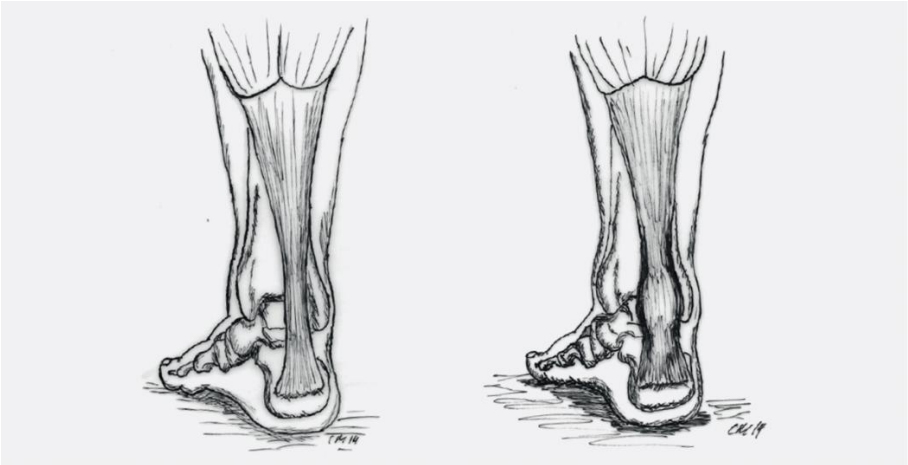
LEONARDO Ärzte für Orthopädie und Traumatologie

ACHILLES TENDON DISORDERS (ACHILLODYNIA)

TENDON, INSERTION, HAGLUND'S EXOSTOSIS

DEFINITION

As with many tendons in the body, degenerative changes can lead to pain in the Achilles tendon. Repetitive or unfamiliar excessive strain can occasionally be identified as the cause. Obesity or additional foot malalignments are also considered contributing factors to such degenerative changes. However, in most cases, no specific cause can be determined.



1 Normal Achilles tendon (left) and

degenerated tendon with thickening at typical location (right)

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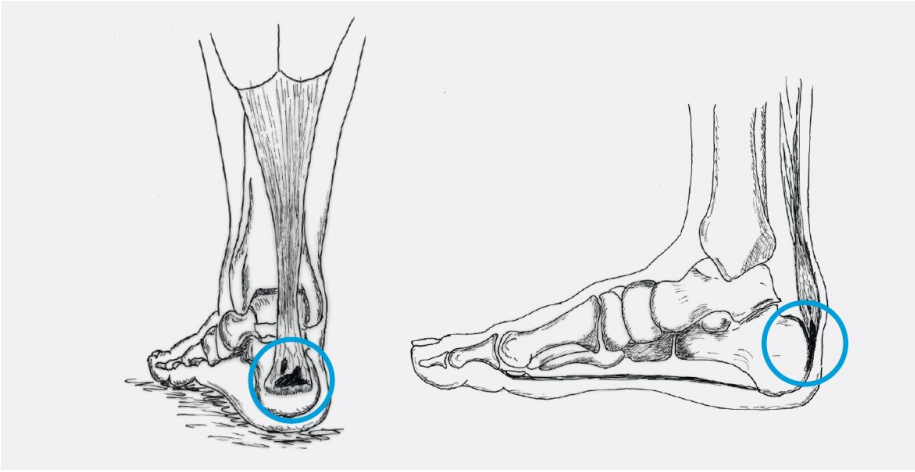
Typically, degeneration in the Achilles tendon occurs approximately 6 cm above the heel bone. Due to anatomical conditions, the blood supply to the tendon in this region is lower than in other areas. A noticeable spindle-shaped, often painful swelling is commonly found in this area (Fig 1 right). The second most commonly affected site is the Achilles tendon insertion. In addition to degenerative changes, calcifications and bone spurs may also develop here (Fig. 2).



