Surgical Technique

# Final Trial Reduction and Component Implantation of

# TC

smith&nephew

TC-PLUS◇ PRIMARY

Mobile Bearing

PLUS SOLUTION
KNEE FAMILY

# TC-PLUS◇ PRIMARY
# Mobile Bearing

## Final Trial Reduction and Component Implantation of TC

**The TC-PLUS PRIMARY surgical procedure is followed to the point of proximal tibial resection.**

**This Surgical Technique should be used in conjunction with the TC-PLUS PRIMARY Femur-First procedure (Lit. No. 1701).**

**For preoperative planning there are also x-ray templates available (Lit. No. 1735/1736).**

**Table of Contents**



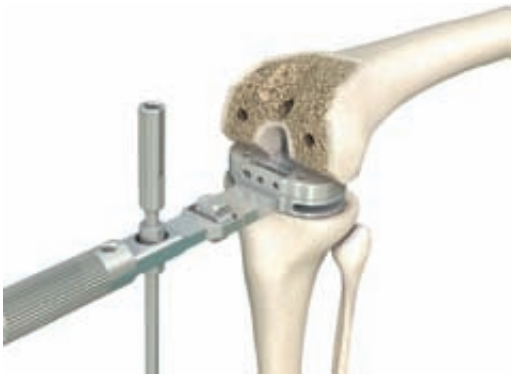
**Nota Bene**

The technique description herein is made available to the healthcare professional to illustrate the authors' suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the patient.

# Surgical Procedure

## 1. Final Trial Reduction

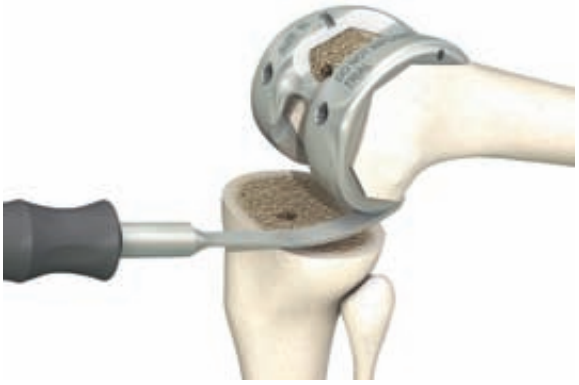
### 1.1 Flexion and extension gaps



The flexion gap (90°) and extension gap (0°) may be assessed using the modular spacer blocks. A set of modular spacer blocks measures the gap and indicates the appropriate thickness of the tibial insert, subject to re-evaluation at trial reduction.

Check alignment and balance with spacer block and alignment rod through the tibial handle in flexion and extension. Balance ligaments in standard fashion if the Femur-First technique is performed. For the TC SB prosthesis an identical flexion and extension gap is required.

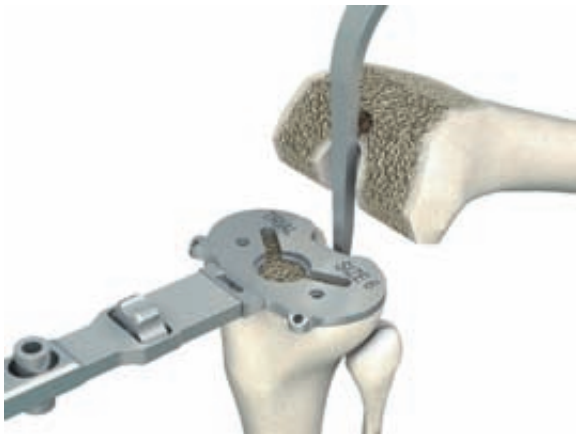
## 1.2 Removal of any residual peripheral osteophytes



Use the curved osteotome to remove all osteophytes on the residual posterior condyles. At this time, a posterior contracture can also be released. This will improve flexion and prevent possible damage of the polyethylene insert by these bony projections.

The femoral trial is used as a reference for the removal of any residual posterior condyles with the curved osteotome.

## 1.3 Tibial sizing



Maximally flex the knee and place a thin bent Hohmann laterally and medially. The tibia is subluxed anteriorly with a tibial retractor.

Insert the tibial sizing template together with the attached tibial handle. Tibial sizing templates are available in all sizes.

