

A guidebook for **HIP SURGERY** **IN CHILDREN WITH CEREBRAL PALSY**

Department of Orthopaedic Surgery



Children's Hospital Boston

Children's Hospital
Boston

Disclaimer

The information here is a general description of surgery and recovery expectations at Children's Hospital Boston. Your child's surgery will be personalized and may differ slightly from what is described here. Also, everyone recovers from surgery in their own way. You may find your child's recovery is somewhat different from what is described here. Please talk with your doctor about your child's particular surgery.

Contents

Disclaimer	2
The Cerebral Palsy Program at Children’s Hospital Boston.....	4
Subluxed or dislocated hip	5
Botox®	6
Phenol	7
Muscle (tendon) lengthenings.....	8
Femoral osteotomy.....	9
Pelvic (hip) osteotomy	10
Preparing for surgery.....	11
The day of surgery	15
Potential surgical complications.....	19
Immobilization	20
Physical therapy after surgery.....	21
Resources available for families.....	22
Going home.....	24
What to expect at home.....	25
Frequently asked questions	27

Developed by Cynthia T. Thompson, FNP, MSN
Department of Orthopaedic Surgery, 2010
© COSF, Boston



The Cerebral Palsy Program at Children's Hospital Boston

Our Cerebral Palsy Program is a part of the Department of Orthopaedic Surgery at Children's Hospital Boston. The Department of Orthopaedic Surgery at Children's Hospital Boston has a long tradition of over a century of excellence in the care of patients. We have internationally recognized expertise in the diagnosis and treatment of the child with cerebral palsy.

Children with cerebral palsy often cannot exercise or stretch their muscles by running, walking or playing which can lead to poor muscle and bone growth. Weak muscles do not support the bone and joints as well as they should, which can lead to other conditions, like scoliosis, hip dislocation and foot and ankle deformities, like clubfoot and flat foot.



cerebral palsy team

- We offer consultations for the diagnosis and management of cerebral palsy, spasticity, and dystonia (movement disorders).
- We treat more than 1,800 patients each year with a wide range of conditions.
- The goal of treatment is to prevent bone and joint deformity by balancing muscle forces about the joint.
- Treatment may include physical and occupational therapy, bracing and orthotic devices, and/or surgical lengthening when contractures are severe and cause problems with movement, balance and coordination.
- Secondary conditions can sometimes be prevented or treated by managing spasticity.



Subluxed or dislocated hip

In subluxed hips, the head (ball) of the femur (thigh bone) moves out of its normal, centered position in the acetabulum (cup, socket), but not over the edge completely. In dislocated hips, the ball slides out of the socket altogether. In children with cerebral palsy, this hip problem can result in pain when sitting in a wheelchair or with walking, or may even make it difficult or impossible to walk. One leg can look shorter than the other. It can become painful for the caregiver to perform regular activities of daily living, including moving the child and hygiene.

Subluxed hip

The symptoms of subluxed hip you may see include limited range of motion, or pain with motion of that hip. Sometimes parents notice this while performing daily hygiene, or when positioning patients. You may notice one leg begins to look shorter than the other, or the hips just don't look the same. Your child may not be able to sit comfortably any more if pressure is placed on that hip. If your child is walking, he or she may begin to limp, or simply begin refusing to bear weight and walk.

Dislocated hip

The symptoms of dislocated hip may include severe pain in the hip or knee of the affected side. Hip swelling or obvious deformity may occur. Your child may be unable to move the hip, or be having a lot of muscle spasms, numbness or weakness. Again, he or she may not be able to walk, or bear weight in a stander or gait trainer.

The reasons this happens include:

- The hip socket is too vertical. It does not cover the head of the femur well.
- The hip socket is too shallow. If it is not deep enough, the head of the femur will slip out.
- The upper part of the femur is not angled enough, so it does not point the ball into the cup correctly.
- Muscles attached to the top of the femur may be very tight, and contribute to pulling the femur out of the cup.

There are several surgical procedures done at Children's Hospital Boston for this condition.

- Botox and phenol injections
- muscle tendon lengthenings
- femoral (shortening) varus derotational osteotomy
- pelvic osteotomy



dislocated hip

Botox®

Botox® (Botulinum toxin type A) has been used as an aid in the treatment of cerebral palsy since the late 1970's. It was officially approved in Canada in 1995. It is not yet officially approved for use in children younger than 12 years of age in the US, and so it is used "off-label".

Botox® is injected in very small amounts into the muscle to decrease spasticity in patients with cerebral palsy. The effects are usually seen within a few days to 2 weeks, and can last 3-6 months. As effects begin to wear off, parents and children may begin to notice gradual fading of its effects over several weeks. Injections can be repeated after at least 3 months.

Benefits to Botox® use may include:

- relaxation of muscle
- decrease in spasticity
- easier to stretch the muscle
- improves ROM
- improves tolerance for braces (AFO's, etc)
- decreases scissoring of the legs
- helps with progressing to standing, and more comfortable gait

How it works:

Spasms in CP happen where the nerve enters the muscle, at the "neuro-muscular junction". When the nerve impulse enters the muscle, it causes the spasm. Botox® partially "weakens" over-active spastic muscles. This helps the muscle stretch more easily. Joint ROM may then improve, and fixed deformities called contractures may be less likely to develop. Children will continue to wear AFO's or other braces. Physical therapy works with the child to continue the stretching and stimulate healing and growth of the muscle. After therapy, there is no restriction to movement. Results are not the same for every child, **results will vary**.

Not every child needs Botox®. Some spasticity is good and needed to be able to stand, walk, etc. If all the spasticity is taken away, it would result in too much weakness.

Botox® by itself is not complete management for children with cerebral palsy. It is not a cure for spasticity. It is used as part of a complete plan to include assessment by orthopaedic physicians, physiatrists, physical therapists, occupational therapists, orthotists (brace shop) and others.

Phenol

Phenol is a chemical that is placed along a nerve to block nerve impulses before they get to the muscle. It was first used in the 1960's for this purpose. The result is decreased contraction and spasticity of the muscles. It may also help relieve the pain associated with stretching after Botox® injections, and bracing or casting.

