

Treating Clubfoot with the Ponseti Method

Introduction

Clubfoot is a common birth defect that affects one in 1000 babies. The term clubfoot is used when a baby is born with one or both feet twisted inward and pointing down.

In a person with clubfoot, the tendons in the leg and foot are shorter than normal. They pull the foot into an abnormal position, which results in bone deformity. This deformity is reversible with early treatment.

Clubfoot is not painful and early treatment can correct almost all cases of clubfoot.

If clubfoot is not treated, the foot will stay twisted. Untreated clubfoot leads to an inability to walk, infection, and chronic pain in the feet. Most cases of clubfoot are easily treatable without surgery thanks to advances in medicine.

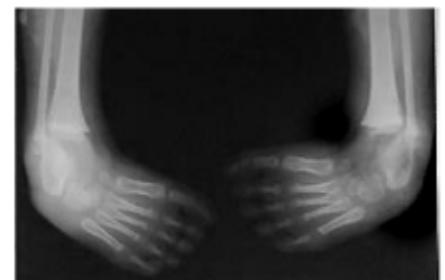
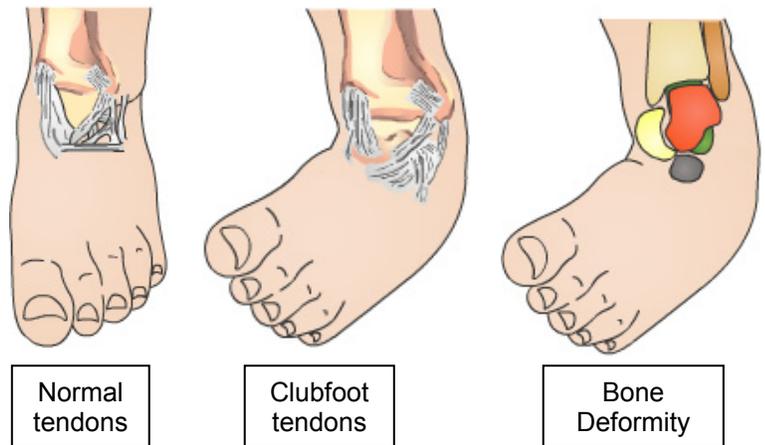
This reference summary discusses how clubfoot is diagnosed and how it is treated using the Ponseti method.

Diagnosis

Clubfoot is easily diagnosed with a simple physical exam.

Sometimes doctors may do additional tests like x-rays.

Clubfoot can sometimes be seen on an ultrasound before birth. Even though it cannot be treated before the baby is born, this kind of early diagnosis can help parents prepare and plan for treatment. The earlier the treatment, the higher the chances are of success.



X-ray of clubfoot

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There are different types of treatment for clubfoot. This tutorial discusses the Ponseti method. If you are choosing this type of treatment, you should find a doctor who is trained in the method.

Ponseti Treatment

Treatment for clubfoot is usually started in infancy. The Ponseti method is the most common treatment option and is usually started in a baby's first two weeks of life. However, successful results can be accomplished for cases with treatment started up until adolescence.

The Ponseti method was developed by Dr. Ignacio Ponseti in the 1940's. It has a success rate of over 95%.

The Ponseti method consists of three stages:

First, stretching and casting to stretch out the tendon and straighten the foot. This period lasts 3 to 8 weeks.

Second, clipping the heel cord before the last casting. This last cast is kept for two to three weeks to allow the tendon to heal.



Third, bracing of the feet. At first, the brace is worn 23 hours a day for 3 months. After that, the brace only needs to be worn at nap time and at night for about 4-5 years.

Each of the above stages is explained in the next sections. Parents play a critical role in ensuring the success of the Ponseti treatments for their children.

Stretching and Casting

Using the Ponseti method, the affected feet are gently stretched and manipulated towards a more correct foot position.

A long leg plaster cast is placed from the toes to the top of the thigh to hold the position in place. Casts must go from the toes to the top of the thigh in order to fully immobilize the foot and allow maximum stretching of the tendons. Short leg casts are not effective because they allow the foot to move and slip from the cast.

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Since babies grow quickly, the cast needs to be removed every 4-7 days. The affected feet are stretched and manipulated again and another cast is then applied.



