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Case Report

Endoscopic Calcaneoplasty in an Elite Runner

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ABSTRACT

Haglund's syndrome is a triad of postero-superior calcaneal prominence, retro-calcaneal bursitis and insertional Achilles tendinopathy. Endoscopic treatment of patients with this triad allows for earlier weight bearing, direct visualization of the Achilles insertion and less soft tissue disruption. In addition, it allows excellent visualization of the pathology. We report a case of an elite runner that underwent Endoscopic Calcaneoplasty done in the prone position. Prospective analysis of his performance before and after the surgical intervention as well as post-operative rehabilitation is detailed. Prone positioning allows for easier access to the Haglund's deformity, a more logical view on the monitor and a more ergonomic hand position.

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Introduction

Haglund's syndrome is a symptom complex characterized by postero-superior calcaneal prominence, retro-calcaneal bursitis and insertional Achilles tendinopathy. Non-operative treatment options include activity modification, heel padding, therapy and possibly steroid injections into the retro-calcaneal space. If patients fail a period of six months of non-operative treatment, operative treatment may be offered. Traditional operative management involves open bursectomy with resection of the postero-superior aspect of the calcaneus, otherwise known as Haglund's excision. However, open treatment puts the patient at risk for complications, including Achilles tendon avulsion, skin breakdown, recurrent pain due to inadequate resection, scar hypersensitivity, altered sensation about the heel and post-operative stiffness [1-6].

An alternative endoscopic treatment, Endoscopic Calcaneoplasty, was first popularized by van Dijk et al. in 2001 [7]. This procedure is not indicated for those with painful calcification or nodules along the Achilles tendon indicating significant Achilles degenerative tendinopathy. Rather, Endoscopic Calcaneoplasty is indicated for patients experiencing pain at the postero-superior aspect of the calcaneus prominent bump, retro-calcaneal bursitis with little or no Achilles tendon involvement. Since Van Dijk's report, others have reported similar excellent results [7-10]. To our knowledge, this technique has never been prospectively reported on for an elite athlete. We present a case report of

Endoscopic Calcaneoplasty in an elite runner with detailed prospective evaluation of his performance postoperatively.

Case Report

A 28-year-old elite runner presented to our clinic with a four -year history of posterior heel pain at the insertion of his right Achilles tendon. X-ray examination revealed a Haglund's deformity (Figure 1). MR evaluation revealed retro-calcaneal bursitis without Achilles tendinopathy or tear (Figure 2). His symptoms had a gradual onset during training, beginning in 2005, one year prior to his ranking 9th in the US for long-distance running. He first presented to our clinic in 2009 with an extensive history of right Haglund's syndrome and insertional Achilles pain, along with retro-calcaneal bursitis. On examination, he had tenderness of the Achilles tendon and mild pain with ankle dorsiflexion. He had bilateral equal ankle and subtalar range of motion and his strength was graded 5/5 for both feet with no obvious atrophy. The patient reported frequent (6/10) annoying pain in his right Achilles insertion area. In addition, he described ankle stiffness, swelling and sense of instability. He experienced pain when running and jogging long distances. Furthermore, his mobility was limited when climbing stairs, descending, running, or walking fast. Prior to surgery, he rated his overall function as a 4/10. He failed all conservative treatment over a 5-year period, including PT, taping and PRP injection, before considering

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operative treatment. Alternative treatment options were discussed, however the patient elected to proceed with surgery.

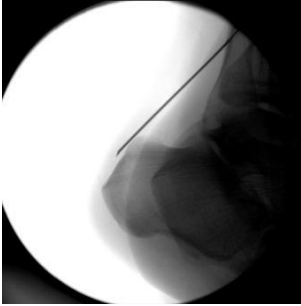


Figure 1: Fluoroscopic image done during surgery showing needle localization of the Haglund's deformity.



Figure 2: MR examination of the patient reveals the Haglund's deformity with no Achilles tendinosis.

