

EVALUATION OF SURGICAL EXCISION IN HAGLUND'S DEFORMITY

By

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ABSTRACT

Background: Haglund's syndrome is a common cause of hind foot pain in adults. Haglund's deformity is a posterior superior osseous prominence of the calcaneus. It is common in the female population between the ages of 15 and 35. Several methods for treatment have been described including excision of the retrocalcaneal bursa, calcaneal osteotomy, and calcaneal osteotomy with Achilles tendon debridement. The results of surgical procedures have been varied and inconsistent.

Objective: To determine the outcome of calcaneal tuberosity resection with retrocalcaneal bursal and Achilles tendon debridement for cases of Haglund deformity.

Patients and Methods: This was a prospective randomized interventional study conducted on 20 patients attending Al-Hussein University Hospital with Haglund's deformity were allocated by simple random technique.

Results: Thirteen patients (65%) were females and 7 patients (35%) were males, mean of age was 45 with range from 35 to 60 years. The pain post operation and post-operative complications showed that 4 patients had mild post operation pain, and 1 patient had moderate post operation pain, only 2 patients had complications after operation.

Conclusion: Surgical excision of Haglund's deformity provided an effective treatment as regards pain relief, functional improvement, and overall enhancement of patients' health.

Keywords: Haglund's Deformity, Calcaneal tuberosity resection, Hind foot pain.

INTRODUCTION

Haglund deformity was first described by Patrick Haglund in the year 1927. Haglund's deformity also referred as pump bump or Bauer bump is a posterior superior osseous prominence of the calcaneus, which may lead to bursitis and inflammation at the site of the insertion of the Achilles tendon in the posterior heel (Rosa et al., 2017).

It is mostly an idiopathic condition but several contributory factors play a role. These include over practice in runners and athletes, tight fitting low back shoes, and certain inherited conditions of the foot like a high arched foot, tight Achilles tendon, and altered biomechanics of the foot joint because of mal-aligned subtalar joint (Vaishya et al., 2016).

It usually affects the middle-aged people and females have a higher

predisposition than males. Bilateral involvement is a common feature. The clinical features include pain at the posterior aspect of the heel which is predominantly present when the patient begins to walk after a period of rest. A painful prominence is usually present at the posterior aspect of the heel (*Mir et al., 2018*).

Diagnosis can be made on the basis of lateral radiographs of the ankle, which reveals a bony prominence at the posterosuperior part of the calcaneal tuberosity, calcaneal bursal swelling and increased density in the pre-Achilles bursa. MRI may be required for ambiguous and clinically equivocal cases (*Debus et al., 2019*).

Conservative treatment includes the avoidance of rigid heel counter shoes, use of heel cushions, softer uppers or pads for elevation of the heel, activity modification, or local block treatment. Medication includes nonsteroidal anti-inflammatory drugs or corticosteroid injection into retrocalcaneal bursa are also recommended for acute cases. However direct intratendinous steroid injections might weaken the tendon and cause tendon rupture (*Myerson et al., 2018*).

In patients where conservative methods fail, surgery may be indicated. Several methods have been described including excision of the retrocalcaneal bursa, calcaneal osteotomy, and calcaneal osteotomy with Achilles tendon debridement. The results of surgical procedures have been varied and inconsistent (*Jiang et al., 2016*).

The aim of this study was to evaluate surgical excision of Haglund's deformity.

PATIENTS AND METHODS

This was a prospective randomized interventional study conducted on 20 patients from Al-Hussein University Hospital with Haglund's deformity.

Inclusion criteria:

- Middle age.
- Females and males.
- Cases of Haglund's deformity confirmed by radiograph.
- All patients who were unresponsiveness to non-operative treatment for more than 6 months.

Exclusion criteria:

- Patients with any kinds of inflammatory arthritis (such as rheumatoid arthritis).
- Fracture or other concomitant disorders in the foot and ankle area.
- Patients who had other comorbidities such as diabetes, severe heart disease, morbid obesity, or peripheral vascular disease.

Preoperative history and clinical examination: Detailed history for pain at rest, on standing, walking, running, walking up hill or downhill the history included duration of complaints and requirements at work. Physical evaluation aimed at gait disturbance antalgia, Local swelling and warmth, tenderness, pain on dorsiflexion, range of motion at ankle, subtalar joint and foot.

Radiological evaluation:

1. Lateral view X-ray of the ankle to identify the bony protrusion.
2. Ultrasound to assess pathology of bursa and Achilles tendon.

