

## COMPARISON OF OPEN VERSUS ENDOSCOPIC CALCANEOPLASTY FOR HAGLUNDS DEFORMITY: A SHORT TERM ANALYSIS

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**ABSTRACT:** Endoscopic calcaneoplasty is a minimally invasive technique for resection of inflamed retrocalcaneal bursa and resection of abnormal prominence over the postero superior part of calcaneum. In this article we would like to compare the results of open versus endoscopic calcaneoplasty after a minimum followup of one year. **AIMS:** To evaluate the functional outcome of patients with Haglunds deformity and compare open technique versus endoscopic method using AOFAS {American orthopaedic foot and ankle society hind foot} Scoring system after one year

**KEYWORDS:** Endoscopic calcaneoplasty, Haglunds deformity, arthroscopy.

**INTRODUCTION:** In 1928, the Swedish orthopedic surgeon Patrick Haglund described a patient with a painful hind foot caused by a prominent postero superior aspect of the calcaneus in conjunction with a sharp rigid heel counter<sup>1</sup>. The retrocalcaneal bursa is a horseshoe-shaped structure located superior and posterior to the os calcis. It provides a smooth gliding surface for the Achilles tendon in dorsiflexion and plantar flexion movements of foot.<sup>2-3-4</sup>

Haglund's disease is defined as a complex of symptoms involving the superolateral calcaneal prominence, retrocalcaneal bursitis and adventitious Achilles tendon bursitis.<sup>5-6</sup> On physical examination, a bony prominence can be palpated at this location. This entity is described by a variety of different names such as 'pump-bump'<sup>7</sup>, 'cucumber heel'<sup>8</sup>, 'high-prow heels'<sup>9</sup> and 'winter heel'<sup>8</sup> (Fig. 1) Non-operative treatment is always recommended first. After persisting pain with conservative treatment and a bony exostosis confirmed by imaging, a surgical treatment is considered. The conventional surgical treatment is an open resection <sup>10,6</sup> Recently, several authors reported good results with an endoscopic technique.<sup>6,11,12,13,14</sup>

### SUBJECTS AND METHODS:

**PATIENTS:** Fifteen patients were included in the study it was a prospective study done between September 2012 to November 2013 at our institute. There were 12 females and 3 males. Their average age was 35 years. All the patients were managed conservatively earlier for nine ± two months.

Systematic history was taken for all patients including when pain occurred (At rest, when standing, walking, running, and walking up hill or downhill), duration of complaints and requirements at work. Physical evaluation was aimed at gait disturbance antalgia, Local swelling and warmth, tenderness, pain on dorsiflexion, range of motion at ankle, subtalar joint and foot.

All patients had a painful swelling on the posterior heel, medial and lateral to the tendo Achilles. All of them had a radiograph of the heel to confirm hagleunds deformity. All patients have not responded to conservative treatment beyond 7 months. Non operative treatment consisted of rest,

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physical therapy, analgesics as tolerated and heel support. All of them underwent AOFAS scoring before the surgical procedure. Diagnosis of insertional tendinopathy was made and consent was taken before the procedure.

**SURGICAL TECHNIQUE:** Six patients had open surgical calcaneoplasty (4 female and 2 male), while nine patients (8 female and 1 male) had endoscopic calcaneoplasty:

- A. Open surgical technique:** Patient in supine position with tourniquet under control twice the systolic pressure and a sand bag under the ipsilateral hip. A “J”-Shaped incision is made along the lateral border of tendoachilles. Care was taken to avoid sural nerve which lies anterior to the skin incision. Dissection was performed by using scissors entirely anterior to the tendon and exposing its anterior surface and calcaneal tuberosity. Excision of the tuberosity was done from lateral side using a half inch osteotome. Wound closed in layers. skin closed with 2-0 Ethilon using all gower stitches. Compression bandage applied and foot placed in Plaster of paris volar slab.
- B. Endoscopic calcaneoplasty:** Patient in prone position with tourniquet under control with feet positioned over the edge of the operating table. Lateral portal is made through a small vertical incision at the level of superior aspect of calcaneum. Retrocalcaneal space is entered with a blunt trocar. 4.5mm arthroscopic shaft with a 30° inclination is used. Under direct visualisation a needle is introduced just medial to Achilles tendon at the level of superior aspect of calcaneum. Arthroscopic resector is used through medial portal to resect the inflamed bursa under visualisation from the lateral portal (fig 2). Foot is dorsiflexed to identify the impingement. The poster superior osteophyte is removed using a burr under visualisation without injuring the Achilles tendon. The two portals are used interchangeably to rest of the osteophyte. After resection the bone can be visualised using a fluoroscope by a lateral view (Fig. 3).

Skin is closed with 3-0 Ethilon and compression bandage applied and a volar slab applied with foot in plantar flexion.

**Post-Operative Protocol:** Wound is inspected on day 3 & check x-ray and dressings are done. Partial weight bearing is started. By day 10 active movement of ankle is encouraged and weight bearing mobilization is taught as tolerated.

**RESULTS:** The mean Preoperative AOFAS Score for patients who underwent open procedure was 23.66 and the post-operative score improved to 88.16 at one year. The mean Preoperative AOFAS Score for patients who underwent endoscopic calcaneoplasty procedure was 21.55 and the post-operative score improved to 96.66 at one year. One patient had grade IVb type of surgical site infection in open group while the endoscopic group had no wound healing problems.

Weight bearing was earlier in endoscopic procedure by an average of 13 days. Mean return to activity was 10 weeks in open procedure while it was 6 weeks in endoscopic procedure. The average tourniquet time in open procedure is 64 minutes while in endoscopic procedures it is 44 minutes.

**DISCUSSION:** Our study favored an endoscopic technique over open procedures like:

1. Decreased operative period.

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2. Decreased surgical site infection and wound healing.
3. Early return to normalcy.
4. Significant AOFAS ankle-hind foot scores (p=0.019).

Limitations of our study include a small number of people under study and short duration of study and our bias towards endoscopic procedure.

To conclude whether the choice is open or endoscopic the results are excellent if enough bone and bursa are removed to prevent impingement but endoscopic technique has demonstrated better functional rehabilitation, excellent scar healing, a shorter recovery time and a quicker return to normal activity.

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**Fig. 1: Haglunds deformity**



**Fig. 2: Intra operative pics**



**Fig. 3: Intra operative flouoscopy**

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