Phenol is used as an aid in the treatment of spasticity in children with cerebral palsy. The treatment involves all muscle groups the nerve supplies. It treats a group of muscles with one injection, where Botox can be used with selection for specific muscles only. Sometimes, Botox® and Phenol are used together in the same child during the same procedure. Phenol is not useful in the treatment of fixed contractures.

Muscle strength and spasticity return as soon as the nerve regenerates.

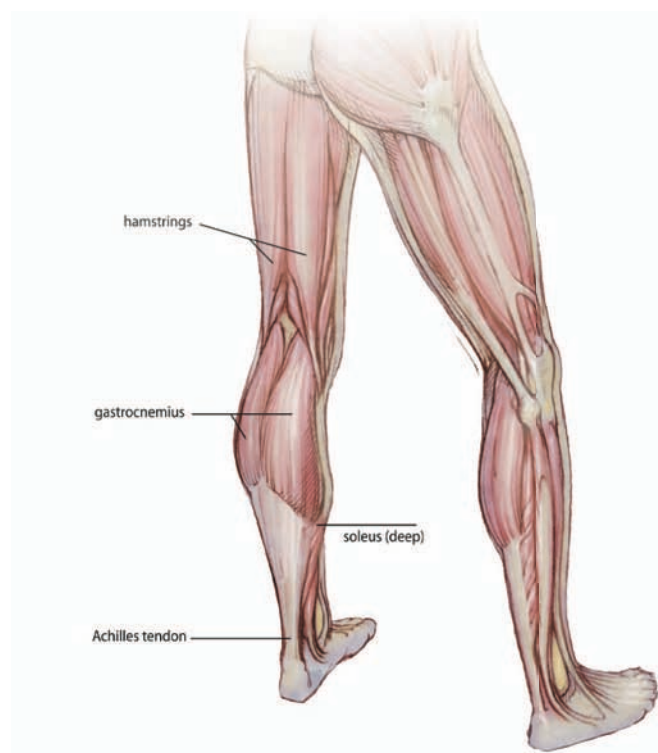
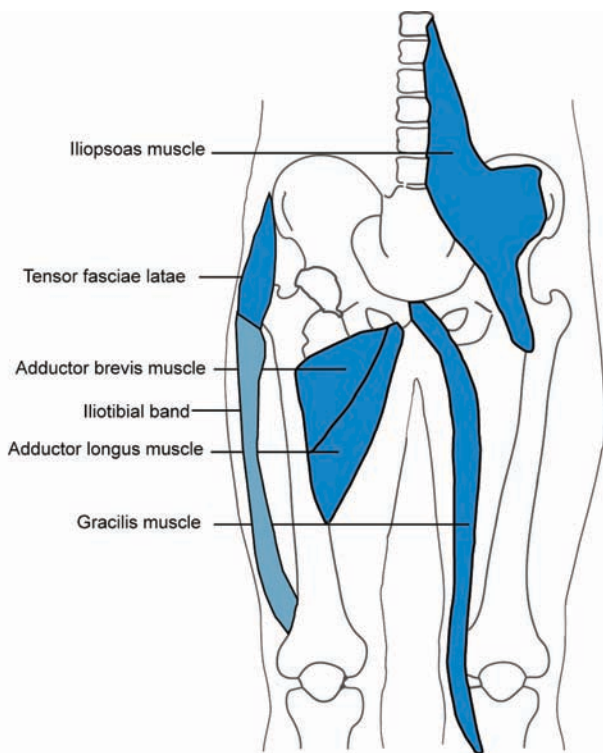
Results will vary. Phenol is not a cure for spasticity or cerebral palsy.

Like Botox®, it is used as part of a complete management plan involving all providers in the child's care.

Muscle (tendon) lengthenings

Sometimes the muscles attached to the legs and hips become very tight and pull on the bones, helping to pull the ball of the femur out of the cup. This makes it hard to straighten at the hips, knees and ankles. These muscles can be “lengthened” to relax them a little and allow some more stretch. Sometimes this is done at the same time as Botox® and Phenol. Lengthenings may be done when subluxation is noted, when the head of the femur is not completely out of the joint. Usually the child is less than 8 years old. The child may have the same lengthenings done on both sides, or different tendons may need to be lengthened on each individual side, depending on the position of the hips. Your doctor will explain which tendons are going to be lengthened in detail. Sometimes this is done at the same time as the bone surgery.

- The **iliacus** and **psoas** muscles are inside the pelvis wall. They help to bend at the hips.
- The **adductors** and the **gracilis** muscles are inside the thighs and help pull the legs into the body.
- The **tensa fascia lata** and the **iliotibial band** are on the outside of the upper thigh and hip. They act to pull the hip out to the side.
- The **hamstrings** are in the back of the thighs and help to bend at the knees.
- The **gastrocnemius (gastroc)**, and **soleus** muscles are behind the calf and the gastrocnemius muscle attaches to the ankle at the heel, as the Achilles tendon.



The word osteotomy means to cut the bone.

Tendon lengthenings are done through a small incision in the skin. A small incision is then made in the sheath or thin covering over the muscle. This makes it easier for the muscle to relax and stretch a little more.

If your child has just tendon lengthening done, he or she will have dissolvable sutures and small dressings. If the hamstrings were lengthened, your child may be placed into knee immobilizers. If the heel cords are lengthened, your child may be placed into a removable boot or into casts. Sometimes, both boots or casts and knee immobilizers are used if both hamstrings and heel cords are lengthened.

Femoral osteotomy

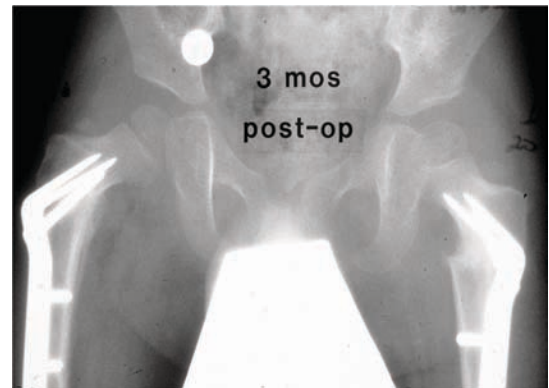
Sometimes the femur or thigh bone is too straight (valgus), and not pointing into the hip correctly or the head and neck point too far forward (anteversion). The doctor may decide to cut the femur bone, reposition it to point into the hip at a better angle, and then reattach it with a plate and screws. Sometimes the bone also has to be turned or rotated to allow the knee to face forward. This is called a femoral osteotomy.

