



ORIGINAL RESEARCH PAPER

Orthopaedics

ENDOSCOPIC CALCANEOPLASTY FOR TREATMENT OF HAGLUND'S SYNDROME

KEY WORDS:

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ABSTRACT

Background: The purpose of our study is to evaluate endoscopic treatment of Haglund's syndrome in which all patients showed a Haglund projection on radiography and none had a cavo-varus deformity. **Methods:** Our study included n=15 patients (20 heels) with a mean age of 32 years (range 26-44 years). They presented with posterior ankle impingement syndrome with Haglund's deformity on radiography and were resistant to conservative therapy for more than 6 months. They underwent two portal endoscopic surgeries in HIITECH Medical college and hospital, bbsr between Aug 2020 and Aug 2022. **Results:** The mean follow-up was 24 months (range 6–24 months). In 17 heels, postoperatively we achieved negative parallel pitch lines on lateral radiographs. The average AOFAS score improved from 35-45 points preoperatively to 85-95 points at final evaluation ($p < 0.01$) at final evaluation. There were no obvious intra or post-operative complications. All patients were satisfied with the result of the operation. **Conclusion:** Endoscopic calcaneoplasty is a safe and effective minimally invasive treatment option for Haglund disease after failure of conservative treatment for 6 months.

INTRODUCTION:

Retrocalcaneal bursitis (RCB) is inflammation of bursa located between the Achilles tendon and the posterior edge of the calcaneus. This entity was first described by Painter¹ in 1898. Haglund² performed its first successful surgical treatment and described it in 1928. Although Retrocalcaneal bursitis is often seen with Achilles tendinitis or superficial bursitis, these entities are not the same.³⁻⁷ The etiology, injury mechanism, treatment and rehabilitation of these Achilles tendon insertion problems are different. Chronic Retrocalcaneal bursitis was previously known as Haglund deformity, pump bump and winter heel. Recently, it has been suggested that instead of using these confusing terms, "chronic posterior calcaneal bursitis" should be used.⁶ Various management methods have been described for the treatment of chronic Retrocalcaneal bursitis.

This leads to a large number of different technologies. The lateral view radiograph of the ankle joint shows posterosuperior bony prominence and intra tendinous calcification that confirms the diagnosis. Changes in tendon degeneration can also be demonstrated by ultrasound scans.¹² Multiple conservative treatment options have been described to manage retrocalcaneal bursitis, including avoidance of tight shoe heel counters, cast immobilization, non-steroidal anti-inflammatory drugs, activity modification, padding, shock wave treatment, physical therapy and injection of corticosteroids into the retrocalcaneal space.¹³ When these measures fail, surgical treatment can be considered. Mostly the open procedures performed are through a lateral, medial or transverse Achilles tendon incision. The retrocalcaneal area is debrided and an osteotomy of the posterosuperior calcaneus is performed. These open procedures are invasive, have high complication rates and rehabilitation is extensive.^{14,15} Therefore, an endoscopic approach was developed by Van Dijk et al.¹¹ Compared with open surgical techniques, endoscopic interventions show that the incidence of complications are always low and patient satisfaction is always high. Minimally invasive surgeries allow early postoperative recovery and minimal pain.¹⁶ Therefore, we evaluated the clinical and functional outcome following endoscopic decompression of retrocalcaneal bursitis in our population.

Aim was to assess the functional outcome of endoscopic decompression of retrocalcaneal bursitis. The objectives of this study were to determine the functional outcome of endoscopic decompression in retro calcaneal bursitis by evaluating the following parameters.

- Preoperative and postoperative radiographs.
- Pre and postoperative American Orthopaedics Foot and Ankle Society (AOFAS) scores.
- Visual analogue scale (VAS) for analysis of pain pre and postoperatively.

