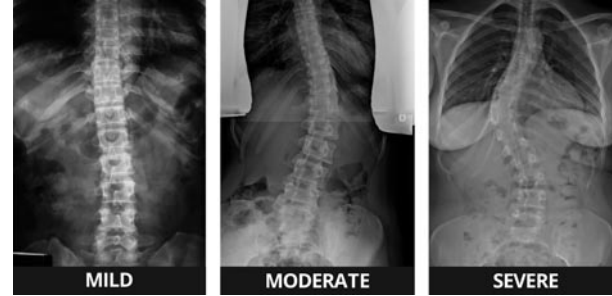


## WHAT IS SCOLIOSIS?

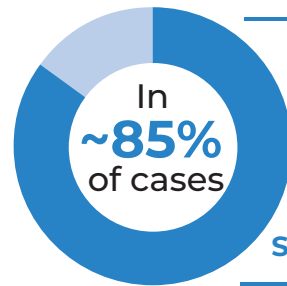
Scoliosis is a common condition in which the spine curves to the side instead of having a straight, vertical appearance when viewed from the front or the back. In scoliosis, there can be one or more curves which often have “C” or “S” shape. Frequently the curvature is accompanied by a twist in the spine, creating a three-dimensional problem. Severe cases can be extremely painful and can be life threatening. Most cases of scoliosis occur in teenagers, but younger children and adults can also develop it.



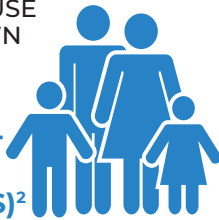
## WHO GETS SCOLIOSIS??

**MOST OFTEN DEVELOPS BETWEEN THE AGES OF 10-18**

BOYS & GIRLS CAN DEVELOP AIS  
AIS CURVES IN GIRLS ARE  
**5-8X MORE LIKELY**  
TO INCREASE IN SIZE & REQUIRE TREATMENT<sup>1</sup>  
AIS CURVES ARE MOST LIKELY TO PROGRESS DURING ADOLESCENT GROWTH SPURTS



THE EXACT CAUSE IS NOT KNOWN AND IS REFERRED TO AS **ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS)**<sup>2</sup>



AIS TENDS TO RUN IN FAMILIES  
**~30%** OF ADOLESCENT PATIENTS HAVE A FAMILY HISTORY OF SCOLIOSIS

**Early-onset scoliosis (EOS)** affects children younger than 10 years of age. Since young children have more growing ahead of them, EOS tends to cause faster developing and more severe curves than adolescent idiopathic scoliosis.

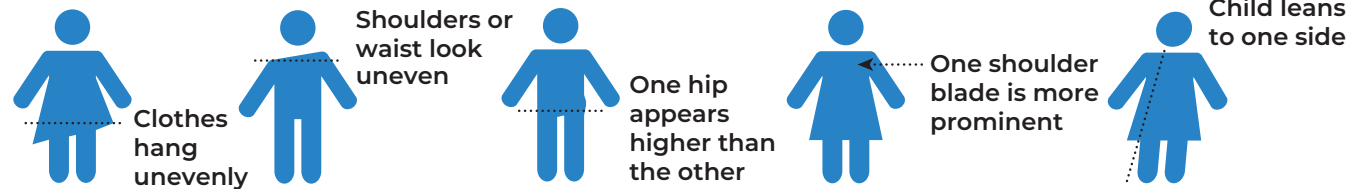
## WHAT CAUSES SCOLIOSIS?

It is important to know that AIS or EOS are not caused by anything your child has done and they are not the result of bad posture, sports activities, wearing a heavy backpack or injury. A scoliosis curve will not straighten on its own, and it can continue to progress.

Some other types of scoliosis have a specific cause. Congenital scoliosis is caused by birth defects that affect the development of bones in the spine. Neuromuscular scoliosis can result from medical conditions that affect muscles and nerves such as cerebral palsy, muscular dystrophy, and spinal cord injuries.

