Insertional Calcific Tendinosis: When is a Graft Needed and Can Short Harvest Suffice?

Surgical treatment of insertional Achilles tendinosis is indicated after failure of nonoperative modalities, including NSAID medications, stretching and eccentric strength training, activity restriction, immobilization, and even extra-corporeal shock wave treatment. The mainstay of surgical treatment includes resection of diseased tendon, removal of insertional spur and the posterior Haglund’s process, and retrocalcaneal bursectomy. Biomechanical data supports tendon reattachment to the calcaneus if greater than 50% of the insertional area is released during the debridement. Clinical results are excellent, with satisfaction ranging from 74-96%. Controversy exists as to whether this procedure is less effective in the older population, in whom tendinosis is typically more extensive. Other factors not well studied include the effects of obesity, occupation or activity, and other medical comorbidities. Of note, many authors described successful debridement of up to 50% of the tendon cross-section (Grade B Recommendation, fair level of evidence).

Many surgeons have described augmentation of the Achilles insertion if greater than 50% of the tendon cross-sectional area is debrided. More extensive tendon degeneration may compromise the tissue left for reattachment, raising concerns over its healing capacity, durability, and ultimate strength. Biomechanical or histological data to support routine augmentation is lacking, however. Defining the exact clinical indications for use of tendon augmentation beyond simple tendon debridement remains an area of investigation, with no comparative studies available. Some suggest that tendon augmentation offers better outcomes in older patients; it may also provide improved plantarflexion strength in obese patients, or those who work as laborers. It can be combined with V-Y advancement or central turndown of the Achilles and is also useful in cases of extensive tendinosis and chronic tearing that require complete excision.

Initially described for the treatment of chronic Achilles ruptures, flexor hallucis longus (FHL) transfer has become a versatile adjunct in the treatment of insertional tendinosis. FHL transfer offers several advantages over other potential donor tendons, including: (1) a dynamic in-phase transfer with an appropriate axis of pull, (2) good relative strength, (3) anatomic proximity, and (4) a hypothetical improvement in local vascularity to the Achilles region.

The surgical technique for FHL transfer can be performed through a posterior incision augmented by a second medial arch incision for tendon harvest at the knot of Henry. Alternatively, harvesting and transfer of the FHL through a single posterior incision has proven effective in several clinical series. Cadaveric data suggests that addition of the second medial arch incision only adds 3 cm of additional tendon length; further, medial arch dissection for FHL harvest may risk injury to the medial plantar nerve. After debridement of the Achilles and posterior calcaneal exostectomy, the FHL is harvested through the posterior incision, transferred into the calcaneus via an osseous tunnel and secured by intraosseous suture anchors, or preferably an interference screw. Initial immobilization and weightbearing restriction is followed by progressive rehabilitation focusing on strength and proprioception retraining, gait mechanics, and conditioning. Most patients achieve maximal improvement after 8 to 12 months.

Clinical reports in the literature demonstrate 73-95% pain relief and 86-100% patient satisfaction rates. Patients demonstrate good functional recovery, with 75-100% able to toe-raise and climb stairs. Plantarflexion torque deficit of 7-25% compared to the normal limb is common, although comparison to preoperative deficit is lacking. Use of the FHL tendon to augment insertional Achilles tendon debridement has a Grade B Recommendation (fair level of evidence), although the exact indications remain to be defined. No direct clinical comparisons between single- and double-incision techniques are available, with retrospective Level IV series of each method suggesting equivalent outcomes between the two (Grade I Recommendation, insufficient level of evidence).
Described complications include residual weakness, wound complications (0-4.5%), pain, limp, nerve injury (2-7%), and claw hallux deformity. Studies have shown that decreased pedobarographic pressure under the hallux and weakness of the hallux interphalangeal joint are common, but result in no clinical problem for the majority of patients.

Bibliography