The details of the surgical technique have been published previously [11]. We placed our patient prone with the arthroscopy monitors at the foot of the operating table. Under C-arm fluoroscopy guidance, we verified the placement of arthroscope and instruments and completed the excision of his Haglund's deformity (Figure 3). The retro-calcaneal bursa and the anterior aspect of the Achilles tendon were visualized and debrided endoscopically. A below-the-knee cast splint was applied with the ankle in 5 degrees of plantar flexion. Post-operatively, the patient was non-weight bearing for the first week with crutches to allow the soft tissues to heal. The splint was discontinued in one week and weight bearing and range of motion began as tolerated with physical therapy. A strengthening program began 2 weeks after the surgery and he returned to jogging at 12 weeks.

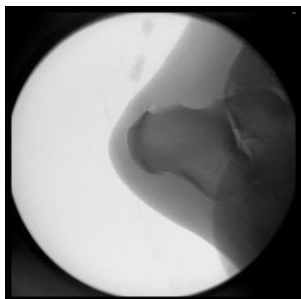


Figure 3: Completed Resection. A fluoroscopic image is taken at the end of the case to ensure an adequate resection.

Result

Our patient, an elite runner, had a 5K race time less than 16:12 minutes prior to surgery. At 8-month follow up his pain was reduced to 1/10. His Hind Foot AOFAS score was 90/100 with mild occasional pain. Cybex

testing done at 8 months post op revealed persistent PF motor deficit of -18.7%, -8.7% and 29.7% at 60 deg/sec, 120 deg/sec and 180 deg/sec respectively. He also exhibited increased dorsiflexion strength of 32.1%, 28.0% and 41.6 % at 60, 120 and 180 deg/sec. According to the patient, he continued to improve for approximately 18 months post operatively before he felt he was back to normal. His progress post-operatively is documented in 5K meets as noted in (Table 1). His last follow up was done at 33 months post op, he was very satisfied with his results, his pain was 0/10 with maximum effort and his AOFAS score had stabilized at 100/100 with high level training and 100/100 with ADL.

Table 1: Preoperative and Postoperative 5 Kilometer race times.

	5K Time
5 years pre-op	14:19 min
3 years pre-op	15:15 min
1-month pre-op	16:15 min
5 months post-op	17:11 min
9 months post-op	15:35 min
21 months post-op	15:53 min
25 months post-op	15:19 min
29 months post-op	14:45 min
33 months post-op	15:13 min

Discussion

Haglund's syndrome, while often treated non-operatively, can be limiting for an elite athlete. Patients who fail >6 months of non-operative management including shoe wear modification, activity modification, physical therapy and bursa injections are considered candidates for operative management. Open Calcaneoplasty has shown relatively good results with good to excellent outcomes in the literature ranging from 50-78% [1, 6, 12, 13]. However, studies have shown up to a 25% complication rate including delayed skin healing, scar sensitivity, persistent swelling, Achilles tendon avulsion and post-operative stiffness [1, 6, 12, 13].

In the case of an elite athlete, inability to return to full functionality in a timely manner can be threatening. Endoscopic Calcaneoplasty allows for much smaller incisions away from areas commonly contacted by shoe wear. In addition, it allows visualization both medially and laterally of the bony prominence as well as the undersurface of the Achilles tendon. Using the endoscopic approach also gives the surgeon an excellent view of the Achilles insertion, minimizing the chance of disrupting its attachment. Finally, since the soft tissue disruption is minimal the patient may be allowed early motion, weight-bearing and physical therapy, which potentially decreases the chance of post-operative adhesions and stiffness. It is important to note that the endoscopic technique is reserved for patients with intact Achilles tendon and is not suitable for patients with calcific tendonitis or advanced tendinopathy where tendon debridement and reinsertion is required.

Our technique, with the patient lying prone and the surgeon standing next to the patient done under fluoroscopic control, allows easy direct access to the Haglund's deformity. In addition, by having the monitor at the foot of the table, the arthroscopic view is very logical to the surgeon, with the Achilles tendon above and the calcaneus below. Finally, by standing next to the patient, the hand position is more ergonomic for easy

resection. Our positive experience with an elite runner resulted in significant pain relief and improved function at a high level of competition. Our patient was able to compete at an elite level after surgery that matched his elite performance 8 years earlier. This case study showed that Endoscopic Calcaneoplasty is a minimally invasive technique, suitable for an elite athlete.

Consent for Publication

The patient was informed of our report and gave his consent for this publication.

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