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# Scoliosis Surgery



An agency of the Provincial  
Health Services Authority

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# Scoliosis Surgery

If you are reading this booklet, your child's doctor has likely told you that you need surgery to correct your scoliosis. You might be worried or alarmed that your child needs surgery. Knowing the facts can help reduce or take away a lot of the worry.

We have put this booklet together to tell you and your child all about scoliosis and the surgery that will help correct it. We suggest you read this booklet and circle any parts you have questions about. There is also space at the end of this booklet for you to write down your questions or concerns. You can talk about your questions and concerns with your child's orthopedic surgeon. If you like, you can also talk to the orthopedic nurse clinician by calling the clinic.

## What is scoliosis?

Scoliosis is when a person's spine twists and curves from side-to-side. When this occurs, the spine looks more like an "S" or "C" rather than a straight line and can produce a hump at the curve(s). This curve can lead to changes in the shoulders, ribcage, pelvis, waist, and the overall shape of the back.

## What causes scoliosis?

In most cases, we don't know what causes scoliosis. This is known as idiopathic (of unknown cause) scoliosis. This type of scoliosis is the most common.

The second most common type of scoliosis is congenital scoliosis. Congenital means present at birth. Congenital scoliosis occurs when the bones in the spine are not shaped properly (abnormality) from birth.

In some cases, there is a neuromuscular disease or condition (e.g. muscular dystrophy) that affects the spine. This type of scoliosis is called neuromuscular scoliosis (or secondary scoliosis). This is the 3rd most common type of scoliosis.

Don't believe people who tell you that *"if you stood up straight your spine wouldn't have curved"* or *"it must be from the volley ball injury"* or *"it's from carrying a heavy bag on the same arm all the time."* Science has shown that these things make no difference to curves and twists of the spine.

Scoliosis affects many individuals in Canada. About 1 in every 10 school children has scoliosis. It is more common in girls than boys.

## How is scoliosis diagnosed and treated?

Scoliosis is diagnosed by a physical exam followed by an x-ray. The x-ray views the vertebrae to see if they are in a straight line or curve to form the shape of an “S” or a “C”. The x-ray may also tell the size of the curve. The size of the curve is measured in degrees:

- **Small curve:** less than 20 degrees
- **Moderate curve:** between 20 and 50 degrees
- **Large curve:** greater than 50 degrees

There are several different ways to treat scoliosis. The type of treatment selected depends on:

- Where the main curve is. It can be in the neck, chest, or lower back.
- How big or twisted the curve is.
- How quickly it is getting worse over time (progressing).
- How much more growing your child still may do. Tests of bone age will tell us this. If you want to know more about bone age and tests, ask your child’s orthopedic surgeon or the orthopedic nurse clinician to explain how these work.

Based on these criteria, your child’s orthopedic surgeon will discuss with you the possible treatment options for your child scoliosis. These may include: observation (for a small-sized curve), bracing (for a medium-sized curve, and surgery (for a large-sized curve).



For more information on scoliosis and the different treatment options, please read the **Welcome to the Spine Program** pamphlet. You can find it under “O” for “Orthopedic Clinic” in the BC Children’s A-Z pamphlets at: [www.bcchildrens.ca/KidsTeensFam/A-ZPamphlets](http://www.bcchildrens.ca/KidsTeensFam/A-ZPamphlets)

# Why is surgery the best treatment for my child?

The curve of your child's spine is large enough that the orthopedic surgeon has recommended surgery as the best way to treat his or her scoliosis. This decision is never easy.

Your child may be thinking to him or herself: "my spine isn't hurting. Most of the time, I don't even think about it. So why should I go through this surgery?"

That's a good question. Scoliosis can affect your child in ways that you will not even think about. The main reasons to have surgery are to:

1. Straighten the curve of the spine as much as it is safe to do so.
2. Stop the progression of the curve to avoid heart, lung and neurological (nervous system) problems.

Other benefits of the surgery include decreased pain, improved appearance of your child's back and trunk, and a better quality of life.

Talk to your child's orthopedic surgeon if you have questions and concerns about scoliosis surgery.

