

# Scoliosis Surgery

## Preparing for surgery and a hospital stay

Children with curves greater than 50 degrees may need surgery. This handout will provide you information on what to expect before, during and after scoliosis surgery.



The goal of scoliosis surgery is to stop the curve from getting worse and if possible to correct it. The type of surgery done depends on many factors, including the type of scoliosis that your child has, age, and the shape and location of the curve.

### **What types of surgery are done for scoliosis?**

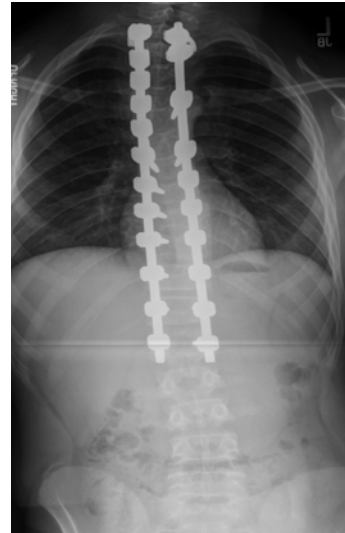
#### **Spinal Instrumentation**

Spinal instrumentation uses devices, most often rods, hooks, screws or wires, that can be attached to the spine. These devices are usually made of titanium or stainless steel. Using instrumentation the spine can be manipulated to a more normal alignment and held in that position. Most curves cannot be made completely straight. Between 50 and 80 percent correction is common.

In most cases the instrumentation is left in place forever. If it is removed, some of the curve may come back. Most people do not have pain from the instrumentation.



**Before Instrumentation**



**After Instrumentation**

### Growing Rods

In most cases instrumentation is done with a fusion (see below). In young children, who still have a lot of growth left, instrumentation is sometimes done without doing a fusion (which will stop growth). This is called a “Growing Rod” technique. The rods will need to be lengthened as your child grows. Since, this requires multiple surgeries, it is not usually considered if only a small amount of growth is likely.

VEPTR is a type of growing rod that can be attached to the ribs instead of the spine. It is used mostly for young children who have rib cage problems associated with their scoliosis.

### Spinal Fusion

Spinal fusion is the process of making separate vertebrae grow together to form one continuous bone. Fusion is done by removing the cartilage and joints between the vertebrae, and placing bone graft (extra bone) between the vertebrae. Over time the body will hopefully grow bone between the vertebrae to form one continuous bone instead of two or more separate bones.

The process of fusion takes between 3 and 9 months. During this period you might be asked to limit sports and heavy lifting to prevent instrumentation from loosening. In special cases a brace may be used for more protection.

When fusion is complete, there is no longer any motion between the vertebrae that are fused. This will stop further deformity of the spine. It will also stop the growth in the part of the spine that is fused.

Most of the time, only the vertebrae that need to be fused to line up the spine are fused. The rest of the vertebrae can still move. When bending forward, most of the motion happens through the hip joints, and a small amount through the spine. After a fusion your child will still be able to bend forward enough to function normally. At first, the motion in the back will

seem limited and may feel awkward. Your child will adapt to the change in body position and function within a few months to a year. Most children who have a spinal fusion are able to do all of the same activities they did before without difficulty.

### What types of surgeries are done for scoliosis?

- **Posterior Fusion** is done through an incision in the back. The bones and joints behind the spinal canal are fused, and the disc spaces are left alone.
- **Anterior Fusion** is most often done through an incision on the side of the body. The discs are removed and replaced with bone graft. The bones are fused in front of the spinal canal.
- **Anterior and Posterior Fusion** may be needed in cases of severe spinal deformity.
- **Posterior Interbody Fusion** is the method of fusing the front of the spine through an incision in the back (posterior). The discs are removed and bone graft is placed in front of the spine. This requires moving the nerves, or going around the spinal cord, but can avoid a separate incision on the side or abdomen.
- **Osteotomy** is when a wedge of bone is taken in the front, back or side of the spine to correct very stiff or severe curves.
- **Spinal Decompression** is when bone or soft tissue is removed to take pressure off of the spinal cord or nerve roots. It is very uncommon in children with idiopathic scoliosis.
- **Vertebrectomy** is the complete removal of a vertebra bone. This procedure is not usually done to treat idiopathic scoliosis.

