

CASE REPORT

Haglund Syndrome — a Characteristic Cause of Posterior Heel Pain

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ABSTRACT

This report is of a 48-year-old man with a painful swelling of the left heel, who was diagnosed with Haglund syndrome. The characteristic radiographical and magnetic resonance imaging features are described.

Key Words: Achilles tendon; Bursitis; Calcaneus; Magnetic resonance imaging; Tendinopathy

INTRODUCTION

Posterior heel pain is a common problem and has a variety of causes. Haglund syndrome is a characteristic cause of posterior heel pain, and consists of a constellation of soft tissue and bone abnormalities. The condition is characterised by a prominent posterior bursal projection of the calcaneus, Achilles tendinosis, and inflammation of the retrocalcaneal and retro-Achilles bursae.

CASE REPORT

A 48-year-old man presented in 2007 with left heel pain and deformity for 1 year. He had a history of a right above-knee amputation for haemangioma 20 years previously, but was otherwise in good health. At physical examination, there was a tender swelling at the Achilles tendon insertion of the left heel. Simmonds test revealed an intact Achilles tendon.

Lateral radiograph of the left ankle showed soft tissue swelling at the insertion of the Achilles tendon, ossifications within the thickened Achilles tendon suggesting tendinosis, a prominent osseous protuberance at the bursal projection of the calcaneum, and an increase in density of the retrocalcaneal bursa suggesting bursitis. No cortical erosion was present (Figure 1).

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Figure 1. Lateral radiograph of the hindfoot showing a prominent bursal projection of calcaneum (black arrow), loss of lucency in the retrocalcaneal recess suggesting retrocalcaneal bursitis (asterisk), ossifications in the thickened Achilles tendon (short arrows), and convex superficial soft tissue swelling at the insertion of the Achilles tendon (curved arrow).

Magnetic resonance imaging (MRI) subsequently revealed hypertrophy of the calcaneum at the bursal projection, associated with marrow oedema. Increased T2-weighted signal intensity in the thickened Achilles tendon and a thin rim of circumferential high signal intensity were indicative of Achilles tendonitis. Small dystrophic ossifications were present in the distal insertion of the Achilles tendon. Fluid in the retrocalcaneal and retro-Achilles bursae were compatible with bursitis