- MRI to assess pathology of bursa and Achilles tendon.

Operative Stage:

Patient was in prone position with tourniquet under control twice the systolic pressure. A “J”-Shaped incision was made along the lateral border of tendoachilles. Care was taken to avoid sural nerve which lied 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 closure. Compression bandage applied and foot placed in plaster of pairs planter slab.

Postoperative management:

Wound was inspected on day 3 and checked by X-ray (Figure 1). Partial weight bearing started. By day 10, active movement of ankle was encouraged, and weight bearing mobilization taught as tolerated. Ankle hindfoot scale was used for assessment of pain and functional activity.

The assessment was according to the American Orthopedic Foot and Ankle Society ankle–hindfoot scale (AOFAS) Ankle-Hindfoot Scale (100 points total) (Vosoughi et al., 2016).



Figure (1): Preoperative (a) and postoperative (b) lateral x-ray of the left ankle.

Data management and statistical analysis:

Data were collected, coded, revised and entered to the Statistical Package for the Social Science (IBM SPSS) version

20. The data were presented as number and percentages for the qualitative data, mean, standard deviations and ranges for the quantitative data.

RESULTS

Thirteen patients (65%) were females and 7 patients (35%) were males, mean of age was 45 with range from 35 to 60 years (Table 2).

Table (2): Demographic data

Variables		No	%
Sex	Female	13	65.0%
	Male	7	35.0%
Age	Range	35- 60	
	Mean \pm SD	45 \pm 4.02	

Post-operative results according AOFAS of 11 patients (55%) was excellent, of 8 patients (40%) was good and of 1 patient was fair. 4 patients had

mild post operation pain and 1 patient had moderate post operation pain, only 2 patients had complications after operation (Table 3).

Table (3): Post-operative results according AOFAS, pain and complications

Variables		No	%
Post-operative results according AOFAS	Excellent	11	55.0%
	Good	8	40.0%
	Fair	1	5.0%
Pain post operation	No	15	75.0%
	Mild	4	20.0%
	Moderate	1	5.0%
Post-operative complications	No	18	90.0%
	Yes	2	10.0%

DISCUSSION

The treatment of Haglund deformity remains a significant orthopaedic challenge (Natarajan and Narayanan, 2015). The first approach must be conservative (heel elevations, orthosis prepare ad hoc, program with eccentric exercises, avoiding those that involve dorsal flexion, physical therapy). Johnson *et al.* (2012) noted that most of the patients with Haglund's disease experience recurrent, persistent symptoms after conservative therapy.

If conservative treatment is not effective then surgical treatment options like retrocalcaneal decompression and

calcaneal ostectomy or osteotomy are used (Watson *et al.*, 2010). Many patients may benefit from surgical intervention. The various surgical methods described to treat this deformity have produced mixed results, making it too difficult for physician and patient alike to decide under what circumstances and with what methods to intervene surgically (Fadel *et al.*, 2019).

Inadequate bone resection can lead to the recurrence of symptoms. Adequate resection of the bone is required to produce a good clinical outcome. enough bone should be resected to allow decompression of the tendon and the retrocalcaneal bursa (Roth *et al.*, 2014).

The endoscopic or minimally invasive approaches adopted have already been described in their advantageous and disadvantageous aspects in the literature. Where the indications are evident, endoscopic treatment has made it possible to shorten the time of post-operative recovery and to bring into play all the advantages of the minimally invasive surgery (Lughi, 2020).

The main goal of this study was to evaluate surgical excision of Haglund's deformity. We conducted an interventional study on cases of Haglund's deformity. The study was carried out on patients attending to orthopedic department in Al- Hussein university hospital after approved by local committee and an informed consent. Our study includes 20 patients, 7 were males (65%) but 13 were females (35%). Mean of age was 45 ± 4.02 with range from 35 to 60 years. In our study the Post-operative results according AOFAS of 11 patients (55%) was excellent, of 8 patients (40%) was good and of 1 patient was fair.

Ettinger et al. (2016) reviewed the data from 40 patients after surgery and found that the mean numerical rating scale of pain during exercise improved significantly from 8.5 to 2.6 and the average AOFAS Ankle-Hindfoot scale score increased significantly from 59.4 to 86.5. Similarly, *Miao et al. (2016)* followed up 34 patients and found that the mean VAS score had improved significantly from 6.5 to 2.1. *Ahn et al. (2015)* reported the results for 15 patients and noted that the average AOFAS Ankle-Hindfoot scale score had increased from 62.1 to 92.5. This was in agreement with the outcomes previously reported by *Sella*

et al. (2010) and *Brunner et al. (2011)* using AOFAS score.