The appropriate tibial size is determined. The tibial sizing template is selected which provides the greatest coverage of the prepared surface without overhang anterior to the mid-coronal plane.

## 1.4 Final tibial preparation

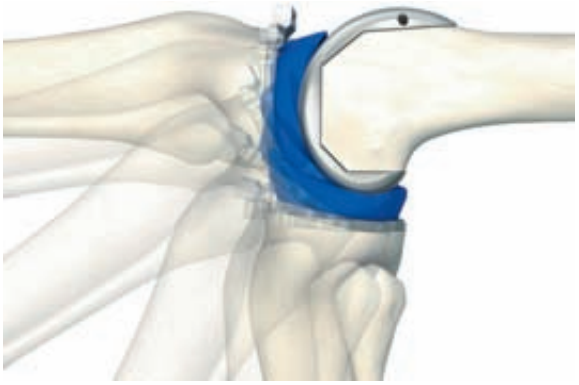
First attach the tibial axis insert to the tibial sizing template and then insert the tibial insert trial, followed by the femoral trial component.

With the tibial handle attached to the tibial sizing template, take the knee into full extension. Pass the axial alignment rod through the tibial handle to assess full leg alignment.

☞ **Note**

In cases in which the femur and tibia are not equal in size, the femoral or tibial component may be combined with a component of the next size up or down.

With the TC SB prosthesis, the size of the tibial insert has to be matched with the size of the femoral component.

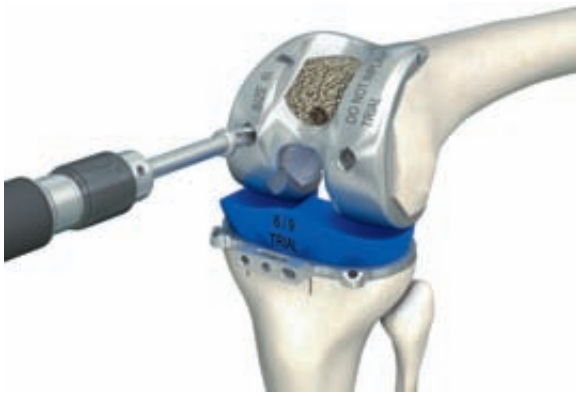


Ensure soft tissue balance is appropriate if the Femur-First technique is performed.

Perform a trial range of motion to check the mobility, implant fit and joint stability of the knee joint. Mark the rotational position of the tibial sizing template on the anterior edge of the tibia.

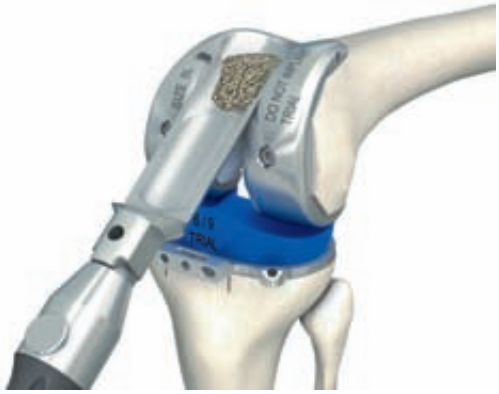
If no sufficient kinematics or adequate stability can be achieved with the TC SB trial components, the use of a TC-PLUS◇ PRIMARY Fixed Bearing prosthesis is recommended.

## 1.5 Final femoral preparation



The femoral trial should be aligned medio-laterally in accordance with the anatomy to maximize patellar tracking.

Drill for the femoral anchorage pegs through the femoral trial using the appropriate femoral drill with stop.



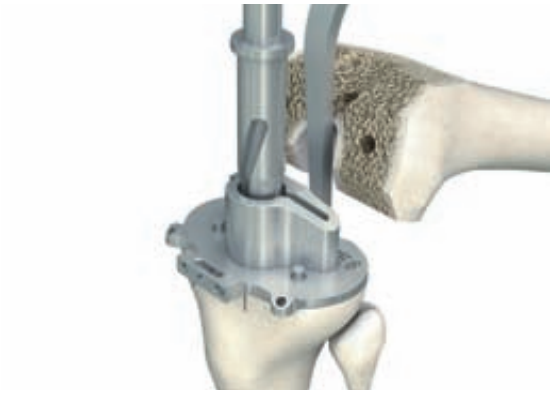
Prepare the trochlear fossa with the trochlear chisel. Use the femoral bolts to keep the femoral trial in a stable position.

