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The Surgical Treatment of Adolescent Idiopathic Scoliosis

Royal Devon and Exeter **NHS**  
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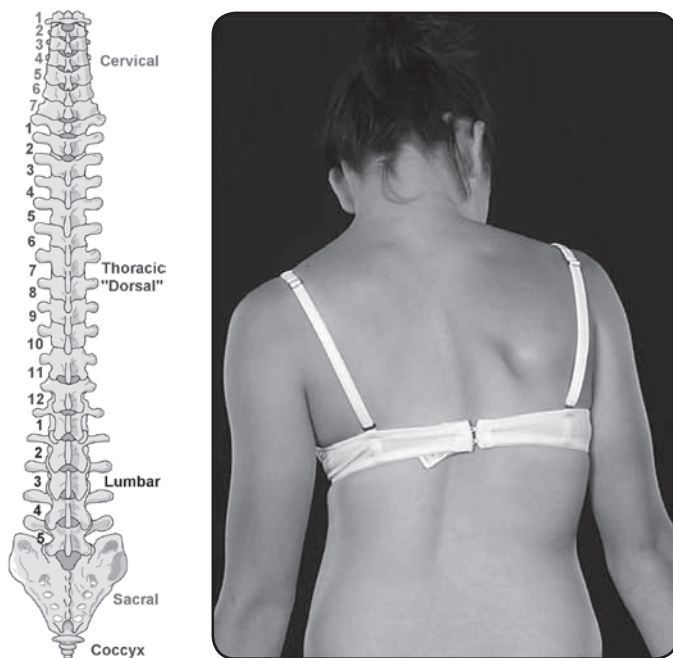
# Patient Information

## The Surgical Treatment of Adolescent Idiopathic Scoliosis

**Respond Deliver & Enable**

## Definition

Scoliosis is a condition that causes a deviation of the spine off to one side and is accompanied by rotation of the spinal column. Scoliosis may appear as one shoulder that is higher than the other, a hump in the back, and/or a shifting of the body to one side or another. The most common type of scoliosis seen in children is adolescent idiopathic scoliosis (AIS). AIS is defined as scoliosis whose onset occurs after 10 years of age, and whose cause is essentially unknown. The commonest type of scoliosis affects the thoracic spine AND INVOLVES A BEND TO THE RIGHT- see figure 1 below.



**Figure 1**

*The spine viewed from behind. The cervical spine is the neck. The thoracic spine is the mid back. The lumbar spine is the low back. The picture on the right shows a right thoracic scoliosis.*

supplied by the nerve involved. In extreme cases, injury to the spinal cord could result in permanent paralysis (the inability to move the limbs). However, this is extremely rare (reported in 1:2000 cases).

## Other risks

- That the bone graft does not fuse together and if it fails to do so may result in persistent pain and/or loss of the curve correction and in rare cases a need to re-do part of the operation.
- That if anterior spinal surgery is used (i.e. the spine is approached through the chest or abdomen), there is a risk of lung complication such as infection or collapse. Injury to the large blood vessels that sit in front of the spine is possible but is uncommon.

As you can see, this list of potential complications is both long and daunting. Thankfully, the vast majority of scoliosis correction operations pass off without any problems. However, it is important you understand the magnitude of the surgery you are embarking upon.

## Summary

Scoliosis surgery is a major undertaking. The majority of surgical cases proceed with no major complications. The decision to proceed with surgical treatment is complex and involves many factors. This decision must be made carefully and is a joint decision between child, parents or carers and surgeons.

- **Extremely rare and serious complications** (risk of less than 1 in 10,000). These include severe allergic reactions and death, brain damage, kidney and liver failure, lung damage, permanent nerve or blood vessel damage, eye injury, and damage to the voice-box. These are very rare and may depend on whether you have other serious medical conditions.

## Blood clot

The risks of a blood clot in the legs that, in rare cases, can pass to the chest and be life threatening, but is not likely in a child. If the child is at particular risk then special precautions will be taken to reduce the risk. Moving his/her legs and feet as soon as she/he can after the operation and walking about early, all help to stop thrombosis occurring.

## Wound infection

Deep wound infection that does not respond to antibiotic treatment is a serious problem that may ultimately require further surgery. Superficial wound infection is usually of no significance and settles readily with antibiotics. A deep infection is potentially more difficult to treat and may require prolonged antibiotics and even further surgery. This risk is of the order of 1-2%.

## Pain

Most patients with AIS do not have significant pain. In the immediate period after your operation you will be given medication to control your pain and you may require simple painkillers for a few weeks after the operation. Long term pain is not usually a problem.

