



Idiopathic scoliosis

By David Gray, M.D.

Idiopathic scoliosis is the most common variety of scoliosis in the pediatric and adolescent population. Scoliosis is defined as a curvature of the spine, consisting of a side-to-side bending of the vertebral column of at least 10 degrees. This spinal curve is accompanied by vertebral and trunk rotation, making scoliosis a three-dimensional deformity. Idiopathic scoliosis is a separate entity and it does not include congenital scoliosis (abnormalities of the vertebrae), or neuromuscular diseases that may create a spinal curve. There is a clear genetic link for idiopathic scoliosis that continues to be defined and DNA testing is improving.

About scoliosis

- About 3 percent of the population has a curve greater than 10 degrees.
- Less than 1 percent of the general population will develop a curve greater than 30 degrees.
- Girls are three times more likely to have their scoliosis progress and require treatment than boys.
- Skeletally immature patients (patients with growth remaining) are at risk for curve progression and this risk is greatest during rapid spine growth.
- Idiopathic scoliosis does not typically cause significant cardiac or pulmonary problems unless the curves progress to 80 degrees or more.
- The incidence of back pain is the same in the scoliosis population as in the general population.
- Core strengthening and physical conditioning are key to long-term health and well-being.

• Presentation

Primary care physicians may notice:

- Shoulder asymmetry.
- Waist shift or uneven waist line.
- Trunk rotation.
- Rib asymmetry. The trunk and rib rotation is most noticeable on forward bending exam with one side of the back higher than the other.
- Occasionally complaints of back pain. Pain is not usually a major component of the history of idiopathic scoliosis.
- Suspicion because of a family history of scoliosis.

Workup

Physical exam

- Shoulder asymmetry.
- Trunk rotation or rib asymmetry.
- Waist shift.
- Thorough neurologic examination.



Radiographs

- Standing posterior to anterior (PA) view of the thoracic and lumbar spine that includes the iliac crest on both sides of the pelvis.
- Lateral view of the spine should include the thoracic and lumbar spine.
- Preferably each one of these radiographs is taken on a 14" x 36" cassette so the PA and lateral view show the entire spine on one film each.
- An MRI scan is not routinely used unless there are abnormal neurologic findings, unusual curve patterns or unusual pain patterns. The use of an MRI for scoliosis is



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best used at the discretion of the scoliosis specialist.

Indications for referral to an orthopedic specialist

- Curves greater than 10 degrees in patients skeletally immature (remaining growth).
- Curves greater than 25 degrees in patients who are skeletally mature (no remaining growth) for at least one evaluation and discussion of any long-term recommendations.
- Curves that remain less than 10 degrees do not require referral and can be monitored on a biannual (six month) basis until skeletally mature. If there are any concerns, then a referral is warranted.

Treatment

- Visits every three to six months, with radiographs, to observe curve progression in patients that are skeletally immature
- Brace treatment
 - custom made braces worn full-time or at night only for patients with curves 25-40 degrees when skeletally immature.
 - prevents progression of the curve in about 75 percent of treated patients.
 - does not provide permanent correction.
- Surgery
 - Curves greater than 50 degrees (curves between 40 and 50 degrees may or may not be an indication for surgery depending on the curve pattern and patient preference).
 - Surgical intervention involves fusion and instrumentation (placing rods and bone anchors such as screws or hooks in the bone).

Long-term natural history

- Curves less than 30 degrees as adults usually do not significantly progress (3 to 10 degrees on average) during adulthood.
- Curves more than 50 degrees as adults typically progress 20 degrees between the ages of 20 and 60.
- Activities are not restricted unless a surgical fusion has been done.
- The surgical group is restricted from contact sports and gymnastics.
- The incidence of back pain is the same in the scoliosis population as in the general population. Core strengthening and physical conditioning are key to long-term health.

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