

## PEARLS FOR SUCCESS IN PERFORMING THE LAPIDUS

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The Lapidus procedure is a powerful tool for correcting severe hallux valgus deformities. While the procedure can potentially correct the most severe of deformities, it can also be difficult for a surgeon who is not well-versed in the procedure to gain the needed correction and achieve desired sagittal and transverse plane results.

Typically encountered problems with the Lapidus include adequate exposure of the metatarsal cuneiform joint, adequate joint resection without excess shortening, difficulty closing the intermetatarsal angle after joint resection, elevatus, and fixation.

The metatarsal cuneiform joint is quite tall, frequently measuring 25-mm or more in height. This makes incision placement critical to gain adequate exposure for successful resection of the joint. Due to the height of the joint, the author prefers to extend the metatarsophalangeal joint skin incision proximal, rolling medially and bisecting the metatarsal cuneiform joint. This results in easy access to the dorsal and plantar aspects of the joint.

Once the initial dissection is completed, and the joint is exposed by reflecting the periosteum, special care should be taken to release the dorsal metatarsal-cuneiform ligament complex (Figure 1). Even with excellent dissection, resection of the joint may still remain a challenge. Distraction of the joint with the use of the A-O mini distractor or other small external fixator can greatly simplify the procedure (Figure 2). Distraction of the joint reveals the hidden curves of the joint that must be addressed for good joint resection and adequate IM correction.

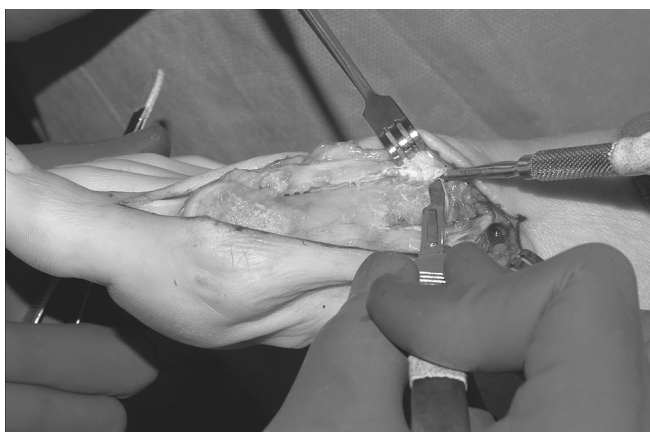


Figure 1. Suspension and release of the dorsal first metatarsal cuneiform ligament.

Initial joint resection is undertaken by “squaring” the anterior face of the medial cuneiform, making the surface essentially perpendicular to the long axis of the second metatarsal (Figure 3). The cartilaginous surface of the medial anterior cuneiform is intentionally left intact, and is removed only at final fitting of the fusion site to prevent excess shortening.

As attention is turned to the metatarsal base, the articular surface is resected removing only the cartilage centrally and the resulting donut of bone around the periphery (Figure 4). The greatest and most common pitfall leading to difficulty closing the fusion site, elevatus, and poor intermetatarsal correction is inadequate removal of the plantar lateral hook of the base of the first metatarsal (Figure 5). This can be the result of poor distraction or fracturing off the plantar portion of the resection of the metatarsal base. This frequently occurs as a result of the strong tendon fiber attachments from the peroneus longus and the plantar metatarsal cuneiform ligaments. The author addresses this

