**Taylor Frame**
The Taylor Frame is a circular fixator composed of metal rings and six struts. It is connected to the bone with thin wires and thick pins.

The computer generated ring positions are based on measurements taken from x-rays and clinical examinations. The computer then generates a schedule of daily strut settings. The struts are turned daily to straighten or lengthen the bone.

This picture (to the left) shows the bone being lengthened. The fuzzy area shows where the new bone is starting to fill in. As soft bone forms where the bone was cut, the new bone, skin, muscles, and blood vessels are gradually stretched as well.

**Ilizarov Frame**
The Ilizarov external fixator is a circular fixator composed of metal and carbon rings connected by metal rods and clickers.

The Ilizarov fixator is connected to the bone with thin wires and thick pins that are used to hold the bone in place.

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**Familiarity Visit**
The familiarity visit is a required visit that lasts about four hours. Family members are strongly encouraged to be a part of this visit. During this visit, the patient and their family will attend a pre-op teaching class to help prepare them for surgery, and they watch a movie to learn about the lengthening process and pin care. The patient and their family will also meet with Physical Therapy who will demonstrate and explain the exercises required after the surgery, Family Services, and Recreational Therapy.

The lengthening and straightening process requires a great deal of commitment and responsibility from the entire family. The familiarity visit ensures that everyone is prepared and ready for the process. The fact that you are given a date for the familiarity visit and complete it does not mean that we have decided that a fixator is the best thing for you. We use the familiarity visit to get to know you and further study the medical problem in order to be sure that an external fixator is the best solution to the problem and that this is the best timing for surgical intervention.

Dr. Gordon and Dr. Miller, your Attending Surgeons, and Jill Hahn, your Care Coordinator, will work very closely with the patient and their family to make sure all questions are answered.

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**Overview**
This handout will provide you with some general information about external fixators used at Shriners Hospitals for Children — St. Louis to straighten and lengthen limbs.

A surgical procedure called an osteotomy is used to cut the bone so the limb can be straightened or lengthened.

An external fixator is a device on the outside of a leg or arm that is used to hold the bone in place. There are different types of external fixators that are used at the St. Louis Shriners Hospital. Your doctor will discuss the best type of device for your child.
**After Surgery**

You will have your first shower four days after surgery. The nurses will teach you how to care for your pin sites. Despite this, it is very common to get a slight pin tract infection, which is usually treated with oral antibiotics.

Pin tract releases may be needed a few times while the external fixator is in place. A pin release is when the skin around the pin or wire is released to relieve some of the pressure.

After removal of the external fixator, the pin sites are not sutured closed, but are allowed to heal. They usually will close over within four to six days and small scars form. Sometimes these scars are large and dimpled and other times they heal with minimal scarring.

**Complications That May Occur**

- **Infection** – It is not unusual to get a minor pin tract infection that is treated with oral antibiotics.
- **Damage to nerves and blood vessels** – This complication is very rare due to the close monitoring of circulation, sensation, and motion.
- **Bone not healing** – This may result in not getting as much length or correction as desired.
- **Temporary loss of motion in the affected joint** – May require that the lengthening process be slowed as well as more intensive physical therapy.

**Physical Therapy Goals**

**Following the application of a leg lengthening or straightening device:**

The patient will be seen by Physical Therapy one day postoperatively for stretching, strengthening exercises and ambulation training. Therapy will be performed two times a day as scheduled by the therapist.

The patient is expected to cooperate with use of positioning and positioning devices as needed to maintain range of motion. (i.e. positioning in bed or wheelchair as indicated, the use of a dorsiflexion strap, shoe wedges, or additional hardware on the device to maintain appropriate range.)

The patient will initially begin walking on level surfaces; weight-bearing as tolerated on the involved extremity until eventually they can progress to crutches. The patient will be instructed in ambulation up and down stairs. As strength and endurance improve, the patient will gradually be weaned off the use of the assistive device.

The patient’s compliance with their prescribed therapy program is crucial to the success of the lengthening/corrective procedure.

- Parents will be instructed in the patient’s physical therapy program and updated as the patient progresses. Parents are required to participate in the patient’s physical therapy following discharge, as instructed by the therapist.
- Following discharge from Shriners, the patient and the parents will return to clinic and outpatient physical therapy for re-evaluation once a week.
Care Management
The social worker from Care Management will meet with the patient and their family on the day of their familiarity visit to:

- Determine the patient’s and their family’s understanding of their responsibilities during the hospitalization and at discharge.
- Determine the patient’s and their family’s ability to deal with the many challenges that the hospital stay and the procedure may bring.
- Identify resources within the hospital and in the community that may help the patient and family deal with the patient’s ongoing medical needs.
- The social worker provides support and assistance to the patient and family during their hospitalization.

Recreational Therapy
The RT/CL department is available to help provide therapeutic activities and distraction for patients undergoing a limb lengthening procedure. Recreational Therapists and Child Life Specialists are on hand to provide a pre-op education class for the patient and family to help prepare for surgery. Help with pain management is available, as well as various programs to help the patient during his/her stay.

Important Things to Remember
- Therapy is a must, twice a day at home and three times a week with a therapist (once during clinic appointment and twice with private therapist).
- Shower every day to care for pinsites.
- Weight bearing is A MUST.
- Avoid all nonsteroidal medications such as: Motrin, Advil, Aleve, and Naproxen.
- May swim in a chlorinated pool.
- Weekly clinic visits are necessary to check on your progress.
- Must be prepared to be able to attend weekly clinic visits.

For any questions or concerns, call Jill Hahn, Center Care Coordinator:

Jill Hahn
Care Coordinator
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