2 Calcifications at the insertion of the Achilles tendon

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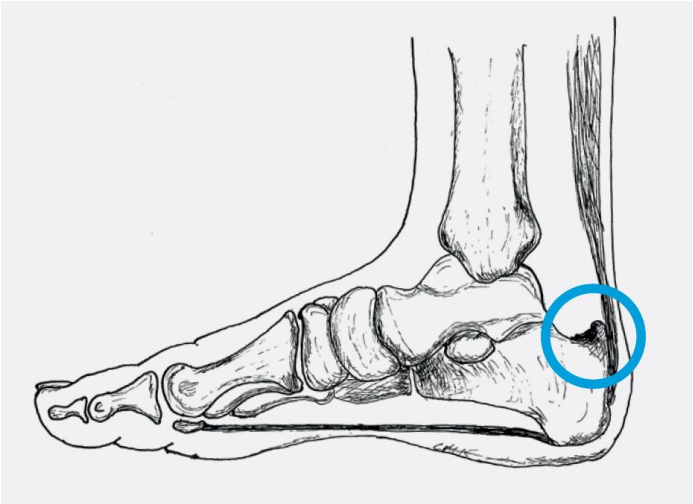
Some patients have a very prominent bony protrusion at the back of the heel, known as Haglund's exostosis (Fig. 3). This "bony bump" can occasionally cause discomfort, especially when wearing hard, closed shoes.

3 Haglund's exostosis



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SYMPTOMS

Achillodynia regularly causes pain under stress/strain. The first steps in the morning after getting up are often particularly painful (start-up pain). The pain decreases after warming up but may increase again in the course of the day.

Pain at the Achilles tendon insertion is generally dependent on load. Issues may also arise when wearing hard, closed shoes.

Haglund's exostosis primarily causes pressure-related problems with footwear.

EXAMINATION

During an examination, prominent bony protrusions may be observed. In addition to assessing foot shape, the length of the Achilles tendon and calf muscles is particularly evaluated, especially with the knee extended. A shortening of the muscle and tendon is often present.

For determining further treatment, MRI is often recommended in cases of Achilles tendon complaints, especially when non-surgical treatment has been unsuccessful. MRI can reveal the extent of degeneration and possible partial tears that may not be detectable through clinical examination, aiding in surgical planning.

TREATMENT

A) NON-SURGICAL

Primary treatment is non-operative management. Although conservative treatment of Achilles tendon complaints can be lengthy, it is generally very successful, particularly for symptoms along the course of the tendon. Insertional symptoms can be more persistent.

1. Physiotherapy

If there is no risk of rupture and no prior treatment has been performed, non-surgical treatment should be attempted first. This primarily involves stretching the muscles and addressing the chronic inflammation in the tissue surrounding the tendon. Strengthening the tendon through eccentric loading (controlled resistance) is particularly beneficial. Appropriate exercises are instructed in physiotherapy and must then be performed independently on a daily basis.

2. Footwear / Orthotic aids

When choosing footwear, ensure good cushioning and stability. These features are often found in running shoes, which also provide good rollover support. For symptoms along the course of the Achilles tendon, a specific brace may provide relief (Fig. 4 left). In cases of insertional Achilles tendon pain, a soft and well-shaped heel counter is important. It may be helpful to modify pressure load with a soft heel wedge (Fig. 4 right).

4 Special brace for the Achilles tendon (left) and Soft heel wedge (right)

4

3. Shockwave therapy
Shockwaves are sound waves that stimulate increased blood circulation in affected tendon tissue, promoting healing. This treatment can sometimes help dissolve calcium deposits. The procedure can be quite painful, so a trial session is recommended before undergoing a full series of treatments. Due to a lack of scientific evidence proving its efficacy, health insurance providers typically do not cover this treatment.

4. Injection therapy
Due to its tendon-damaging effects, corticosteroid injections should never be administered into or directly next to the Achilles tendon. However, alternative injection therapies are available.

a) PRP injection: Platelet-rich plasma (PRP) is obtained by centrifuging the patient's blood, resulting in a high concentration of platelets and growth factors. These growth factors play a crucial role in healing processes and may have a beneficial effect on tendon changes. Since PRP is derived from the patient's own blood, it provides a concentrated dose of natural healing factors directly to the affected tendon areas.

b) Traumeel injection: Traumeel is a plant-based preparation primarily containing arnica. If initial treatment is effective, injections can be repeated as needed.

c) Sclerotherapy: This ultrasound-guided procedure targets abnormal new blood vessels that form in response to chronic inflammation and are believed to contribute to pain.

