Achilles tendinopathy is one of the most common overuse injuries in athletes, and approximately 6% of the population will have it sometime. It may be non insertional (50%) or insertional (20%). The other 30% is combined insertional and non insertional. Although its pathogenesis is not fully understood there seems to be consensus that it is related to overuse and also to anatomical factor like what has been called the Haglund’s deformity. This is a prominent postero-superior calcaneal tuberosity that may produce impingement at the distal insertion of the Achilles tendon. It may be related to bursitis and to a variable range of distal Achilles tendinopathy. Treatment typically begins conservatively and if there is no good result, then different surgical options may be considered.

The physiopathology must consider that there are NO nerve endings inside the tendon. Instead, they are located in the paratendon. Another interested findings is that there is no straight correlation between symptoms and the severity of symptoms. There may be poor prognosis associated when there is more tendon degeneration and calcifications. For non insertional Achilles tendinopathy the role of the plantaris tendon has been suggests since it does not have any attachment to the femur compared to the gastrocnemius muscles.

The insertional tendinopathy has been related to the impingement produced by a prominent posterior a superior tuberosity of the calcaneous.¹²

*Introduction:

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*Diagnosis:

The patient typically complains of dorsal heel pain that gets worse with sprint sports. It is worse when movement begins and then it gets better when the patient warms up. Then it gets worse again as the physical activity increases. Most of the time medical consultation is delayed more than 3 months. A painful bump may be observed on physical examination.

Imagenology may consider X-rays, ultrasound, MRI in order to evaluate where there is: inflammation, tendon degeneration, bursitis, calcification, etc. Some of these findings may influence the decision making process.

*Conservative Treatment:

There is good level of evidence to recommend different types of conservative treatment. These include modifying physical activity, physical therapy with eccentric exercises, shock wave therapy, etc. Most patients will get at least some improvement in level of daily activities or sports with conservative treatment.³
Surgical Treatment

Different surgical options have been recommended and they seem to have different success rates and at the same time completely different recovery time specially when it comes to sports return. Some of the invasive treatments include 4,5:

1. Ultrasound guided injections:
   - PRP;
   - Stem cells;
   - Hyaluronic acid;
   - Physiologic solution;
   - They pretend to separate peritenon from the tendon, so are more useful for NON insertional Achilles tendinopathy;

2. Endoscopic pre Achilles bursa resection with or without Haglund resection;
3. Calcaneal osteotomy (Zadek or similar);
4. Open central tendon debridement with or without Haglund resection;
5. Total (or central 80%) Achilles insertion detachment plus Haglund resection;
6. Flexor hallucis longus transfer. Isolated or combined with some of the other options and;

1. Injections:
In cases without improvement after conservative treatment we would recommend some kind of minimally invasive approach using US guided injections. These options seem to have better results in NON insertional Achilles tendinopathy. In some cases we would use a cortisone injection directed to the pre-Achilles bursitis, under ultrasound assistance.

2. Endoscopic techniques:
For the less severe cases in which there is just minor damage to the Achilles tendon an endoscopic technique may be indicated. The surgical procedure begins with bursitis debridement and may include Haglund’s deformity resection. Endoscopic assistance is useful, but it may also be perform with just a minimally invasive technique using a burr, protecting the tendon and confirming the complete removal of the bone under radioscopic assistance.

This technique seems to work only in cases without evident tendon damage. So, Van Dijk just recommended it for cases without any calcification. Fortunately, most patients will require surgery with already severe tendon damage so this technique would be insufficient.

Some authors have tried to push the indication a bit further in cases with mild tendon damage adding debridment to the anterior wall of the tendon insertion, but results have not been conclusive and some tendon ruptures have been described. 6,7

3. Calcaneal osteotomies:
Different modifications of calcaneal osteotomies have been described. The osteotomy should remove a dorsal wedge of the calcaneal bone anterior to the Achilles tendon insertion. It may be performed as an open or a MIS technique.