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The process of stretching and casting is usually repeated 5-8 times for a total of 3-8 weeks to achieve correction.

You need to check the cast and treated foot regularly for potential problems. Check the cast often to make sure that it has not slipped off or out of place.

A properly applied cast should not restrict blood flow. The baby's toes should "pink up" quickly after a gentle squeeze. If not, call your doctor right away.

Call your doctor if the skin at the edges of the cast is sore, red, or irritated.

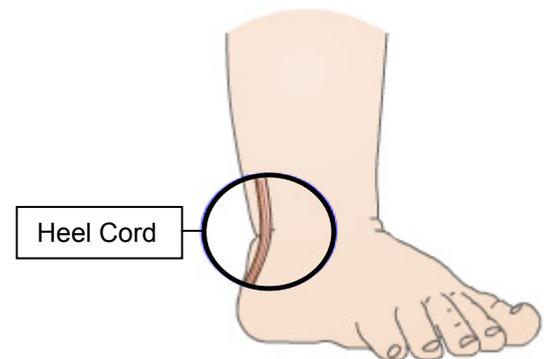
If the tips of the toes seem to be pulling back inside the cast, call your doctor.

Snipping the Heel Cord

Most of the time, before the last cast of the treatment process is applied, the heel cord is snipped. The heel cord is the tendon that connects the heel to the calf muscles. This is done under local anesthesia using a very thin blade. This procedure is called tenotomy.

The last cast must be left on for 2-3 weeks. This allows time for the heel cord to heal. When the final cast is removed, the heel cord will be healed and grown back to the correct length.

Call your doctor right away if there is blood dripping out of the cast. Minor bleeding resulting in an inch long blood stain on the cast is normal.



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Make sure to call your doctor if there are any signs of infection. Signs of infection include:

- Fever
- Chills
- A greenish drainage coming from the cast

A fever is a temperature of 101 degrees Fahrenheit or higher that does not go away.

Bracing

Stretching and casting corrects most cases of clubfoot. But, clubfoot tends to relapse without proper care after the stretching and casting process.

Your child will need to wear a brace in order to prevent the foot from moving back to the incorrect position. A brace consists of shoes that attach to a bar.

The brace keeps the foot from moving back to the incorrect position while the foot grows and develops.

Your doctor should order the brace during the last stretching and casting appointment. The brace should be tailored and fit your child. It is important that the brace is ready when the doctor removes the last cast.

Most clubfoot patients treated using the Ponseti method will use braces for 4-5 years. At first, the brace is worn 23 hours a day for 3 months. After that, the brace only needs to be worn at nap time and at night for about 4-5 years.



You will have regular follow-up appointments with your doctor during the time your child is using the brace, typically every 3-6 months. You will need to bring the brace with you to each follow-up appointment.

It's important for you to follow the doctor's directions to prevent the clubfoot from coming back. Use the braces as directed for the prescribed amount of time. Not following your doctor's directions can cause the clubfoot to come back. This could mean additional stretching and casting along with additional bracing.

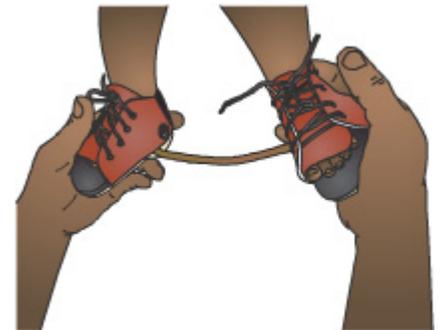
Bracing is necessary for lasting change. Some parents make the mistake of giving their child a "break" or "vacation" from bracing. Skipping bracing for even a few nights can make it difficult to get back on track.

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Try to make bracing fun. You can decorate the shoes or create fun fabric covers for them. Many parents call them the “magic shoes” that will make their children run faster, jump higher, or dance better. Be positive but firm about the braces; your child will follow your lead.

Make sure the braces are laced up or strapped securely. When the shoes are not laced up or strapped tightly enough, the foot can move around in the shoe and rub causing painful blistering. If you see blistering, make sure to treat it right away and check the fit of the brace.

