

FIXALL SURGICAL TECHNIQUE



The FixAll HTO Titanium Plate is designed to achieve the correction of knees with varus malalignment, with a particular focus on varus aligned tibial deformity. The main features of the implant (Fig 1) include:

- > Double curvature to accommodate the plate to proximal tibial anatomy.
- > Block spacer with desired correction height as well as anterior inclination to counteract the slope increase tendency.



Indications for Osteotomy

Physically active, non-smoking, patients with varus deformity under 60 years of age. Preferably patients should have a BMI < 30kg/m², with medial compartment osteoarthritis staged under Kellgren-Lawrence grade 2. Lateral compartment and meniscus should be preserved as a requisite for medial wedge opening HTO.

Preoperative Planning

The amount of tibial correction is preoperatively established upon evaluation of long-leg standing x-rays using Fujisawa's technique (Ref 1) or by evaluation of the medial proximal tibial angle (MPTA) according to surgeon preference (Ref 2).

Patient Positioning and Preparation

Patient is positioned supine in a preferably translucent operating table, with application of a proximal thigh pneumatic tourniquet to be inflated to 250-300 mm Hg after limb expression. The entire leg is prepped with the surgeon's solution of choice and draped.

Arthroscopic Procedure

Standard arthroscopic inspection is carried out to determine and treat associated injuries and confirm preservation of lateral compartment and meniscus.

Surgical Approach

A 3-4 cm incision is performed in a longitudinal medial parapatellar location, placed mid-way between the anterior tibial tuberosity (ATT) and the medial border of the proximal leg, starting proximally at the level of the patellar tendon insertion (Fig 2).

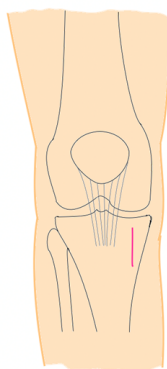


Fig 2

A sharp dissection is carried down to the distal hamstring insertion. An "L" shaped incision is performed in the pes anserinus insertion and elevated with a blunt dissector allowing posterior retraction of the pes anserinus insertion and exposing the superficial MCL (Fig 3).

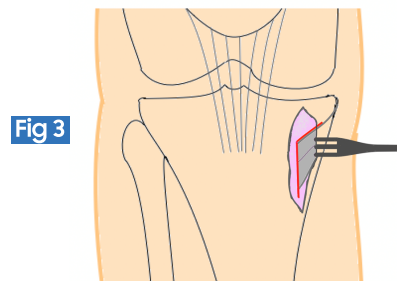


Fig 3

Posterior dissection of the proximal tibia is continued with a blunt dissector, carefully separating the medial gastrocnemius, posteriorly allowing placement of a blunt Hohmann's retractor. In the anterior aspect of the incision, with the aid of Metzenbaum scissors, the medial aspect of the patellar tendon and its insertion are identified, in order to protect it during the osteotomy cut. Two different techniques are recommended to design the cut near the ATT. Either performing the osteotomy through a line connecting the lateral desired point of exit and the inferior patellar tendon insertion or performing a coronal cut in the superior aspect of the ATT.

Osteotomy cut

Using the compass guide or with a free hand technique, under fluoroscopic vision, a guide pin is inserted from the medial edge of the tibia, to connect to a line in the lateral border of the tibia at the level of the proximal aspect of the proximal tibio-fibular joint (approximately 1 cm distal to the lateral tibial plateau) (Fig 4).

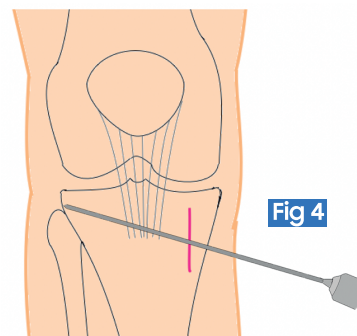


Fig 4

Once the pin placement is satisfactory, the cut is initiated with an oscillating saw, either above or below the guide pin, according to the surgeon's preference. The saw should be slightly directed to lean on the pin to aid in directing it adequately (Fig 5).