The femur neck is re-attached to the rest of the bone with a plate and screws. These are left in the bone while it heals. They do not need to be removed, but if they cause any discomfort or are bothersome in the future they can be removed in a return to surgery.

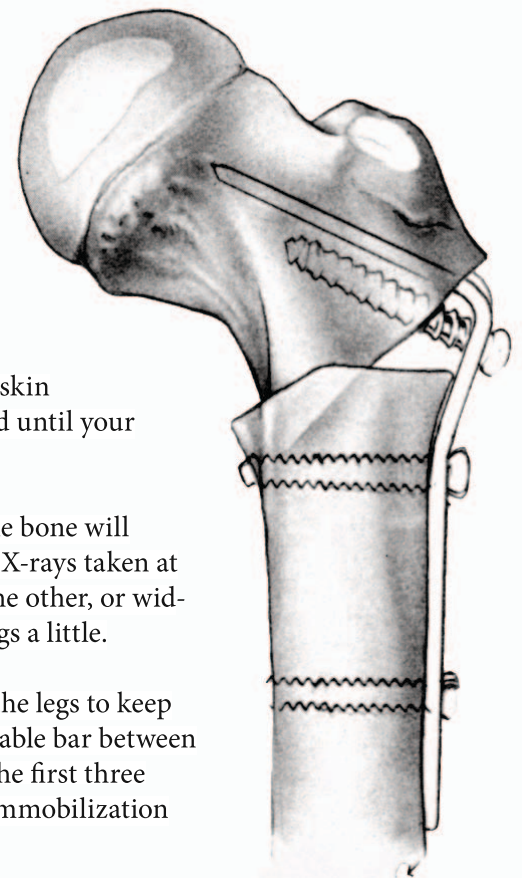
Your child will have dissolvable stitches that do not have to be taken out. The skin of the incision will also be covered with a dressing, which will not be removed until your post-op visit unless it has to because it got dirty or wet.

Bone healing can be seen on X-ray as early as three weeks after surgery but the bone will not be fully healed for 8-12 weeks. The metal plate and screws can be seen on X-rays taken at your post-op visits. After the surgery, the leg may look slightly shorter than the other, or wider at the hip. This surgery may also result in helping to release tight hamstrings a little.

Your child may be placed in knee immobilizers, with a foam wedge between the legs to keep them separated. Or, he or she may be placed into two long casts with a removable bar between his or her legs (*see page 20*). The child needs to wear this immobilization for the first three weeks, full time. Then, after your first post-op visit, your child may take the immobilization off for bathing only.



post-op femur derotational osteotomy



femur derotational osteotomy

Pelvic (hip) osteotomy

The word osteotomy means to cut the bone.

A pelvic osteotomy is done to help create a better shaped cup to hold the ball of the femur. There are many types of pelvic osteotomies, and they all result in a better shaped cup.

The type of pelvic osteotomy your child will have depends on:

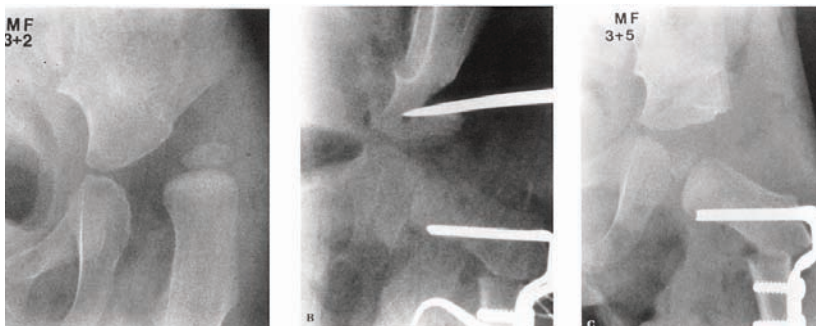
1. Your child's age.
2. His or her ability to stand and walk, with or without equipment, and
3. The extent of the changes to the shape of the head of the femur and the acetabulum.

Your child will have dissolvable stitches that do not have to be taken out, and will have a dressing on over the incision. This will be left in place until your post-op appointment, unless it has to be changed because it got wet or dirty.

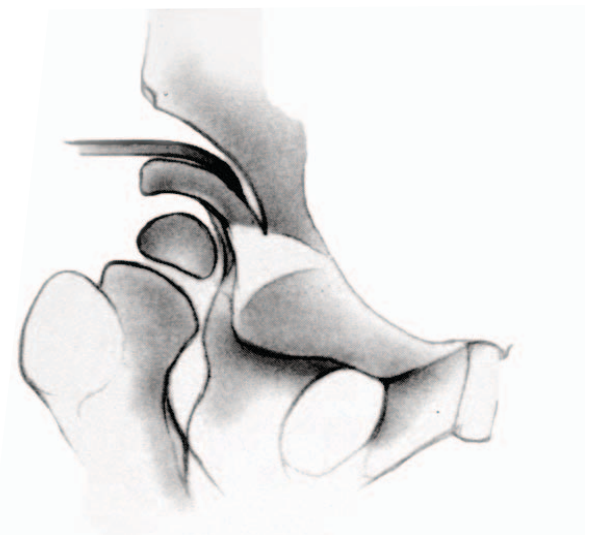
Your child may be placed in knee immobilizers, with a foam wedge between the legs to keep them separated. Or, he/she may be placed into two long casts with a removable bar between his or her legs (*see page 20*). The child needs to wear this immobilization for the first three weeks, full time. Then, after your first post-op visit, your child may take the immobilization off for bathing only.

