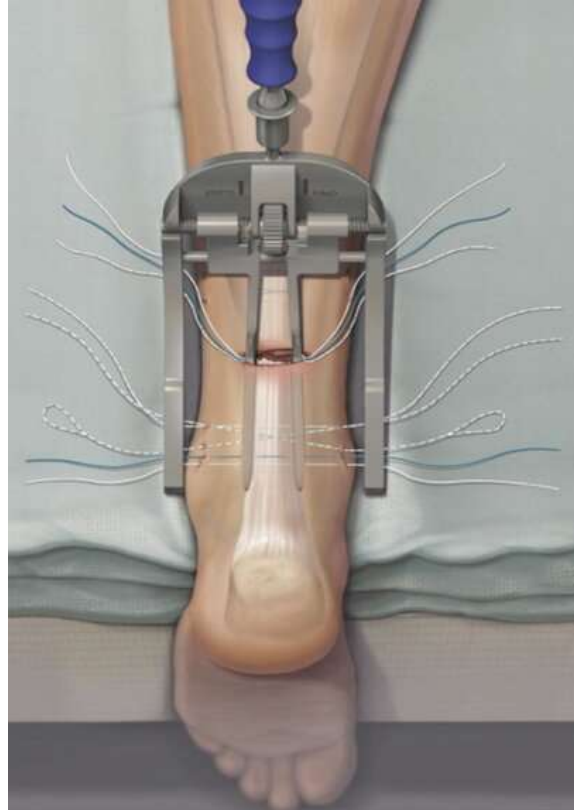


Achilles Repair – Minimally Invasive (MIS) Technique



Optimal treatment options for acute Achilles ruptures have been debated in the orthopedic literature for decades. In the past, the debate was concentrated on whether conservative treatment was a superior option to open surgical management. Currently, as technology and techniques have advanced, the debate has evolved to include minimally invasive options that offer a similar advantage of tendon apposition with limited surgical risk.

Choice of treatment regimen is ultimately up to the patient, our job as surgeons is to educate patients with current evidence-based results. Outcomes will also differ dependent on patient compliance with treatment regimen. The debate is not as simplistic as whether surgery or conservative treatment is the best for an Achilles rupture, the real question is what treatment is best for a patient's physiology and their athletic demands.

Appropriate selection and meticulous surgical techniques will maximize functional outcomes while minimizing complications. Repair is advocated in all active patients if optimum performance is desired. It should be used in athletes and in patients who have high activity level. Nonsurgical management is reserved for older (over 60), sedentary, or debilitated patients or in patients that

choose to avoid surgery. Minimally invasive surgery provides benefits of functional outcome that is obtained with open surgical approach without the soft tissue complications. With advances in surgical instrumentations and techniques, minimally invasive Achilles tendon repair has provided sufficient data to justify its use for repairs. Minimally invasive repair has definitively demonstrated superior overall outcomes with decreased surgical complications compared to open repair.

An excellent study done by Hsu et al. retrospectively reviewed 101 PARS to 169 open repair patients. It demonstrated greater number of patients returning to baseline physical activities by 5 months in PARS (the minimally invasive technique we use) (98%) compared to open group (82%). Overall, complication rate in open group was 10.6% (18 cases) and 5.0% (5 cases) in PARS group. We have evaluated our own results with the use of the minimally invasive PARS technique with isolated suture and the alternative described as a mid-substance speed bridge where the suture is anchored into the heel bone. Our data has also shown excellent clinical results with a very low rate of rerupture (<1%) that is currently submitted for publication.

Another advantage of minimally invasive repair is cosmesis. While this may not directly improve functional outcome, patient satisfaction is increased if similar outcomes are provided with smaller incision. The length of the incision not only minimizes the amount of scarring of the tendon, but also helps to decrease the risk of infection.

The technique involves a 3 cm longitudinal incision along the center of the Achilles tendon rupture. This can be extended proximally or distally as required. The PARS technique is utilized in the proximal tendon stump. The PARS jig inserted into top part of the rupture, allowing for suture placement without the need to make a large incision. A small incision is made over the calcaneus on the medial and lateral aspect of the Achilles insertion site. The sutures in from the top aspect of the ruptured tendon are pulled into the small incision made near the heel, this places the sutures away from the nerve, minimizing the risk of nerve injury. Tension is applied to the suture and the foot held in a position so that the tendon ends are touching. While the foot is held so that two tendon stumps are apposed the BioSwiveLock anchor is inserted into the anchor hole. Opposite side anchor is inserted in the same manner. This allows for superior biomechanical strength of the repair, that allows for early rehabilitation and decreased risk of rupture (although this cannot be eliminated).

Recovery is facilitated with this repair technique and weightbearing in a boot is allowed at 2 weeks from surgery with heel lifts. A very detailed protocol is used for physical therapy that allows for weightbearing in a shoe 6-7 weeks from surgery. Return to full impact, is individual with most patients able to achieve this 6 months from surgery. Some patients are able to return slightly fast and some require another few months of recovery. Maximal return of function – which has been shown to be approximately 95% of the strength of the non-injured side in the best of circumstances can take up to 1 year.

Outcomes of Achilles tendon repair based on published literature:*

- MIS Repair (Not Many Published Literature Regarding MIS Repair Technique Outcomes)
 - o Sural Neuritis - 0%
 - o Deep Infection - 0%
 - o Superficial Wound Dehiscence - 3%
 - o Foreign Body Reaction Requiring Removal - 2%
- Open Repair
 - o Sural Nerve Neuritis - 3% to 8.76%
 - o Superficial Wound Dehiscence - 4%
 - o Superficial Infection - 0.7% to 4.8%
 - o Deep Infection - 2% to 6%
 - o Re-ruptures - 2.3% to 4.8%
 - o Deep Venous Thrombosis (DVT) - 0% to 7.08%

* Please direct to www.chicagoanklesurgery.com for references