## WHAT ARE THE SIGNS AND SYMPTOMS OF SCOLIOSIS?

Children should be evaluated if their:



In severe cases, patients may also experience:

- Reduced range of motion
- Trouble breathing and cardiovascular issues from the rib cage pressing on the lungs and heart (more common in severe early-onset scoliosis cases)
- Back pain

## HOW IS SCOLIOSIS TREATED?

It is important to catch scoliosis early and begin treatment before the disease can progress. Early diagnosis can minimize both pain and the effects of scoliosis on daily life. When effectively treated, children with scoliosis can live normal, active lives, including participation in sports.

Using state-of-the-art tools and techniques, board-certified physicians at the NYSI Scoliosis Division are able to improve curves significantly. All patients receive individually-tailored treatments based on age, type of curve and its likelihood of progression.

The goals of treatment are to control scoliosis progression and work to correct the curvature.

### Conservative treatments

Children and adolescents with mild cases of scoliosis may benefit from approaches such as observation, bracing to stop the curve's progression and physical therapy.

### Surgical approaches for AIS

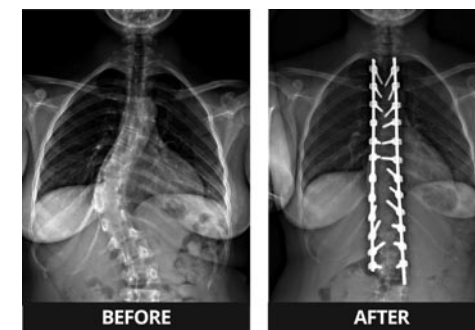
The larger a curve becomes, the more likely surgery will be needed to correct it.<sup>3</sup> Curves greater than 50° often need surgery to restore normal posture. In younger children, curves of even 30° can rapidly progress.<sup>3</sup>

Scoliosis specialist may recommend one of the following procedures:

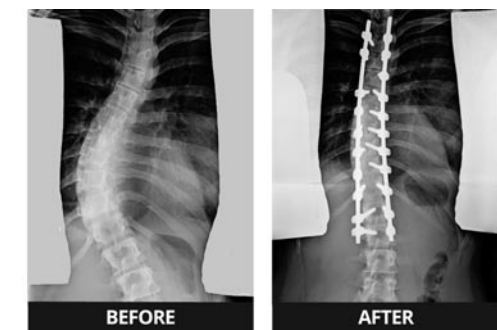
- **Definitive fusion:** The traditional and most common type of surgical procedure to treat adolescent scoliosis. Small pieces of bone, usually taken from the patient's lower spine, as well as metal rods and screws are implanted to realign and fuse together the curved vertebrae so that they heal into a single, solid bone to correct and stabilize the deformity.
  - **Vertebral body tethering:** An innovative, less invasive surgical procedure using an implanted rope-like device that can adjust bone growth of the spine during the period of rapid growth spurts when adolescent spinal curvature typically progresses.
- In addition to definitive fusion, procedures to treat EOS include:
- **Guided growth treatment:** Anchors are placed in the top, middle and bottom on both sides of the spine and connected by rods. The rods slide within the anchors while guiding the spine into straighter position as the patient grows.
  - **Traditional distraction-based treatment:** An initial surgery is performed to implant a growing rod(s) on the spine to gain control over the deformity. Usually twice a year, the doctor will manipulate the rod through a small incision to straighten and lengthen the spine, as the child grows. This is done under general anesthesia.

## RESULTS AT NYSI

### T4-L3 Posterior Spine Fusion



### T4-L2 Posterior Spine Fusion



1. Scoliosis Research Society. <https://www.srs.org/patients-and-families/common-questions-and-glossary/frequently-asked-questions/general-spinal-deformity-faqs>  
 2. American Academy of Orthopaedic Surgeons. <https://orthoinfo.aaos.org/en/diseases-conditions/introduction-to-scoliosis/>  
 3. American Academy of Orthopaedic Surgeons <https://orthoinfo.aaos.org/en/treatment/nonsurgical-treatment-options-for-scoliosis/>