# How do I get my child ready for surgery?

Before surgery your child's orthopedic surgeons' secretary will phone you to book an appointment for a day of tests and preparations. These tests will take at least 4 to 5 hours, so it is best not to make other plans for that day.

During this day, you and your child will meet with a number of different health care providers. Make notes of what you want to talk about so you won't forget anything. You may want to bring this booklet and pen so that you can write things down.

<p><b>Orthopedic Clinic Date:</b> _____</p> <p><b>Arrival Time:</b> 8:00 am (unless otherwise instructed)</p>
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At the orthopedic clinic day, you and your child will:

- Spend time with the orthopedic nurse clinician. The nurse will talk to you and your child about what to expect during surgery. This is a good time to get all your questions answered. If there are things that are worrying you or your child, talk to the orthopedic nurse clinician about them. Be sure to also talk to the orthopedic nurse clinician about:
  - What your child can and cannot eat or drink for the night before his or her surgery. This is called **fasting instructions**.
  - How to clean your back **before** surgery.
- Talk with a doctor who is specially trained to keep your child asleep during the surgery (anesthetized), give your child pain relief, and make sure all is well with your child's heart and lungs during surgery. This doctor is called an **anesthetist**.
- Discuss with your child's orthopedic surgeon about what he is planning to do for your child's operation. At this time, you will also give informed consent and review your child's recovery plan.
- Talk with the **physiotherapist**. The physiotherapist will help keep your child's lungs clear with breathing exercises and the use of an spirometer (tool that measures the volume of air that a person breathes in with a deep breath).



For more information on how to prepare for surgery, please see the BC Children's Virtual Surgery Tour. You can find it at: [www.bcchildrens.ca/surgerytour](http://www.bcchildrens.ca/surgerytour)

## What tests does my child need to have done?

There are several tests that are done to check your child's general health before surgery:

1. **Lung function test:** this test measures:
  - How much air is going in and out of your child's lungs
  - With what force your child can pull the air in and push it out

This test is important, as it tells us how much the curve in your child's spine is interfering with the flow of air through his or her lungs. For this test, your child will blow as hard as he or she can into a plastic tube.

2. **Spinal x-rays:** your child will have some x-rays taken of his or her back to give the orthopedic surgeon information about your child's spinal curve.
3. **Blood tests:** blood will be taken from a vein in your child's arm with a needle. Your child's blood is checked to make sure he or she is in good health for surgery. The sample of your child's blood is also matched to a supply of blood that can be used during the surgery, if needed.
4. **Urine Test:** your child will be asked to pee into a cup. This is called a urine sample. It is another check on your child's body chemistry and general health.
5. **Heart ultrasound:** if your child's orthopedic surgeon feels this is necessary, a heart ultrasound may also be scheduled on this day. The heart ultrasound looks at the size and shape of your child's heart and the pumping of blood.

## What happens on the day of my child's surgery?

**Surgery Date:** \_\_\_\_\_

**Arrival time: 6:30 am** (unless otherwise instructed)

On the day of your child's surgery, go to BC Children's Hospital. Leave enough time to get to the hospital so you aren't rushing to get here. Once you and your child have arrived at the hospital, go to the Surgical Day Care Unit (SDCU).

- In the SDCU, the nurses will give your child a hospital gown to change into. You and your child will have a short visit with your child's anesthetist, orthopedic surgeon, and a spinal cord monitoring technologist.
- Your child will have his or her vital signs done. A numbing cream will also be applied to your child's arm.
- The spinal cord monitoring technologist may apply color markings onto your child's scalp. These markings show where small, flat, metal discs (electrodes) can be placed on your child's scalp once he or she is asleep. Otherwise, these marking will be made while your child is in the Operating Room.

When the time comes, your child will be wheeled to the operating room on a stretcher bed.