### What are possible complications of surgery?

The chance of a major complication which would lead to long-term problems is very low, but not impossible. The chance of a full recovery is very high. The most common complications are:

- **Additional surgery** – There is a possibility that another surgery could be needed in the future.
- **Arthritis** – Can occur above or below the fusion, due to long-term wear and tear. Individuals with scoliosis who have not had a fusion also frequently develop arthritis.
- **Blood transfusion** – Sometimes a child may bleed during or after surgery and need a blood transfusion. A machine called a cell saver can be used during surgery to collect blood where the child is bleeding and return it to the child. Children weighing over 100 pounds may be able to donate their own blood before surgery. A transfusion is only given when it is needed. The risk of getting an infectious disease from transfusion is very low.
- **Non-union or pseudoarthrosis** – Means the body did not create a complete fusion of the bones. This allows a small amount of motion to continue. The stress on the instrumentation can cause rod or screw breakage, loosening and motion within the bone, which can be painful. This problem is usually not discovered until 2 to 5 years after surgery.

- **Spinal cord injury** – The chances of paralysis (loss of feeling or muscle function) after scoliosis surgery is about 1 in 1,000. The risk is higher when there is already spinal cord compression, or the deformity is very severe.
- **Trunk imbalance or shoulder asymmetry** – The portion of the spine that is not fused does not always correct the way we predict. This can sometimes lead to an unbalanced appearance after surgery. Most trunk shifting will resolve on its own as the nervous system and muscles accommodate to the straighter spine. This can take up to 6 months. Rarely additional surgery is needed to correct this.
- **Wound infection** – Your child will be given antibiotics, their skin will be cleaned with special disinfectants, and all aspects of the surgery will be done in a sterile environment. Despite our best efforts, it is possible that infection can occur. Infections are usually successfully treated by washing out the wound and giving antibiotics.

Other common problems include nausea, constipation, itching, problems with IV lines or urinary infection.

### **How long will we be in the hospital?**

Your child will need to stay in the hospital until it is safe to go home. The length of stay will vary based on the surgery they are having, their general health, physical abilities before surgery, and if additional help will be needed at home. Once your child can eat, urinate, get in and out of bed, walk safely without much help, and take pills or liquid pain medicines, they can go home. Most patients stay between 3 and 5 days after surgery. If you live far from the hospital, you may consider finding lodging nearby until your child is ready to travel home.

### **What do we need to do before surgery?**

Review and follow the instructions given on the Seattle Children's [Before Surgery Checklist](#).

#### **Medical OK**

If your child has other medical problems they will need to get medical consent from their family doctor or specialist before scheduling surgery. Plan for these evaluations a month or two before your child's surgery date to avoid the surgery being delayed. Please let your surgery scheduler know if you have any questions.

Please let your doctor know if you have any of the following:

- Infections, including dental infection
- Diabetes
- Asthma
- Heart conditions
- History of blood clots or bleeding problems in your family
- Hepatitis or liver disease
- Rheumatoid arthritis or chronic inflammatory disease

- Psoriasis
- Chronic bladder or diarrheal disease
- Recent medical procedures

### Medicines

- It is important that you bring with you to your pre-operative appointment all medicines and herbal supplements your child is taking, so that we can confirm the medicines, dose and schedule.
- Children under the care of a medical provider should ask for instructions on stopping or continuing medicines before surgery.
- Most of the time they should be able to take their normal medicine with a sip of water on their regular schedule before surgery. There are some exceptions.
- Do not give ibuprofen (Motrin or Advil), aspirin or naproxen (Aleve) for at least 7 days before surgery. These medicines can increase the risk of bleeding from the surgery site.
- Stop taking all over-the-counter supplements 2 weeks before surgery. These medicines can contain chemicals that can interfere with anesthesia, blood clotting and healing.
- It is OK to give Tylenol.
- If your child is taking an anticoagulant (like aspirin, Coumadin, or Lovenox), call your surgeon for the stop date, and confirm this with the prescribing doctor.