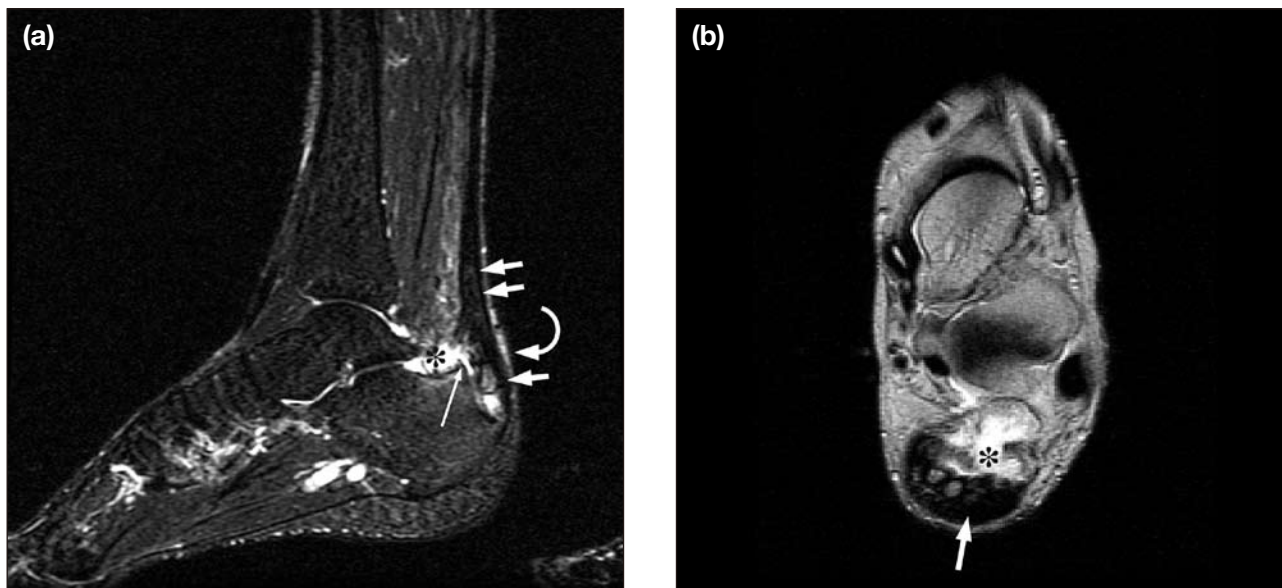


Figure 2. (a) Sagittal T2-weighted short tau inversion recovery; and (b) axial proton density images showing Achilles tendinosis with increased signal and ossifications at the insertion (short arrows), distension and increased signal of the retrocalcaneal bursa indicative of retrocalcaneal bursitis (asterisk), increased signal superficial to the Achilles tendon representing retro-Achilles bursitis (curved arrow), and bone marrow oedema of the protuberance of the bursal projection (long arrow).

(Figure 2). Overall, the features were compatible with Haglund syndrome.

The patient's symptoms did not subside with conservative treatment of analgesia and physiotherapy. The patient underwent surgery, and the intraoperative findings of a large bony Haglund deformity, ossifications within the thickened Achilles tendon, and retrocalcaneal bursitis were in agreement with the MRI findings. Local excision of the bony deformity and bursectomy of the retrocalcaneal bursa were performed. The patient's symptoms markedly improved after surgery.

DISCUSSION

Haglund syndrome was first described by Patrick Haglund in 1927.¹ This author established a connection between posterior heel pain, a visible and palpable soft tissue swelling, a pointed posterosuperior bursa border of the calcaneum, and the wearing of low back shoes.¹

The condition is caused by mechanically induced inflammation of the superficial bursa, Achilles tendinosis, retrocalcaneal bursitis due to repetitive compression from the back of the shoes, and prominent bursal projection of the calcaneum.²⁻⁹

Haglund syndrome is characterised clinically by a painful soft tissue swelling, the so-called 'pump bump', at the level of the Achilles tendon insertion. The pain typically occurs when starting to walk after a period

of rest.⁷ Patients with Haglund syndrome range in age from young adult to elderly, are of either sex although the condition is more common among women, and have varying patterns of daily activity.² Hind-foot varus and pes cavus are predisposing factors.^{5,6} Chronic stress is important to the aetiology. This patient would have experienced increased stress to the left leg as the right leg had been amputated.

The condition is usually diagnosed by a combination of clinical and radiological assessments. Plain radiograph in a lateral standing position is useful to assess the presence of a prominent bursal projection of the calcaneum, the Haglund deformity. Different objective radiographic assessment methods, including the parallel pitch line and posterior calcaneal angle or Fowler's angle, are well described.^{2,3,5} However, these methods do not always agree with the clinical symptoms.^{2,3} Assessment of the soft tissue detail is therefore crucial for making the diagnosis. Loss of a lucent retrocalcaneal recess is an important indication of underlying retrocalcaneal bursitis.^{6,10} The Achilles tendon is swollen, and dystrophic calcifications may also be seen. Superficial bursitis usually manifests as soft tissue swelling and convexity of the soft tissue posterior to the Achilles tendon insertion.

Although radiographic assessment is sufficient for the diagnosis for definitive cases, MRI may be required for ambiguous or clinically equivocal cases. With its superior soft tissue and bone marrow signal contrasts,

and multiplanar capability, MRI is more sensitive for making the diagnosis and assessing the severity of the disease.¹⁰⁻¹⁴ The cardinal soft tissue abnormalities, namely Achilles tendinopathy, and retrocalcaneal and retro-Achilles bursitis, are more easily and directly depicted by MRI imaging, with increased signal intensity demonstrated within the pump bump and Achilles tendon on T2-weighted sagittal images.^{4,6,10} The detection of marrow oedema within the prominent bursal projection is likely to support the repetitive mechanical compression and inflammation as the pathological mechanism in this condition.