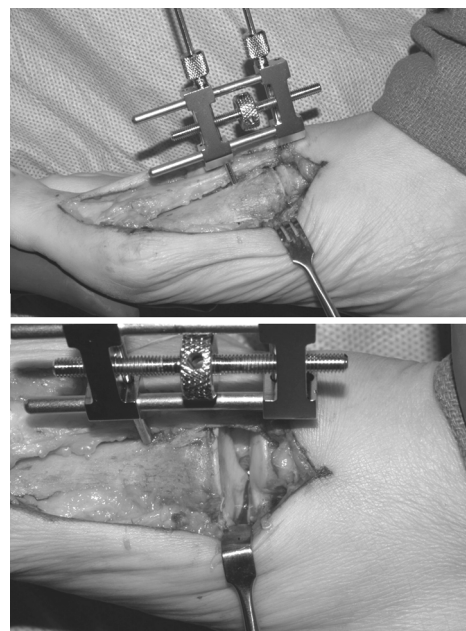


Figure 2. Dorsal placement of the AO mini distractor. Note the more distal placement of the pin in the metatarsal so that this may later be used for compression screw placement. This is chosen to minimize stress risers and risk of fracture of the dorsal cortex. (Bottom) Note the complete exposure of the joint after distraction. This enables complete visualization for management of the plane of cuts for joint resection.

on final inspection after removal of the cartilage with a small slightly-angled rongeur. A small osteotome may also be used to help mobilize this fragment.

After removal of all fragments, the site is fenestrated with the tip of a 0.045" or 0.062" Kirschner-wire (K-wire). This assures bleeding into the arthrodesis site and decreases risk of nonunion (Figure 6).

With the site fully prepared, distraction is released, and the approximation and position of the arthrodesis site is evaluated. This is evaluated on the basis of adequate reduction of the intermetatarsal angle (clinically and via radiograph), good sagittal plane position of the first metatarsal head, and good fit of the fusion site. The site is then temporarily fixated, typically with an axial 0.062" K-wire. After radiographic confirmation of the position, this pin is replaced with the axial compression screw (Figure 7).

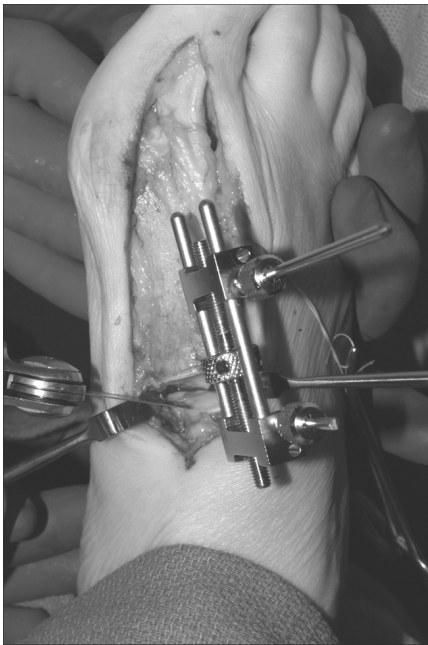


Figure 3. Anterior cuneiform resection — “squaring” the face.

Final reinforcement of fixation is then typically achieved with a small locking plate construct, which enhances stability and may offer the advantage of allowing earlier weight-bearing (Figure 8).

In summary, pearls for success for the Lapidus procedure include: enhanced exposure with medial midline incision at the metatarsal cuneiform joint, release and distraction of the first metatarsal cuneiform joint, minimal resection of the joint while adequately debriding and realigning for successful fusion and intermetatarsal correction, subchondral drilling prior to final fixation, and axial compression screw fixation augmented with plantar medial locking plate construct to allow for greater stability and earlier weightbearing in many individuals. By observing these tips, success with the Lapidus can be enhanced and many complications avoided.



Figure 4. Minimal resection of the first metatarsal base.

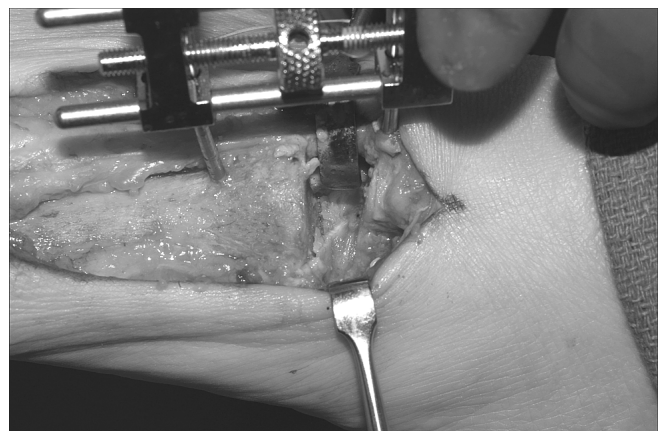


Figure 5. Retained fragment of plantar lateral prominence of the first metatarsal base after resection.

