Cavovarus Foot Deformity

OVERVIEW
Your child has been diagnosed with cavovarus foot deformity. The term cavovarus means your child has a higher than normal arch and turning in at the heel. This tends to be a deformity that gradually worsens with time. As it worsens, there can be increasing pain at the ankle due to recurrent sprains, painful calluses at the side of the foot or base of the toes, or difficulty with shoe wear. The cause of the deformity is often weakness in the peroneal muscles and sometimes the small muscles in 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 of the foot deformity depends on the age of your child and the degree of deformity and stiffness. 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 can return and require more surgery. The prognosis for function depends on the underlying neurologic condition.

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 and big down, which cause the arch to increase. As this happens, the heel rolls inward. As this process continues, the ligaments in the foot pull the toes into a clawed position due to a windlass effect and the heel can be come stiff and fixed in the inward position. These changes as the progress can lead to repeated lateral ankle sprains, the formation of painful calluses, and difficulty with wearing shoes.
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 true cavovarus foot deformity. The most common neurologic condition is Charcot-Marie-Tooth disease, which is an inherited condition with slowly progressive loss of myelin in the peripheral nerves. Loss of myelin leads to decreased and slowed nerve conduction. The long nerves to the peroneal muscles are often the earliest to show changes with weakness and contracture developing over time. Unfortunately, as the neurologic condition progresses, there can be progressive deformity.

The symptoms of cavovarus foot deformity will vary depending on how severe the condition is and the activity level of the person with it. Many will have no pain or other symptoms. Symptoms may 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, feet stiffness, and recurrent ankle sprains.

CLINICAL PRESENTATION AND DIAGNOSIS
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 presents for concerns about gait changes, where it has become difficult for the child to walk or run. Some times, patients complain about pressure related pain in the arch or at the base of the toes. If these pressure points have present for a long time, there can be painful calluses. If the heel starts to turn inward, this can be added stress on the outside of the ankle and patients can have recurrent ankle sprains.

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 with 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.
TREATMENT
Treatment will depend on what is causing the pain, if anything. 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 progressively increasing in height, 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 internet sites for expert and peer reviewed information are the American Academy of Orthopedic Surgeons at www.aaos.org and www.emedicine.com.

FEEDBACK
If you have questions or comments, please contact the office or submit them to the web site at www.pedortho.com.