SEVER’S DISEASE (CALCANEAL APOPHYSITIS)

Calcaneal apophysitis and Sever’s disease describe an irritation to the growth center (apophysis) in the heel bone (calcaneus) and disturbance to the growing area at the back of the heel bone (calcaneus) where the strong achilles tendon and plantar fascia ligament attaches. It is most common between the ages of 10 to 14 years of age.

When we are very young, most of our bones are made up of cartilage. The bones enlarge from this growth plate continually to eventually form our adult bones.

This type of condition is not limited to the heel bone. These are one of several different 'osteochondroses' that can occur in other parts of the body, such as at the knee (Osgood-Schlatters Disease).

Patients who have calcaneal apophysitis generally are participating in running sports (soccer, football), have a very tight Achilles tendon, pronate excessively (increased stress of plantar fascia), and generally are growing very quickly.

When these 2 soft tissue structures aggressively create too much torque on this growth center it can sometimes fragment. This then creates significant pain especially with activity and especially upon rising in the morning after rest. Usually the child will notice subjective symptoms in the diffuse area around the heel. He can occur on one side only or both.
Specifically the plantar fascia is designed to help reduce the downward declination of the arch and pronation while allowing it to be a flexible supple adapter to the ground and to allow shock absorption. The Achilles tendon is designed to strongly contract to pull the heel upward for propulsion and jumping.

Utilizing stretching to reduce the Achilles tendon stretch and an arch support, to reduce the plantar fascia stress normally aids and long-term treatment.

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 DIAGNOSIS** is made on the clinical history. Pressing on the heel from side to side will result in pain. Pressing on the bottom of the heel generally will not result in pain. X-rays should be taken to rule out a fracture through the growth plate.

There are 2 portions of treatment. The first is to reduce the injury to the growth plate which many times include a fracture. Immobilization generally consists of a cast boot with significant reduction of athletic and normal activity; resolve this first issue. The second issue is oriented to reduce the biomechanical stresses of the of the 2 major soft tissue attachments to this very sensitive growth center; which include the Achilles tendon/calf muscle and the plantar fascia.
**MANAGEMENT AND TREATMENT** of this problem includes reduction of activity and rest. We usually recommend a removable pneumatic cast boot over the next 4 weeks. Stretching of the tight calf musculature helps to reduce the pressure of the Achilles tendon on the growth plate and if tight we will sometimes recommend a night splint along with manual stretching exercises. Thirdly we recommend an orthotic to help reduce the plantar fascia tension on the growth plate through pronation. This is done either with a custom or an over-the-counter type insert. Occasionally anti-inflammatory medication as necessary or complete discontinuation of all sporting activities. The problem is self-limited as eventually the growth plate will fuse but we see many patients that have recurrence calcaneal apophysitis at the beginning of each soccer season. This is from incomplete healing and likely a return back to sports too quickly.
Calf Muscle Stretch: manual stretch or night splint

Cast Boot Immobilization:

Orthotics