

# Haglund Deformity

## OVERVIEW

Haglund deformity (also known as a pump bump or Bauer bump or Mulholland deformity) is defined as bony enlargement formed at posterosuperior aspect of calcaneum.

## ANATOMY

The calcaneus is the largest bone of the foot, and its posterior aspect provides the distal insertion for the Achilles tendon. The retrocalcaneal bursa is a sac between the bone and the Achilles tendon that allows the tendon to slide easily on the bone during plantarflexion and dorsiflexion of the foot.

## BIOMECHANICS

Haglund's deformity can be related to rigid back (counter) of pump style shoes, giving it the name "pump bump." Shoes with a rigid counter can increase the pressure at the posterior calcaneus creating an irritation that aggravates the bone enlargement. The most important criteria for the evaluation of the biomechanical patterns of the deformity are the posterior calcaneal angle and the pitch angle (calcaneal inclination angle).

## PATHOGENESIS

Haglund's deformity may have a hereditary character. Women aged 20 to 30 years are often affected due to the use of high heeled shoes. Also cold weather can increase the incidence due to the more frequent use of closed back shoes and boots. Other predisposing factors include cavus foot and a tight Achilles tendon.

## CLINICAL PRESENTATION

The main symptom of Haglund's deformity is a dull aching soreness at the postero-superior aspect of the heel. Often is present a hyperkeratotic postero-superolateral prominence near

the Achilles tendon insertion. In severe cases cumulative microtrauma causes the formation of an inclusion cyst or ulcerations.

## **EXAM**

In addition to a detailed physical examination, other important studies can be performed to understand each single case. X-rays will help the surgeon to evaluate the biomechanical aspect of the deformity and the bone structure. MRI is useful to evaluate any retrocalcaneal bursitis and the associated degenerative changes in the Achilles tendon. Ultrasonography is useful to find the exact localization of the deformity that can be visualized dynamically (with motion).

## **STAGES**

There is not a unique classification for the Haglund disease.

## **TREATMENT**

The aim of non-surgical treatment of Haglund's deformity is to reduce the inflammation. Conservative treatment may provide temporary relief, although symptoms often recur if the deformity persists. While these approaches can resolve the pain and inflammation, they will not remove the bony protrusion. Non-surgical treatment involves biomechanical, physical and pharmacologic therapies.

- Rest and sometimes immobilization can help to reduce the inflammation
  - Ice: Indicated to reduce swelling.
  - Medication: Oral nonsteroidal anti-inflammatory drugs (NSAIDs).
  - Stretching Exercises: help to relieve tension from the Achilles tendon.
  - Shoe modification: decrease heel counter to reduce pressure on the Achilles tendon
  - Physical therapy: Ultrasounds, laser therapy, tecar therapy
  - Orthotic devices: Indicated to support the arch and to decrease the Achilles Tendon tension
- Surgical Treatment

If non-surgical treatment fails to provide adequate pain relief, surgery may be considered. Longstanding disease predisposes the patient to more extensive tendon degeneration.

Surgical care focuses mainly on the resection of the posterosuperior aspect of the calcaneus and possibly the excision of the inflamed retrocalcaneal bursa. The Achilles tendon may be

debrided of diseased tissue as well, and lengthening of the gastrocnemius complex should be considered. The goal of these procedures is to reduce the prominence in the back of the heel and the tension on the Achilles tendon.

In procedures that involve the Achilles tendon the healing process lasts 6 weeks. In severe cases of deformity a calcaneal closing wedge osteotomy (Keck and Kelly) may be considered. The wedge is removed from the midportion of the calcaneus, avoiding the articular surface. Closing the osteotomy an anterior shift of the postero-superior prominence is obtained, decompressing in this way the insertion of the Achilles Tendon.

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