

Heel Pain in Children (Severs Disease; Calcaneal apophysitis)

What is heel pain in children (Severs disease or Calcaneal apophysitis):

Heel pain, unlike the **heel spurs**, that occur in adults is very uncommon in children. Of those children who do get heel pain, by far the most common cause is a disturbance to the growing area at the back of the heel bone (calcaneus) where the strong achilles tendon attaches to it. This is known as Sever's disease or calcaneal apophysitis (inflammation of the growth plate). It is most common between the ages of 10 to 14 years of age. These are one of several different 'osteochondroses' that can occur in other parts of the body, such as at the knee (Osgood-Schlatters Disease).

The anatomy of heel pain in the child (Severs disease or Calcaneal apophysitis):

When a baby is born, most of the bones are still cartilage with only some starting to develop into bone. When the heel (calcaneus) starts to develop bone, there is generally one large area of development that starts in the center of the cartilage heel. This area of bone spreads to 'fill up' the cartilage. Another area of bone development (ossification) occurs at the back of the heel bone - see the x-ray to the right. These two areas of developing bone will have an area of cartilage between them - this is how the bone grows in size. At around age 16, when growth is nearly complete, these two bony areas fuse together. Sever's disease or calcaneal apophysitis is usually considered to be due to damage or a disturbance in this area of growth.



The two growth areas of the calcaneus can be seen on this x-ray. The smaller area to the back of the heel is normal. Notice the small cartilage joint between the two.

What are the symptoms of heel pain in the child (Severs disease or Calcaneal apophysitis):

Pain is usually felt at the back and side of the heel bone. Sometimes there may be pain at the bottom of the heel. The pain is usually relieved when the child is not active and becomes painful with sport. Squeezing the sides of the heel bone is often painful. Running and jumping make the symptoms worse. One or both heels can be affected. In more severe cases, the child may be limping.

What causes heel pain in children (Severs disease or Calcaneal apophysitis):

The cause of Sever's disease is not entirely clear. It is most likely due to overuse or repeated minor trauma that happens in a lot of sporting activities - the cartilage joint between the two parts of the bone can not take all the shear stress of the activities. Some children seem to be just more prone to it for an unknown reason - combine this with sport, especially if its on a hard surface and the risk of getting it increases. It can be almost epidemic at the start of some sports seasons, especially winter. At the start of winter, the grounds are often harder, but soften later. Children who are heavier are also at greater risk for developing calcaneal apophysitis.

A tight calf muscle is also common in those who develop calcaneal apophysitis - if you look at the x-ray above, you can imagine how much pull there is from the calf muscles via the achilles tendon on the small growth plate at the back and the strain that this will place on the cartilage join between them. A **pronated foot** (a foot rolled in at the ankle) is also more common - it is assumed that this may cause an uneven weight bearing on the back part of the heel bone.

Self management of heel pain in the child (Severs disease or Calcaneal apophysitis):

If your child have Sever's disease, the following is suggested:

- * cut back on sporting activities - don't stop, just reduce the amount until symptoms improve (if the condition has been present for a while, a total break from sport may be needed later)
- * avoid going barefoot
- * a soft cushioning heel raise is really important (this reduces the pull from the calf muscles on the growth plate and increases the shock absorption, so the growth plate is not knocked around as much).
- * **stretch the calf muscles**, provided the stretch does not cause pain in the area of the growth plate)
- * the use of an ice pack after activity for 20mins is often useful for calcaneal apophysitis - this should be repeated 2 to 3 times a day.

Calf
muscle
stretch:



Podiatric management of heel pain in children (Sever's disease or Calcaneal apophysitis):

Management by a health professional of Sever's disease is often wise. There are a few very rare problems that may be causing the pain, so a correct diagnosis is extremely important.

Advice should be given on all of what is mentioned above - appropriate activity levels, the use of ice, always wearing shoes, **heel raises** and **stretching** ... **follow this advice!!!**

As a **pronated foot** is common in children with this problem, a discussion regarding the use of **foot orthotics** long term may be important.

Strapping or tape is sometimes used during activity to limit the ankle joint range of motion.

If the symptoms are bad enough and not responding to these measures, medication to help with anti-inflammatory may be needed. In some cases the lower limb may need to be put in a cast for 2-6 weeks to give it a good chance to heal.

After the calcaneal apophysitis resolves, prevention with the use of stretching, good supportive shock absorbing shoe and heel raises are important to prevent it happening again.

What are the long term consequences of heel pain in the child (Sever's disease or Calcaneal apophysitis):

This condition is self limiting - it will go away when the two parts of bony growth join together - this is natural.

Unfortunately, Sever's disease can be very painful and limit sport activity of the child while waiting for it to go away, so treatment is often advised to help relieve it. In a few cases of Sever's disease, the treatment is not successful and these children will be restricted in their activity levels until the two growth areas join - usually around the age of 16 years.

There are no known long term complications associated with Sever's disease.