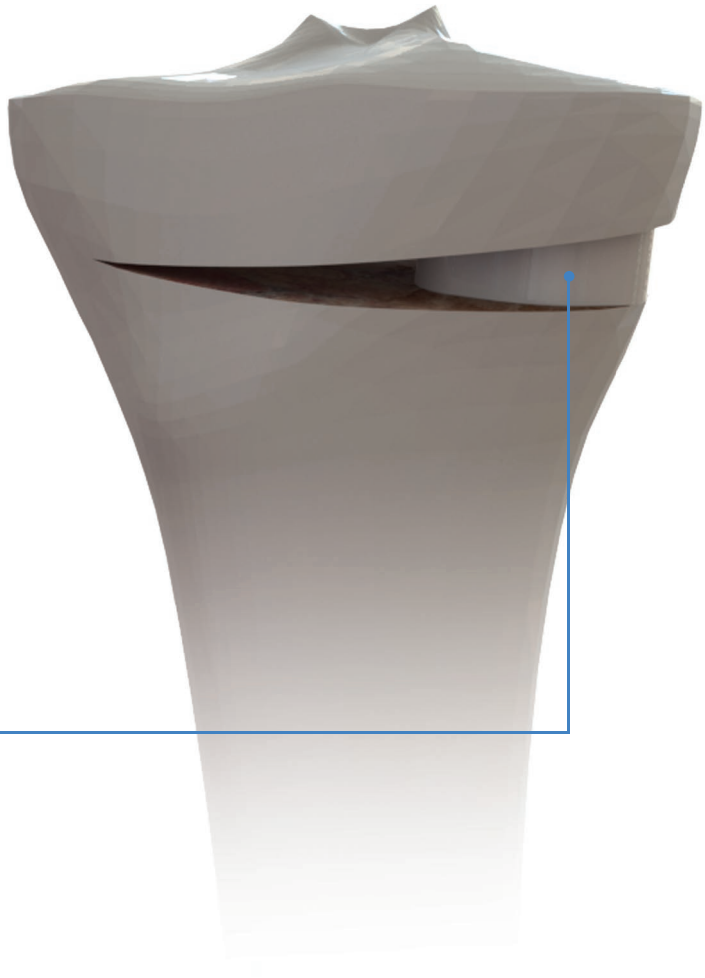
Opening Wedge High Tibial Osteotomy

Anatomically shaped resorbable implants

OTIS®



- Precise correction
- Various porosities
- Bioactive
- Synthetic

SBM
Science & Bio Materials

+ complete instrumentation set

Resorbable synthetic wedge

SBM, 20 years of experience, was the first company to manufacture synthetic wedges for High Tibial Osteotomy (HTO) by addition in 1996. Manufactured in Biosorb (100% β Tricalcium Phosphate), the OTIS® osteotomy line was adapted in porosity and sizes 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 a high mechanical resistance, 50% porosity for a fast resorption.

Perfect precision

A complete range of 10 height of wedges for a perfect correction from 6 to 15 mm.

Ensuring results

Bioactivity [1-15]

A real strong chemical link without fibrous interlaying is developped with bone, creating a long term biological fixation of the implant.

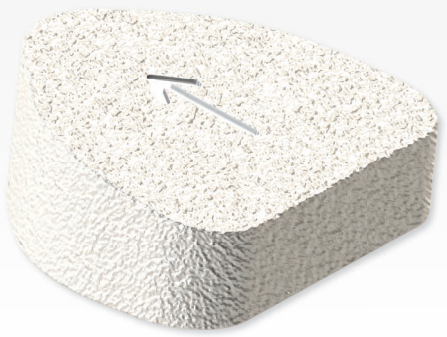
Osteointegration [1-15]

The total control of the macro-porosity guides bone cells and improves bone graft integration.

Resorption [1-15]

Due to its chemical composition, the implant is resorbed through a cellular process simultaneously to bone growth.

