



Surgical Technique

INDICATIONS

The Distal Femoral Opening Wedge Osteotomy System utilizes the same principles of design featured in the Tibial Opening Wedge Osteotomy System. Specifically designed femoral osteotomy plates take into account the anatomical differences between the distal femur and proximal tibia.

In situations involving lateral unicompartmental arthritis unresponsive to conservative treatment options, the Distal Femoral Opening Wedge Osteotomy System is a safe, reproducible alternative to traditional closing wedge distal femoral osteotomies. The system is designed to correct valgus malalignment through the knee joint and is carried out through a distal lateral femoral approach.

In a simplified technique, an opening wedge osteotomy is performed originating from the distal femoral diaphyseal-metaphyseal flare avoiding surgical exposure to the medial side of the distal femoral region. The osteotomy is supported by one in a series of Femoral Osteotomy Plates and secured with traditional proximal bicortical screw and distal cancellous screw fixation. The defect created by the opening wedge may subsequently be filled with appropriate autograft, allograft or OSferion® Osteotomy Wedge, a bone graft substitute.

ADVANTAGES

- Simplified, reproducible technique in a single saw/osteotome cut
- Performed through a small, less complicated lateral incision
- Safer exposure regarding potential injury to neurovascular structures
- Titanium screws lock into titanium plate for strong overall construct
- Low profile plates and screws reduce soft tissue irritation

PREOPERATIVE PLANNING

Preoperative evaluation, x-rays (full leg standard A/P, 35° flexed weight-bearing A/P, lateral, and axial view) are routinely necessary to assess the degree of femoral correction necessary. Further diagnostic studies as well as diagnostic arthroscopy will further delineate intraarticular pathology.

OPERATIVE TECHNIQUE

EXPOSURE

Following routine supine positioning, tourniquet placement, sterile prep and draping, a longitudinal incision is made along the distal lateral

femoral diaphyseal-metaphyseal region. Exposure is carried out by splitting the iliotibial band and retracting the vastus lateralis superiorly and medially with the Femoral Osteotomy Retractor (*shown to the left*). Additional blunt dissection posterior to the femoral shaft is carried out to place soft tissue retractors, preventing potential neurovascular injury. Care is taken to avoid unnecessary exposure and injury to the lateral collateral ligament.

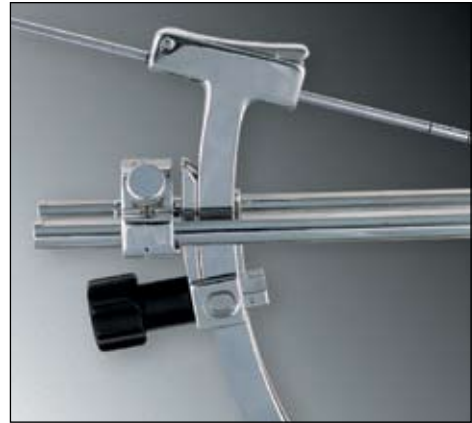


PIN PLACEMENT

Using the Opening Wedge Osteotomy System, a 3 mm Osteotomy Guide Pin is inserted under fluoroscopic control transversely to the origin of the medial collateral ligament. The pin is drilled in the medial cortex.

NOTE: The Osteotomy Guide Assembly (shown to the right) is inserted onto the guide pin and placed inverse to the tibial technique. The assembly is positioned so the back of the guide is aligned with the laser line on the pin.

Following Parallel Guide Sleeve assembly and attachment to the Osteotomy Guide Assembly, two 2.4 mm Osteotomy Guide Pins are individually drilled obliquely under fluoroscopic control to intersect the transverse pin 6-7 mm from the medial cortex of the distal femur. The breakaway feature of the osteotomy pins allows the surgeon to shorten their length to achieve unhindered access while performing the osteotomy.



The obliquity of the osteotomy and medial target should be directed toward the origin of the medial collateral ligament. This position, with respect to the pin position placement, is fluoroscopically confirmed, prior to removal of the transverse 3 mm pin and guide assembly.

OSTEOTOMY

The Osteotomy Cutting Guide or Cutting Guide for HTO is placed over the osteotomy guide pins. A headed pin can be used to secure the guide to the femoral cortex. Retractor positioning is confirmed to prevent neurovascular injury during the osteotomy. The osteotomy is performed superior to the osteotomy guide pins. An oscillating saw is utilized to cut the femoral cortex laterally, anteriorly and posteriorly superior to the guided pins under fluoroscopic visualization. The osteotomy is then completed utilizing appropriate sized Osteotome Blades attached to the Osteotome Handle. The osteotomy guide pins are removed at the completion of the osteotomy.



OSTEOTOMY OPENING

The Osteotomy Wedge or Osteotome Jack (shown to the left) is inserted into the completed osteotomy and slowly advanced with a mallet, creating an opening wedge of the lateral femur. The Osteotome Jack is slowly opened using the 3.5 mm Screwdriver. The wedge is driven to the desired alignment correction preoperatively planned, as referenced on the wedge tines. The correction is performed under fluoroscopic control specific with attention drawn to the medial femoral cortex.

