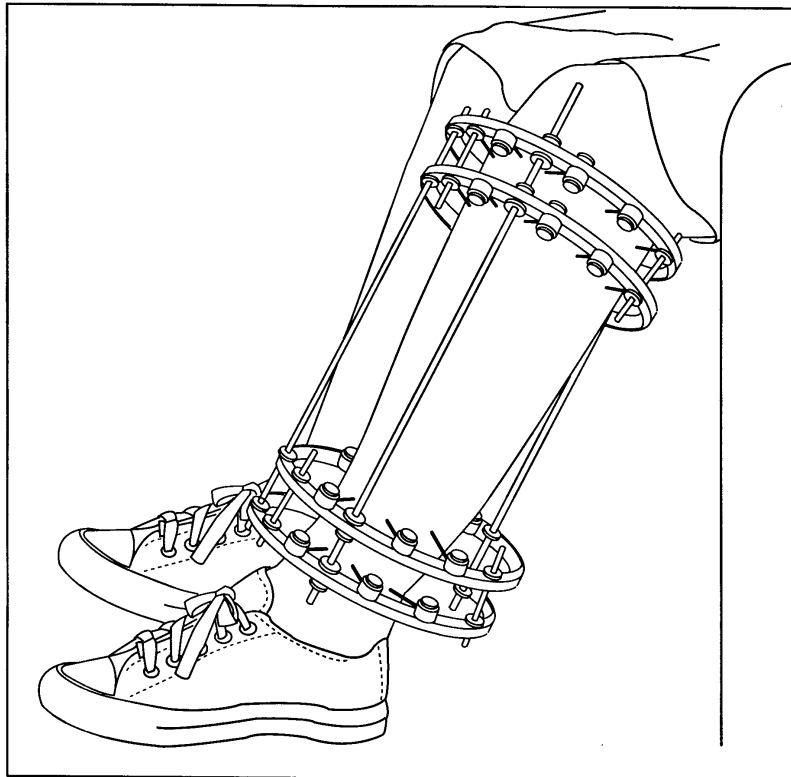


The Ilizarov External Fixator

What is the Ilizarov external fixator?

The Ilizarov external fixator is the name of a device that is used to lengthen bones. It is a very powerful tool that may also be used to stabilize fractures, regrow lost bone or correct deformities in the length rotation or angles of bones.

This picture shows the Ilizarov device on the lower leg.



How does this device work?

The device is attached to two ends of the bone during surgery. When the device is adjusted several times a day, tension pulls the ends of the bone slightly apart. The body's natural healing process fills in this space with new bone.

The bone can be lengthened by about 1 mm each day. The device remains in place until the new bone becomes strong. This process may continue over several months.

What will it be like to wear this device?

You and your child need to prepare yourselves for what is involved with wearing this device.

Your child can expect to wear the device for 6 months to one year. This requires a big commitment of time and effort, for the parents and the child.

Each day that your child wears the device, you or your child must follow strict instructions to:

- care for the many pin sites by cleaning the skin carefully at least 2 times a day and after each shower
- adjust the device using a technique called distraction 4 times a day

It takes time to adjust to wearing this large, heavy device. Your child may feel frustrated or overwhelmed at times.

What happens before surgery?

Your child will have an appointment in the Pre-op Clinic located at 690 Main Street West, Hamilton (West End Clinic).

A child life specialist and a nurse will help you and your child prepare for surgery. Your child will also see the anesthesiologist. You will be given a checklist of instructions to follow the day before surgery.

On the day of surgery, come to the Same Day Surgery Unit at McMaster University Medical Centre, 1200 Main Street West, Hamilton.

Your child will change into hospital clothes and go to the operating room with you.

You may be asked to bring your child's shoes with you so they can be put on after the surgery to act as a splint for the foot.

What happens during surgery?

Your child will be given a general anesthetic so that he or she will be asleep during surgery and not feel any pain.

The Ilizarov device is attached to your child's bone. Small incisions are made in the skin where the wires and pins go. The surgeon may need to make other incisions depending on the type of surgery needed.

Surgery may last from several hours to most of the day.

At the end of the surgery, the operating room staff may put your child's shoe on, to help keep the foot in the right position.

What happens after surgery?

Your child will go to the Post Anesthetic Care Unit (PACU) after surgery. In the PACU, your child will be closely monitored until he or she is fully awake. As soon as possible, the nurse will bring you to the PACU to be with your child.

When your child is fully awake, you and your child will go to the children's ward. The nurses will continue to check:

- your child's vital signs - breathing, heart rate, blood pressure, and temperature
- the blood flow in the limb with the device
- the wire and pin sites
- your child's position and comfort

How can I help my child feel more comfortable?

After surgery, the amount and type of pain is different for each child.

Your child will feel a lot of pain for 3 to 4 days after surgery. During this time your child will be given pain medication through an intravenous line, by epidural or by mouth.

When you go home, the surgeon will give you a prescription for pain medication.

How do I take care of the pin sites?