Pemberton osteotomy

A Pemberton pelvic osteotomy may be helpful for children who are young (less than 8 years old), and who have open growth plates in the pelvis (triradiate cartilage). The doctor will cut the pelvic bone above the cup, using the open growth plate as a hinge. He or she then creates a wedge-like opening in the cut, bringing the roof of the cup down over the head of the femur, covering it better. The wedge is then filled in with bone to hold it in position.



l-r before, during, and after, hip wedge osteotomy

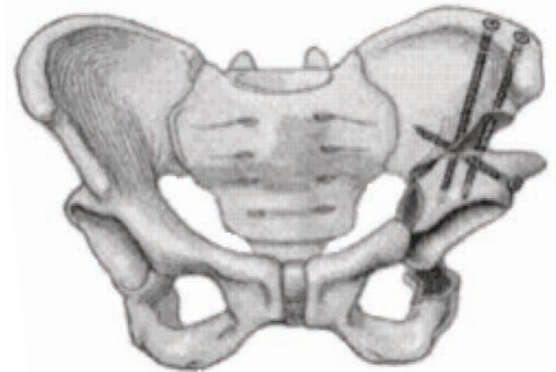


hip wedge osteotomy

Ganz periacetabular osteotomy

“Periacetabular” means “around the acetabulum (cup)” If your child has a closed triradiate cartilage, and walks independently or is a community walker with crutches or a walker, he or she may benefit from a Ganz periacetabular osteotomy. The doctor cuts the bone of the pelvis around the cup, and rotates it to bring it into better position to cover the femoral head better. Then, 3-4 screws are placed into the bone to hold it in position. These are seen on X-ray postoperatively.

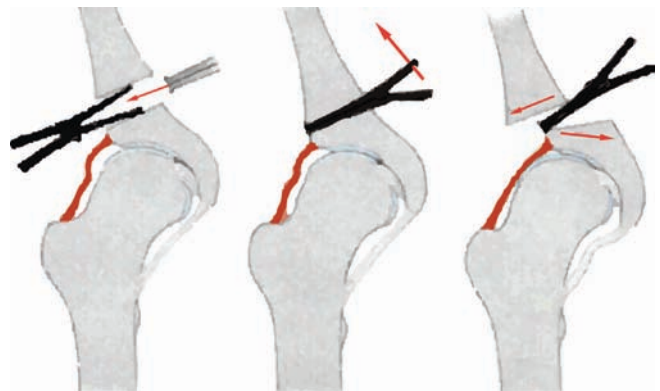
The triradiate cartilage is a growth plate in the hip.



Ganz periacetabular osteotomy

Chiari osteotomy

Sometimes a skeletally mature child (more than 8 years old, closed triradiate cartilage) has a lot of degenerative changes to the head of the femur and the acetabulum. The shape of the head of the femur may make it impossible to move it back into the cup from its dislocated position. This child is usually not walking, but may be able to stand with assistive devices. For this child, a Chiari osteotomy may be helpful. A Chiari osteotomy creates a shelf that helps to cover the head of the femur. The doctor makes a cut in the pelvic bone over the cup. The cup is “shifted”, creating better coverage of the head of the femur. Again, 3-4 screws are placed to hold the bone in position.



Chiari osteotomy

Preparing for surgery

Preoperative (Pre-Op) clinic visits

An appointment will be made for your child with the Pre-Op clinic and with the Orthopaedic clinic before your child's surgery. Our surgical coordinator will make this for you. You and your child will meet with the orthopaedic mid-level provider in the orthopaedic clinic. She will explain more about your child's surgery and answer any questions you may have about your child's hospital stay and recovery. She will ask questions and review your child's health history, perform a physical examination, and discuss bracing and/or casting. During your preoperative visit, you also may have x-rays or other tests done. Your child may have blood tests done if the surgeon has requested them. You may sign the consent form for the surgery at this visit.

You and your child will meet with the nurse practitioner in the Pre-Op Clinic. Your child will have a complete health history taken, and a physical exam. She will make sure all of your child's physicians know about the upcoming surgery and collect all recommendations. She will review all of your child's medications. Please tell her if your child has any allergies, or if your child is taking any herbal supplements. You and your child also will meet with the anesthesiologist, to talk about the pain medication your child will receive during and after the surgery.

Your child's surgeon may suggest parents or family members donate blood for your child before the operation (designated donor). In some cases, your child may be able to donate his or her own blood (autologous blood donation). This blood would be given to your child during or after the surgery if needed. Your surgical coordinator can help to arrange blood donation here at Children's. You can reach the Blood Donor Center at 617-355-6677 to arrange for autologous donation. There may be a fee for this service depending on your child's insurance.

Often local Red Cross chapters and hospitals offer this service and will send your child's blood to Children's before the surgery. There is a fee for this service which is not covered by your child's insurance.

If your child is younger than 10 years old, weighs less than 80 pounds, takes certain medications, or has other health problems, he or she may not be able to donate blood. In the case where no blood can be donated, blood from the blood bank will be available.

If you would not like your child to receive blood or blood products during or after surgery, please discuss this with your doctor, pre-op nurse and anesthesia team before surgery.

Will blood be needed?

All patients lose some blood during hip and femur surgery because of rich supply to tissues and bones around the hip. Lost blood is collected in the operating room through a cell saver system, filtered, and can be given back to your child through the IV line during the surgery. However, some patients will need additional blood transfusions during or after surgery.

Medications

It is very important that you tell your doctor or mid-level provider about all medications your child is taking. Be sure to include all herbal remedies, prescription medicines, including any form of birth control pills, patches, etc. as well as over the counter medicines. Bring all the bottles with you to your child's pre-op visit and have them with you on the day of the surgery.

If you are planning to have your child receive any vaccinations, including H1N1 or flu vaccine, these must be given **no closer** than one week (7 days) **before** the scheduled surgery.

Medications to avoid

Some medications affect your child's blood and may cause excessive bleeding during an operation. So, certain medications should **not** be taken for two weeks before the surgery. These include:

- aspirin
- ibuprophen
- Advil®
- Aleve®
- Motrin®
- Nuprin®
- Naprosyn®
- some herbal remedies

Many medications may contain one of these ingredients. If you are unsure about whether your child can take a medication, talk with your nurse or doctor. Your child may use Tylenol® (acetaminophen) during the two weeks before the surgery.