## Nerve injury

Thankfully, severe nerve injury is extremely rare. However, there is a small risk of nerve injury. The severity of this can vary - from a small degree of numbness to complete loss of strength in the muscles

## Introduction

You have been scheduled for an operation to try and improve the shape of your spine - a correction and instrumented fusion of the spinal column. This is a major procedure. It is carried out when the size of the curve of the spine exceeds approximately 50°, and in particular when you still have the potential to grow, as the spine curvature may worsen with increasing growth. It is important that you understand why this surgery is being carried out, so that you can make an informed choice as to whether to go ahead.

## Reason for surgery

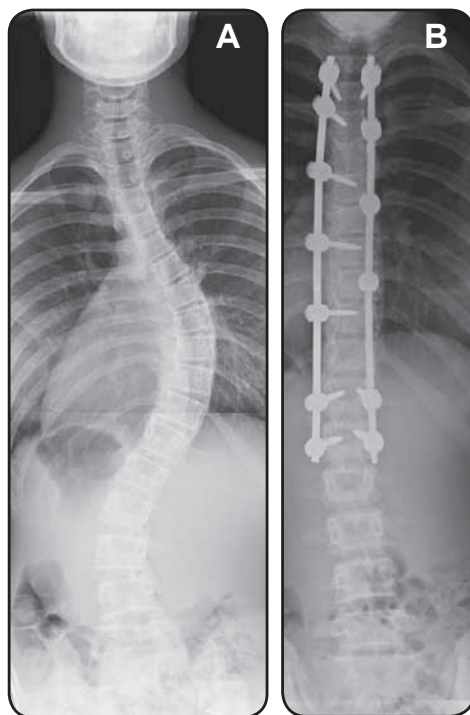
The aim of surgical treatment is two-fold: firstly, to prevent curve progression and secondly to obtain some curve correction.

In the past, it was thought that scoliosis correction surgery was performed to prevent damage to the heart, lungs, and other internal organs. It was also performed because people feared having AIS would cause more back pain in later life and limit the ability to lead a normal lifestyle. **It is important that you understand this is not the case.** AIS does cause some restriction in lung capacity but most patients are completely unaware of this and lead full and active lives including pursuing full sporting activities with no restriction at all. People with AIS are **not** more prone to back pain than anyone else. Correction of AIS will not improve lung or heart function nor will it cause you to have less back pain than anyone else.

The main reason for correction of AIS is to improve the appearance and shape of the back. A significant spinal deformity can be very upsetting for young people and in particular, as the majority of cases affect adolescent girls, the abnormal shape may have a significant impact on self-image.

## How is surgery carried out?

Surgical treatment today uses strong metal implants which are attached to the spine, and then connected to two rods. Implants are used to correct the position of the spine and then to hold it in the corrected position until the spine segments which have been operated on all fuse together as one bone. Bone graft is placed along the length of the corrected spine and eventually sets like cement to hold the spine in the corrected position. The surgery can be performed from the back of the spine (posterior approach) (see figure 2) through a straight incision along the midline of the back or through the front of the spine (anterior approach) which is usually through the side of the chest or abdomen, or through a combination of both anterior and posterior approaches. Many factors go into the decision as to the surgical approach and your surgeon will review the options and choose the best approach for you.



**Figure 2**

**A** shows a right thoracic scoliosis. **B** shows the scoliosis corrected via a screw and rod system.

## How long will it take to recover?

Hospital stay is for approximately 5 to 10 days. Usually, you will get up as soon as you can tolerate doing so. This is usually within a few

days after your operation with the help of the physiotherapists. You do not usually have to wear any form of bracing after this procedure. You will be allowed to travel home by car. When you go home, we will want you to gradually increase the amount of walking you do on a week to week basis. By about 6 weeks after the operation, you should feel much stronger and able to do more and more. It takes at least three months for the bone graft to be reasonably secure. You can usually return to school around 6 weeks or less after surgery, but no games, PE, or bicycle riding until three months, with all normal activities being resumed after 4-6 months, dependent on the advice of the surgeon. Outpatient follow-up appointments will usually take place 6 weeks after surgery and at 3, 6 and 12 months, with check x-rays as necessary. Discharge from hospital care is about one year after operation but may continue until the end of growth.

## Risks of surgery

All operations carry some degree of risk. Risks of scoliosis correction surgery include but are not exclusively limited to the following:

### The risks of a general anaesthetic

General anaesthetics have some risks, which may be increased if you have chronic medical conditions, but in general they are as follows:

- **Common temporary side-effects** (risk of 1 in 10 to 1 in 100) include bruising or pain in the area of injections, blurred vision and sickness, these can usually be treated and pass off quickly.
- **Infrequent complications** (risk of 1 in 100 to 1 in 10,000) include temporary breathing difficulties, muscle pains, headaches, damage to teeth, lip or tongue, sore throat and temporary problems speaking.