Your child will have many pin sites from the device. For the first few days, there will be bleeding and swelling around each site. During this time the nurse will clean away the blood around each site. For the next few weeks, clear fluid may drain from each pin site.

Clean and check all pin sites at least 2 times each day and after each shower.

Follow these steps to clean and care for the pin sites:

1. Wash your hands with warm water and soap. Rinse and dry hands.
2. Clean the skin around each pin site with a clean cotton tipped swab (such as a Q-tip™) and the solution prescribed by the doctor. Using a circular motion starting at the pin, wipe around each pin once and throw the swab away. Repeat if needed, wiping in circles, working outwards away from the pin. **Remember to clean all pin sites.** Your child can help you keep count.
3. Any crusts of clear drainage should be removed from around the sites.
4. If the skin is stuck to the pin, gently massage the skin.
5. Check each pin site and call the doctor if you notice:
 - swelling
 - redness or heat
 - change in the type, colour and odour of drainage
 - tightness of the skin
 - change in the colour of the skin
 - increased pain or tenderness
 - pin movement
6. Use a clean cotton swab to put Polysporin® ointment around each pin site. Use each swab only once, then throw it away. Do not wrap anything around the sites.

While this device is in place, your child may have a shower, not a bath. After the shower, dry the surrounding skin well with a clean towel. Then follow the steps for pin site care.

What is "distraction"? How do I adjust the device each day to lengthen the bone?

The treatment process used to lengthen the bone is called **distraction**. Distraction pulls the ends of the bone slightly apart. At first, the nurses will do the distraction. Then the doctor and nurses will start to teach you or your child (depending on his or her age and ability). You or your child can do the distraction when you feel comfortable.

The distraction must be done 4 times a day, following strict instructions. During treatment, you will be given specific instructions if a change to distraction is required. If the distraction is done too often or not often enough, the bone will not lengthen properly. There can be serious complications, including having to have surgery again.

The adjustment required for the distraction depends on the type of Ilizarov device. Your doctor and nurse will show you how to do distraction with your device. Some devices have a dial that you turn with a "click". Other devices are adjusted by making a quarter turn with a wrench at specifically indicated nuts.

If your child's needs are complex, other distraction techniques such as compression and/or rotation are used. The doctor will give you specific instructions.

What activity can my child do?

It may take time for your child to adjust to wearing this device. He or she may find dressing is easier with pants or shorts that have Velcro™ at the sides. The nurse or child life specialist can provide suggestions for your child's clothing.

It is important that your child continue with his or her daily activities and get lots of rest – 8 to 10 hours a day. The physiotherapist will encourage your child to gradually increase his or her activity in the first few days after surgery.

Your child will need to use a walker or crutches, depending on his or her age, weight bearing instructions, balance and ability. This will be painful at first, so your child will be given pain medication before activity.

The surgeon will direct the physiotherapist as to what exercises need to be done and whether weight bearing is allowed. Exercises stretch the muscles around the area where the device is located. Your child will need to do exercises until the device is removed.

As the device is heavy and cumbersome, your child may feel clumsy or unstable when walking. Your child may need help to move around at first. He or she needs to take care that the device does not hit anything.

Exercises are very important. Weight bearing as instructed helps bone to form.

Your child should avoid:

- any activity that would get dirt on or near the pin sites
- sports that would damage or create pressure on the device

When can my child go home?

The usual hospital stay is 4 to 7 days. The surgeon will decide when your child can go home. This will depend on whether:

- your child's pain is well controlled
- your child can eat and move about
- the incisions are healing well
- all the teaching about the adjustment of the Ilizarov device is completed and understood
- all the teaching about self-care is completed
- arrangements are made for any equipment or care needed at home

The health care team will help you prepare to take your child home. Before you can go home, you or your child must be able to do the distraction and care for the pin sites.

The physiotherapist will help you arrange for a wheelchair and possibly a walker to use at home. An occupational therapist may talk with you to see if your child will be able to manage comfortably at home.

A physiotherapist will visit your child at home to make sure your child is moving safely and doing exercises properly. Depending on your child's needs, health care providers from the Hamilton Niagara Haldimand Brant Local Health Integrated Network, HNHB LHIN (formerly Community Care Access Centre) may also visit your child at home.

Your child will need to wear this device for many months. The hospital teacher and the school principal can help you arrange for a home instruction teacher or plan for your child's return to school.

Before you go home, the nurses will review your child's care. They will arrange appointments for x-rays and visits with your child's surgeon at the clinic or the surgeon's office.

When should I call the surgeon?

Call the surgeon right away if you notice your child has any of these problems:

- the pins, wires or rods come loose from the device
- your child feels ill or has a fever; a temperature higher than 38.5°C or 101.3°F
- continued redness, swelling, bleeding or discharge from the pin sites
- pain that does not go away or seems to be getting worse
- unable to eat or drink as usual
- nausea or vomiting

For Dr. Missiuna, call 905-527-3014 (office) or 905-540-0373 (pager).

If you cannot reach the surgeon, bring your child to the emergency room at the McMaster Children's Hospital (the McMaster University Medical Centre site of Hamilton Health Sciences).