Wide choice of corrections



OTIS®

30 % porosity

Mechanical strength

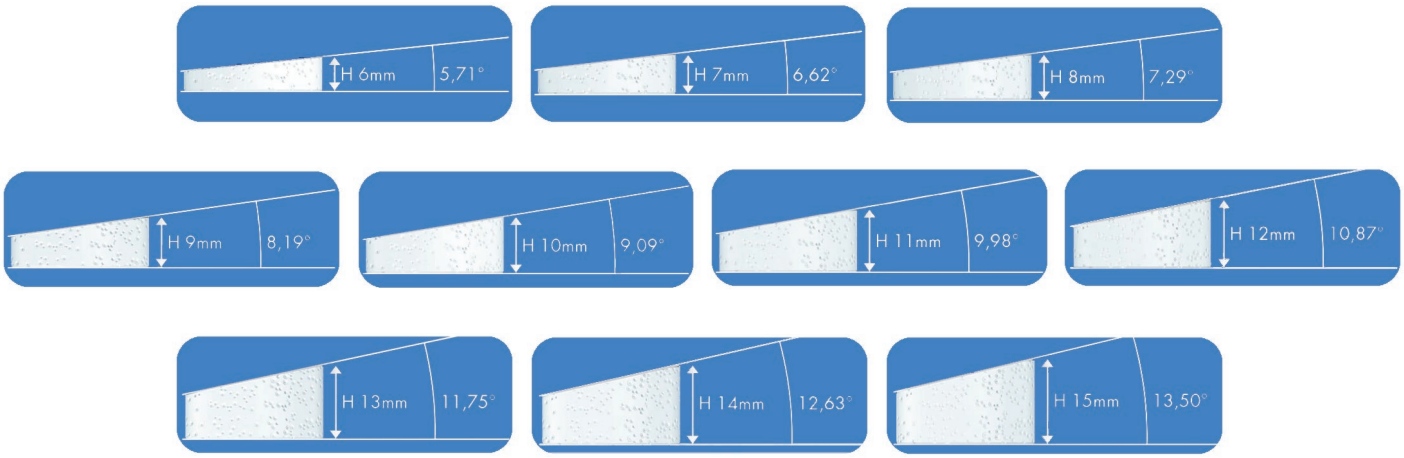
(can be associated to a plate)

OTIS 50®

50 % porosity

Accelerated resorption

(has to be associated with 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 the 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 you in the implant size selection.

The correction to be performed is based on the pre-operative planning.

The pre-operative confirmation of the correction required can be made in various ways:

- Hernigou's scale (Rev. Chir. Orthop., 1992, 78, 258-283).
- The technique of using a cord requires intra-operative control, but the size of the implant does not need to be calculated.
- A protractor is used to measure the angle per-operatively.

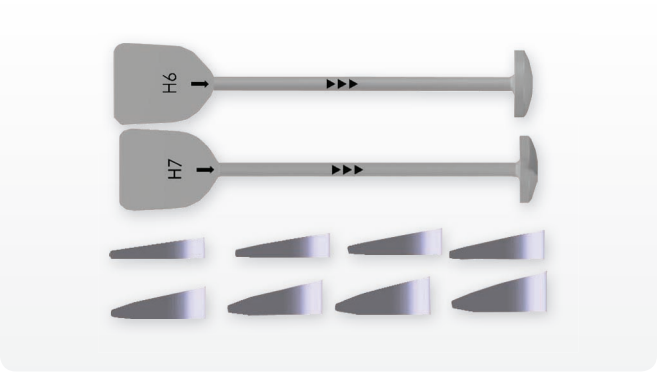
Step 2

Medial metaphyseal incision

The medial metaphyseal incision has three reference points: medial border of the patellar ligament, posterior border of the patellar ligament,articular gap. The incision is short, 5 to 6 cm, longitudinal and equidistant between the patellar ligament and the posterior border of the tibia. 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 progrssively lifted from the tibial metaphyseal surface to allow the rugine to slide behind the medial border, and a right angle retractor is inserted to protect the popliteal fossa. To limit the risk of partition of lateral tibial plateau, the opening can be achieved with Lambotte osteotomes.

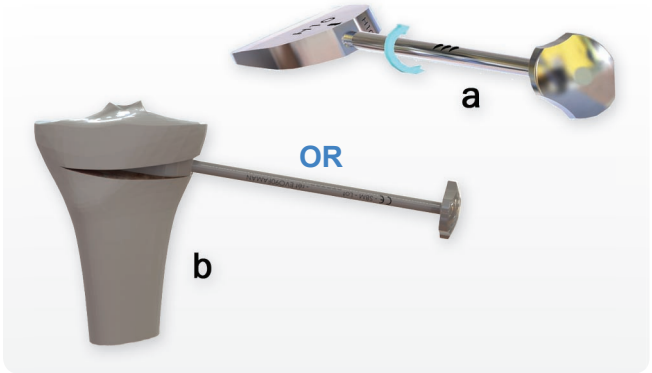
Step 3



Selection

A range of 10 metallic trial implants of height 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

The distraction is obtained by a progressive impaction of the trial implant through the osteotomy incision, up to outcrop of the cortical post-medial.