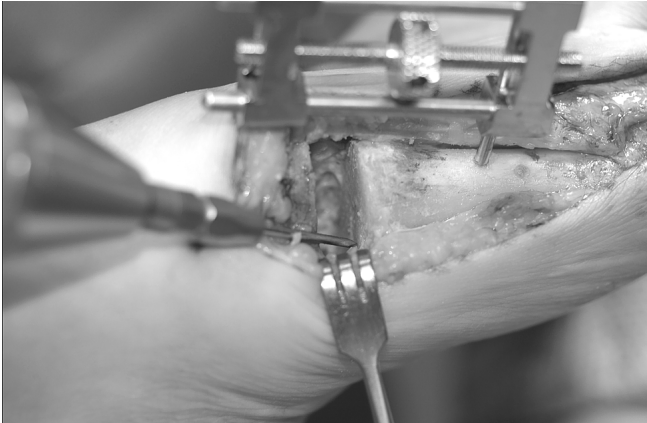


Figure 6. Fenestration of subchondral bone plate to encourage bleeding into the arthrodesis site.

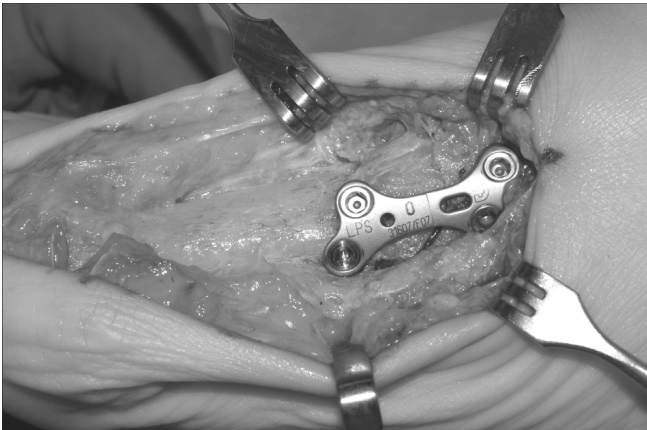


Figure 8. Lapidus fixation construct complete with low medial placement of the Wright Medical Darco locking plate.

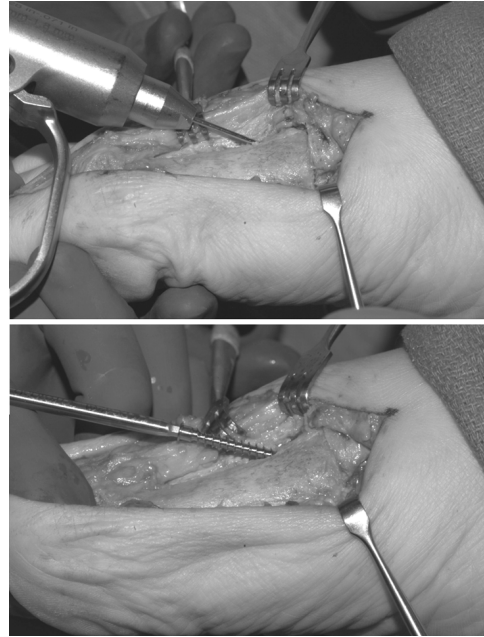


Figure 7. (Top) Temporary fixation of arthrodesis site for evaluation prior to screw placement. (Bottom) A temporary fixation removed and placement of axial compression screw (lag by application).