

# Haglund's Disease with Clinical and Radiological Findings: 3 Case Reports

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## ABSTRACT

**Objective:** Haglund's Deformity is a variation of the posterosuperior region enlargement of the Os Calcaneus (OC) in the form of exostosis. It is associated with Haglund's Disease (HD), which encompasses Achilles tendinitis, retrocalcaneal bursitis, supra calcaneal bursitis, and inflammation of the Kager fat pad. Diagnosis is based on clinical findings and radiological methods, such as lateral ankle radiographs, Computed Tomography (CT), and Magnetic Resonance Imaging (MRI). This study aims to present three cases of ankle pain diagnosed with HD using radiological imaging. The mean age of our cases was 44.6 years, with two females and one male. Patients commonly present with complaints of pain and swelling behind the heel.

**Results:** Physical examination revealed pain and tenderness upon palpation over the left OC and Achilles tendon insertion. Radiological examination showed osseous protrusion in the posterosuperior part of the OC, indicating Haglund's Deformity. Edema was observed at the bony prominence of the posterosuperior OC, Kager fat pad, and heel area. The treatment plan for all three patients included leg rest splint, anti-inflammatory medication, and physical therapy.

**Conclusion:** In cases of heel pain where traumatic events such as acute fractures are ruled out, MRI should be performed, and Haglund's Syndrome should be investigated if osseous protrusion in the posterosuperior calcaneus is observed on radiographs, along with other findings suggestive of HS.

**Keywords:** Haglund's Disease, clinical and radiological findings, Case report

## INTRODUCTION

Haglund Deformity (HD) is a variation characterized by an enlargement in the form of exostosis in the posterosuperior region of the Os Calcaneus (OC). This condition was initially described by Patrick Haglund in 1972. Haglund's Disease refers to the constellation of conditions caused by HD, including Achilles tendinitis, retrocalcaneal bursitis, supracalcaneal bursitis, and inflammation of the Kager fat pad. Diagnosis is typically based on clinical findings, ankle lateral radiographs, and radiological methods such as Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Treatment primarily involves conservative measures, while surgical intervention is considered for cases that do not respond to conservative treatment.

The aim of this study is to present three cases of ankle pain diagnosed with Haglund's Disease through radiological imaging.

## CASES

Radiologically lateral direct X-ray, CT, MR imaging were used. Direct X-rays were made with a GE brand digital X-ray device. CT imaging was performed with a 64-slice Multidetector CT (Optima CT 660, General Electric Medical Systems, Milwaukee, Wisconsin, USA). MRI scan was performed by taking T1, PD fat sat in the sagittal plane, T1, T2, PD fat sat in the axial plane, T1, T2, MERGE images in the coronal plane on a GE brand (Signa Explorer-60 cm) 1.5 tesla MR device.

## Research Article

Received 19-05-2023

Accepted 10-06-2023

Available Online: 25-06-2023

Published 30-06-2023

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### Case 1

A 58-year-old female patient presented with left foot pain that developed after prolonged standing and persisted for 2-3 weeks. Physical examination revealed tenderness over the Achilles tendon, increased pain with plantar flexion and stretching, and tenderness over the heel. The lateral radiograph of the ankle showed osseous protrusion in the posterosuperior part of the Os Calcaneus (OC), indicating Haglund Deformity (HD), as well as calcific tendonitis and a calcaneal spur at the site of attachment of the Achilles tendon to the OC (Figure-1). MRI imaging revealed osseous protrusion consistent with HD in the T1 and T2-weighted sequences, tendinosis in a 2 cm segment at the insertion site of the Achilles tendon to the OC, and areas showing increased signal indicative of edema-fluid around the tendon. Edema was also observed in the Kager fat pad (Figure-2 and 3). Taking all the findings into consideration, a diagnosis of Haglund's Disease was made. The patient, who had previously received treatments such as immobilization, ice, and elevation of the foot without improvement, was scheduled for physical therapy.



**Figure 2:** Osseous protrusion in the posterosuperior Os Calcaneus, increased edematous signal at the fat pad and heel level in T1-Weighted sagittal MRI.



**Figure 1:** Osseous protrusion in posterosuperior Os Calcaneus, calcification in Achilles tendon insertion localization and calcaneal spur on lateral direct X-ray.



**Figure 3:** Achilles tendonitis, edematous changes in the Kager fat pad, retrocalcaneal bursitis in sagittal fat-suppressed T2-Weighted MRI

## Case 2

A 39-year-old female patient with bilateral ankle pain is presented. Physical examination revealed tenderness in both Achilles tendons and an increase in pain with plantar flexion and stretching. Bilateral lateral radiographs showed osseous enlargement consistent with Haglund Deformity (HD) in the posterosuperior region of the Os Calcaneus (OC) in both feet (Figure-4). CT imaging revealed bilateral HD, with calcification foci in the distal part of the Achilles tendon (Figure-5). Edematous changes were observed at the level of the fat pad and heel region (Figure-6). Incidentally, an accessory bone tissue compatible with the accompanying os trigonum was seen on the right side (Figure-7). The treatment plan included anti-inflammatory medication and physical therapy.