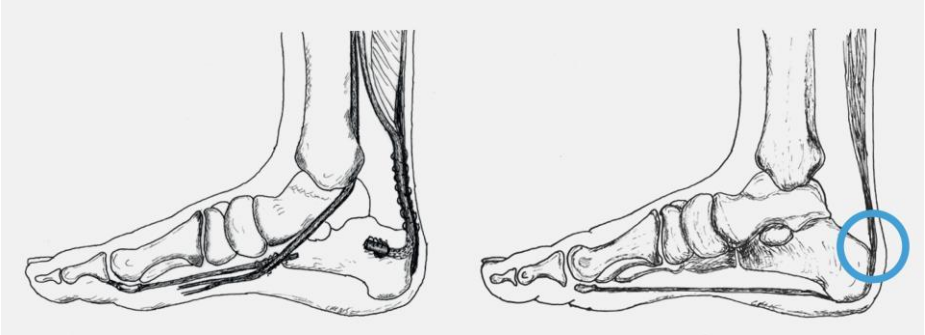
Since the effectiveness of these injection therapies in Achilles tendon conditions is not scientifically proven, health insurance providers usually do not cover the costs.

B) SURGICAL

If no improvement occurs after 3 to 6 months, surgical intervention may be considered.

1. Debridement
The first step involves removing degenerative tissue. If the tendon insertion is affected, calcifications and bone spurs are also removed. The remaining tendon is then sutured and, if necessary, reattached to the bone using anchors. Depending on the amount and quality of the remaining tendon, reinforcement with a tendon transfer may be required (Fig. 5 left). Various surgical techniques are available, with the long flexor tendon of the big toe being the most commonly used. Because of its existing connections to the other toe flexors, patients can still flex their big toe after surgery, although strength may be slightly reduced.

This usually does not affect daily activities, though some highly active young athletes may notice a difference. Post-operative care must be individually tailored, but immobilization in a Vacoped boot (Fig. 7) or cast for several weeks is always necessary.
IMPORTANT: Rehabilitation after Achilles tendon surgery is lengthy, it can take up to 2 years!



5 Tendon transfer (left) and Removed Haglund exostosis (right)

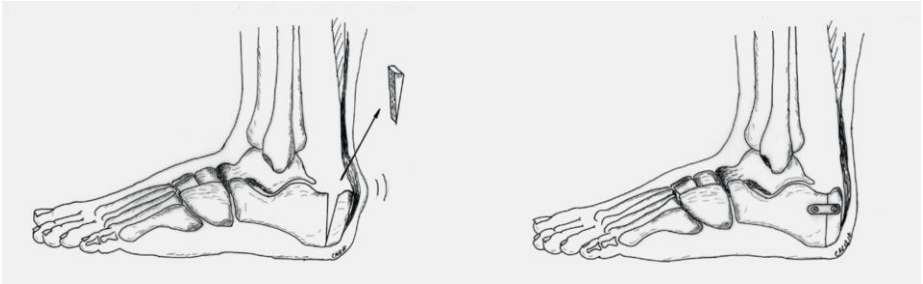
5

2. Haglund's Exostosis

If customized footwear and stretching exercises fail to improve symptoms, Haglund's exostosis can be surgically removed (Fig. 5 right.). Post-surgical treatment also involves immobilization in a Vacoped boot (Fig. 7), though usually for a shorter period compared to Achilles tendon surgeries. The required time off work and sports activities is also generally shorter.

3. Kelly Keck Osteotomy

In certain cases, an indirect removal of bone spurs with simultaneous slight unloading of the Achilles tendon can be performed without directly operating on the tendon itself. This is usually associated with a shorter rehabilitation period. A small wedge of bone is removed from the heel bone (Fig. 6 left) and then fixed with clamps, a plate, and/or screws (Fig. 6 right). Postoperative treatment involves immobilization in a Vacoped boot (Fig. 7) and partial weight-bearing for six weeks, followed by a rather quick gradual increase in load.



6 Removal of bone wedge from heel bone (left) Fixation with small plate and 2 screws (right)

6

RISKS AND COMPLICATIONS

All surgeries carry certain risks. Complications may arise during or after surgery, potentially delaying healing or requiring further intervention. These may include:

- Wound healing issues
- Infections
- Vascular injuries, postoperative bleeding, bruising/hematoma, blood loss
- Nerve damage
- Thrombosis, pulmonary embolism
- Loss of tendon tension with strength deficit or re-rupture
- Pseudarthrosis (lack of bone healing), loss of correction
- Disturbing osteosynthesis material (screws, plate, staples)
- CRPS (Complex Regional Pain Syndrome)
- Residual discomfort

FOLLOW-UP TREATMENT

Surgery is only one part of the treatment. Proper post-operative care is crucial for a successful recovery. Upon discharge, patients receive detailed rehabilitation guidelines for themselves and their physiotherapist.