Verify the function of the patella and confirm that it tracks accordingly.

☞ **Note**

At this stage it should be decided if a patellar resurfacing is required.

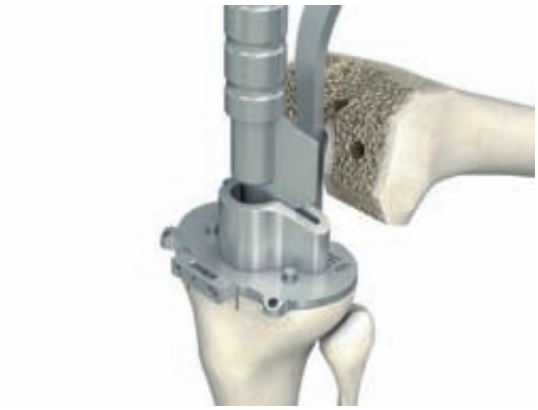
## 1.6 Preparation of tibial anchorage



Remove the femoral trial together with the femoral bolts as well as the tibial insert trial.

Use short bone pins with head to secure the tibial sizing template based on the markings on the anterior edge of the tibia.

Position the appropriate tibial anchoring adapter on the tibial sizing template. The tibial anchorage adapter should match with the determined tibial size to ensure the appriopriate impaction level for the tibial stem. Use the tibial stem reamer.



Attach the tibial anchoring punch onto the tibial anchoring adapter. Impact the punch completely.

Remove the tibial anchoring punch with the slap hammer and bone pins with head by using the pin extractor.

## 2. Patellar Preparation

The patellar instruments permit the use of the “onlay” technique in which 10 mm of the bone is resected and resurfaced by a 10 mm patellar component height. If an 8 mm patellar component height is planned, just resect 8 mm accordingly.

An alternative option is the “inlay” technique, in which the implant is partially countersunk (3 to 5 mm). In this case the patella is only resected approx. 5 to 7 mm below the ridge.

The thickness of the residual bony patella should not be less than 12 mm.

### 2.1 Patellar resection

After positioning the patellar clamp grasp the patella with the clamp. Turn the knob in a clockwise direction to tighten the clamp. Fix the clamp by depressing and turning the knob on the top side of the clamp in a clockwise direction.

Measure the patellar thickness with the thickness indicator. The patellar thickness can be read from the millimeter scale on the handle.

Adjust the patellar resection level to the desired height by turning the smaller knob on top of the resection guide on the distal end of the patellar clamp.

☞ **Note**

Ensure that the saw blade does not drift e.g. due to sclerotic bone sectors during the resection.

### 2.2 Patellar sizing

Determine the diameter of the appropriate patellar size using the patellar sizer.

☞ **Note**

The patellar component is implanted with a slight medial offset, thus matching the position of the natural patellar ridge. Small implant sizes are recommended for small patellae to ensure the required offset.

## 2.3 Milling

Mount the patellar bushing onto the patellar clamp with ratchet.

Select the patellar reamer to match the corresponding patella size. Depending on the selected anchoring technique, mill briefly (onlay technique) or countersink by 3 to 5 mm (inlay technique). Milling down to the stop results in a depth of 5 mm.

☞ **Note**

Patellar components with a height of 10 mm are recommended as standard. Implants with a height of 8 mm are available as an alternative for thin patellae.

## 2.4 Drill anchoring holes

Using the patellar drill guide and the patellar peg stop drill, prepare the anchoring holes for the pegs.

## 2.5 Trial insertion

Trial fit all of the components and reduce the knee to check medial and lateral stability, tibio-femoral rotation, and patellar tracking.

# 3. Component Implantation

This section describes the steps involved in insertion of the cemented and non-cemented femoral and tibial components and insertion of the tibial insert and patellar component.