Prescription medications

Be sure to tell your doctor or mid-level provider if your child is taking **any** prescription medicines. Any birth control pills or patches should be stopped **one month** before the surgery because of the risk of blood clots.

Constipation

If your child is constipated regularly, your doctor or nurse may suggest medication to help make your child regular before the surgery, to help avoid problems with constipation after surgery.

Eating and drinking guidelines for surgery

For your child's health and safety, eating and drinking (including nutrition via g-tube) are not allowed for a certain period of time before surgery. It is important that you and your child follow these directions. **The surgery will be cancelled if you do not follow these guidelines.**

Do not feed your child a large meal the night before surgery, since the digestive system will slow down after surgery. All that food from a big meal may make your child throw up after waking from anesthesia.

clear liquids	stop 2 hours before surgery/procedure
breast milk	stop 4 hours before surgery/procedure
formula (Children over the age of 1 yr must stop formula 8 hours before surgery/procedure.)	stop 6 hours before surgery/procedure
solid food (including: candy,gum, non-human milk (cow/soy/etc)), thickened formulas including commercial ones such as AR (which is added to rice).	stop 8 hours before surgery/procedure
G-tube formula feeding should be stopped after midnight except for children under 1 year of age who may continue g-tube formula for up to 6 hours prior to the time of surgery/procedure.	
Clear liquids include: water, apple juice, Pedialyte®. No carbonated beverages should be consumed during the 8 hour pre-surgery/pre-procedure period.	

Visitors

Family members are welcome to visit anytime. The hospital visiting hours for friends are from 12:00 p.m. until 8:00 p.m. Family members must wear a visitor's badge which they will receive at the time of the child's admission or from the Parking and Transportation Office, located on the ground level of the Children's Hospital Boston parking garage at 283 Longwood Avenue, Monday through Friday. Visitors under 12 years of age are required to get a visitor pass at the information desk located in the main lobby of the hospital.

One parent may stay with the child overnight. In the room, there is a chair that opens into a cot. Your child will probably have a roommate. You may want to discuss visiting and overnight plans with friends before your child's hospital admission. **Please note: the above information is for Children's Hospital Boston only. If your child is having surgery at another facility, please contact them directly for visiting rules.**

The day of surgery

On the morning of surgery, return to the Pre-Op Clinic ninety minutes (1½ hours) before the time your child's surgery is scheduled. The nurse or mid-level provider will re-check your child's temperature, heart rate, breathing, and blood pressure and ask when he/she last ate or drank. Your child will change into hospital pajamas. Then, you and your child will be brought to the Pre-Op holding area (near the operating room).

The Pre-Op holding area

You will talk to a nurse from the Pre-Op holding area, the nurse from your child's operating room, your child's anesthesiologist, and your child's surgeon. The anesthesiologist may start an IV. If your child is having blood drawn on the day of the surgery, it may be drawn at this time. If your child is difficult to start an IV on, or is very anxious, the team may wait until your child is asleep before starting the IV and drawing the blood.

The surgeon and the nurse will confirm with you the exact operation that your child will have and which side of the body is to be worked on. The hip or leg having the surgery will be marked with a pen and the surgeon will sign his or her initials on the body part. Many people will verify this with you before the surgery. This is part of the patient safety guidelines in place at Children's Hospital Boston.

If the plan is for your child to go into a cast after the surgery, you and your child may choose the color of the cast at this time. After the hip and/or leg is marked, the anesthesia doctor may give your child some medicine through the IV to help your child relax.

The family waiting area

After your child is taken into the OR by the anesthesia team, the rest of the family will be escorted to the Family Waiting Area. You can wait there until you can visit your child in the recovery room immediately after the surgery.



Pre-Op Clinic



Pre-Op holding area



family waiting area

Either in the Pre-Op holding area or in the family waiting Area, you will meet the surgical liaison nurse. During surgery, the surgical liaison nurse will check with the operating room every 90 minutes and give updated information to you. You may also leave a cell phone number with the liaison nurse since the duration of the surgery is somewhat unpredictable.

When the surgery is done, and the child is brought to the recovery room, the surgical liaison nurse will bring two family members at a time to see the child.

The operating room

In the operating room, your child is covered with warm blankets and given intravenous medication to help him or her relax. The room is warm, soft music is playing, and your child is surrounded by people whose only job is to take care of him or her. Sometimes parents choose to stay with their child until he or she is under anesthesia and asleep. This is your personal choice.

If an epidural analgesia is to be given in addition to the general anesthesia, your child will lie on his or her side or sit comfortably with his or her head resting comfortably on pillows while a tiny epidural catheter is inserted through a small anesthetized area in the lower part of the back. After the epidural catheter is gently taped into place, your child will lie on his or her back with pillows under the knees. Anesthesia is then given through the IV. Your child will breathe oxygen through a soft mask and your child will drift off to sleep. When your child is under general anesthesia, a catheter will be placed into his or her bladder. An additional IV may be inserted as well. Next, the entire hip and leg area, up to the waist, will be cleaned with an antiseptic solution. After the surgical drapes and towels are placed around the surgical area to keep it sterile, the surgery will be performed.

It is usually about 60-90 minutes from the time your child enters the operating room until the operation is started. Depending on the complexity of the surgery, 6-8 hours may pass from the time you leave your child until you meet him or her again in the recovery room. Only a portion of this time is spent doing the actual surgery. Once the surgery is completed, the incision(s) will be closed with dissolvable sutures, a type of glue may also be placed on the skin, and a sterile bandage will be applied. Your child may be placed into knee immobilizers with a foam wedge placed between his or her legs. If your child will need casts, these will be placed at this time, in the operating room. The decision for casting or immobilizers is made with the surgeon at your pre-op visit, and depends on the type of surgery your child is having.



operating room

After the surgery is finished, your child will slowly become more awake as the anesthesia wears off. Once he or she is alert, your child will be lifted onto his or her bed, and placed on his or her back. You will see your child in the PACU (Post Anesthesia Care Unit).

The Post Anesthesia Care Unit (PACU)

Your child will be transported to his or her bed in the PACU directly after surgery. He or she will be groggy and sleepy. Sometimes the child does not really remember the PACU.

