INTRODUCTION
Scoliosis is a lateral curvature of the spine. Congenital scoliosis refers to a spinal curvature due to one or more vertebra that is not properly formed. The cause is unknown. The abnormal vertebral bone may be discovered incidentally or when a curve develops as the child grows. Diagnosis is generally by X-ray. Treatment depends on the severity of the curve and potential for progression. Mild curves are usually observed during growth and if they stay mild, no treatment is needed. Severe or progressive curvatures are usually treated with surgery.

BACKGROUND
Scoliosis by definition is a sideways curvature of spine. In congenital scoliosis, the curvature is due to an anomaly of one or more vertebral bones. Congenital spinal anomalies are described on which part of the vertebra is missing (failure of formation) or not fully separated (failure of segmentation). The spinal deformity may also have kyphosis (round back) or lordosis (sway back). Not all congenital anomalies fit neatly into these categories. At times two malformations can balance each other with a hemivertebra on the left side and another on the right. Other times, multiple anomalies can accentuate the curvature, such as two hemivertebra on the same side. The presence of malformed vertebrae is usually not a problem unless they cause the spine to tilt significantly out of alignment.

When your child’s congenital spine anomaly is first diagnosed, no one will know exactly how much the spinal deformity will progress as the child grows. There are some clues, however. Anomalies in the thoracic spine tend to progress more. Multiple fully-segmented hemivertebrae (triangular vertebra with discs between them) on the same side of the spine tend to progress more. A hemivertebra opposite a set of fused vertebrae (bar) is the most likely combination to progress as the child grows. Because of the rapid period of spinal growth in the first five
years of life, and similarly during adolescence, curves must be monitored closely during these periods.

**CLINICAL FINDINGS AND DIAGNOSIS**
After the history and physical examination, the next step in evaluating congenital scoliosis is obtaining X-rays. Good quality front and side view X-rays are necessary. The three-dimensional structure may be best visualized with CT scan because three-dimensional reconstructions of the spinal anatomy are possible. MRI is also valuable to rule out associated anomalies in the spinal cord, and better define the nerve and disc anatomy. Your primary care provider may want to obtain an ultrasound of the kidneys or a cardiology consult because the kidneys and heart are formed at the same time as the spine. Children with congenital scoliosis have a 25% chance of having an anomaly of the urologic system (kidneys, bladder) or 10% chance in the cardiac system. The child's limbs should be examined for any musculoskeletal abnormalities, such as clubfoot or malformed hand or arm.

**TREATMENT**
Most curves start small and gradually get bigger with growth. Most of the time, the risk for progression of the curvature decreases when growth stops during adolescence. Treatment decisions are based on the size of the main curvature and compensatory curvatures and expectations of remaining growth and risk for worsening. The size of the curvature is measured from the X-rays, it is important to recognize that the measurement has an error range of 5-10 degrees. The remaining growth is estimated based on your age, your height measurement, the X-ray appearance of your pelvis and progression through puberty. Options for scoliosis include observation, bracing, or surgery.

**Observation**
Observation is usually appropriate for a young child and for small curvatures. During periods of more rapid growth, X-rays are obtained every four to six months. Observation is usually continued as long as there is no drastic increase in the size of the curve.

**Bracing**
If the curve is progressive, and your child is still growing, bracing or casting, may be recommended. A brace does not correct the curve, but can sometimes slow down progression.
**Surgery**

Surgery is sometimes needed to address the curvature. The most common procedures is a posterior spinal fusion with instrumentation. This is sometimes combined with resection or osteotomy at the abnormal levels. If the child is still young, limited fusion or non-fusion surgery may be a first step, often followed by a longer or definitive spinal fusion when the child is older and closer to done growing.

**MORE INFORMATION**

More information is available from the National Scoliosis Foundation at 800-673-6922. Further information can be obtained on the internet. Two good sites for expert and peer reviewed information are [www.aaos.org](http://www.aaos.org) and [www.emedicine.com](http://www.emedicine.com).

**FEEDBACK**

If you have questions or comments, please contact the office or submit them to the web site at [www.pedorhoto.com](http://www.pedorhoto.com).