### **Once your child is in the Operating Room:**

- A thin tube is placed into a vein in his or her hand: your child *may* feel a small needle prick as this happens. This is called an **intravenous** or **IV** for short.
- *During surgery:* the anesthetic drug and other medicines are given to your child through this IV tube.
- *After surgery:* this IV tube will stay in your child's hand for a few days after surgery. Your child will get medications, fluid, and nourishment through this IV tube until he or she is able to eat and drink again.
- Small discs are attached to your child's chest. These discs connect your child to a machine that records his or her heartbeats. This machine is called an **electrocardiogram** or **ECG**. The anesthetist keeps watch on this to make sure your child's heart is functioning well during surgery.
- Electrodes are placed on your child's scalp, wrists, and ankles. These discs are connected to a machine that records signals (nerve impulses) from your child's brain and limbs. This machine is called an **electroencephalogram** or **EEG**. The orthopedic surgeon and technologist monitor the EEG to make sure that your child's nerve impulses remain active during surgery.
- A thin plastic drain tube is inserted into the opening leading to your bladder. This tube is called a catheter. The **catheter** drains pee into a collection bag while you are asleep.

## **What happens during scoliosis surgery?**

The type of surgery your child is having is called segmental spinal instrumentation. Most surgeries of this kind take about 5 hours, but some can take up to 10 hours. The orthopedic surgeon can tell you how long your child's surgery is expected to take.

There are several steps that make up this type of surgery.

## Step 1: Making the cut

The orthopedic surgeon makes a cut. This cut is called an **incision**. This cut could either be made in your child's back at the main curve (**posterior approach**) or under his or her arm (**anterior approach**). Sometimes the orthopedic surgeon needs to make both types of incisions. Your child's orthopedic surgeon will tell you where the incisions need to be made.

## Step 2: Attaching the rods

Rods are attached to your child's spine to hold the spine in a correct position while it heals. 2 rods are usually placed and attached to your child's vertebra, one on each side of the spine. These rods can be attached to the vertebrae in several different ways. This includes using bone screws (most common) or hooks and wire.

## Step 3: Spinal fusion

The orthopedic surgeon takes small chips of bone and packs these around the rods. If there aren't enough chips from your child's bones, then some will be taken from a bone bank. In time, these chips will grow together to make a solid, stable bone mass to prevent a curve from forming again. This is called a **spinal fusion**. The fused section cannot bend and will not grow.

## Step 4: Closing the incision

The incision is closed in layers. Staples are used to close the last layer and then a bandage is applied. Your child's orthopedic surgeon will insert drainage tubes called **hemovac**s around your child's incision while it is being closed. Your child's staples will be removed around 2 weeks after surgery in the orthopedic clinic or by your child's family doctor if you live out of town.

## Where does my child go after surgery?

Depending on the size of your child's curve and physical condition, your child will either go to the **Intensive Care Unit (ICU)** or to the **High Dependency Unit (HDU)** on the ward. If your child is in the ICU, he or she may have a short stay of 1 to 2 nights. If your child is going to HDU, he or she will spend up to 2 hours in the recovery room prior to moving up to the ward.

After surgery, a nurse will help your child wake-up by asking him or her to say his or her name. Your child will feel quite groggy. It will take time for your child to focus and be alert to the sights and sounds around him or her.

A nurse will be monitoring your child closely overnight. The nurse is responsible for making sure that your child's body gets over the surgery as quickly as possible. Every 1 to 2 hours, the nurse will take your child's pulse and blood pressure, and ask your child to do different movements, such as wiggle his or her toes or squeeze a hand.

A physiotherapist will come to help your child get started on his or her breathing and leg exercises. Eventually, the physiotherapist will also help your child move in and out of bed.

## **What happens when my child in the hospital?**

While your child is in the hospital recovering from his or her surgery, we will help your child and monitor his or her eating, movement, pain, bandage, and incision site.

### **Eating:**

The 1st day after surgery, your child probably won't feel like eating or drinking much. Instead, your child will get your fluids and nutrients through the IV tube that was inserted into his or her vein before surgery. Your child will start with clear fluids, which are drinks you can see through, like water, apple juice, and tea. Milk and pulpy drinks are not clear. As soon as your child can drink enough (minimum of 8 cups), his or her IV will be capped (blocked). This usually happens by the 3rd or 4th day. Little by little, we will also add things like soup, pudding, and yogurt to your child's meals until he or she is eating normal food again.