A nurse will check your child's blood pressure, heart rate, breathing and circulation. He/she may have a mask blowing a cool oxygen mist until your child is completely awake. If your child has pain, the nurse will give some pain medication through the IV or epidural catheter. Your child's IV and urinary catheter will stay in place for several days. If an epidural catheter is used, it usually remains for three days. The child will not be able to get out of bed until the epidural catheter is removed. Your child will have at least one IV catheter that will stay in for the whole time you are in the hospital.

Your child may have two visitors at a time in the PACU. After a stay of 2-3 hours in the PACU, your child will be transported, in the bed, to the inpatient surgical specialties unit for the remainder of your stay. Some of our more complex children may be transferred to the ICU (Intensive Care Unit) for a time. You can go with your child to the ICU and stay there with him or her. Depending on your child's recovery, you may be transferred to the inpatient surgical specialties unit, or you may continue to be in the ICU, and can be discharged from the hospital from there at the end of your stay.

After you have arrived on the surgical specialty unit, you will meet your child's nurse and get settled into your room. Your child's temperature, heart rate, breathing and blood pressure will be checked. All rooms have a TV and VCR.

Turning and positioning

Every few hours, your child will be repositioned to help decrease pressure areas on the skin. The child also may be on a special mattress. There should be support under the heels to prevent pressure sores. The nurse will help reposition your child in the bed. Most children are in bed for 2-3 days after the surgery, depending on the type of surgery they had. If the child had only tendon lengthenings, he or she will be able to be up and around sooner. If the child has an epidural, they will be in bed until the catheter is removed. Then your child will be out of bed with the help of the nurses and/or the physical therapists.

Eating and drinking

The operation, anesthesia, and medications can make your child's digestive tract slow down for several days, which decreases his or her appetite. At first, the nurse will give your child water or ice chips. **Go very slowly.** Remember, your child's stomach has been empty and will be slow to wake up. If your child has a G-tube, nutrition will be restarted slowly as bowel sounds return. Sometimes, children need to receive nutrition through an IV line until they are ready, this is called total parenteral nutrition (TPN). Once your child is drinking, he or she can start taking pain medication by mouth. He or she will gradually be able to eat regular foods in small amounts. Don't worry if it takes several weeks for your child's appetite to return to normal. Your child may be constipated at first. Your child will be given medicine to help with this. He/she needs to have a bowel movement before you leave the hospital.

Showering and bathing

Your child's first surgical dressing may or may not be changed before you go home. The dressings do not need to be changed routinely, and often will not be removed until the first post-op visit. If the dressings do become dirty, or begin to come off on their own once at home, they can be changed. Once home, if the dressings become soaked with a lot of drainage from the wound, **call the orthopaedic clinic at 617-355-6021 as soon as possible.**

Casts cannot come off and **cannot get wet.** Wet casts make the skin break down and your child could get an infection. Sponge baths may be needed for the first several weeks after your child leaves the hospital. Once home, if the cast becomes wet at either end, **please call the orthopaedic clinic as soon as you can at 617-355-6021** to come in to have the cast changed and the surgical incisions looked at.

Pain medication

Your child will be visited by a group of pain treatment specialists. These doctors and mid-level providers will assess how your child is feeling. When able, they may use a "pain scale", which may be a number scale (0-10) or pictures of faces. If your child is not comfortable, tell these doctors, nurses or mid-level providers so that changes in pain medications can be made. Parent input is important, as you know your child best, and are the best at reading their responses.

The amount of pain medication is based on your child's weight, age, diagnosis, and type of surgery. Sometimes parents are worried that pain medication may be habit-forming and may try to limit the use. It is unlikely that your child will form dependence as long as he or she is taking the medication as prescribed for the pain. Pain medication will help your child change positions easier and breathe more deeply after surgery. Your child may be given a medication to help stop muscle spasms. This is an important part of your child's pain control plan, and should be taken as directed.

As always, if you have any questions or concerns, **please ask the doctor, nurse or mid-level provider** caring for your child.

Once your child begins to drink and eat small amounts of food (or starts to take food through his or her G-tube), the IV may be removed. He/she will take pills or liquid medication instead of using the epidural or other IV medication for pain. Except for the tug of the tape, IV removal is not painful.

Wound drainage

If your child had a drain placed in the surgical wound, it will be removed one or two days after the surgery. This is not painful.

Urinary catheter

While your child is asleep during the surgery, a nurse in the operating room will put in a urine tube known as a catheter. Your child will not feel this being done. The catheter allows for urine to drain through a tube and into a plastic bag. The nurses will measure the amount of urine produced. A few days after surgery, the tube is removed. Removing the tube does not hurt, but may feel a little odd. If your child is normally diapered, he or she can continue with this. A few hours after the tube is removed, your child will need to go to the bathroom.

Potential surgical complications

As with any surgery, a major hip surgery involves some risk of complications. Though not frequent, complications include surgical wound infection, injury to major nerves or blood vessels, and non-union (failure of the bone to heal following the osteotomy). Your doctor will discuss the specific risks associated with your child's surgery with you as part of the planning process and again at the preoperative visit.

Average hospital stay:

- Pelvic osteotomy.....5 days**
- Femoral osteotomy.....3-4 days**
- Tendon lengthenings.....1-2 days**
- Any combination of the above.....5 -7 days**

Immobilization



A-frame



knee immobilizers with foam wedge and a short leg cast



Maple Leaf abduction brace

Physical therapy after surgery

While you are in the hospital, your child may see a physical therapist to assist you with transfers and positioning in the wheel chair. Due to the post operative casting or immobilization, your child will probably not fit in their own wheel chair, if they have one. The discharge planner will help you rent a reclining wheel chair which can be used for positioning and moving about your home. This chair is **not** crash tested and **can not be used in a vehicle** for transit.

Physical therapy for your child's legs will resume after the three week post operative visit. At that point range of motion exercises and gentle strengthening will begin. If you have access to a pool, beginning therapy in the pool will be helpful. Your child may be able to stand in the water. If your child only had muscle lengthenings, he/she may be allowed to begin standing and weight bearing on land. At this point, if comfortable, your child should be able to sit in his/her regular wheel chair. If surgery was done on a bone, standing and weight bearing will need to wait until healing has taken place at somewhere between 6 -12 weeks post operatively depending on your child's bone healing. Your surgeon will look at the healing on the X-rays and let you know when it is safe to stand on land.

