Case study: Total Ankle Replacement with first metatarsal dorsiflexion osteotomy utilizing EasyFuse®

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Patient overview

- The patient is a 58-year-old male real estate agent with years of progressive ankle pain, instability, and deformity. He described "countless ankle sprains" and that "he cannot trust his ankle."
- He additionally has a history of lower extremity deep vein thrombosis on rivaroxaban but is otherwise healthy and active.
- On exam, the patient had noted asymmetric intra-articular varus at the ankle. Significant asymmetric lateral ankle instability was noted with increased anterior translation with soft endpoint on anterior drawer and significantly increased talar tilt.
- He had relatively retained motion, at the tibiotalar joint, demonstrating 10 degrees of dorsiflexion, 45 degrees of plantar flexion. The patient demonstrated intact peroneal function/strength.

Figure 1: Weightbearing radiographs of the right ankle demonstrated end-stage post traumatic arthritis of the ankle with approximately 25 degrees of varus coronal malalignment suggestive of chronic lateral ankle instability.

Figure 1

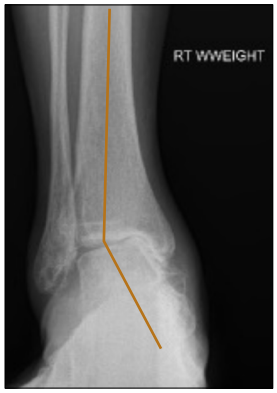

Figure 2a

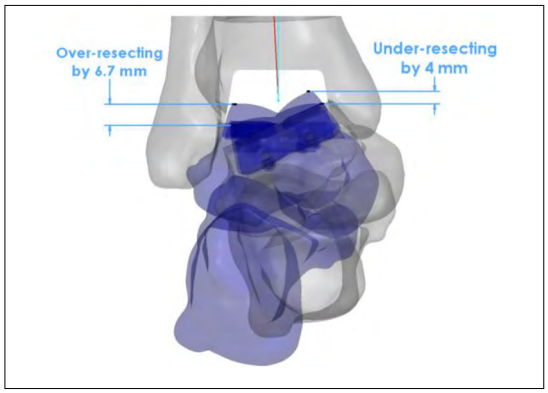

Figure 2b

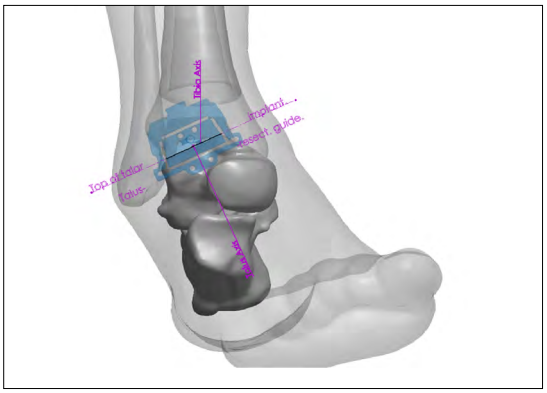

Figure 2c

Figure 2: Preoperative X-ray highlighting the severe post traumatic ankle arthritis with 25 degrees of varus deformity **(a)** preoperative Prophecy® plan suggesting hindfoot corrected into neutral alignment after correction of the varus deformity at the ankle joint. **(b & c)**

Figure 2b: Talus resection guide relative to the talar bone and the planned tibia alignment axis. The resections will result in a correction of 24.5° from varus. Ligament balancing may be necessary to achieve balance.

Figure 2c: The swing of the talus & overall resection height (relative to standard implant height). The "corrected" talus is highlighted.

Operative treatment plan

- The primary surgical plan was for a right total ankle replacement with Infinity® implant. A midfoot/deltoid capsular release and an Achilles lengthening.
- The secondary surgical plan was for a lateral ligament reconstruction with the possibility of a first metatarsal dorsiflexion osteotomy and/or valgus producing calcaneal osteotomy.
- Intraoperatively, with correction of the ankle joint into neutral alignment, the patient was noted to have residual forefoot-driven hindfoot varus on simulated Coleman block testing. A first metatarsal dorsiflexion osteotomy was completed and fixated with an 18mm × 20mm EasyFuse nitinol compression staple. After this was performed, no hindfoot osteotomy was deemed necessary.

