

# Surgical Management of Haglund's Syndrome in Nonathletes: A Retrospective Review

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## ABSTRACT

**Aim:** The present study was carried to retrospectively analyze the outcomes of patients with Haglund's syndrome treated with author's preferred technique and to compare and validate its results by comparing with the available literature.

**Materials and methods:** Twenty-four patients who had undergone surgery for Haglund's syndrome between 2008 and 2014 were identified retrospectively from records and included in the study cohort. Visual analog scale (VAS) score and American Orthopedic Foot and Ankle Score (AOFAS) were computed preoperatively and at each follow-up, the records of which were available through patient notes. The mean follow-up period was 32 months (12–55 months).

**Results:** The VAS score improved from a mean of 6.9 to 0.5 at 6 weeks follow-up and to 0.12 at 12 weeks follow-up. The mean AOFAS increased from  $55.54 \pm 7.26$  to  $91.20 \pm 6.84$  at 12 weeks follow-up. None of the patients had any significant complications. At 1 year follow-up, all the patients had returned to their predisease activity level.

**Conclusion:** Open surgical management with an individualized approach provides good to excellent outcomes with minimal complication rates.

**Keywords:** Achilles tendinopathy, Haglund's, Heel pain.

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## INTRODUCTION

Haglund's deformity is one among the many causes of posterior heel pain. It was initially described as

a posterosuperior calcaneal prominence, anterior to the insertion of tendoachilles, causing mechanical compression over the local soft tissues, associated with wearing low back footwear with a rigid counter. The presence of this prominence predisposes to Haglund's syndrome, a triad of retrocalcaneal bursitis, insertional Achilles tendinopathy, and a painful "pump bump."<sup>1,2</sup>

Patient usually complains of posterior heel pain and examination reveals painful thickening of the soft tissue of the hind foot, appearing as a "bump," with tenderness on either or both sides of the tendoachilles.

Numerous objective radiological criteria have been found to be reliable diagnostic tools.<sup>3,4</sup> The treatment of this entity still remains a challenge. The primary measures are always nonsurgical and comprise of nonsteroidal antiinflammatory drugs (NSAIDs), modified footwear (heel lifts, soft soles, or sleeves), physical therapy, extracorporeal shock wave therapy, and some other modalities. Surgical treatment is usually reserved only for those who completely fail conservative therapy. The main goal of therapy is to address the basic pathology, i.e., resection of the posterosuperior calcaneal prominence, inflamed retrocalcaneal bursa, and to debride the Achilles tendon and any associated spur. Various techniques have been devised to achieve this, including both open procedures, which can be done through different approaches, and endoscopic procedures as well.<sup>2,5-8</sup> Open procedures are advantageous as they provide an appropriate exposure and allow adequate removal of inflamed tissues and the calcaneal prominence.<sup>9,10</sup> However, they are associated with skin necrosis and wound problems. Minimally invasive and percutaneous techniques have become popular as they overcome these problems but these techniques often result in inadequate removal.<sup>11,12</sup> The present study was carried out to retrospectively analyze the outcomes of patients with Haglund's syndrome treated with author's preferred technique and to compare and validate its results by comparing with the available literature.

## MATERIALS AND METHODS

The present study was carried out at a tertiary care center. Twenty-four patients who had undergone surgery for Haglund's syndrome between 2008 and 2014 were identified retrospectively from records and included in

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the study cohort. All the patients who had presented with long-standing posterior heel pain and had conservative treatment (physical therapy or stretching exercises or corticosteroid injection or NSAIDs) in one or more forms for more than 6 months, before they were offered surgical treatment, were included in the study. A diagnosis of Haglund's syndrome was confirmed clinically as well as radiologically using the parallel pitch lines and the soft tissue indicators like retrocalcaneal recess and anteroposterior thickness of the Achilles tendon.<sup>3,4</sup> Patients having any disease which could lead to wound healing issues like uncontrolled diabetes mellitus or peripheral vascular disease were excluded. One of the patients who was initially identified had multiple gouty deposits in the operated foot and hence, was excluded from the study.