Twelve weeks post operatively you child can resume aggressive physical therapy once approved by your doctor. Strengthening, stretching, and gait training are all indicated. It will probably take 6 months for your child to get back to baseline following surgery, and improvements can occur for up to a year.

Resources available for families

As you plan for surgery, there are so many details to keep in mind. Social workers are available to facilitate some of the “non-medical” issues related to admission and post-operative recovery. Social workers are part of the multidisciplinary health care team, and work as licensed professionals in providing a spectrum of psychosocial services to enhance the quality of care. Adjustment to illness and, specifically, to hospitalization, is very stressful. It is important to plan ahead, not only in terms of medical needs for recovery, but also for general support for the patient and the caregivers. Here are some of the resources available during admission to best help during this stressful time:

Care Management Center

- Discharge planning and equipment needs.

Center for Families

- Library, internet access and general resource for programs to help families, including parking program for income eligible families.

Chaplaincy/Pastoral Care

- Provide spiritual support, services and resources.

Child Life

- Developmentally appropriate activities for patient; facilitate tutoring during admission.

Psychiatry Consult Service

- Assess and work with patient during stressful admission to address overall mental health and coping.

Social Work (inpatient)

- Provide support to family during admission; help with problem solving and community resources.

Before and after admission, questions may arise about resources such as finances, guardianship, education, transportation and adjustment/coping. Some further resources to utilize:

Financial Counselors

- Can address insurance questions specifically around Mass Health coverage and applications.

Social Work (clinic based)

- Ongoing support, resource needs assessment, coordination of services.

Transportation is an often identified issue following hip surgery. There are several options:

PT1 (prescription for transportation through MassHealth)

- If patient has Mass Health Standard, a PT1 can be submitted for travel.
- PT1 can only be used for appointments (medical/mental health, PT, etc).

MBTA RIDE

- A month or two prior to surgery, application should be submitted for this service that provides door to door transportation to make the T handicap accessible.
- RIDE can be used within the eligible Massachusetts towns; not limited to appointments.

Reimbursement

- Mass Health will reimburse for travel to and from appointments; limited amount per mile. This is relevant for all appointments, not specifically for pre and post-op.
- Other states (including NH) also have reimbursement programs.

Going home

Discharge

Your child will be discharged when he or she is able to sit comfortably. Your child also must have good pain control on medicine by mouth or through a G-tube. Your child should be eating normal food or taking nutrition via G-tube before discharge, and should have a bowel movement before going home.

Your child's nurse and mid-level provider will give you important instructions on how to manage diet, how to care for the incisions, what problems to watch out for, and who to call with questions. Your surgeon will tell you when you can expect to go home. **Discharge time is 11:00 a.m. Please arrange in advance for your transportation home.**

Prescriptions

Before you go home, you will receive prescriptions for medications for pain and spasms your child will need at home. These prescriptions should be filled **before** you leave the hospital. Some of these medications **cannot** be called into your pharmacy. The pharmacy will need the original prescription. It is very important that you call for refills on medications several days before you run out.

Transportation home

When planning your transportation home from the hospital, consider what mode of transportation will be the most comfortable for your child, and how he or she will fit into a car or car seat with casts, immobilizers, etc. If you need a car seat to accommodate a child in knee immobilizers or casts, the inpatient discharge nurse will be happy to help you choose the right car seat for you. **Inpatient Child Passenger Safety Program** has several different types and sizes of car seats available for all ages. If it is impossible to fit your child comfortably and safely, an ambulance can be called to take you home.

Before you go home

- Be sure you have filled your prescriptions.
- Confirm that a follow-up appointment with your orthopaedic surgeon or mid-level provider has already been scheduled.

While your child is in the hospital, a case manager will help plan your child's discharge. If you will need a wheelchair, hospital bed, commode, walker, or any other equipment, the case manager will rent it for you. He/she will also schedule visiting nurse services if needed, and home physical therapy, and blood draws if needed. If you think you will have difficulty caring for your child in the initial days after the surgery, please let us know and we can discuss options that may be available to you.

If you have urgent questions when you return home, or for prescription refills, call your surgeon, mid-level provider or nurse in the orthopaedic department at 617-355-6021, option 2, Monday through Friday, 8:30 a.m. to 4:30 p.m. If you have an emergency that you feel cannot wait, go to your local emergency room.

For non-urgent matters, please call Cynthia Thompson, NP at 617-355-4221, or Corrie Bledsoe, RN at 617-355-8623. Please leave a detailed message, including your child's name, date of birth, doctor, and reason for calling. When the clinic is not open, you can call the operator at 617-355-6363 and ask to page the orthopaedic resident on call.

What to expect at home

Your child's appetite will be less after surgery. Try small meals and frequent snacks every 2-3 hours. Constipation is a problem after surgery, because of side effects of pain medications and changes in diet and activity levels. To help prevent constipation, your doctor may recommend a stool softener or laxative. Foods high in fiber, fruits, vegetables and lots of liquids helps also.

Pain medication and medication to help with spasms will be prescribed. Give your child the medication as directed. As time goes by, he or she will start to feel better, and will need less of the medication. Call the nurse if you have questions about your child's medications at 617-355-6021.

Caring for the incision

Although wound problems are rare, you should check your child's skin at the incision sites if possible. Leave the original dressings in place if possible, and check the skin in the surrounding area. Sometimes visiting nurses choose to check the incision sites. They should then place a new, clean bandage over the area. The incision will have small strips of tape called Steri-Strips under the big dressing. Do not remove these. Check for signs of infection.

If you notice any signs of infection, call your surgeon, mid-level provider, or nurse in the Orthopaedic department at 617-355-6021, option 2, Monday through Friday 8:30 a.m. to 4:30 p.m. If you have an emergency that you feel cannot wait, go to your local emergency room.