TITANIUM PLATE AND SCREW INSERTION

The selected plate is positioned into the bone correction, ensuring optimum bone-to-plate tooth contact. The Drill Guide is inserted into the Locking Guide and then inserted into the distal screw holes of the plate, orienting the long laser line of the locking guide to the opening of the washer. Under x-ray, the drill is inserted in standard fashion and drilled to (but not through) the medial femoral cortex. The length of the screw may be determined by viewing the laser line of the Drill at the back end of the Drill Guide, or using a standard depth gauge. The Drill Guide is removed while the position of the Locking Guide is maintained in the slots of the washer in the plate hole.

A 6.5 mm cancellous screw is inserted onto the driver, orienting the dot on the screw head to the long laser line on the driver, and is inserted through the Locking Guide into the bone. When the first round laser line on the driver reaches the back end of the locking guide, orient the long laser line of the locking guide to the long laser line of the driver to insure proper screw head insertion into the washer and plate.

Advance the screw until the second round laser line on the driver is reached. The screw should now be tight and flush to the washer and plate. The remaining distal screw holes are filled with 6.5 mm cancellous screws, and 4.5 mm cortical screws are inserted proximally.

Following plate fixation, bone graft is obtained and inserted into the defect. Autogenous or allograft wedge bone graft harvested from the iliac crest or OSferion bone graft substitute is recommended to be placed anterior and posterior to the plate's position.

Prior to closure, intraoperative x-rays confirm final correction, plate position, fixation and bone graft placement.

CLOSURE

The wound is closed in routine fashion, sterile dressing and a postoperative brace is applied. Postoperative crutch walking and weight-bearing status are dependent upon bone quality, osteotomy fixation and subsequent radiographic evidence of healing postoperatively.



ORDERING INFORMATION

Opening Wedge Osteotomy System Set (AR-13305S) includes:

Osteotomy Wedge	AR-13300
Osteotome Handle	AR-13301
Osteotome Blades, 10 mm	AR-13302-10
Osteotome Blades, 25 mm	AR-13302-25
Osteotome Blades, 35 mm	AR-13302-35
Parallel Guide Sleeve Body	AR-13304-1
Parallel Guide Sleeve, qty. 2	AR-13304-2
Osteotomy Guide Assembly	AR-13305
Osteotomy Cutting Guide	AR-13306-01
Osteotomy Cutting Guide Pin	AR-13306-02
Alignment Rod	AR-13308
Femoral Osteotomy Retractor	AR-13309
Radiolucent Retractor	AR-13310
Universal Handle Extractor	AR-13314
Cutting Guide for HTO	AR-13315
Bone Graft Tamp	AR-13317
Application Bar for HTO Plates	AR-13318
Drill Guide for HTO	AR-13320
Drill Guide for HTO Titanium Plates	AR-13321
Bending Irons for HTO Plates, qty. 2	AR-13322
Depth Device for Osteotome Jack	AR-13323G
Osteotome Jack, 35 mm	AR-13323-35
Osteotome Jack w/Screwdriver, 35 mm	AR-13323-35S
Wedge Trial for HTO	AR-13324
A/P Sloped Osteotomy Wedge Trial, large	AR-13325L
A/P Sloped Osteotomy Wedge Trial, small	AR-13325S
Screwdriver, 3.5 mm hex	AR-13326
Screwdriver, 90°, 3.5 mm hex	AR-13326-90
Locking Guide for HTO Titanium Plates	AR-13327
Depth Device, large	AR-4167
Opening Wedge Osteotomy System Instrumentation Case	AR-13307
Storage Case for HTO Plates	AR-13307P

Accessories:

Patellar Tendon Retractor	AR-13312
Medial Retractor for HTO	AR-13313
Drill for HTO Titanium Screws, qty. 6	AR-13319
Osteotomy Guide Pin, 2.4 mm, qty. 6, single use	AR-13303-2.4
Osteotomy Guide Pin, 3 mm, qty. 6, single use	AR-13303-3.0
Osteotome Jack, 25 mm	AR-13323-25

Recommended Bone Graft Substitute (single use and sterile):

OSferion Osteotomy Wedge, 7 mm x 30 mm	AR-13370-1
OSferion Osteotomy Wedge, 10 mm x 30 mm	AR-13370-2
OSferion Osteotomy Wedge, 12 mm x 35 mm	AR-13370-3
OSferion Osteotomy Wedge, 15 mm x 35 mm	AR-13370-4

For a complete list of plates and screws for femoral osteotomies, refer to the Arthrex Product Catalog, surgical techniques Tibial Opening Wedge Osteotomy System (LT0113) and Tibial and Femoral Opening Wedge Osteotomy (LT0108) or go online at www.artbrex.com.



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This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use.

U.S. PATENT NOS. 5,620,448; 5,749,875 and PATENT PENDING

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