Calcaneal Spur

By

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Introduction

Among the various causes of heel pain, Calcaneal spur tops the list. It is interesting to know about the genesis of this notorious spur. As your feet are being subjected to abnormal pressures, the foot muscles & ligaments are stretched beyond their normal levels of comfort. Gradually over the years the pull exerted by this abnormal stretch on the heel bone results in the formation of extra growth of bone from the calcaneus. This is the infamous Calcaneal spur. The presence of these otherwise unwanted extra pieces of bone at the bottom of the heel irritates the surrounding soft tissues and muscles resulting in pain, swelling and limp.

Risk Factors:

Glance through this list. If you find yourself in any of this group, beware, you may be a sitting duck for the common heel spur!

- Overweight persons
- Obesity
- Repetitive stress in the vulnerable group (already mentioned)
- As ageing hazards
- Improper footwear
- Women are more prone

Presentation: A person suffering from heel pain supposedly due to a Calcaneal spur will present as follows:

- Pain in the heel, which is more in the morning as soon as they get up from the bed.
- Patient is unable to place his heel on the ground immediately after waking up in the morning (Typical complaint)
- Slowly after taking a few steps, with difficulty, the pain gradually disappears.
- As the day wears off, the pain recurs later in the evening or night.
- Foot fatigue and discomfort is often reported.
- Limp is another common complaint.
- Calf muscle pain and cramps could be seen in few cases.

Investigations:

- Plain x-ray of the heels.
- These spurs are very clearly seen on the lateral (side) views. (Fig 1).
• Seldom-higher investigations are required.
• Laboratory investigations have no role either.

![Image showing lateral view of the heel](image1.png)

**Figure No 1 showing a lateral view (side view) of the heel depicting the Calcaneal spur**

*Note: This extra growth of bone, what is referred to as spur, paradoxically is not the cause of the heel pain. The pain develops due to the inflammation and irritation caused to the surrounding ligaments, muscles and the soft tissues of the sole of the feet, due to the pressure effects of this spur.*

**Retrocalcaneal Spur**

- A similar extra growth of bone can also occur at back of the heel bone, at the point where your calf muscle tendon, the Tendo Achilles, gets inserted into the calcaneum (called the Retrocalcaneal spur).
- However this is not as common as the Calcaneal spur.
- Here the pain & swelling is experienced at the back of the heel!

**Presentation**

- Pain behind the heel near the end of the prominent tendon of your calf muscles (called the Tendo Achilles).
- Swelling over the back of the heel (See Fig 2).
- Limp
- On pushing the foot down (called plantar flexion), there could be pain.
- On pressing the back of the heel with your index finger, there could be pain.

![Image showing retrocalcaneal spur](image2.png)

**Figure No 2 showing Retrocalcaneal spur**
Plain x-ray of the heel: Lateral views of the heel shows the development of the retrocalcaneal spur. (Fig 3).

Retrocalcaneal Bursitis

- Behind your heel in between the Tendoachilles and the skin, there is fluid filled sac called the Retrocalcaneal bursa.
- This serves as a protection and shock absorber behind the heel.
- When you wear tight fitting foot wears, which put abnormal pressure over the bursa directly, this sac lining gets irritated and becomes inflamed. This results in pain and swelling develops.
- This condition mimics the Retrocalcaneal spur in its presentation but however, in this condition the swelling is soft while it is hard in the former condition.

Tendo Achilles Tendinitis

- The muscle at the back of your legs is called the Calf (actually medically it is called the Gastrosoleus).
- The prominent end of this muscle, which gets attached to the back of the calcaneum, is called the Tendo Achilles.
- This muscle complex is instrumental in bringing about the downward movement of your foot (called plantar flexion). Due to constant irritation by the ill-fitting footwear, this tendon could get inflamed and lead to a condition called Tendinitis.
- Here there could be pain behind the heel, limp and pain during plantar flexion.

Investigations

- X-Ray of the Heel: This is a simple and most effective way of detecting that extra growth of bone beneath and the back of your heel. However X-ray is not useful in diagnosing plantar fasciitis. (Fig 1).