Results are promising, but some biomechanical concerns have been reported since the length of the bone is changed by shortening. A shortened calcaneum may affect performance because of a short lever arm.

On the other side a bony procedure that typically needs fixation may increase the time to return to sports.

4 and 5. Open surgical debridement:
Just debridement? Or always reattach? It is tempting to perform a small incision and just remove a part of the diseased tendon in the central area without adding detachment or Haglund resection. In our experience, results were poor because of persistent symptoms in a significant number of patients.

It was enlightening that in 2006 Wagner showed that tendinopathy is typically underestimated in preoperative images. This means that US or MRI may encourage the surgeon to just remove some of the central part of the tendon. Empirically a 50% magic number has been mention as a safe percentage in order to keep enough tendon to prevent post-surgical rupture. This approach would also pretend to obtain a quicker recovery time which was partially true when it was compared with the old fashion anchors reattachment techniques. They found that the intraoperative findings typically confirmed more than 50% of central tendon involvement so the recommended to ALWAYS a reattachment of the distal insertion of the tendon in order to obtain predictable results.

Although results of reattachment with classical anchor were promising, the rehabilitation time was classically very long (Technique and results of Achilles Tendon Detachment and reconstruction for Insertional Achilles Tendinosis Emilio Wagner, John Gould, et al, Journal of Foot and Ankle International 2006)
Achilles Insertional Tendinopathy. Haglund Removal, Just Remove the Tendon or Reattach?

Cristian Ortiz, MD

With the recently available technique of Haglund resection, debridement of the distal pathologic tendon but reattachment with tape loaded anchors in a “W” figure a much more stable construct allowed surgeons to move on with a more aggressive rehabilitation protocol. Its better stability has been biomechanically and clinically tested. Its advantages are related to several factors:

A - Distal insertion of the Achilles tendon is opened like a book removing the central part which is typically the most diseased tendon. This preserves the lateral attachment so length is not lost and also keeps some mechanical strength;

B - The tape grabs more surface of the tendon against a well vascularized area after resection of the Haglund’s deformity and,

C - Two rows of Ø4.75 x 19.1 mm Fastlock Knotless Anchors allow a bigger surface of the healthy tendon against the bone and with more stable construct.

The anchors are knotless so there is no irritation of sutures compared with the old fashion anchors technique.
We typically keep the patient weight bearing as tolerated in a removable boot for 2 to 3 weeks. Then, we remove the sutures and send them to physical therapy to progressively go back to daily activities and sports as tolerated.

Most patients are able to get rid of the boot as early as 3 to 4 weeks and begin with progressive load. Some athletes are able to go back to sports between 3 to 6 months.

6. **FHL transfer:**

It must be mentioned that there are some cases in which there is such a complete damage of the whole tendon that it must be replaced by an allograft. In some others, the muscle (triceps surae) may be atrophic and useless to repair. Then a FHL tendon transfer to replace the diseased tendon a muscle may be indicated. The FHL transfer could be performed arthroscopically.

7. **Gastrocnemius release:**

There is conflicting, low-level evidence on the effectiveness of isolated gastrocnemius recession to reduce pain and improve function in patients with IAT (Grade I recommendation). More research is needed to understand the efficacy of a gastrocnemius recession as an adjunct to other operative procedures.

**Summary**

For the disabling Achilles insertion tendinopathy most authors would recommend reattachment and posterior tuberosity resection. The ILA - Internal Ligament Augmentation technique provides a significant improvement in recovery time. It allows surgeons to leave the patient without protection and start rehabilitation as soon as tolerated.

Most of the time this quicker recovery time makes the difference between persisting on conservative treatment for a long period of time or performing a surgery with low associated morbidity and excellent results.
References:

15. A Comparative Analysis of Clinical Outcomes in Noninsertional Versus Insertional Tendinopathy Using PROMIS® Foot&Ankle Specialist August 2019;