### Bathing

It is important that the skin is clean before surgery to reduce the risk of developing an infection after surgery. You will be given a special soap to use the night before surgery. Your child will be asked to wipe their entire body with a special cleanser at the hospital just before the surgery.

Seattle Children's information on bathing: [Hibiclens Bathing Instructions for the Night before Surgery](#)

### Eating

One business day before the surgery, you will receive a phone call that will include when your child needs to stop eating and drinking before surgery. The surgery may need to be rescheduled if these instructions have not been followed.

### Avoiding Constipation

Anesthesia, back surgery and pain medicine all cause constipation. A diet that includes plenty of fiber and liquids will help reduce constipation.

More information: Seattle Children's [Constipation after Surgery](#)

### **What can we expect when coming to the hospital?**

Please come on time. The nurse and the anesthesiologist will ask you questions about your child's health and the medicines they take. Your child's surgeon will talk to you before you go into the operating room and confirm the procedure that is to be done. They will also mark the surgery site.

During surgery all vital functions such as blood pressure, heart rate, fluid balance, and kidney function will be watched by the anesthesia and surgery team. We may use the following devices to monitor your child during and after surgery:

- **Spinal cord monitoring** – involves placing tiny electrical needles into the skin of the head, neck, trunk and arms and legs to watch the function of the spinal cord during surgery.
- **IV (intravenous catheter)** – gives fluids if needed.
- **Arterial line** – a small tube placed in the artery of the wrist or leg to closely monitor blood pressure.
- **Central venous access line** – a tube placed into the larger veins near the neck and close to the heart to watch fluid balance. Used for patients with serious heart or lung disease or those patients having extensive surgery.
- **Catheter** – used to monitor urinary output for the first few days following surgery.
- **Compression stockings and calf pumping devices** – help reduce the risk of blood clotting during surgery.

These devices are most often placed after anesthesia, so that there is no pain.

### **What can we expect in the operating room?**

Once in the operating room, your child will be placed on the operating table. If the incision is to be made on your child's back, they will be placed on a padded frame to let their stomach hang free. This helps to minimize bleeding.

Special positioning and padding will be used to make your child comfortable and to protect their nerves, skin, joints, face and eyes. Your child may be sore after surgery, especially if the procedure is long. The most common problems are a sore neck, shoulder, chest wall, and some tingling in the fingers or thighs. These may take a few days to go away. It is not common to last longer, but not impossible.

If spinal cord monitoring is used, it may take up to an hour from the time you leave your child until the surgery begins to place all of the monitors, IVs, catheters and arterial lines.

During surgery your child's bodily functions are monitored by the anesthesiologist, and supported in any way that is needed with oxygen, medicine and fluids.

X-rays or fluoroscopy may be used during surgery to assess the placement of instrumentation or confirm the position of the surgical site.

After the surgery is finished, a dressing is placed on the wound and your child will be taken to the recovery room to wake up. This process takes about an hour until your child is stable enough to move to a hospital room.

After extensive procedures or in the case of substantial medical problems your child may be taken to the Intensive Care Unit until they are ready to go to a regular hospital room.

### **What can we expect while recovering in the hospital?**

The goal of your child's hospital stay is to get your child functioning enough on their own to return home as quickly and safely as possible. Your child will be cared for by a team of nurses, aides, physical therapists, occupational therapists, pharmacists and in some cases other doctors under the advice of your doctor.

#### **Activity and Movement**

When your child moves around there is muscle activity at their incision site that will cause some pain. The nurses and physical therapists will help show them ways to move that will cause the least amount of pain. They will not rip out stitches or hardware by moving. The faster they get up and walking the quicker they will recover. However, this may be hard to do at first and we want them to ask for the help of the nurse or therapist to get up the first few times until they tell your child it is OK for them to do it on their own.