Children grow quickly. Braces or the shoes that are attached to them will need to be replaced as your child grows. Check the braces regularly to make sure they are still in good shape.



Talk with your doctor about the correct angle for the brace. Check the brace regularly to make sure it is positioned at the correct angle. Sometimes the screws loosen or the connector breaks. Knowing the correct angle will make it easier to fix.

Complex Clubfoot

A small number of clubfoot cases can be classified as atypical or complex, and are more difficult to treat. These feet can still be corrected without surgery with skilled adjustments to the Ponseti method.

If your child has one or more of the following seven symptoms they may have atypical/complex clubfoot:

1. A short and fat or swollen foot.
2. The big toe is short and points upward.
3. A crease runs across the bottom (sole) of the foot from side to side.
4. There is a deep crease in the skin above the heel.
5. The heel area is rigidly tilted inward.
6. The foot is rigidly flexed downward and the heel cord is very tight, wide, and long.
7. The calf muscle is very small and bunched up under the back of the knee.

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Having just one of these symptoms does not always mean your child has complex clubfoot. Make sure to talk with your doctor if you notice any of the seven symptoms.

Make sure to talk to your doctor if you notice any signs of treatment problems. Signs include slipping of the cast (the foot appears to move up into the cast), sores on the top of the foot or in the heel, or the cast being kicked off.

If a cast slips, it should be removed right away. If it is not removed right away the foot or skin can be damaged. Plaster casts are the best choice for complex clubfoot cases because soft-casts and fiberglass casts are more difficult to mold. This can lead to the cast coming off or shifting.

When treated correctly, atypical clubfoot requires no more casts than a standard case of clubfoot. Just as with the normal Ponseti method, the snipping of the heel cord is done before placing the last cast. The last cast is left on for three weeks for healing. After correction, the foot's shape, length and flexibility will continue to improve, usually after a few months.

The angle of the foot in the last cast is only 30 degrees compared to 60-70 degrees in standard clubfoot. The brace should also be set to only 30 degrees of outward rotation of the shoes on the affected feet. As the foot improves with time, the angle of the shoe should be slowly increased to eventually reach 50-60 degrees. Generally, this process takes about 6-8 months.



Surgery

Sometimes clubfoot returns even with proper bracing, or is resistant to correction. Your doctor may recommend a surgery called tibialis anterior tendon transfer in the case of clubfoot relapse. During this operation, a tendon in the foot is adjusted to a different position. This helps pull the foot into a more correct position.

There are other types of surgery that can help for special or more difficult cases of clubfoot. Your doctor will discuss these with you if he or she thinks your child needs one. However, extensive corrective surgery is needed in fewer than 2-5% of cases.

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Summary

Clubfoot is a common birth defect that affects one in 1000 babies. The term clubfoot is used when a baby is born with one or both feet twisted inward and pointing down. Clubfoot is not painful and early treatment can correct almost all cases of clubfoot.

Clubfoot can be diagnosed with a physical exam and x-rays. Clubfoot can sometimes be seen on an ultrasound before birth.

Treatment for clubfoot is usually started in infancy. The Ponseti method is the most common treatment option and is usually started in the baby's first two weeks of life. It consists of using stretching and casting to stretch out the tendon and straighten the foot.

Most of the time, before the last cast of the treatment process is applied, the heel cord is snipped. The heel cord is the tendon that connects the heel to the calf muscles. This is done usually under local anesthesia and is called tenotomy.

Make sure to call the doctor if there is excessive bleeding or signs of infection including fever, chills, and greenish drainage coming from the cast. In order to prevent the foot from moving back to the incorrect position, your child must wear a brace. A brace consists of shoes that attach to a bar.

It is important for parents to follow their doctor's directions in order to prevent clubfoot from relapsing. You must use the brace as directed for the prescribed amount of time. Not following your doctor's directions can cause clubfoot to relapse. Braces should not be painful. Check for blisters or discomfort and adjust the brace or shoes right away.

Sometimes clubfoot relapses or does not respond to the stretching and casting treatment. In these cases, surgery may be needed. Surgical options may include tibialis anterior tendon transfer and surgeries that release tight tendons.

Make sure to talk with your healthcare provider if you have any questions or concerns about clubfoot and its treatment options.



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