Post-operative course

- For 2 weeks the patient remained non-weightbearing in splint. He was then transitioned to a tall boot and began active and passive range of motion of the ankle but remained non-weightbearing.
- The patient began weightbearing in boot at 4 weeks with physical therapy beginning at 6 weeks. The patient was able to transition to a lace up brace.
- At 10 weeks he transitioned into a normal shoe without a brace.
- At one year, the patient is extremely pleased with his outcome. He has no significant pain. Clinically, there was excellent ankle range of motion with 15 degrees of dorsiflexion and 50 degrees of plantar flexion. The ankle is subjectively and objectively stable to exam.

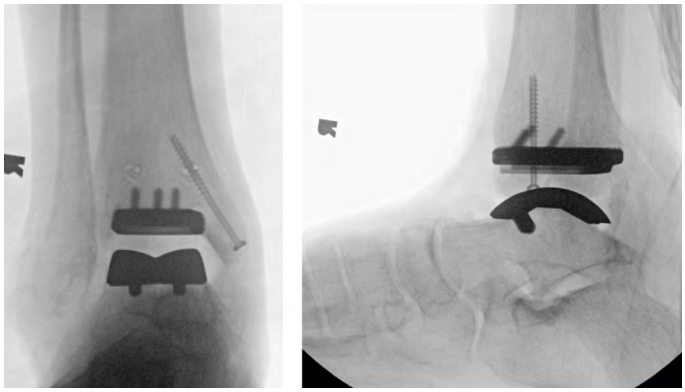

Figure 3

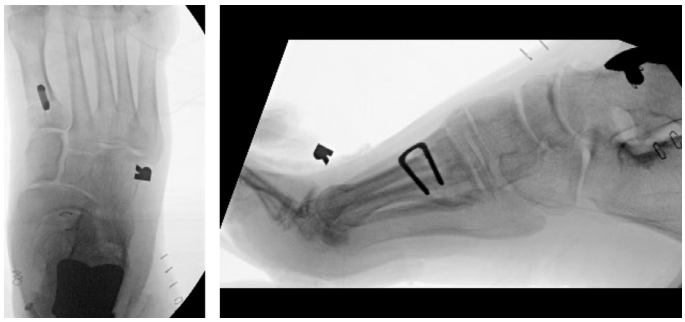

Figure 4

Figure 5

Figure 6

Figure 3: Intraoperative fluoroscopic images revealed neutral implant alignment with correction of his preoperative varus deformity

Figure 4: Intraoperative fluoroscopic images revealed excellent fixation and mainted correction of a dorsal closing wedge osteotomy of the first metatarsal base.

Figure 5: Weightbearing radiographs of the right ankle demonstrate well-ingrown components with maintained neutral alignment

Figure 6: Weightbearing radiographs of the foot demonstrate a well-healed first metatarsal osteotomy with maintained deformity correction.

Brief summary of important product information

Indications for use

The EasyFuse dynamic compression system is intended to be used for fracture fixation, osteotomy fixation, and joint arthrodesis of the foot and ankle.

Contraindications

General surgical contraindications

- Infection;
- Physiologically or psychologically inadequate patient;
- Irreparable tendon system;
- Possibility for conservative treatment;
- Growing patients with open epiphyses;
- Patients with high levels of activity.

Contraindications specific to EasyFuse Dynamic Compression System

None

Warning

For safe and effective use of this implant system, the surgeon should be familiar with the recommended surgical procedure for this device. In every case, accepted surgical practices should be followed in post-operative care. The patient should be made aware of the limitations of the implant and that physical activity has been implicated in premature failure of similar devices. Patient sensitivity to implant materials should be considered and assessed prior to surgery. Do not modify implants.

Dr. Lewis is a paid-consultant of Stryker. The opinions expressed by Dr. Lewis are those of Dr. Lewis and not necessarily those of Stryker. Individual experiences may vary.

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