Pitfall of X-rays in diagnosing heel spurs: The absence of heel spurs on lateral x-ray view does not rule out the presence of heel spurs! In other words X-rays are useful only if the spurs are readily seen.

- Laboratory Tests: These are not particularly useful in painful heel conditions.
- CT scan and MRI: Although these tests are extremely useful in diagnosing this condition, their high costs are prohibitive.
Treatment

Goals of treatment
While you begin to understand the details about various treatment methods for managing painful heel, it has to be clearly understood that there is no permanent cure for this disease. However the goal of treatment is to achieve the following objectives:

♦ Relieving pain.
♦ Preventing further progress of the disease.
♦ Helping the victim to ambulate as normally as possible.

Useful simple treatment options for quick pain relief

• Taking painkillers, muscle relaxants etc at the advice of the doctors.
• Physiotherapy like ultrasound massage, short wave diathermy, TENS etc.
• The heat helps to improve the blood circulation to the areas and relaxes the muscle pain and also brings down pain.

Treatment Methods
This includes drug therapy, physiotherapy, exercises etc.

Drug Treatment

Drugs commonly used in the treatment of early painful stages of the painful heel aims at reducing the pain, muscle spasm, bringing down the swelling, limp etc.

• **Painkiller drugs** like Aspirin, Ibuprofen, and Rofexocib etc. Pain is an important symptom that brings the patient to the doctor and it needs to be tackled effectively to give relief to the patient. However all the drugs have to be taken at the advice of the doctors as most of the drugs are known to cause side effects like pain abdomen, gastritis, bleeding, vomiting etc? These drugs should preferably be taken after meals to avoid the above side effects. One word of caution, do not take these drugs for a longer duration without the advice of the doctors due to their potential complications.

• **Injection treatment**: This consists of injecting locally acting steroid preparations (E.g. In. Kenacort, In Depomedrol etc) into the painful area. This has to be given by experts with full aseptic precautions. Not more than two or three injections can be given into the joints at an interval of one month. (Fig 4)

Note: Cortisone injections into the heel are indicated if there is no response to the drug treatment for a period of three months
Physiotherapy: A brief mention of the various modalities of physiotherapy treatment in painful heel is made here:

- **Heat Therapy**: This is given by way of Ultrasound Massage or Short Wave Diathermy for a period of 2-3 weeks depending upon the severity of pain. Heat therapy helps to alleviate pain and muscle spasm and makes the patient feel better.
- **Cold Therapy**: This is useful in acute conditions of pain and spasm and is not preferred for pain of longer duration. This also works in the same way as the heat therapy.
- **TENS (Transcutaneous electrical nerve stimulation)**: This is another form of heat therapy useful in acute painful conditions.
- **Infra Red**: This is inferior to the heat therapies mentioned above as it is known to heat only the superficial structures like the skin, subcutaneous tissue etc. However the patient can do it himself at home.
- **Massage**: Regular, rhythmic massaging of the painful heel and foot with the application of painkiller ointments or oils is known to induce relaxation of the muscles and cause pain relief. Moderate forces have to be used during the massage

Alternate Therapies
- **Acupressure**: Stimulating appropriate acupoints 5 to 10 times every day helps to relive pain and muscle spasm of the foot. Simple effective and easy to perform by the patient themselves at home.
- **Magnet Therapy**: Placing small magnets beneath the painful heel helps to relive pain and spasm.

Surgery: Surgical intervention is rarely required in these conditions. However if there are proper indications (See Box) it is resorted to by your doctors.

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<tr>
<th>Know the absolute indications for surgery in Calcaneal spurs:</th>
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<td>- Failure of all the conservative measures enumerated above.</td>
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<td>- A very large spur causing troublesome compression of the heel structures.</td>
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<td>- No responses to the usual treatment even after 6 months period.</td>
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Surgical Techniques:
- Excision of the spur by open methods.
- Resection of the spur through a minimum incision using an endoscope.
Caution: It is imperative to know that surgery may not relieve you of the pain completely and there are future chances of recurrence.