Control the correction obtained by fluoroscopy.

Step 6

Retrieval

The metallic implant can be retrieve using the slotted hammer.

Step 7

Implant positionning

The defintive implant corresponding to the metallic trial implant is carefully positioned in the osteotomy incision (using a gauze e.g.).

An etching (an arrow) indicates the superior face of the implant OTIS® in order to prevent its malpositionning during insertion.

Step 8

Impaction

The OTIS® ancillary 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 polymer that acts as a shock absorber and reduces the risk of fracture during final implant positionning. This polymer is biocompatible and has excellent wear resistance.

Step 9

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 screws allowing one step locking and a rapid weight-bearing.

Stabilization using OTIS-C-PLUS® plate

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 stabilisation by staples, the patient is able to stand up the day after the operation, but weight-bearing must be delayed. Post-operative recovery is the 3-4 days. The patient can weight-bear from the 45th day. The use of the thigh/knee splint undoubtedly reduces pain.

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

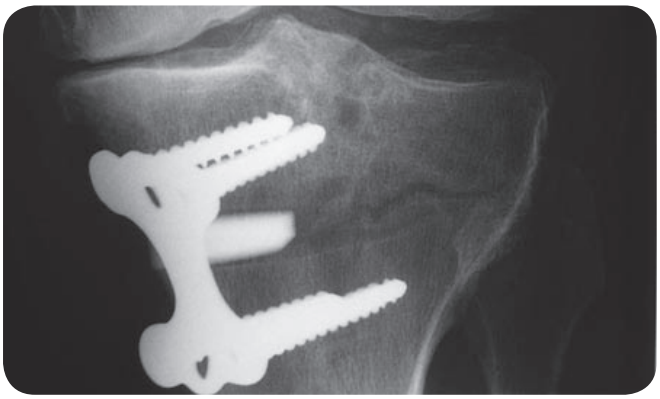
High Tibial Osteotomy: OTIS 30®

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 radioluscent line.
After 3 years, resorption of the material is now evident. The presence of a diffuse central area is still visible.