Functional rehabilitation begins the day after surgery. A night splint is required for six weeks in a pointed-foot position. Patients should avoid standing on the foot initially but can mobilize using a special boot (Vacoped, Fig. 7). Over six weeks, the foot position is gradually adjusted from a 30-degree pointed-foot position to normal. Initially, only partial weight-bearing is allowed. Weight-bearing is then slowly increased with full weight-bearing possible after six weeks, followed by weaning off the Vacoped boot. For up to three months post-surgery, no excessive tension should be placed on the tendon, meaning no stretching or excessive ankle movement beyond a right angle.

7 Vacoped with change of position from pointed foot to normal position

7

DRESSING AND WOUND CARE

Patients are instructed on proper wound care during hospitalization. Until the wound is completely dry, dressings should be changed daily, and no ointments or powders should be applied until the stitches are removed. Disinfection is not necessary. Always remove the entire dressing when changing. The new dressing must be dry and must not slip.

Once dry, a simple adhesive plaster is sufficient. An elastic bandage can protect and cushion the operated area somewhat.

This also reduces the swelling that still exists. If there are concerns about wound healing, you should contact your family doctor or us directly.

Stitches are usually removed about two weeks after surgery. This is usually done by the family doctor.

SWELLING AND PAIN MANAGEMENT

Swelling can persist for weeks, sometimes up to twelve months. Elevating the leg is the most effective way to reduce swelling. This is especially important in the first 2-3 weeks after surgery. Short periods of getting up and moving around several times a day (walking, less standing) are recommended. If swelling and pain occur, the leg should be elevated.

However, despite these measures, pain in the operated Achilles tendon can occur in the first days and weeks after the operation. Painkillers prescribed by us or the family doctor can be taken if necessary.

WEIGHT-BEARING

In the first 2 weeks and until the wound is healed, partial weight-bearing is recommended. Then weight-bearing depends on the type of surgery. A Vacoped boot (Fig. 7) or cast must be worn for the first six weeks. Initially, patients should minimize standing to avoid excessive swelling and bleeding.

Partial Weight-Bearing

Partial weight-bearing allows the foot to bear about 15-25 kg, roughly the weight of the leg itself and requires the use of crutches at all times. Physiotherapists provide training to ensure proper crutch use, including stair navigation.

Full Weight-Bearing

Full weight-bearing is allowed once the rehabilitation plan permits, and pain levels allow. Crutches should still be used initially for stability.

PERSONAL HYGIENE

While stitches are still in place, typically for the first two weeks, the foot should be covered with a plastic bag when showering. Once stitches are removed and the wound is dry and closed, exposure to water is permitted.

THROMBOSIS PROPHYLAXIS

Thrombosis prevention begins during hospitalization and depending on the surgery generally must be continued at home. In most cases, Fragmin 5000 IU injections are used once daily. Patients receive instructions on self-administration. If self-injection is difficult, oral medication such as Rivaroxaban may be an alternative after suture removal and consulting your family doctor. Depending on individual risks, prevention continues at least until full weight-bearing without a cast or boot is possible, which typically takes six to eight weeks.

WORK ABILITY

Rest is essential in the first two weeks post-surgery. The duration of work incapacity depends on the type of surgery and physical job demands. A temporary lighter-duty work arrangement may allow earlier return. The initial sick leave is an estimate, and extensions can be arranged if needed. Therefore, please contact your family doctor or us. If recovery progresses well, patients may return to work earlier.

DRIVING, TRANSPORTATION

Resumption of driving depends on the surgery type, affected foot, and vehicle transmission type. Driving is not allowed while weight-bearing is restricted or while using crutches or a Vacoped boot/cast, except for left-foot surgery with an automatic car. If in doubt, patients are advised to avoid driving.

FOLLOW-UP

A follow-up with the surgeon occurs six to eight weeks after surgery. At this stage, patients usually transition out of the Vacoped boot or cast and reduce crutch use. Continued physiotherapy is crucial. Most daily activities can resume after about three months. Return to sports should be gradual to prevent overuse injuries after the sports break. Sport-specific timelines should be discussed with your physiotherapist or doctor.

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