We encourage walking as much as your child can tolerate. Sitting in a chair instead of lying in the bed can also help breathing to return to normal more quickly. Sometimes patients are too uncomfortable to get up and walk for the first day or two.

Sitting is safe after surgery, but may be uncomfortable. Avoid bending, twisting and lifting for the first 6 weeks after surgery. If the incision is on the neck or upper back between the shoulder blades, your child should avoid pulling hard on things with their arms. Pulling puts stress on the muscle and skin incision.

#### **Bracing**

Most patients do not need to wear a brace after scoliosis surgery. There are special circumstances under which it may be necessary. Our brace team and your doctor will give you instructions for how to use, wear and care for the brace if it is needed.

#### **Diet and Bowel Function**

Bowel and intestinal function is affected by anesthesia and surgery. Pain medicine can also add to the problem. Your child's appetite may be poor for a few days also. In most cases it will be 3 to 5 days until things function normally and allow a bowel movement. Stool softeners, bowel stimulants and laxatives may be needed. Activity also helps the return of normal bowel function.

#### **Fever**

Most patients have a fever for the first 2 to 4 days after surgery. This is due to inflammation at the surgery site and the lungs shrinking during anesthesia (atelectasis). Fever in the first few days after surgery does not usually indicate

### To Learn More

- Orthopedics  
206-987-2109
- [www.orthopedics.seattlechildrens.org](http://www.orthopedics.seattlechildrens.org)
- [www.seattlechildrens.org](http://www.seattlechildrens.org)

### Free Interpreter Services

- In the hospital, ask your child's nurse.
- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.
- For Deaf and hard of hearing callers  
206-987-2280 (TTY)

there is an infection. Deep breathing and walking can help expand the lungs and reduce the fever.

### Pain

After a surgery, some pain is normal. The amount of pain that people have varies, even for the same procedures. We will try our best to keep your child as comfortable as possible. Pain medicines do not fully take away pain. There are limits to how much medicine your child can have.

At first, pain medicine will be given through the IV by a machine called a **PCA** (push a button to get a dose). Pain medicine in pill or liquid oral form usually lasts longer and gives more even pain relief, but may not be tolerable within the first day or two. A special pediatric pain control team will be in charge of the pain medicines for the first few days after surgery. Sometimes it takes a day or two to figure out which medicines work the best, and what dose is needed for your child.

All pain medicines have side effects. These can include nausea, vomiting, itching, constipation and sleepiness. We want to promote the most comfort with the least amount of side effects. Medicines will be ordered to treat side effects if they occur.

You know your child best. We encourage you to take an active part in your child's recovery by talking with your care team about how your child shows pain and what comforts them. In addition to medicine given to your child while in the hospital, encourage age-appropriate coping tools to treat pain and provide support.

### Showering

If there is no drainage from the incisions, your child may be able to shower 3 to 4 days after surgery with the wound uncovered. Do not get in a bath tub, hot tub or pool until 2-3 weeks after surgery.

### Sleep

Your child may have trouble sleeping in the hospital. Napping during the day, lack of normal activity, medicines and the unusual environment all lead to this. Medicine to help your child sleep can be prescribed if needed.

### When can we go home?

You will be sent home when the physical therapists, nurses and your doctor feel that you are able to safely function at home and proper support is in place. Your child will need to eat, urinate and be able to control pain with pills or liquid pain medicine. Once all of the criteria to go home have been met, your insurance company may not pay for any more hospital days.

---

Seattle Children's offers interpreter services for Deaf, hard of hearing or non-English speaking patients, family members and legal representatives free of charge. Seattle Children's will make this information available in alternate formats upon request. Call the Family Resource Center at 206-987-2201.

This handout has been reviewed by clinical staff at Seattle Children's. However, your child's needs are unique. Before you act or rely upon this information, please talk with your child's healthcare provider.  
2009 Seattle Children's, Seattle, Washington. All rights reserved.

3/09  
PE873