Of the 24 patients included, 17 were males and 7 females. The mean age of the study group was  $38.66 \pm 6.98$  years (27–55 years). Thirteen patients had only right foot involvement, 5 had only left foot involvement, and 6 had bilateral but asymmetrical affection; i.e., one side was more painful and affected than the other and surgery was required only for one side; the other side had become asymptomatic with conservative treatment at the time of presentation though the bump was still visible. The mean time from onset of pain to surgery was  $13.16 \pm 4.59$  months (8–24 months). Visual analog scale (VAS) and ankle-hind foot scale [American Orthopedic Foot and Ankle Score (AOFAS)] were used to assess the clinical outcomes. All the patients were followed up at 2 weeks, 6 weeks, 12 weeks, 1 year, and at final follow-up. The VAS score and AOFAS were computed preoperatively and at each follow-up, the records of which were available through patient notes. Radiographs were taken at 1 year follow-up for any signs of recurrence of the deformity. The mean follow-up period was 32 months (12–55 months) with a minimum follow-up of 12 months.

All the data were analyzed statistically using Statistical Package for the Social Sciences, version 18.0 (IBM Corp., Armonk, NY). A Wilcoxon signed rank test was used for comparison of the preoperative and postoperative data. Statistical significance was accepted as  $p < 0.05$ .

### Surgical Technique

There has been growing disagreement among the surgeons regarding the approach for operating a patient with symptomatic Haglund's syndrome. Some surgeons have advised taking an approach medial to the tendon, while the others have countered the idea by advocating a lateral approach. Also, good long-term outcomes have been reported by surgeons by using the central incision technique through the Achilles tendon.<sup>2,7,10,13</sup> In the

present study, the approach was decided based on the laterality of symptoms; i.e., if the pain and tenderness was more on the medial side, a medial approach was taken and if it was more on lateral side, lateral approach was taken. This was adopted in view of the fact that microtears in the tendon are responsible for the pain on either of the sides and deciding an approach based on the more tender side allows a better exposure of the more affected side of the tendon. All the procedures were carried out as outpatient procedures under regional anesthesia with a tourniquet. The patient was positioned supine while taking a medial approach and in floppy lateral position when a lateral approach was to be taken. Whenever lateral incision was made special care was taken to prevent damage to sural nerve. Firstly, the inflamed part of the retrocalcaneal bursa is also debrided and excised. The bony deformity was reached and a level of excision was decided under the image intensifier guidance. The bony prominence is then excised using a pneumatic saw and a 1 cm osteotome (Fig. 1). The sharp edges were smoothed using a pneumatic burr. The degenerated areas in the tendon matrix were carefully identified and debrided without detaching it. Retrocalcaneal spurs if any were excised meticulously without detaching the tendon. After routine closure, patients were given a below knee backslab in 10 to 15° of plantar flexion, and the patients were kept on toe touch partial weight bearing. At 2 weeks follow-up, the sutures and the backslab were removed and patients were advised to gradually increase the weight bearing to full weight. All patients were advised not to wear normal footwear till 6 weeks. Shoes with heels of 2 cm were advised for the first 6 weeks.

### RESULTS

All the patients were followed up at 2 weeks, 6 weeks, 12 weeks, 1 year, and at final follow-up. The VAS score



Fig. 1: Medial approach and excision of the calcaneal prominence

and AOFAS were computed preoperatively and at each follow-up. Preoperatively, the mean VAS score was  $6.9 \pm 1.1$  (6–9) and the mean AOFAS was  $55.54 \pm 7.26$  (42–70). The VAS score improved from a mean of 6.9 to 0.5 at 6 weeks follow-up and to 0.12 at 12 weeks follow-up. At 12 weeks follow-up, two patients scored on VAS (2 and 1); on examination the tenderness was more on the scar, because of which they were unable to adapt to normal footwear and were still using an in shoe orthotic. Both of them scored 0 on VAS at 1 year follow-up and had returned to normal footwear and previous routine. The mean AOFAS increased from  $55.54 \pm 7.26$  to  $91.20 \pm 6.84$  at 12 weeks follow-up. The difference between the preoperative and postoperative VAS score and AOFAS was clinically significant ( $p < 0.05$  for both) (Table 1). All the patients were satisfied with the surgery and said they would undergo the same surgery if the same problem appeared again. Two patients had superficial wound infection which healed with short course of antibiotics.