Materials and Methods

This prospective study was conducted in Hitech medical college and hospital between aug 2020 to aug 2022. All patients who were diagnosed clinically and radiologically as retro calcaneal bursitis, formed the study population. All consecutive eligible patients who fulfilled the inclusion criteria and consented to participate in the study were included in the study, the inclusion criteria being age of the patients > 18 years age and absence of symptomatic relief and functional improvement after three months of non-invasive treatment. Patients with severe calcific tendonitis, previous hind foot surgeries, previous history of steroid injection for retro calcaneal bursitis, previous history of calcaneal fractures were excluded from the study. Based on the survey of in patients and outpatients admitted with retrocalcaneal bursitis in our centre over one year duration. Preoperative x-ray was used to assess posterosuperior bony spur. The American Orthopaedic Foot and Ankle scores was used to assess the preoperative functional ability¹⁷⁻¹⁸. VAS was used to assess preoperative pain score.

ENDOSCOPY PROCEDURE:

We performed the operation with the patient in prone position. The patient is usually withdrawn downwards such that the foot and ankle are hanging freely over the edge of the operating table so that plantar and dorsiflexion of ankle can be done freely. The operation is done under regional anaesthesia and a thigh tourniquet is used. Dorsiflexion of foot can be manipulated by placement of the surgeons body against the foot thus allowing both hands to freely manipulate the arthroscope and the surgical instruments. The opposite leg being strapped to thigh in flexion position of knee. C arm was kept ready and in position from the start of the procedure. A needle is placed approximately 0.5 cm below the superior aspect of the calcaneus just lateral to the lateral margin of the Achilles tendon and confirms the lateral portal. A small vertical incision is then made through the skin. Separation of the subcutaneous tissue is made down to retrocalcaneal space. This is repeated by a blunt trocar. The 4 mm arthroscope is then introduced through this space. Under direct vision a needle is next introduced just medial to the medial border of Achilles tendon at the same level as the lateral portal. This confirms the medial portal. The inflamed retrocalcaneal bursa is first visualised and is removed. It is

removed by arthroscopic shaver. Then the FHL tendon is visualised on posteromedial aspect of ankle joint. The foot is then taken through a range of motion to visualize the exact site of impingement, usually due to a posterosuperior osteophyte. The posterosuperior bone rim of the calcaneus is removed with the help of a 4.5 mm arthroscopic burr. Care should be taken not to go far distally to the insertion of Achilles tendon. Throughout the procedure the Achilles tendon is protected by keeping the closed end of the resector or the burr against the tendon. The resector is then reintroduced to clean the soft tissue debris and to smoothen off the rough edges. Finally lateral radiography under C arm confirms the amount of bone resected. Lastly skin is closed and a compression dressing is placed.

Postoperative Protocol

Elevation of foot done immediately. The patients are encouraged to perform range of motion exercises from 1st postop day. Partial weight bearing was started from second day. Full weight bearing was allowed at the second postoperative week. Regular shoes were allowed after 3 weeks postoperatively. Returning to sporting activities was not allowed till 6 weeks.

Statistical Analysis

All quantitative variables are presented as the mean ± standard deviation. Comparisons between paired data such as the preoperative and postoperative VAS score, AOFAS scale score were performed using the Student t test. The significance level was defined as p < 0.05.

RESULTS:

The mean age of the patients at final follow-up visit was 32 ± 8 years (range 20-50 yrs). The mean duration of surgery was 40 ± 3.8 minutes (range 30 -45). None of the patients was converted to open surgery. Average postoperative follow-up duration was 24 months (range 6-24 month). Average AOFAS ankle hind foot score increased from 35-45 preoperatively to 85-95 post-operatively (p < 0.005) at final follow-up. According to AOFAS, we had 10 excellent results, 3 good results, 1 fair results and 1 poor results. VAS for pain decreased from 8 (range 7-9) preoperatively to 1 (range 1-2) post operatively (p < 0.01). Postoperative lateral radiographs in 17 heels showed achievement of adequate bony removal and negative parallel pitch lines. Mean time to resumption of professional activities was 3 weeks (range 2.5 - 6 weeks). On physical examination no patients showed any signs of local tenderness & the forced dorsiflexion test findings were negative. No intraoperative & postoperative complications were noted. Overall patient satisfaction was high.