### **Going to the washroom:**

It will be hard for your child to get out of bed to use the washroom for the first few days after surgery. During this time, your child will use the catheter that was inserted into his or her bladder before surgery to pee. The catheter will be kept in for 3 to 4 days after surgery.

### **Caring for the incision:**

Your child will have a large bandage or dressing covering the incision on his or her back. This will be changed as needed. The drainage tubes will

be emptied by your child’s nurse and removed after surgery when the drainage has slowed down (in approximately 2 days).

The orthopedic doctor and nurse will tell you how to take care of your child’s dressing and incision when he or she goes home:

- Keep the incision covered with a bandage. If the bandage becomes loose before the staples are removed, it can be changed, re-taped, or another bandage put over top of the first bandage.
- If you notice any drainage, fever, redness, swelling, or tenderness, call your child’s orthopedic surgeon and/or orthopedic nurse clinician right away. After hours (8:00 am – 4:00 pm), or on the weekend, please go to BC Children’s Hospital Emergency Department or to the nearest Emergency Department if you live outside the lower mainland.
- It is **very important** to let your surgeons’ office know if your child visits any other Emergency Department or your family doctor for concerns about the incision.



For more information on how to care for your dressing and incision after surgery, please read the *Caring for Yourself After Scoliosis Surgery* pamphlet. You can find it under “O” for “Orthopedic Clinic” in the BC Children’s A-Z pamphlets at: [www.bcchildrens.ca/KidsTeensFam/A-ZPamphlets](http://www.bcchildrens.ca/KidsTeensFam/A-ZPamphlets)

## Getting up and being active:

Your child may sit at the side of the bed as early as the first day after surgery depending on your surgeons’ instructions. The physiotherapist will show your child breathing and leg exercises to help speed up his or her recovery. These include:

### 1. Log rolls:

When your child lies in one position for a long time, his or her breathing and skin can be affected. Log rolls improve your child’s breathing and prevent sores. To log roll, have your child bend 1 knee and roll onto his or her side, moving his or her shoulders and hips together as if he or she was a log. Log rolls should be done every 2 to 4 hours. If your child finds that log rolls hurt his or her back, talk to your child’s nurse or physiotherapist.

## 2. Deep breathing:

Deep breathing helps your child's lungs expand and keeps them fit. The physiotherapist will visit 1 to 2 times a day to encourage your child to deep breath and to use the inspirimeter.

## 3. Coughing and huffing:

Coughing and huffing helps get the mucus out of your lungs and airways. Do this at least 1 time per hour until you are able to get out of bed.

## 4. Foot and leg exercises:

Foot and leg exercises help keeps the blood moving. For these exercises, have your child:

- Point his or her toes toward his or her head then toward the foot of the bed. Trace circles with his or her feet. Repeat 10 times.
- Tighten his or her knees then relax. Tighten his or her bum then relax. Repeat 10 times.

## 5. Neck and arms:

Your child's physiotherapist will encourage your child to move his or her arms and neck as tolerated to prevent stiffness.

Have your child do these exercises at least 3 times a day until he or she is able to get out of bed.

### ***Exercise recap:***

- ✓ Log roll every 2 to 4 hours
- ✓ Cough at least 1 time per hour
- ✓ Deep breaths 5 times per hour
- ✓ Foot exercises 3 times a day
- ✓ Do not raise your leg without bending it first

Once ready to do so, the physiotherapist will help your child sit up and move around:

### **Step 1:**

Your child will begin with moving his or her head of the bed in a vertical position so that he or she is half sitting. Once your child is able to sit half way, he or she will begin sitting up all the way. The physiotherapist will show your child how to do this correctly.

## Step 2:

Once your child is able to sit up, the physiotherapist will help him or her stand and walk around. Once your child is comfortable with walking around with the physiotherapist, he or she can begin to walk around with a nurse or family member beside him or her. Don't let your child walk on his or her own for the first few times because he or she may get dizzy.

Before your child goes home, it is a good idea to practice going up and down a flight of stairs. Talk to the physiotherapist about when your child is able to practice this.