None of the patients had any recurrence till the time of final follow-up. None of the patients had any significant complications, such as tendoachilles rupture, deep infection, wound dehiscence, or sural nerve injury.

At 3 months follow-up, 22 out of 24 patients (91.66%) had returned to their predisease activity level. At 1 year follow-up all the patients had returned to their predisease

activity level. Radiographs taken at 1 year follow-up when compared with preoperative radiographs did not show any signs of recurrence of the deformity in any of the patients (Figs 2 and 3).

## DISCUSSION

The Achilles tendon inserts on the posterior part of the calcaneum and is separated from the calcaneal tuberosity by the retrocalcaneal bursa. It has been shown that dorsiflexion at ankle produces increasing pressure on the retrocalcaneal bursa and the surrounding tissue and due to this reason these tissues are prone to undergo chronic inflammation.<sup>1</sup>

The term Haglund's deformity was first introduced to represent the condition of intractable posterior heel pain associated with posterosuperior projection on calcaneus. Later, this term was replaced by the term "Haglund's syndrome" as it was realized that this chronic inflammatory condition could occur even in the absence of a significant calcaneal spur.<sup>1,2,7</sup> Conservative treatment for this condition includes at first the avoidance of sturdy shoes; secondly, a modification of activities; thirdly, the use of cushions; fourthly, pads for elevation of the heel, and fifthly, the stretching and strengthening of the gastrocnemius-soleus complex. Also, physical modalities, such as extracorporeal shock wave therapy, ultrasound therapy, and other deep heat modalities have also been used as adjuncts.<sup>2</sup> Corticosteroid injections in the retrocalcaneal bursa have also been recommended, but inadvertent injection in the substance of the tendon carries the risk of rupture of tendoachilles.<sup>5</sup> When all the conservative measures fail and the patient does not respond to treatment for 6 months, surgery is

**Table 1:** Preoperative and postoperative (at 12 weeks) clinical scores

| Score                                    | Preoperative mean | Mean score at 12 weeks | p-value |
|--|-------------------|------------------------|---------|
| Visual analog scale                      | 6.9               | 0.12                   | <0.05   |
| American orthopedic foot and ankle score | 55.54             | 91.26                  | <0.05   |



**Fig. 2:** Preoperative lateral radiograph showing Haglund's deformity



**Fig. 3:** Postoperative lateral radiograph at 1 year with no evidence of recurrence of deformity

indicated.<sup>2,5,6,10</sup> Several different approaches have been used for the surgical treatment of Haglund's syndrome. Each of them has some advantages and some limitations as well. Lateral approach has been shown to be associated with less chances of tendoachilles avulsion as the medial attachment of tendoachilles is more expansive than the lateral. However, it carries a risk of sural nerve injury.<sup>7</sup> Sella et al<sup>7</sup> have reported good to excellent results with the lateral approach in patients with Haglund's syndrome. Similar results have been reported with medial approach as well.<sup>6,10,14</sup> The medial approach with a J-shaped incision can reach up to the lateral corner as well and is not associated with sural nerve injury. But, it carries more chances of avulsion if the tendon attachment is lifted.<sup>10</sup> There is another school of thought which advocates the use of central tendon splitting approach. The advantages proclaimed are excellent exposure with minimal soft tissue injury, less damage to the vascular supply of the tendoachilles which enters from the lateral and medial sides, and avoidance of sural nerve injury. Nunley et al<sup>13</sup> and Ahn et al<sup>2</sup> have reported good to excellent outcomes with minimal complication rates using the central approach.

The authors in this study have individualized the approach according to the side of maximum tenderness. If the tenderness was significantly more on the lateral side, a lateral approach was used and vice versa. Central tendon splitting technique was not used in any of the cases. To prove the superiority of one approach over the other, a properly designed randomized controlled trial (RCT) is the only answer.

This study had a few limitations. It was a retrospective cohort study without a control group involving a limited number of patients. This can be mitigated in the future by conducting a prospective RCT with a sufficient sample size based on the power calculation.

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