

What is Clubfoot?

Clubfoot, also known as talipes equinovarus, is a congenital deformity of the foot that occurs in about one in 1,000 babies. The cause of clubfoot is not exactly known, but it is most likely the cause of a genetic disorder and is not caused by anything the parents did or did not do. The majority of clubfeet result from an abnormal development of the muscles, tendons, and bones causing the foot to be smaller.

What are the Treatments?

Almost all treatment plans start with serial casting. The Ponseti method is a series of casting that is applied at weekly intervals. The foot is gently manipulated to stretch the short and tight ligaments on the inside, back, and bottom of the foot. The cast will hold the foot in place, stretches those ligaments and relaxing the tissues in order to prepare the foot for the next casting. In this manner, the foot is gradually brought into correct alignment. Treatment varies depending on the severity of the clubfoot, but usually will take between four to eight series of casts.

After casting, a minor procedure may be required to complete the correction of the foot. A small incision is made in the back of the ankle to release the tight Achilles tendon. A final cast will be applied that will stay on for approximately three weeks. During these three weeks, the Achilles tendon regenerates to a proper length and strength. At the end of treatment, the foot may appear over-corrected but will return to normal in a few months. For severe clubfeet, surgical correction may be needed if the attempts at casting have failed to improve the deformity.

Maintaining Correction

To prevent the foot from relapsing, a foot abduction brace must be worn. The most commonly used brace consists of high-top open-toed shoes worn for approximately 23 hours per day for the first three months. During the first week or so, the baby may cry when the bar and shoes are on. It takes a little while for the baby to adjust to the legs being together. It is crucial that the brace not be removed, because recurrence of the clubfoot deformity will almost invariably occur if the splint is not worn as prescribed. To help your baby adjust, play with the baby a lot when the shoes are on and encourage him/ her to kick and move both legs.

After three months, the bar must be worn only for naps and bedtime for the next two to four years. The foot abduction brace is effective in 90 percent of the patients when used consistently. Use of the brace will not delay the child's development with regard to sitting, crawling, or walking.

Long Term Monitoring

Following full correction of the clubfoot, clinic visits will be scheduled every three to four months for 2 years, and then less frequently. The duration of the bracing depends on the

severity of the clubfoot. Do not end treatment early. Yearly visits will be scheduled for eight to ten years to check for possible long term relapses.

Relapses

If the deformity relapses during the first two to three years, casting may be reinstated. Occasionally, a second operation is needed.

Severe Clubfoot

Although the results are better if extensive bone and joint surgery can be avoided altogether, five to ten percent of infants with clubfoot have severe short, plump feet with stiff ligaments that are unyielding to the stretching and casting. These babies need surgical correction after it is clear that attempts have failed to improve the deformity with a series of casts.

Cast Care at Home

- Check the circulation every four to six hours after the application and then four times a day. Gently press the toes and watch the return of blood flow. The toes will turn white and then quickly return to pink if the blood flow to the foot is good. If the toes are dark and cold and they do not blanch, the cast may be too tight. If this occurs, remove the cast and call your doctor's office or go to the local emergency room.
- Note the relationship between the tips of the toes and the end of the cast. If the toes seem to be shrinking back inside the cast, the cast has slipped down and correct pressures on the foot are not being maintained. This might create skin sores. Call the office immediately. The cast will need to be changed.
- Keep the cast clean and dry. The cast may be wiped with a slightly dampened cloth if it becomes soiled.
- The cast should be placed on a pillow or soft pad until the cast is dry and hard. Whenever your child is on his/ her back, place a pillow under the cast to elevate the leg so that the heel extends just beyond the pillow. This prevents pressure on the heel that could cause a sore.
- Change diapers frequently to prevent soiling the cast. Keep the upper end of the cast out of the diaper to prevent urine/ stool from getting inside the cast.
- Notify the doctor if the cast is foul smelling or if there is drainage from the cast, red sore or irritated skin, poor circulation in the toes, cast slipping off, or if the child is running a fever of 101.3 degrees or higher for no explainable reason, such as a cold or virus.
- To remove the cast, approximately one hour prior to their appointment, put your child inside a tub or sink, making sure warm water is getting inside the cast. Soak the cast for approximately 15 to 20 minutes. Be sure to never leave the child unattended while they are in the water. The cast should be very pliable and you should be able to unwrap the plaster. If you are unable to, wrap a soaking wet towel around the cast and cover with a plastic bag.

Wearing instructions for the foot abduction brace

- Always use cotton socks to cover the foot everywhere the shoe touches the baby's foot and leg. Use only one pair of socks.
- If your child does not fuss when you put the brace on, you may want to focus on getting the worst foot in first and the better one in second. However, if your baby tends to kick

a lot when putting on the brace, focus on the better foot first, because the baby will tend to kick into the second shoe.

- Hold the foot into the shoe and tighten the ankle strap first. The strap helps keep the heel firmly down in the shoe.
- Check that the child's heel is down in the shoe by pulling up and down on the lower leg. If the toes move backward and forward, the heel is not down, so you might need to retighten the strap. A line should be marked on the top of the insole of the shoe indicating the location of the tips of the child's toes; the toes will be at or beyond this line if the heel is in proper position.
- Lace the shoes tightly, but do not cut off the circulation. Remember the strap is the most important part. The laces are used to help hold the foot in the shoe.
- Be sure all of the baby's toes are out straight and that none of them are bent under.

Helpful hints for the abduction brace

- Expect your child to fuss in the brace for the first couple of days. This is not because the brace is painful, but because it is something new.
- Play with your child in the brace. You must teach your child that they can kick and swing the legs simultaneously with the brace on.
- Make it routine. Children do better if you make this treatment a routine of their life.
- Pad the bar. Bicycle handlebar tape will work well for this. There are also designer pads that you can find on the internet. By padding the bar, you will protect your child, yourself, and your furniture from being hit by the bar.
- Never use lotion on any red spots on the skin. Lotion makes the problem worse. Make sure the heel is down in the shoes and if any blisters or bright red spots occur, contact your physician.
- If your child continues to escape from the brace, and the heel is not down in the shoe try on of the following:
 - tighten the strap
 - tighten the laces
 - remove the tongue of the shoe
 - try lacing the shoes from the top to the bottom so that the bow is by the toes
 - periodically tighten the screws on the bar

What is the future of children with clubfoot?

The child with a clubfoot, corrected by the Ponseti method described in this brochure, can be expected to have a nearly normal foot. Some minor differences may be noticed. The treated clubfoot is slightly smaller than the normal foot and there is a slight reduction in the size of the lower leg muscles. The amount of difference depends on the original severity of the clubfoot. A small, but insignificant, degree of shortening of the leg may be seen. These differences do not cause problems and often go unnoticed.

Sports

Outcome studies of patients treated by Ponseti management show that children and adults with corrected clubfoot may participate in athletics like anyone else. We know many excellent athletes who have corrected clubfoot including Troy Aikman, quarterback for the Dallas Cowboys; Kristi Yamaguchi, Olympic figure skating gold medalist; Dayman Wayans, actor and comedian; and Mia Hamm, Olympic gold medalist in women's soccer.