Make sure your child takes it easy! It does not matter if it takes an extra day or two to get to the stage where your child can walk alone. Encourage your child to listen to his or her body and go at **THEIR OWN** pace.

## Will my child be in a lot of pain?

*"How much pain will I have?"* is a question on everyone's mind. This is hard question to answer because the experience of pain is not the same for everyone. One thing is sure: your child will not be left in pain.

For the first 1 to 3 days after surgery, your child's pain is controlled with pain medicine dripping through the IV. Pain medicine is called an **analgesic**. The first few days after surgery, your child will start taking pain relief pills or liquid pain relief medicine.

It is always easier to control pain before it gets bad. Don't let your child play the hero. If your child feels pain "rising", tell the nurse right away. It takes about 30 minutes for pain pills to work.

Once home you will know when the pain is decreasing by how well your child is moving and is telling you either verbally or by facial expression. The orthopedic nurse clinician or ward nurse will talk to you about how to cut back on the pain relief medication. Once at home, you will need to decide when to start to gradually cut back on the pain medication based on how well your child is doing.

## Other ways to manage pain:

Here are some different things that you can do to help manage your child's pain. You may find that one or more of these methods works better to help control your child's pain.

- **Relaxation:** encourage your child to think about each part of his or her body in turn. Start with his or her head. Have your child clench his or her jaw and then slowly relax all the muscles until his or her face feels velvety and head is heavy and floppy. Now move to the neck. Have your child stretch his or her neck from side to side and then relax. Next tighten the shoulders, and so on until your child gets all the way to his or her toes.

The Family Support & Resource Centre on the 2nd floor of the Ambulatory Care Building has some relaxation resources. Ask someone to check some out for you.

- **Slow, deep breathing:** encourage your child to breathe IN through his or her nose slowly --- now breathe OUT saying "heee" (quietly). Breathe IN slowly, now breathe OUT say "whooo" (quietly). Repeat: IN-OUT "heee", IN-OUT "whooo", IN-OUT "heee", IN-OUT "whooo".
- **Visualization:** this means taking your child's mind off the discomfort (which is here) and day dream about a place your child would love to be. Encourage your child to use his or her mind to take him or her on a journey to the most comfortable place he or she can think of. For example, your child can imagine an air mattress bobbing on a blue sea. When your child has the actual feeling of floating and can see the blue sea, add more details, such as a seagull flying over your child, a breeze lifting your child's hair, or the warm water caressing your child's feet. It takes practice to visualize. We suggest your child practice visualization at home enough times that he or she can easily get into it. Your child can use this in any stressful time, not only in the hospital.
- **Keep moving:** Do not let your child become a "couch potato" – lying around can cause your child's body to stiffen up. It is better to sit for longer periods every day and walk more every day in preparation for going back to school.

## How long will my child be in the hospital?

It will take 5 to 10 days before your child is ready to walk out of the hospital and go home. Once your child is home, if you have any questions, be sure to call the orthopedic nurse clinician.

Before you leave, make sure you have the pamphlet called Caring for Yourself After Scoliosis Surgery. The orthopedic nurse clinician or nurses on the unit will review this with you.

## When will my child follow-up with the orthopedic surgeon?

Follow-up appointments are usually 6 to 8 weeks after your child's surgery.

Date of follow-up appointment: \_\_\_\_\_

## Travel and Accommodations:

If you live out of town and don't have a place to stay, please contact the Family Support and Resource Centre for all your questions around travel and accommodations. It is recommended that travel be limited to 4-5 hours in length after surgery.

604- 875-2345 Ext 7037 or by email: [anna.vantol@cw.bc.ca](mailto:anna.vantol@cw.bc.ca).



### Important telephone numbers:

#### Surgeons

- Dr. C. Reilly: 604-875-3711
- Dr. F. Miyanji: 604-875-2651
- Dr. A. Ghag: 604-875-2068

Orthopedic Nurse Clinician: 604-875-2609

## My Notes

Use this space to make any notes or write down any more questions that you have and bring it to your appointment. You can also text these questions to yourself so that you have them with you at the next appointment.

*We wish you all the best.*

Developed by the health professionals of the Orthopedic Department with assistance from Learning & Development Department

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