In our study, the pain post operation and Post-operative complications shows that 4 patients had mild post operation pain and 1 patient had moderate post operation pain, only 2 patients had complications after operation, *Ettinger et al. (2016)* used the SF-36 subscale scores and reported significant improvement in the physical, pain, and mental subscales, post-operative complication 2.5% of patients developed hematoma requiring reoperation, 7.5% experienced superficial wound healing problems but did not require surgical intervention, 5% developed a painful scar, and 5% developed deep vein thrombosis. In our study, although no major complications occurred, the wound complication rate was high at 13.7%. *McAlister and Hyer (2015)* reviewed the largest case series to date with 98 patients (100 heels). Of these patients, 4% had rupture or avulsion of the Achilles tendon insertion 2% required revision for recurrent pain and tendinitis, 7% had deep wound infection or dehiscence requiring incision and drainage, 2% developed superficial wound complications requiring local wound care, and 3% experienced deep vein thrombosis.

The results of the present study should be interpreted in light of its limitations. First, the follow-up duration was relatively short. Previous studies have suggested that patients who undergo surgical correction of Haglund's deformity required 6 months to 2 years to fully recover (*Natarajan and Narayanan, 2015*). A longer follow-up duration might be required to evaluate the maximal

benefits from surgery. Second, the number of patients in our study was relatively small owing to the strict inclusion criteria. The sample size might not have been large enough to detect any potential factors associated with surgical outcomes. A prospective multicenter research study with a longer follow-up duration and larger sample size is required to further evaluate the outcomes of surgery to treat Haglund's deformity and the possible risk factors.

CONCLUSION

Surgical excision of Haglund's deformity provided an effective treatment, providing pain relief, functional improvement, and overall enhancement of patients' health.

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تقييم الإستئصال الجراحي لتشوه هاجلانند

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خلفية البحث: يعد تشوه هاجلانند بروز عظمي خلفي علوي للعظم، مما قد يؤدي إلى التهاب كيسي والتهاب في مكان وتر اكيليس في الكعب. ينتشر هذا المرض بين النساء اللاتي تتراوح أعمارهن بين 15 و 35 عامًا خاصة عند النساء اللواتي يرتدين الكعب العالي بانتظام، كما أنه شائع عند العدائين، تكون في الجانبين. غالبًا ما يعتمد تشخيص متلازمة هاجلانند على الشكوى والفحص الاكلينيكي، تضيف التغييرات في الأشعة دليلًا إضافيًا للتشخيص، لا توجد معايير إشعاعية واضحة لتشخيص مرض هاجلانند. خاصة في المراحل المبكرة.

الهدف من البحث: تقييم الاستئصال الجراحي لتشوه هاجلانند.

المرضى وطرق البحث: تم اجراء دراسة تداخلية على حالات تشوه هاجلانند على 20 مريضاً يترددون على قسم العظام في مستشفى الحسين الجامعي بعد موافقة اللجنة المحلية والموافقة مستنيرة.

نتائج البحث: شملت الدراسة 20 مريضاً: 7 من الذكور (35%) و 13 من الإناث (65%). وكان متوسط العمر 45 ± 4.02 مع مدى يتراوح من 35 إلى 60 سنة. وكان الكاحل المصاب لـ 10 مرضى (50%) على اليمين، 7 مرضى (35%) على اليسار 3 مرضى (15%) على الجانبين. وكانت نتائج ما بعد الجراحة وفقاً لـ AOFAS عند 11 مريضاً (55%) ممتازة، 8 مرضى (40%) جيدة و مريضاً واحداً ضعيفة. كما أظهرت آلام بعد العملية، ومضاعفات ما بعد الجراحة أن 4 مرضى يعانون من آلام خفيفة بعد العملية وأن مريضاً واحداً كان يعاني من آلام متوسطة بعد العملية، و مضاعفات بعد العملية.

الاستنتاج: تعد متلازمة هاجلاند سبباً شائعاً لألم القدم الخلفية عند البالغين. يوفر الاستئصال الجراحي لتشوه هاجلاند علاجاً فعالاً، حيث يوفر تخفيفاً للألم، وتحسيناً وظيفياً، وتحسيناً عاماً لصحة المرضى.

الكلمات الدالة: تشوه هاجلاند، إستئصال الحذبة العظمية، ألم القدم الخلفية.