Opening Wedge High Tibial Osteotomy
Anatomically shaped bioabsorbable wedges

- Precise correction
- Various porosities
- Bioactive
- Synthetic

+ complete instrumentation set
Bioabsorbable synthetic wedges

SBM, 20 years of experience, was the first company (as early as 1996) to manufacture synthetic wedges for High Tibial Osteotomy (HTO) by metaphyseal addition. Manufactured in Biosorb (100% β Tricalcium Phosphate), the OTIS® line of osteotomy wedges was adapted with respect to porosity and size in order to provide the widest range available.

Adaptability

**Anatomically shaped 15**
OTIS® implants have been designed to fit into the tibial osteotomy plane, by a design combining a flat lower surface and an angulated upper surface.

**Several porosities**
OTIS® implants have been adapted in terms of porosity to fit to any need: 30% porosity for high mechanical resistance, 50% porosity for fast resorption.

**Perfect precision**
A complete range of 10 different heights of wedges, from 6 to 15 mm in 1 mm increments, for a perfect correction.

Ensuring results

**Bioactivity 1-15**
A genuine chemical bond without fibrous interlaying is developed with the bone tissue, without fibrous encapsulation not inflammation.

**Osteointegration 1-15**
Complete control of the macro-porosity guides bone cell penetration and improves bone graft integration within the bone tissue.

**Resorption 1-15**
OTIS® implants are bioabsorbable: the implants are thus replaced by healthy new-formed bone once the cellular resorption process is complete.

Wide choice of corrections

**30% porosity**
Mechanical strength (associated to a plate or staples)

**50% porosity**
Accelerated resorption (must be associated to a locking plate)
Surgical technique

An appropriate internal fixation device is recommended for OTIS® implants, and has to be associated for OTIS 50® implants. To ensure proper positioning of the implant, it is important to adhere to the following procedure:

Step 1
Planning
The OTIS® system provides pre-operative templates in order to help select the best implant size. The degree of correction is determined during pre-operative planning. Perioperative confirmation of the correction required can be done in various ways:
- The technique of using a cord allows for visualization of the lateral to medial mechanical axis.
- A protractor is used to measure the angle perioperatively.

Step 2

Medial metaphyseal incision
The medial metaphyseal incision has three reference points: the medial border of the patellar ligament, the posterior border of the patellar ligament, and the joint line. The incision is short, 5 to 6 cm, longitudinal and equidistant from the patellar ligament and the posterior border of the tibia, 2 to 3 cm under the joint line. After incision through the subcutaneous tissue, the medial border of the patellar ligament and the deep tissue under the ligaments are dissected.

The internal fibroligamentous plane is incised longitudinally and progressively lifted from the tibial metaphyseal surface to allow the rugine to slide behind the medial border, and a right angle retractor to be inserted to protect the popliteal fossa. To limit the risk of partition of lateral tibial plateau, the opening can be achieved with Lambotte osteotomes.

Step 3

Selection
Choose from a range of 10 metallic trial implants with heights from 6 to 15 mm corresponding to the definitive implants.

Step 4

Implant from H 8 to 15mm: (a)
Screw the handles to the trial implants directly from the stainless steel basket.

Implant H 6 or H 7: (b)
Insert the trial implant directly up to the osteotomy incision.

Step 5

Impaction
Distraction is obtained by progressive impaction of the trial implant within the osteotomy incision until it is level with the postero-medial cortical bone.
Control the correction obtained by fluoroscopy.
Retrieval
The metallic implant can be retrieved using the slotted hammer.

Implant positioning
The definitive implant corresponding to the metallic trial implant is carefully placed in the osteotomy incision (by hand, using a gauze for example). An arrow on the top surface of the OTIS® implant ensures proper placement in the incision.

Impaction
The OTIS® ancillary instrumentation provides you with an impactor and its adapted tip specially designed to adjust the implant in the osteotomy cut. Screw the polyoxymethylene (POM) tip on the impactor handle: the POM is a polymer that acts as a shock absorber and reduces the risk of fracture during final implant positioning.

Stabilization
The osteotomy is stabilized by using a locking plate such as the OTIS-C-PLUS® plate. This plate is thin and anatomically shaped with self-tapping screws allowing one step locking and a rapid weight-bearing.

Stabilization using OTIS-C-PLUS® plates
Follow up
When a locking plate is used such as the OTIS-C-PLUS®, the patient can be allowed to weight-bear immediately, using two crutches for 6 weeks. In the case of stabilization by staples, the patient is able to stand up the day after the operation, but complete weight-bearing is authorized only after 12 weeks depending on after-effects. Hospitalization lasts 3 to 4 days. Thigh/knee splints offer an undeniable analgesic effect. Radiological integration of the OTIS® implant occurs from the sixth month on both surfaces; the border between the metaphyseal bone and the implant becomes indistinct and the graft loses its geometric appearance.
Clinical examples

High Tibial Osteotomy: OTIS 30°

The lateral side of the osteotomy cut is perfectly healed. Bone contact with the superior and inferior edges of the implant in Tricalcium Phosphate is excellent, with no radiolucent line. After 3 years, resorption of the material is now evident. The presence of a diffuse central area is still visible.

![7 months post-operative front view](image1)

![3 years post-operative front view](image2)

High Tibial Osteotomy: OTIS 50° with OTIS-C-PLUS® plate

![Post-operative, front view](image3)

![Post-operative, side view](image4)

Courtesy of Professeur Dominique SARAGAGLIA, CHU Sud Grenoble, France.
**Instrumentation**

The OTIS® instrumentation facilitates the osteotomy incision easier thanks to perfectly adapted trial implant distractors and slotted hammer used to impact and easily remove the device. This system offers the advantage of both distracting and measuring the implant size.

**Instruments**

- Slotted hammer for OTIS® metallic trial implants
- Impactor tip
- Handles for OTIS® metallic trial implants (x2)
- OTIS® metallic trial implants
  Heights 8, 9, 10, 11, 12, 13, 14, 15 mm
- Impactor body
- OTIS® one-piece metallic trial implants
  Heights 6 & 7 mm
### Ordering information

**OTIS® implants for High Tibial Osteotomy**

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**OTIS® complete instrumentation set for High Tibial Osteotomy**

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