**Figure 4:** Osseous protrusion, calcaneal spur in the posterosuperior os calcaneus on bilateral lateral ankle radiograph



**Figure 5:** Calcaneal osseous protrusion, calcification in the insertion of the Achilles tendon in sagittal bone window CT



**Figure 6:** Kager fat pad and edema in the heel area on sagittal CT



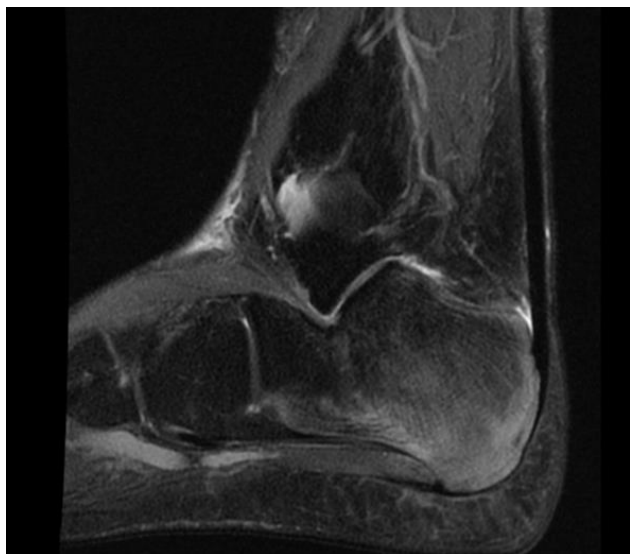
**Figure 7:** Incidental os trigonum on the right side in sagittal bone window CT

### Case 3

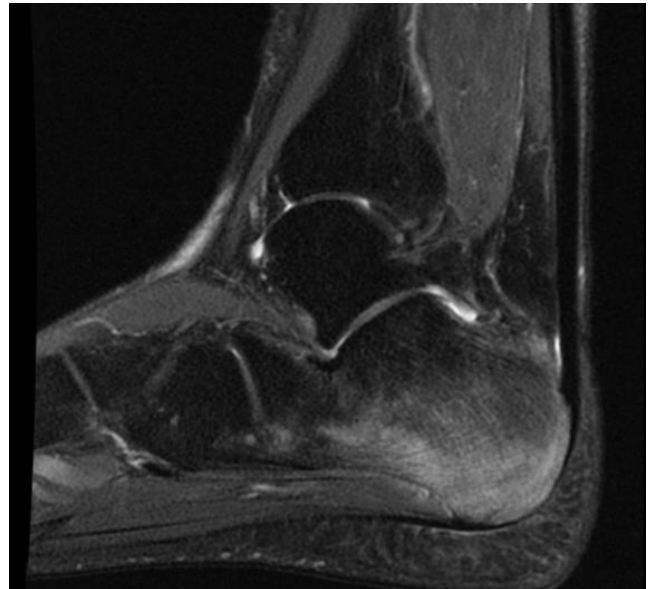
A 37-year-old male patient with persistent ankle pain, which has been increasing over the past 5 days, is presented. Physical examination revealed pain and tenderness upon palpation over the left Os Calcaneus (OC) and Achilles tendon insertion. CT imaging showed edema at the bony prominence of the posterosuperior OC, Kager fat pad, and heel area (Figure-8). MRI revealed osseous protrusion in the posterosuperior part of the OC and diffuse bone marrow edema within the OC. Increased fluid was observed in the retrocalcaneal bursa, and edema was present in the fat pad (Figure-9). Furthermore, mild fluid accumulation was observed in the anterior and posterior talocrural joints, along with edema between the skin, subcutaneous tissue, and muscle groups at the heel level (Figure-10). The treatment plan included the use of a leg rest splint and conservative management.



**Figure 8:** Osseous protrusion in Os Calcaneus, edema in the fat pad and heel on sagittal CT



**Figure 9:** Retrocalcaneal bursitis, edema in the calcaneus in sagittal fat-suppressed MRI



**Figure 10:** Intense edema in the calcaneus, mild fluid increase in the anterior and posterior talocrural joint and edema between the skin, subcutaneous and muscle groups at the heel level in sagittal fat-suppressed MRI

## DISCUSSION

Haglund's Disease is defined as Haglund's deformity-related Achilles tendinitis, retrocalcaneal bursitis, supra calcaneal bursitis, and inflammation of the Kager fat pad (1,2). In this study, 3 cases with exocystosis of the posterosuperior region of the Os Calcaneus, achilles tendinitis, retrocalcaneal bursitis, supra calcaneal bursitis, inflammation of the fat pad and diagnosed with clinical and radiological findings are presented.