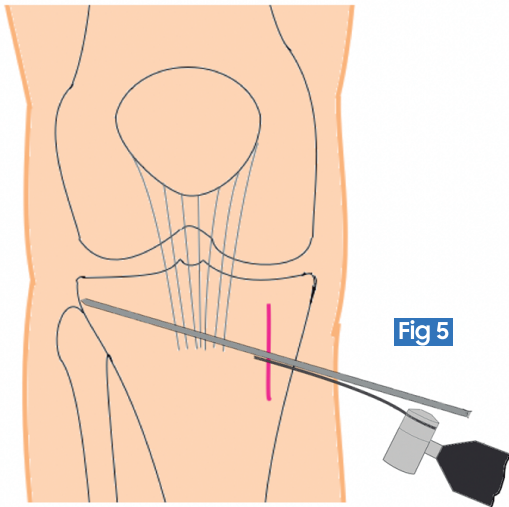


Fig 5

Fluoroscopy is used to confirm the desired trajectory. The anterior, mid-substance and medial posterior aspects of the tibia are cut with the saw, and cuts are completed with an osteotome taking care to not violate the lateral cortex of the proximal tibia. During this process, the posterior aspect of the tibia is protected with a Hohman's retractor.

Opening the Wedge

Once the osteotomy cuts are finished, the convergent osteotome is set in the center of the osteotomy to a point 5 mm medial to the lateral border of the osteotomy and spread to the desired amount of correction in mm, established during preoperative planning, with the aid of the spreading osteotome.

The osteotomes are extracted and the previously fashioned allograft wedge is inserted either with manual valgus, or by using the metallic opening wedge instrument (Fig 6).

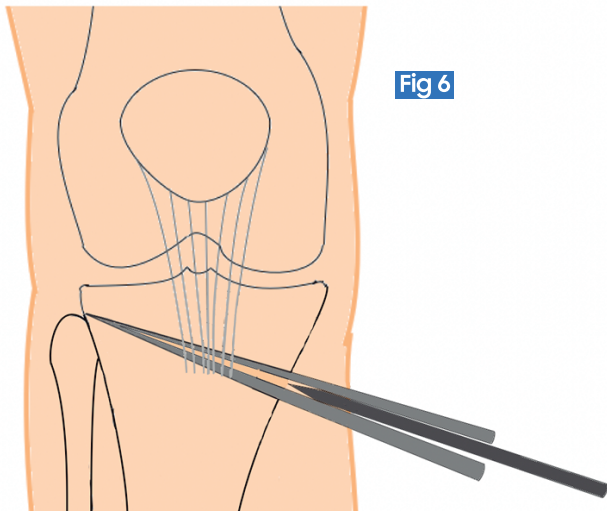


Fig 6

Placing the FixAll Plate

With the aid of the plate positioning pin, the plate is placed in the desired position and impacted into place. A proximal and distal cortical screw are placed preferably one anterior and one posterior, in order to better conform the plate to the medial tibial cortex. Screws are self-tapping to reduce operative time. Note that the proximal screws do not need to be the full length of the proximal tibial width and from 30-35 mm on, are sufficient for fixation. Distal screws should be bicortical (Fig 7).

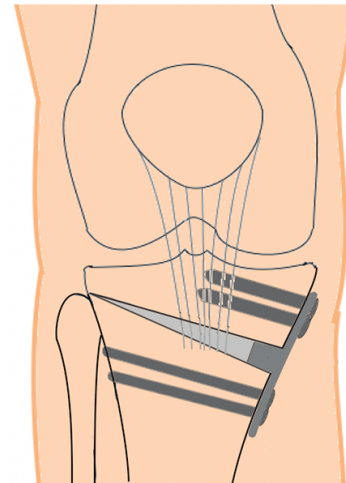


Fig 7

Wound Closure

After thorough wound lavage, the "L" shaped incision on the pes anserinus is sutured with #0 biodegradable suture, and subcutaneous and skin planes are sutured likewise after inspecting hemostasia. Surgeon's preferred bandage is applied, and tourniquets released.

References

1. Fujisawa Y, Masuhara K, Shiomi S. The effect of high tibial osteotomy on osteoarthritis of the knee. *Orthop Clin North Am.* 1979;10(3):585-608
2. Murray R, Winkler P, Shaikh H, Musahl V. High Tibial Osteotomy for Varus Deformity of the Knee. *JAAOS.* July 2021, (5), No 7.