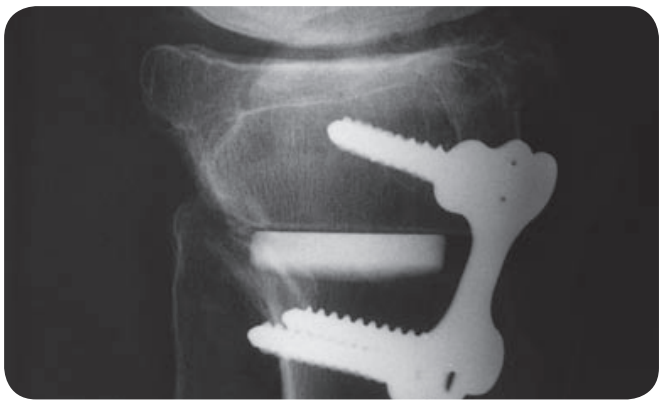
7 months post-operative front view

3 years post-operative front view

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



Post-operative, front view

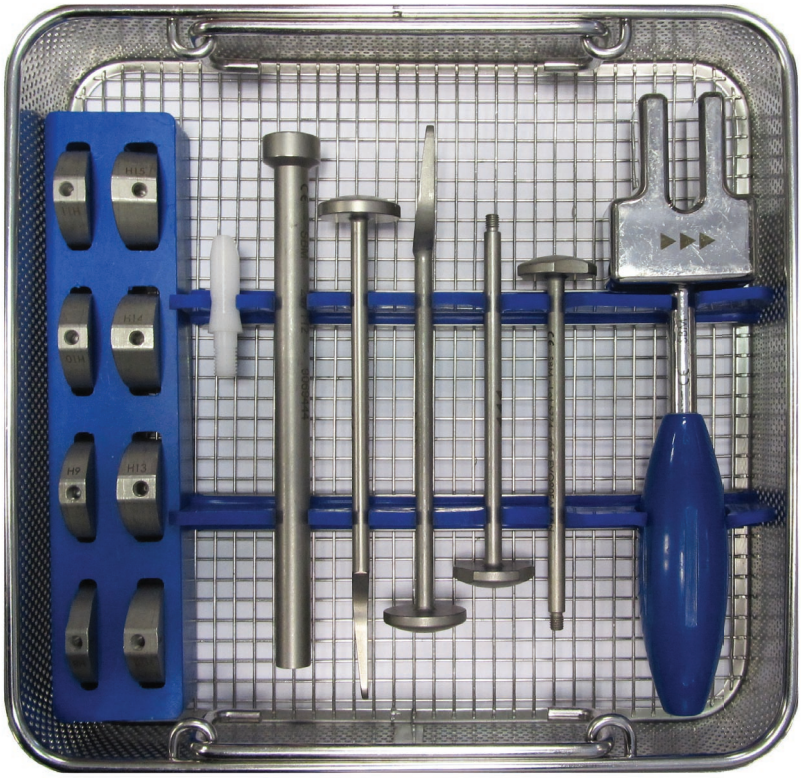


Post-operative, side view

With kind authorization of Professeur Dominique SARAGAGLIA, CHU Sud Grenoble, France.

Instrumentation

The OTIS® instrumentation makes the osteotomy opening wedge easier thanks to perfectly adapted trial implant distractors and slotted hammer, allowing to impact and to remove simply the device. This system allows at the same time to distract and to measure the size of the implant.



Instruments

Slotted hammer for OTIS® metallic trial implants

OTIS® metallic trial implants
Heights 8, 9, 10, 11, 12, 13, 14, 15 mm

Impactor's tip

Impactor body

Handles for OTIS® metallic trial implants (x2)

OTIS® one-piece metallic trial implants
Heights 6 & 7 mm

References

OTIS® implants for High Tibial Osteotomy

Codes	*Designation*	*Packaging*
P822365222	OTIS implant - height 6 mm	1
P822365224	OTIS implant - height 7 mm	1
P822365226	OTIS implant - height 8 mm	1
P822365228	OTIS implant - height 9 mm	1
P822365230	OTIS implant - height 10 mm	1
P822365232	OTIS implant - height 11 mm	1
P822365234	OTIS implant - height 12 mm	1
P822365236	OTIS implant - height 13 mm	1
P822365238	OTIS implant - height 14 mm	1
P822365240	OTIS implant - height 15 mm	1
P822667222	OTIS 50 implant - height 6 mm	1
P822667224	OTIS 50 implant - height 7 mm	1
P822667226	OTIS 50 implant - height 8 mm	1
P822667228	OTIS 50 implant - height 9 mm	1
P822667230	OTIS 50 implant - height 10 mm	1
P822667232	OTIS 50 implant - height 11 mm	1
P822667234	OTIS 50 implant - height 12 mm	1
P822667236	OTIS 50 implant - height 13 mm	1
P822667238	OTIS 50 implant - height 14 mm	1
P822667240	OTIS 50 implant - height 15 mm	1

OTIS® complete instrumentation set for High Tibial Osteotomy

Codes	*Designation*	*In the basket*
EVO9069444	OTIS impactor body	1
EVO9069446	OTIS impactor tip	1
EVO90FAH06	OTIS one-piece metallic trial implant - height 6 mm	1
EVO90FAH07	OTIS one-piece metallic trial implant - height 7 mm	1
EVO90FAH08	OTIS metallic trial implant - height 8 mm	1
EVO90FAH09	OTIS metallic trial implant - height 9 mm	1
EVO90FAH10	OTIS metallic trial implant - height 10 mm	1
EVO90FAH11	OTIS metallic trial implant - height 11 mm	1
EVO90FAH12	OTIS metallic trial implant - height 12 mm	1
EVO90FAH13	OTIS metallic trial implant - height 13 mm	1
EVO90FAH14	OTIS metallic trial implant - height 14 mm	1
EVO90FAH15	OTIS metallic trial implant - height 15 mm	1
EVO90FAMAN	Handles for OTIS metallic trial implants	2
EVO90FAMAR	Slotted hammer for OTIS metallic trial implants	1
P829009040	OTIS template - scale 1.2	1
EVO90FA222	OTIS stainless steel basket with silicone holders	1
EVO90FA500	**OTIS complete instrumentation set for HTO**	

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