HD usually occurs in middle age and is more common in women. The mean age of our cases was 44.6 years, two of them were female, and one was male. Patients most frequently consult a doctor with complaints of pain and swelling behind the heel (2,3).

In three of our cases, the common complaint at the doctor's visit was ankle pain. The first patient had left foot pain that developed after standing for a long time and continued for 2-3 weeks, the second patient had long-standing ankle pain that increased in the last 5 days, and the third patient had bilateral ankle pain.

On physical examination, the bony prominence of the posterosuperior calcaneus can sometimes be seen and palpated. Edema and other HD-related inflammatory changes can be detected (2,4). In the physical examination of our cases; Pain and tenderness were detected on palpation over the OC and Achilles tendon insertion. There was increased pain with plantar flexion, stretching, and tenderness on the heel.

The bony protrusion in the posterosuperior calcaneus is seen and can sometimes be seen and felt by hand in physical examination. Osseous protrusion was observed in the posterosuperior part of the Os Calcaneus on MRI in 3 of our cases.

Edema and other inflammatory changes associated with Haglund's Disease can be detected (3). In one of our cases,



edema was observed at the bony prominence of the posterosuperior Os Calcaneus (OC), Kager fat pad, and heel area. In another case, edema was specifically observed in the Kager fat pad. In the third case, edematous changes were seen in the fat pad and heel region.

The etiology of Haglund's Disease includes factors that exert pressure on this area, such as wearing tight and narrow shoes and engaging in prolonged running. However, none of our cases had these etiological factors present.

In the differential diagnosis, traumatic-mechanical ankle pathologies such as calcaneal bursitis, Achilles tendonitis, plantar fasciitis, calcaneal avulsion fracture, epin calcanei, rheumatological diseases such as rheumatoid arthritis, gout, primary or secondary osteoarthritis, osteomyelitis and diabetic ulcer infectious pathologies such as plantar nerve neuropathy, tarsal tunnel syndrome and lumbar plexopathy, and rarely malignancies can be considered (4). While diagnosing our cases, the differential diagnoses mentioned here were considered.

Imaging methods are important in the differential diagnosis of HD. Direct radiography is the first easily accessible imaging method used to rule out acute conditions such as fractures. It can be easily seen on HD lateral radiographs (5,6). Inflammation findings in the Achilles tendon and Kager fat pad developing due to HD can also be detected on radiographs (6,7). CT allows us to evaluate the bone tissue in more detail. However, due to the radiation dose received by the patient and the clearer evaluation of soft tissue in MRI, it is not often preferred in the differential diagnosis of HD cases. In cases with HD on direct X-ray, MRI is sufficient as the second examination method. In our study, CT was requested by an orthopedist as a result of clinical examination in two of our patients who applied to the doctor due to foot pain, and HD was found incidentally. MRI is a non-invasive examination with high soft tissue resolution. For this reason, the imaging method should be preferred after direct radiographs in the diagnosis of HD. On MRI, the osseous protrusion in the postero-superior calcaneus and associated Achilles tendinosis, retrocalcaneal bursitis, and signs of inflammation in the Kager fat pad can be easily distinguished (7,8).

Although ultrasound examination does not reveal as many demonstrative findings as CT and MRI in bone and soft tissue, the literature has also reported cases in which HD was diagnosed after ultrasound examination after direct radiography. In addition, ultrasound-guided steroid injection can be applied to the retrocalcaneal bursa (9). In our cases, bone tissue findings such as bone spur compatible with HD in the posterosuperior OC, calcaneal spur, calcification suggestive of calcific tendinitis in the distal part of the Achilles tendon in direct X-ray and CT, and in MRI examination; Soft tissue findings such as increased fluid in the retrocalcaneal bursa, edema in the Kager fat pad and heel level were compatible with the literature, and the diagnosis of HD was easily made with clinical-radiological findings.

Treatment of patients diagnosed with HD is conservative and surgical (10). Conservative treatment includes choosing appropriate shoes, steroid injection around the Achilles tendon, oral or topical anti-inflammatory drugs, and stretching exercises (10,11). In surgical treatment,

retrocalcaneal decompression and calcaneal osteotomy can be applied (12,13). In our cases, conservative treatments such as anti-inflammatory drugs, physical therapy, and leg rest splint were applied. While significant regression can be achieved with appropriate treatments, clinical findings due to chronic tendon damage intensify, and tendon rupture may occur in undiagnosed and untreated cases.

In conclusion; In cases with heel pain in which traumatic events such as acute fracture have been excluded, when osseous protrusion in the posterosuperior calcaneus on the radiographs and other findings suggestive of HD are seen, MRI should be performed, and HD should be investigated.

**Acknowledgements:** None

**Conflict of interest:** The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Author Contributions:** **DD, NU:** Data Collection, design of the study, **DD:** manuscript preparation, revisions. All the authors have read, and confirm that they meet, ICMJE criteria for authorship.

**Ethical approval:** All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and/or with the Helsinki Declaration of 1964 and later versions.

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