Signs of infection

- redness
- swelling
- separation at the incision
- tenderness at the incision
- yellow or green fluid (pus)
- an unusual smell
- fever higher than 101 degrees Fahrenheit (by mouth)

Return to school

Your child will feel tired, and be uncomfortable for a few weeks. If only tendon lengthenings are done, your child may return to school when comfortable, or taking only acetaminophen (Tylenol). This is generally two weeks after surgery. If work on the bone was done, your child will probably remain out of school for 4-6 weeks. A tutor form can be written. If your child continues to need narcotic pain medications, he or she is **not** ready to return to school.

Many integrated or special needs school programs are comfortable with a child returning to school in a wheelchair or casted or immobilized, as long as they are pain free and there is help with hygiene issues. Check with your school ahead of time to see how comfortable they are with the return to school, and work with them to set up transportation and help for your child during the school day.

If your child gets occupational, and speech therapy in school, this can generally resume as soon as he or she returns. **Physical therapy on the legs will not start again until the doctor gives you the official physical therapy order after your 3 week post-op visit.**

Do not allow your child to resume any activities including standing or walking until the doctor tells you it is time.

Frequently asked questions

When can my child lie on the operative side?

Generally, after surgery on the femur bone, your child can lie on that side after healing has occurred, 3-4 weeks after the surgery, if he or she is comfortable.

How long will my child be out of school?

Expect your child to miss 2 weeks of school if only tendon lengthenings are done. He or she will miss 4-6 weeks of school if work on the femur or hip bone is done. If your child is still taking pain medicine other than Tylenol® and Motrin®, then he or she is probably **not** ready to return to school. Also, be aware that the wheelchairs that are rented for you fold up for transport and **are not approved** for strapping down into wheelchair vans. If you talk with your school and can arrange door to door transportation, you must also talk about who will be responsible for getting your child on and off the bus.

I live far from Boston. Can a doctor near me take care of my post-operative follow-ups?

You should plan on returning to Boston for your child's first postoperative visit. If you live far from Boston, and are unable to travel to Boston for the rest of your follow-up visits, you can work with your Children's orthopaedic doctor to arrange a post-operative treatment plan in which your child can see your local orthopedist.

How do I get home from the hospital?

In planning your trip home, remember that your child may have some post-operative pain and discomfort. Many patients travel home by car without difficulty. You may need to speak with the Child Passenger Safety case manager on the floor about a car seat or restraint that will safely fit your child in the casts or immobilizers. Children may have difficulty fitting into a very small car.

What kind of physical therapy will my child need?

Physical therapy will not begin until three weeks after surgery. At that time, you will be given an order for your child to come out of casts and immobilizers to begin very gentle assisted range of motion only. Sometimes pool therapy can begin at this time, if incisions are healed. But your child will not be bearing weight on the legs. Physical therapy will increase at six weeks from the surgery. If your child had only lengthenings done, physical therapy may be allowed to progress sooner.

When can my child take a bath/shower?

Sponge baths will be needed for the first 3 weeks. After that, your child may come out of the casts/immobilizers for showering/bathing. No bathing (or pool therapy) until the incisions have completely healed. During spring and summer, it is strongly advised **not** to bring your child into a pond, lake or river to swim after surgery, because of risk for infection.

What will the scar be like?

The scar for a pelvic (hip) osteotomy is usually along the front and side of the hip and usually blends in with the normal hip crease when your child bends, about 6 inches long.

- A femur osteotomy scar is located down the side of the thigh, about 8 inches long.
- Adductor tendon lengthening incisions are small, about 1 inch, and located in the inside of the thigh, at the groin.
- Hamstring lengthening scars are also small, 1 inch or less, and located behind the knee.
- Heel cord lengthening scars are small, 1-2 inches, and located behind the lower calf.

It is important to keep the newly healed scars covered or use sunscreen with a high level of SPF over the incision for one year when going out in the sun.

When and if the hardware is removed, do you use the same incision or a new one?

Plates, screws and pins placed during the surgery do not necessarily have to come out. But, if the child is bothered by them, they are removed through the same incision. The procedure is a day surgery, that is, the child usually goes home the same day.

Do you recommend anything for reducing the appearance of the scar?

Putting vitamin E or any lotion on the site of your surgical scar once or twice a day may help minimize the appearance of the scar. It's mainly the massaging while you put the lotion on that helps.

Will the hardware set off metal detectors in airports?

The hardware usually does not set off airport detectors since the screws are covered with muscle, but then again, we get reports that sometimes they are detected. We have letters you may obtain that verify the existence of the hardware that you can show to the airport authorities. They may still have to use the wand to verify the hardware.

What should I do to prepare at home?

If you need equipment rented for you (wheelchair, hospital bed), the case manager will do this before you leave the hospital. Think about whether you will need:

- a wheelchair with extending leg rests
- a hospital bed
- a commode
- Your child may not be able to bear weight and/or walk after surgery. Please think about the logistics of how to move him or her out of the car and into your house when you return home.

Please call your insurance agency before the surgery to see what equipment they will cover and what, if anything, you will need to pay out of pocket. Try to eliminate any obstacles to wheelchair access in your home. Your child may find it easier to sleep on the first floor for the initial weeks after surgery.

How long will my child be in the hospital?

Average hospital stay:

Pelvic osteotomy.....5 days

Femoral osteotomy.....3-4 days

Tendon lengthenings.....1-2 days

Any combination of the above.....5 -7 days

A member of my family is a doctor and wants to observe my child’s surgery, Is this possible?

Children’s policy prohibits a patient’s relatives from observing his or her surgery.

If you have urgent questions when you return home, call your surgeon, mid-level provider or nurse in the orthopaedic department at 617-355-6021, option 2, Monday – Friday, 8:30 a.m. to 4:30 p.m.

If you have an emergency that you feel cannot wait, go to your local emergency room.

For non-urgent matters, please call Cynthia Thompson, NP at 617-355-4221, or Corrie Bledsoe, RN at 617-355-8623. Please leave a detailed message, including your child’s name, date of birth, doctor, and reason for calling. When the clinic is not open, you can call the page operator at 617-355-6363 and ask to page the orthopaedic resident on call.

Questions for your provider

Lined area for writing questions.

