Cavovarus Foot Deformity

OVERVIEW
Your child has been diagnosed with cavovarus foot deformity, which means that the arch is higher than normal with turning in at the heel. This deformity may be stable or may worsen with time. The cause of the deformity is often weakness in the peroneal muscles and sometimes the small muscles in the foot due to a neurologic condition. Treatment depends on the age of your child and the degree of deformity. Options range from supportive care with bracing, to surgery for soft tissue releases, tendon transfers, and possibly reshaping or fusion of the bones and joints. Treatment of the foot deformity does not correct the neurologic condition and sometimes deformity will progress with time.

BACKGROUND
Cavovarus foot deformity is a term that describes a broad range of foot shapes, which can range from high arches (pes cavus) to feet with severe deformity with high arches, inturning of the heel, and severe clawing of the toes. The deformity often develops due to weakness and contracture in the peroneal muscles on the lateral side of the leg. Contracture in these muscles pulls the first metatarsal downward, which cause the arch to increase and the heel to turn inward. Sometimes, these changes pull the toes into a clawed position.

In two thirds of patients, cavovarus foot deformity is related to some type of nerve dysfunction leading to contracture of the peroneal muscles. High arches can be the first sign of this condition, or can be a normal thing that runs in your family. If the high arches progressively worsen and the hindfoot turns inward, this is a true cavovarus foot deformity. Some patients with mild deformity do well. Some with more deformity will have symptoms that vary from a mild problem with shoe fitting to significant disability. Some of the symptoms can include: corns and calluses, shoes not fitting very well, stiffness, and pain.

CLINICAL PRESENTATION
Patients typically present for evaluation of the foot shape or due to progressive worsening of the gait or due to pain in the foot or the ankle. Usually, the foot deformity has been present for a long time, but has been gradually worsening. Some patients present for concerns about gait changes and difficulty walking or running. Sometimes, patients complain about pressure related pain in the arch or at the
base of the toes. If these pressure points have been present for a long time, there can be painful calluses. If the heel starts to turn inward, this can put added stress on the outside of the ankle and patients can have recurrent ankle sprains.

**DIAGNOSIS**
The doctor will examine your gait and foot and will watch your foot position during gait and with standing. It is important to see the shape of the arch and the position of the heel. The mobility of the heel will be checked with a test called the Coleman Block Test. Xrays will be taken to look at the shape of the bones. Often the bones and joints will look normal, other than the alignment with the high arch and the inward rotation of the heel. The cause of the deformity is often weakness in the peroneal muscles and sometimes the small muscles in the foot. It is important to be evaluated by a neurologist to discover the cause of the weakness. The most common cause is an inherited peripheral neuropathy called Charcot-Marie-Tooth disease.

**TREATMENT**
Treatment will depend on the severity of the deformity and the cause. Initially a careful investigation is needed to rule out any neurological condition that may be causing the high arched foot. Generally, treatment of the foot deformity can involve several options.

In mild cases, foot pain can be addressed with orthotics or custom shoes to support and protect the foot and relieve pressure areas. If corns and calluses are present, they should be treated with a regular skin care routine.

In severe cases, especially if pain is present and the height of the arch is increasing, surgery may be recommended. Surgery can involve release of contracted soft tissues, tendon transfers to rebalance the foot, osteotomies to reshape the foot, and possibly joint fusions to realign and hold the foot in a corrected position.

**EXPECTED OUTCOMES**
Treatment of cavovarus deformity is directed at reducing pain and improving function. Usually there is an underlying neurologic condition and the foot deformity can worsen if the neurologic condition is progressive.

**MORE INFORMATION**
Further information can be obtained on the internet. Your local public library can help you explore these sources if you are interested. Two good sites for expert and peer reviewed information are the American Academy of Orthopedic Surgeons at [www.aaos.org](http://www.aaos.org) and the Pediatric Orthopedic Society of North America at [www.orthokids.org](http://www.orthokids.org).