. For further information please refer to:

implantcast GmbH
Lüneburger Schanze 26
D-21614 Buxtehude, Germany
phone: +49 4161 744 0
fax: +49 4161 744 200
email: info@implantcast.de
internet: www.implantcast.de

Technical modifications are subject to change without notice.

All implants have been developed, manufactured and tested according to latest technical standards. No abuse of this document may be duplicated without prior consent of implantcast GmbH.