The differential diagnoses, including systemic inflammatory articular disorders such as Reiter syndrome and rheumatoid arthritis, are difficult to distinguish clinically. In contrast to Haglund syndrome, the pump bump associated with these inflammatory arthritic diseases are more diffuse, and they are associated with cortical erosions of the bursal border of the calcaneum.^{2,3} Therefore, a careful search of any cortical erosion along the posterosuperior bursal surface of the calcaneum at MRI is important.

Treatment is often conservative to start, followed by surgical bursectomy and resection of the Haglund deformity, either as open surgery or endoscopic surgery, if necessary.^{5,7,8,11} There is also a report of satisfactory pain relief after local injection of steroid into the retrocalcaneal bursa under ultrasound guidance.⁹

Posterior heel pain is a common problem, and there are various causes. Haglund syndrome has a characteristic constellation of pathology, which consists of prominent posterior calcaneum projection, Achilles tendinosis, and retrocalcaneal and retro-Achilles bursitis. Radiographic

assessment is useful for examination of the bony protuberance, but MRI offers more sensitive and specific assessment for making the diagnosis.

REFERENCES

1. Haglund P. Beitrag zur Klinik der Archillessehne. *Zeitschr Orthop Chir* 1927;49:49-58.
2. Pavlov H, Heneghan MA, Hersh A, Goldman AB, Vigorita V. The Haglund syndrome: initial and differential diagnosis. *Radiology*. 1982;144:83-8.
3. Burbenne LJ, Connell DG. Xeroradiography in the diagnosis of the Haglund syndrome. *J Can Assoc Radiol*. 1986;37:157-60.
4. Kumar R, Matasar K, Stansberry S, et al. The calcaneus: normal and abnormal. *Radiographics*. 1991;11:415-40.
5. Stephens MM. Haglund's deformity and retrocalcaneal bursitis. *Orthop Clin North Am*. 1994;25:41-6.
6. Ly JQ, Bui-Mansfield LT. Pictorial essay: anatomy of and abnormalities associated with Kager's fat pad. *AJR Am J Roentgenol*. 2004;182:147-54.
7. Jerisch J, Schunck J, Sokkar SH. Endoscopic calcaneoplasty (ECP) as a surgical treatment of Haglund's syndrome. *Knee Surg Sports Traumatol Arthrosc*. 2007;15:927-34.
8. Steenstra F, Van Dijk CN. *The Achilles tendon: endoscopic techniques*. London: Springer; 2007. p 133-40.
9. Sofka CM, Adler RS, Positano R, Pavlov H, Luchs JS. Haglund's syndrome: diagnosis and treatment using sonography. *HSS J*. 2006; 2:27-9.
10. Narváez JA, Narváez J, Ortega R, Aguilera C, Sánchez A, Andía E. Painful heel: MR imaging findings. *Radiographics*. 2000;20: 333-52.
11. Rosenberg ZS, Beltran J, Bencardino JT. From the RSNA Refresher Courses. Radiological Society of North America. MR imaging of the ankle and foot. *Radiographics*. 2000;20 Spec No:S153-79.
12. Robinson P, White LM. Soft tissue and osseous impingement syndromes of the ankle: role of imaging in diagnosis and management. *Radiographics*. 2002;22:1457-71.
13. Bureau NJ, Cardinal E, Hoben R, Aubin B. Posterior ankle impingement syndrome: MR imaging findings in seven patients. *Radiology*. 2000;215:497-503.
14. Kier R, McCarthy S, Dietz MJ, Rudicel S. MR appearance of painful conditions of the ankle. *Radiographics*. 1991;11:401-14.