

Lapiplasty® Procedure

Key Steps & Fluoro Checks

Items to request in addition to standard foot & ankle instrumentation:

- Straight ¼ inch osteotome
- Pituitary rongeur
- Fluoroscopy (mini c-arm preferred)
- Sagittal saw & wire driver



1. Direct Dorsal Incision

Locate the 1st TMT joint with fluoro and make a direct dorsal incision, along the medial margin of the EHL. Create a full-thickness, sub-periosteal tissue envelope from the proximal pole of the cuneiform to the midshaft of the 1st metatarsal, exposing the medial ridge of the metatarsal.



2. 1st TMT Release

Insert the sagittal saw halfway into the TMT joint before powering on, planing the joint surfaces to “flatten” them for congruent rotation. Use an osteotome to release any remaining capsular or plantar ligament attachments.

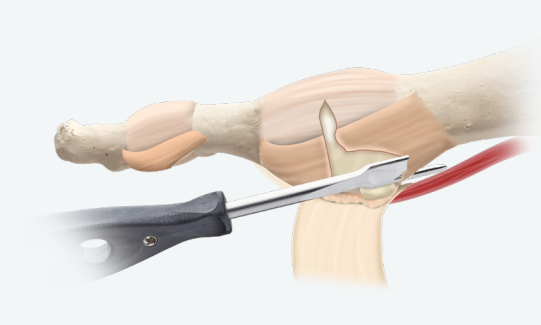
A freer can be used to create a pocket between the 1st and 2nd metatarsal bases for the 3-n-1 Guide.



3. 1st MTP Lateral Release

Make a small dorsal incision at the MTP joint, just lateral to the EHL tendon. Incise the lateral capsule and perform a complete suspensory ligament release with the SpeedRelease™ instrument or scalpel.

Note: The deep intermetatarsal ligament and adductor tendon are typically left intact.



4. Trial Reduction

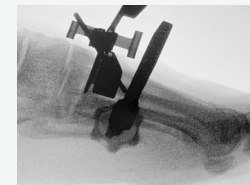
Insert a 2mm “joystick” half-pin approximately 1cm distal to the TMT joint from a dorsomedial orientation, parallel with the TMT joint (aiming toward the 5th metatarsal head). Hold the foot stable and perform a “trial manual reduction” under live fluoro by rotating the joystick pin laterally and applying pressure to the metatarsal head.



5. Lapiplasty 3-n-1 Guide and Positioner

Insert the 3-n-1 Guide into the lateral corner of the TMT joint. Place the Positioner tip into a stab incision over the 2nd metatarsal (2-3mm distal to 3-n-1 Guide) and apply the Positioner cup on the 1st metatarsal medial ridge tightening to “two finger” tightness.

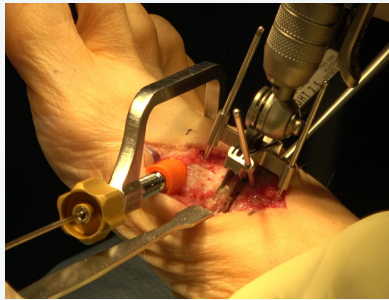
Confirm correction on AP and lateral fluoros, dorsiflexing for an AP “gunsight” view of the 3-n-1 Guide (pin holes appear as “perfect circles” and Joint Seeker is a “sliver”) to confirm a relatively flat metatarsal cut and a wedge cut on the cuneiform.



Lapiplasty® Procedure Key Steps & Fluoro Checks (cont'd)

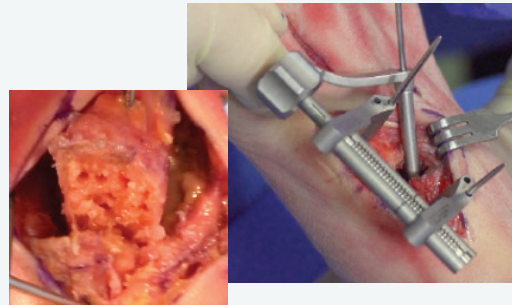
6. Make Precision Cuts

Drive a 1.6mm k-wire through the cannulation in the Positioner into the 2nd metatarsal to secure the correction. Fixate the 3-n-1 Guide with two bicortical 2mm half pins (driven to the laser marks) and a third offset pin to secure the guide. Maintain a vertical orientation of the saw and slowly advance with a "pecking" motion, to the full depth of the blade to complete the cuts.



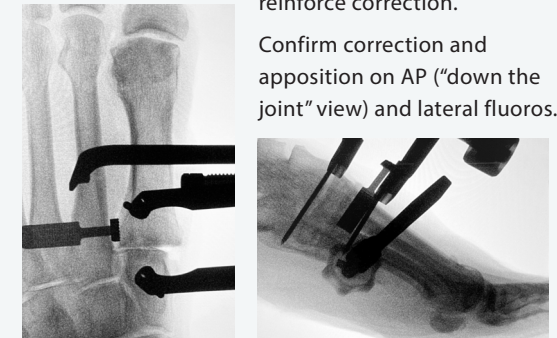
7. Fenestrate TMT Surfaces

Remove the k-wire from the Positioner and the offset hole in the 3-n-1 Guide, sliding the 3-n-1 Guide off the parallel pins. Distract the joint and fully free up the bone slices with an osteotome to allow removal without breaking the pieces. Use the 2mm drill with drill sleeve to aggressively fenestrate subchondral bone surfaces (10+ holes per side). Do not irrigate joint after fenestration.



8. TMT Joint Apposition

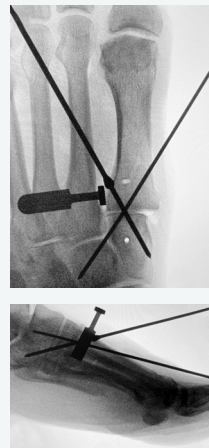
Apply the Compressor over the pins with the knob orientated medially (use 0° cuneiform & 10° metatarsal holes for additional rotation). Insert the Fulcrum between the 1st and 2nd metatarsal bases and tighten the Compressor to "two finger" tightness (do not overcompress) to fully appose the TMT joint. The Positioner can be reapplied to stabilize and reinforce correction.



Confirm correction and apposition on AP ("down the joint" view) and lateral fluoros.

9. Provisional Fixation

For provisional fixation, first drive the threaded olive wire from the lateral side of the metatarsal flare (starting at the level of the Compressor pin) into the center aspect of the cuneiform. Then apply a straight crossing k-wire from the dorsomedial aspect of the TMT joint for a second point of fixation. Confirm the final reduction on AP and lateral fluoros. Remove the Compressor pins and take off the Compressor.



10. Plate Placement

Utilize the Plate Holder to position the dorsolateral plate across the lateral aspect of the TMT, centered over the joint, checking that the ends of the plate are touching bone. Affix with 1mm plate tacks in the outer holes and confirm position on AP fluoro, ensuring it is not in intercuneiform joint.

Apply the second plate directly medial, along the medial ridge of the metatarsal, ensuring screws are 90° to the dorsolateral plate. Check that all screws are locked flush with the plates. Confirm final AP & lateral fluoros.

Note: If a medial flare or "step off" is present at the metatarsal base, gently contour it with a saw or rongeurs but do not overly flatten the area.