Preventive Measures

Good foot practice certainly is the mantra for a healthy and pain free feet. This is the most important aspect of the successful management of pain in the heel. The following steps are suggested:

- Realize that your heel has to bear your weight for years.
- Avoid all kinds of improper and fancy foot-wears (See Fig 5).
- Use foot-wears which are flat and which will not distort the normal aches of the foot. (Fig 6).
- Avoid overweight and obesity.

Figure 5 on the left shows improper foot wear and walking

Fig 6: right foot wear and the right method of walking

Remedies: Preventive Measures

- Self care: An understanding that your feet are burdened with the onerous tasks of locomotion and weight transmission will go a long way in preventing most of the problems related to the foot. Especially the heel.
- Be prudent and not fashionable by shunning all kinds of extravagant footwear and high heels. This fancy footwear bites both your pocket and heel.
- Avoid walking on bumpy and hard grounds.
- Avoid standing for a long time.
Definitive Curative Measures

1. Home Physiotherapy: As soon as you get up in the morning, massage (Fig 7) your heel with painkiller ointments, gels or ayurvedic oils thoroughly using moderate force for a minimum period of 15 minutes.

   ![Figure 7 showing the technique of foot massaging](image)

   ▪ After massaging your feet, now immerse both your feet in warm water for 5 to 10 minutes.
   ▪ Now place your foot on the ground for few seconds.
   ▪ Take the first few steps over the toes and then slowly plant your heel on the ground.

2. Foot Exercises: These consist of foot mobilization and muscle strengthening exercises.

   a) Mobilization exercises: Just actively move the joints of all the toes, ankle freely for about 5 minutes. This increases the range of movements of all the foot joints. (See Fig 8)

   ![Figures 8 showing various foot mobilization exercises](image)
b) *Strengthening exercises:* Curl all your toes inwards and hold it for few seconds. This strengthens the intrinsic muscles of your foot. This exercise can be done inside your shoes while you are at work, standing, walking etc. It is advisable to do these exercises immersing your feet in warm water.

![Strengthening exercises](image)

Figure 9 on the left shows the method of foot massage, the figure on the centre and right shows the methods of calf muscle and hamstring stretches

c) *Stretching exercises* of the Tendoachilles, hamstrings and foot muscles helps to relieve pain and stiffness and this relieves the pain secondary to these conditions. (Fig 9 and 10).

c) *Rolling the foot* over a Tennis ball helps you to massage the painful and stiff foot. (Fig 11).

![Rolling the foot](image)

Figure 10 showing another method of calf muscle and hamstring stretches
Figure 11 showing method of rolling over a ball

Certain precautions you need to follow as a matter of routine:

- Avoid standing unnecessarily for a long time.
- Avoid walking on irregular ground surfaces.
- Repeat the massage and home physiotherapy measures before retiring for the day.

Know the advantages of the Self help therapy:

- Very easy to perform.
- Very effective in relieving pain and foot muscle spasm.
- Can be done by the patient himself or herself.
- Absolutely no side effects.
- Relieves the dependence over drugs.
- Can be practiced for a long-term basis.
- Absolutely no side effects.
- Cheap and dependable.

Supportive Therapy:

Adequate heel supports are inserted into the regular foot wears and should be made up of microcellular rubber or silicon rubber. These supports effectively absorb the shocks due to walking and weight bearing, relieve stress on the heels and thereby ensure reduction of pain. (Fig 13).

Foot wear correction is an important form of treatment for painful heels and includes:

- Use of Microcellular heel pads (Fig 12)
- Use of Silicon heel pads (Fig 13)
- Use of soft foot wears
- Polyethylene and Polypropylene heel cups to increase the heel cushion. (Fig 14)
Note: These extra heel cushions buffers the heel and helps in improved shock absorption.

Fig 12 showing the heel and foot supports

Figs 35: Various foot supports

Figs 14: showing various Shoe inserts

The treatment plan for Calcaneal spur and other conditions for painful heel in a nutshell:

- Drug therapy
- Injection therapy
- Physiotherapy
- Self help
- Foot exercises
- Acupressure techniques
- Magnet therapy
- Supportive therapy
- Surgery

Note: The most effective way of tackling this problem is to judiciously combine the above therapies in consultation with your doctors.