**Common Foot Deformities**

Most foot deformities are minor and have a favorable prognosis. However, some may be the first sign of a significant problem. A thorough physical examination of ankle, hindfoot and forefoot regarding position, alignment and flexibility of each segment helps to identify and distinguish between the more common deformities.

**Clubfoot (Talipes Equinovarus)**

• Extreme plantar flexion of the ankle ( equinus )

• Medial angulation of the hindfoot ( varus )

• Adduction and supination of the forefoot ( metatarsus adductus)

All of these criteria must be present to make the diagnosis.

On inspection, the foot appears "down and in" and smaller, with a flexible, softer heel because of the hypoplastic calcaneus. The inside of the foot is concave with a deep skin furrow, and the outside of the foot is highly convex. The heel is usually small and is internally rotated making the soles of the feet face each other.

The type of clubfoot determines the specific therapy:

• Extrinsic clubfoot can be treated by serial casting

• Intrinsic clubfoot may require surgery

Plaster casting should be attempted on all clubfeet, supple or rigid, as soon as possible. Serial casts should be continued for about three months until correction is achieved. The cast needs to be changed twice weekly and than in one to two weeks intervals. If the foot is resistant to this treatment surgical correction is required when the child reaches 4 – 6 months of age.

Persistent cast treatments by experienced clinicians have been reported to be successful in most patients. But if a complete correction can not be reached, surgery by a specialist in pediatric foot deformities should be considered. It is important to know that with a clubfoot the child has not only misshaped and misaligned tarsal bones but the bones are also reduced in size as is the musculature in the posterior compartment of the leg.

**Calcaneovalgus foot**

This deformity is located in the ankle joint and occurs in about 5 % of all newborns affecting more female than male.

How do you diagnose a Calacaneovalgus foot?

The foot appears flat, the heel bone is angled away from the midline and the ankle rests in upward so that the top of the foot is positioning up against the shin. The ankle generally can be flexed downward to only 90 degrees or less. In mild case the foot is flexible and easily manipulated downward in more severe cases this motion is limited.

What is the current management of a Calcaneovalgus foot ?

Generally the treatment depends on the severity of the deformity. Mild cases can be treated with stretching exercises performed with every diaper change bringing the foot passively down and slightly in for a count of 10, repeated three times. If stretching fails after 1- 2 months or in more moderate cases splinting is indicated. For severe deformities serial casting for up to three months is needed followed by a maintenance therapy consisting of nightly splinting for 2 – 10 weeks.

**Congenital vertical talus ( CVT, Rocker-Bottom foot)**

This is a rare deformity which diagnosis is frequently delayed because CVT is often confused with calcaneovalgus. It is a rigid deformity, as opposed to a flexible calcaneovalgus foot, so it does not respond to stretching and, in most cases, requires surgery.

How do you diagnose Congenital vertical talus foot?

The foot examination usually reveals a rigid foot with a convex bottom surface, and a deep crease on the outside top surface side of the foot. The ankle joint is down, while the midfoot and forefoot are extended upward. The dislocation is difficult to feel but a buldging on the inside of the foot is obvious.

What is the current management of CTV ?

Conservative therapy can assist in stretching the forefoot and hindfoot, but surgery is needed in most cases. Surgery is complex and should be performed by a specialist in pediatric foot deformities.

**Metatarsus adductus**

Metatarsus adductus is a very common deformity in infants occurring in one to two cases per 1,000 births. It is defined as a deformity in the forefoot where the bones behind the toes are deviated inwardly.

How do you diagnose a Metatarsus adductus foot?

Diagnosis is made clinically via physical exam of the affected foot. You will find that the forefoot is turned inward causing the outside border of the foot to be curved, giving the foot a kidney bean shape. In infants a simple test named “V” can raise suspicion of Metatarsus

adductus. In this test, the heel of the foot is placed in the "V" formed by the index and middle fingers, and the outsideaspect of the foot is observed from the bottom side for inward or outward deviation from the middle finger.

What is the current management of a Metatarsus adductus foot?

The forefoot in metatarsus adductus can be corrected passively or actively and can be often overcorrected into abduction. Active correction occurs with digital stimulation of the outside border of the foot. Treatment is successful in 90% with passive stretching exercises, with the hintfoot stabilized with one hand and outward pressure applied at the onside of the foot. If that treatment fails by age 3 to 4 months or the deformity is more rigid the child needs to be referred to an Orthopedic Specialist and serial casting may be needed as excessive compensation can lead in the future to the development of bunions, hammertoes, and other disorders.

Only a small percentage of children will need surgical repair, when the deformity is not resolved by age of 18 months.

**Metatarus varus**

Metatarsus varus occurs in about 1 to 1000 birth. Congenital metatarsus varus is a inward orientation of the long bones behind the toes.

How do you diagnose a Metatarsus varus foot?

Metatarsus varus is diagnosed by the following features encountered during the physical exam:

• a deep vertical skin crease on the inside aspect of the foot at the arch

• prominence of the base of the fifth metatarsal

• convexity of the outside border of the foot

• inability to passively align the forefoot with the heel

What is the current management of a Metatarsus varus foot?

Serial solid casting is the initial treatment with weekly cast changes in children under two months of age and biweekly with older children lasting up to three months. The successful correction is achieved when the outside border of the foot is straight.

To maintain the correction a subsequent treatment with a removal cast used at night or a plastic orthotic with a shoe for a minimum of 4 month is needed. This is usually combined with a stretching exercise program.

Indication for operative treatment is given if the correction is not achieved after 3 months casting (children presenting after 8 months of age are known to have a higher failure rate) or if a child

presents having a rigid deformity after the age of two years.