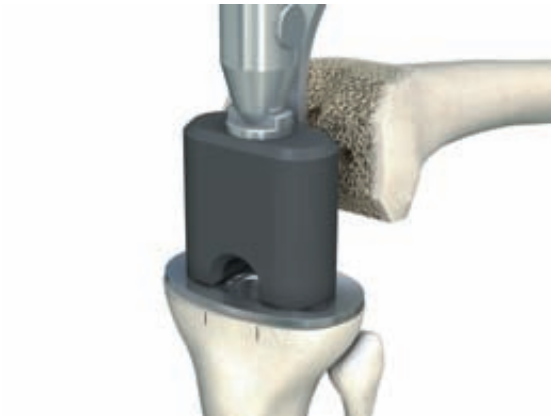
## 3.1 Tibial and femoral implantation

Clean, irrigate and dry the bone bed sufficiently.

**Notes**

Avoid damaging the surfaces. Use only the dedicated impactors for hammering in the components. Place the impactor block centrally on the component and align it parallel to the mechanical axis.

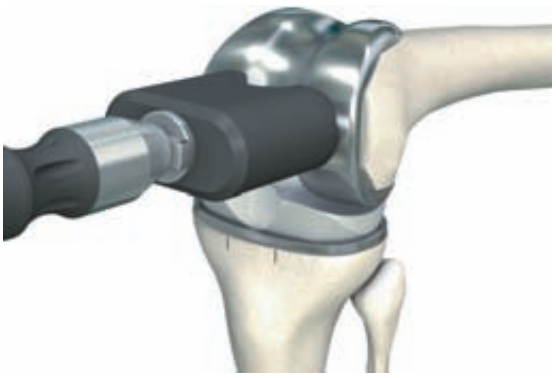
### A) Cemented anchoring of the tibial and femoral components



Mix the bone cement according to the manufacturer's instructions. Cement the tibial component first. Insert the tibial component and hammer home using the impactor (with handle). Gently remove all excess bone cement.

Insert the definitive tibial insert into position from anterior. Now insert the femoral component, applying cement to the rear surfaces of the condyles. Remove all excess cement, including the dorsal area in particular.

### B) Non-cemented anchoring of the tibial and femoral components



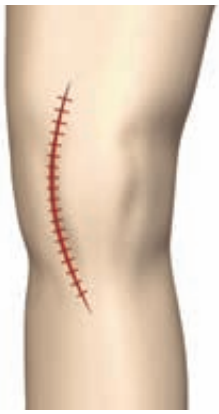
Insert the tibial component and hammer home using the impactor (with handle). Insert the tibial insert into position from anterior.

Insert the femoral component and hammer home with the impactor.

### 3.2 Implantation of the patellar component

Mount the patellar inserter on the patellar clamp with ratchet. Coat the backside of the patellar component with cement and fill the three peg holes of the patella with cement. Insert the patellar component with the leg extended and gently press in using the patellar clamp fitted with the patellar inserter. Remove excess cement. Leave the clamp in place until the cement has completely set.

### Wound closure



The wound must again be rinsed out thoroughly after implantation. Close the wound in layers, inserting two intra-articular and one subcutaneous redon drain.

# Postoperative Treatment

**Rehabilitation**

The operated leg is immobilized in a splint and the knee joint is cooled. Isometric contraction exercises should be performed on the first postoperative day. Thrombosis prophylaxis until a full load can be borne.

On the second postoperative day, after removing the drains, assisted movement exercises and the use of a motorized splint (CPM) are started. The operated leg can generally bear a load early on.

Mobilization of the patient initially occurs with a walking frame or crutches, which can be eliminated as steadiness of gait improves.

# Sterilization

**Implants**

All the implants described in this Surgical Technique are sterile when they are delivered by the manufacturer. Resterilization is not allowed.

**Instruments**

System components and instruments are not sterile when they are delivered. Before use they must be cleaned by the usual methods in accordance with internal hospital regulations and sterilized in an autoclave in accordance with the legal regulations and guidelines applicable in the relevant country. (For detailed information please refer to leaflet Lit. No. 1363.)

The correct settings are given in the instructions for use issued by the autoclave manufacturer. Instrument manufacturers and dealers accept no responsibility for sterilization of products by the customer.

# Notes

**Manufacturer**
Smith & Nephew Orthopaedics AG
Oberneuhofstrasse 10d
6340 Baar
Switzerland

**Contact**



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