DISCUSSION:

Initial management of heel pain in patients with diagnosed Haglund deformity includes NSAID, padding, avoidance of tight shoes, stretching and strengthening of the gastrocnemius-soleus complex, activity modification.¹⁹ A single infiltration in the retrocalcaneal bursa with corticosteroids is another modality of treatment after the above mentioned treatments have failed. But repeated infiltration has a potential risk for rupture of the Achilles tendon.²³ Literature shows a mixed results on success rate of conservative treatment. According to the study of Myerson and Clement 85-95% of patients improved with conservative treatment.^{21,22} On the other hand Sammarco and Taylor reported a failure rate of 65% with conservative treatment for an average of 62 weeks.²⁰

The operative treatment of posterior ankle impingement syndrome due to Haglund deformity after failure of conservative measures aims at prevention of impingement of the retrocalcaneal bursa between the Achilles tendon and the os calcis. This can be accomplished by removal of the inflamed retrocalcaneal bursa followed by resection of the superoposterior calcaneal prominence. Superoposterior

calcaneal resection can be performed by open surgical procedure through postero- lateral incision, a posteromedial incision, or both. Several complications, such as weakening of the bone after removal of a large part of the posterosuperior calcaneus, recurrent pain, unpleasant scars or tenderness around the scars, Achilles tendon avulsion, stiffness of the Achilles tendon, and altered sensation around the heel have also been reported following open procedures.^{24,20,25,26,27}

Angermann²⁶ operated on 40 heels in 37 patients with Haglund deformity using a posterolateral incision and allowed immediate weight bearing. Complications included one case of superficial heel infection, one case of hematoma, and two cases of delayed skin healing. At an average followup of 6 years, 50% of the patients were cured, 20% were improved, 20% were unchanged, and 10% were worse. Huber and Waldis²⁸ found a considerable amount of residual complaints in 32 patients who were examined clinically and radiologically at a mean follow-up of 18.6 years after being treated for Haglund's exostoses by resection of the posterosuperior calcaneal prominence. Fourteen of the 32 patients had soft tissue problems, including excessive scar formation and persistent swelling. Not enough bone was removed in 8 patients and 2 patients had new bone formation; both caused persistent painful swelling. In 8 patients a disturbance in Achilles tendon function was noted. Thus the open operative treatment of symptomatic Haglund deformity requires good exposure to remove an adequate amount of bone. Conversely, a large exposure is accompanied by a significant percentage of wound and soft tissue problems.

Endoscopic calcaneo-plasty offers a good alternative to open resection. Van Dijk et al. described the use of retrocalcaneal endoscopy for treatment of Haglund disease and retrocalcaneal bursitis in 2000.²⁹ Jerosch and Nasef³⁰ reported 7 excellent and 3 good Ogilvie-Harris scores after a mean follow-up period of 5.2 months in their study on 10 patients undergoing endoscopic calcaneoplasty. There were no intra- or postoperative complications. Leitze et al.³¹ compared the results of 33 endoscopic decompressions of the retrocalcaneal space with 17 open surgeries. Both groups had improvements in AOFAS scores although the difference was not significant (p=0.115). Complication rates were slightly different (infection: 3% and 12%; altered sensation: 10% and 18%; scar tenderness: 7% and 18%). In our study of 15 patients (20 heels) of Haglund syndrome undergoing endoscopic treatment, we got 10 excellent, 3 good, 1 fair & 1 poor results according to AOFAS scoring at a mean follow-up of 24 months. There was no intraoperative & postoperative complications. Overall patient satisfaction was high. Arthroscopic surgery allows for excellent medial and lateral visualization. Thus, the Achilles tendon and its insertion and the calcaneus can be inspected and treated. This minimizes the chance of removing and disturbing the Achilles tendon attachment. Other advantages of the endoscopic technique are that complications, such as wound dehiscence, painful or unsightly scars, and nerve entrapment within the scar, can be avoided.

CONCLUSION:

The endoscopic decompression is highly effective in patients with retrocalcaneal bursitis. It yields cosmetically better results and the procedure allows better visualization of the bony spur and resect adequately. It shows several advantages including better functional outcome, good wound healing and a shorter recovery time after treatment.

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