CITRELOCK®

Flexor Digitorum Longus (FDL) Transfer combined with a Medial Displacement Calcaneal Osteotomy

CASE STUDY

These results are specific to this individual only. Individual results and activity levels after surgery vary and depend on many factors, including age, weight, and prior activity levels. There are risks and recovery times associated with surgery, and certain individuals should not undergo surgery.

This case study is published by Acuitive Technologies.

History of Present Illness

A female with a history of progressive collapsing foot deformity (PCFD) has undergone extensive conservative treatments over the past year, including activity modification, orthotic inserts, anti-inflammatory medications, and physical therapy. Her symptoms have worsened, with increased pain, swelling, and progressive deformity that interfere with her daily activities. Her relevant medical history includes well-controlled diabetes, hypothyroidism, and polycystic ovary syndrome. She is a non-smoker, actively engaged in her daily life, and works as a substitute teacher.

Exam

A standing lower extremity exam revealed a pes planovalgus deformity and tenderness over the posterior tibialis tendon (PTT). She was unable to perform a double or single heel rise, and there was minimal abduction deformity. The hindfoot had full pain-free motion, was flexible, and could be passively corrected to neutral alignment. Osteophytes of the midfoot joints were noted, and the patient is asymptomatic. The patient was neurovascularly intact without neuropathy.

Radiographic Examination

Preoperative weight-bearing radiographs revealed that the ankle was well-preserved without tilt. A mild reduction in Meary's angle aligned with early PCFD and asymptomatic midfoot osteoarthritis (OA). MRI indicated PTT tendinosis.

Diagnosis and Treatment Plan

This patient has PCFD. Despite months of conservative treatment, her deformity, pain, and functional limitations worsened. Surgical options were discussed, focusing on flexible reconstruction versus hindfoot

arthrodesis. Because of her isolated PTT symptoms, active lifestyle, and desire to preserve her motion, the decision was made to proceed with a flexor digitorum longus (FDL) transfer combined with a medial displacement calcaneal osteotomy. This approach provided a reliable surgical solution for her ankle pain and correction of the deformity.

Surgical Procedure

After following a standard protocol for pre-operative antibiotics, prepping, and draping, a medial approach was made to the left foot centered around the PTT, extending from distal to the medial malleolus to just past the navicular insertion. The sheath was incised, and the tendon was excised after inspection indicated it was not salvageable. The spring ligament was examined and found to be well preserved, not requiring reconstruction. The floor of the tendon sheath was incised to expose the FDL tendon, which was traced distally to the Knot of Henry, where it was transected, taking care to ensure enough length for transfer and to protect the closely adjacent flexor hallucis longus (FHL) and neurovascular bundle. The tendon end was secured with tagging sutures for later transfer into a navicular bone tunnel. The site for tendon transfer was identified at the native insertion of the PTT on the medial navicular tuberosity. Using the Acuitive CITRELOCK System, a guide wire was placed at the insertion site and advanced across the navicular, taking care not to violate the talonavicular or naviculocuneiform joints. The tendon was sized, and the corresponding bone tunnel was drilled over the guide wire. Using a loop on the guide wire, the previously placed tagging suture was pulled through to deliver the tendon into the bone tunnel and secured after a standard open medial displacement calcaneal osteotomy was performed. The FDL was tensioned appropriately, and the corresponding CITRELOCK interference device was impacted into the bone tunnel adjacent to the tendon, providing excellent stability.

Recovery and Follow-up

The patient's post-operative course was uneventful. Once the incisions were well-healed, she was placed in a cast and remained non-weight-bearing. At 6 weeks post-operative, imaging showed good bridging of the osteotomy, and she was allowed to start weight-bearing in a boot to her tolerance and begin physical therapy. At 10 weeks post-operative, she transitioned from a boot to a normal shoe. The patient regained pain-free function by 16 weeks. At 1-year follow-up, she was clinically asymptomatic, and x-rays (**Figures 1 and 2**) showed good implant position with ongoing resorption and no lucency.

Figure 1

Figure 2

An MRI obtained at 1 year for unrelated reasons confirmed a secure tendon transfer (**MRI Figures 3 and 4**) and the absence of inflammatory reaction or edema around the implant (**MRI Figures 5, 6, and 7**).

Figure 3

Figure 4

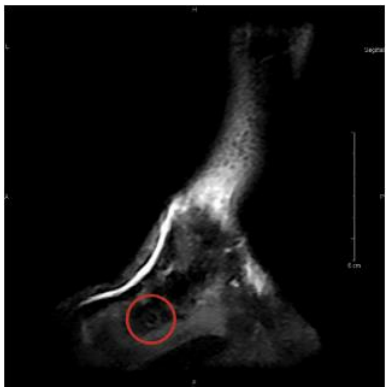

Figure 5

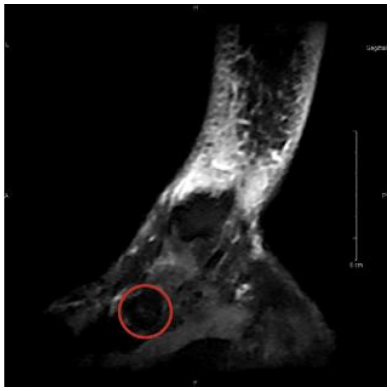

Figure 6

Figure 7

Pleased with her good results, she gained the confidence to undergo an identical reconstruction on her contralateral side later that year.

This case involves an active patient with PCFD. She underwent successful reconstruction and resumed normal activities. The CITRELOCK implant was chosen for its easy-to-use instrumentation, strong pull-out strength that securely anchors the tendon transfer, and impaction technique that protects and prevents binding or cutting the tendon. Additionally, its unique bioabsorbable properties help reduce concerns about reactive changes and persistent pain, as confirmed by post-operative MRI and supported by clinical observations.

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