Welcome

Welcome to the summer issue of The Spine Segment with news and insights on spinal conditions and treatments. This issue includes useful information on scoliosis, back-pack safety, athletic injuries and new research and procedures, including Video-Assisted Thoracoscopic Spinal Surgery (VATS).

Tips for Treating Scoliosis

According to the National Scoliosis Foundation, scoliosis affects 2% to 3% of the population - infants, adolescents and adults worldwide among every race and socio-economic class. In scoliosis, the spine curvature appears more like an “S” or “C” than a straight T on an X-ray. Eighty-five percent of scoliosis cases are idiopathic.

The primary age of scoliosis onset is 10-15 years old. The majority of cases do not require treatment. Only approximately 4 in 1,000 children will have spinal curves that will require treatment. While scoliosis is equally common in males and females, females are eight times more likely to progress to a level that requires treatment. Males generally have a less pronounced curve.

Early detection is important. Beginning around eight years old, possible signs include:

- uneven shoulders
- prominent shoulder blade(s)
- uneven waist
- elevated hips
- leaning to one side

In making a diagnosis*, the physician should:

1. Take a family and medical history, noting any family history of the disease or underlying conditions that might be causing scoliosis. For instance, age and onset of puberty help determine growth patterns.

2. Perform a physical examination observing front and back for any asymmetry in shoulders, rib cage, pelvis or waist. Patients may present with humpback or leaning tendencies.

3. Conduct the Adam's Forward Bending Test in which the patient bends forward at the waist. View from behind and note any thoracic or lumbar prominence.

4. Use a scoliometer to measure any rib hump in degrees.
5. Measure and compare leg length.

6. Use a plumb line held posteriorly at the 7th cervical vertebra hung below the buttocks. When normal, the line should pass through the gluteal crease.

7. Palpate the thoracic and lumbar muscles for any prominence on one side.

8. Note range of motion for flexion, extension, lateral bending and spinal rotation.

9. Note any neurological problems or symptoms including numbness, pain, spasms, weakness or bowel/bladder changes.

10. X-ray the patient to reveal entire length of spine (posterior/anterior and lateral). This will help show if curves are structural or non-structural.

* Source: Diagnosis steps provided by www.spineuniverse.com.

According to Thomas M. Reilly, M.D., an orthopaedic spine surgeon with the Indiana Spine Group, “We consider the patient’s age, how much more he or she is likely to grow, the degree and pattern of the curve and the type of scoliosis before recommending treatment. Treatments may include observation, bracing or surgery.”

Many surgical techniques can be used to correct scoliosis curves. Risks and benefits of each case are carefully weighed.

Thomas M. Reilly, M.D.

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**Cutting Edge**

**ISG Surgeon has Success with Video-Assisted Thoracoscopy**

Patients with idiopathic scoliosis often have a noticeable rib deformity that may persist following corrective surgery. Open thoracoplasty has been the traditional treatment to reduce the rib deformity. A newer effective alternative is video-assisted thoracoscopy (VATS).

Rick C. Sasso, M.D., an orthopaedic spine surgeon with the Indiana Spine Group, presented his experience and reported outcomes with this procedure at the Scoliosis Research Society (SRS) 2002 annual meeting. He and colleague Praveen Mummaneni, M.D., assistant professor of neurosurgery at Emory University, also proposed an outcome scoring system to allow other surgeons a way to record results.

Between 1998 and 2000, four patients underwent VATS performed by Dr. Sasso for...
significant rib hump deformity associated with ideopathic scoliosis. Patients were followed for 40 months following surgery, and outcomes were assessed using defined criteria.

Two patients had excellent outcomes - meaning the rib hump was absent and the patients were fully satisfied with the cosmetic result. They experienced minimal or no pain in the postoperative chest wall area. Two patients had good outcomes - meaning a mild residual rib hump and patients were satisfied with the cosmetic result. They had mild postoperative pain.

According to Dr. Sasso, “VATS provides an alternative, minimally invasive route to perform thoracoplasty. VATS incisions are much smaller and more cosmetically appealing than thoracoplasty incisions. Long-term follow-up indicates good to excellent patient outcomes.”

Help Young Patients with Backpack Safety

One of the most common reasons for any patient to visit his or her physician is due to back pain. Unfortunately, back pain is starting to occur in much younger patients, often due to unsafe use of backpacks in schools.

Backpacks can be useful when used properly and are preferable to shoulder bags, says Kevin E. Macadaeg, M.D., a spinal diagnostic specialist with the Indiana Spine Group. “But their weight should not exceed 10% to 15% of a child’s body weight,” he adds.

When they are too heavy, the child may arch the back or lean forward to compensate. This can result in muscle, back or joint stress or injury. Physicians should look for signs of numbness or weakness in arms or legs or reported back pain in their pediatric patients.

Physicians can advise parents with the following suggestions

- Limit the weight of the backpack and carry only essential items. Store additional books or supplies in lockers or at home.
- Consider a pack with wheels or a metal frame, remembering that the backpack may have to be carried up stairs.
- Consider purchasing an extra set of books for home, or buy books on CD-ROM when available.
- Encourage students to go to their lockers between classes, if time allows.
- Carry heavier items close to the body and bulky items pointing away.

Kevin E. Macadaeg, M.D.
Select packs with two wide, padded straps that go over both shoulders.

Use a chest belt to distribute weight evenly.

Strengthen the stabilizing muscles of the lower back and abdomen i.e. with weight training or other back strengthening exercises.

Pick up the pack by bending at the knees and using both hands.

If stress or pain persists, says Dr. Macadaeg, the child may need to be seen by a specialist to ensure there are no underlying problems.

Back Pain in Athletes

Back pain affects almost three-fourths of working people and is very common in athletes, especially those in sports such as football, soccer, golf, rowing, diving, rugby and gymnastics.

Injuries of the lower back can be the result of repetitive stressful activity, sudden twists, trauma, improper conditioning or warmup, says Kenneth L. Renkens, Jr., M.D., a neurosurgical spine surgeon with Indiana Spine Group. Pain can come from any of the spinal structures or surrounding muscles or tissues. Dr. Renkens says the lumbar vertebrae are more prone to injury in the growing adolescent, especially during sports activities.

Spondylolisthesis is a result of a stress fracture that causes the vertebra to slip out of place causing inflammation of cartilage and underlying bone. It may result from over-stretching the spine during some sports, such as football or diving. The condition requires prompt medical attention. One should never assume kids will recover quickly from injuries because of their youth, warns Dr. Renkens.

A good history and physical exam will provide the most information. Several diagnostic tests can also aid in the correct diagnosis. Dr. Renkens advises, “A bone scan is ideal for stress fractures. X-rays can show any abnormalities of the bone structures. MRIs are the best tool for revealing degenerative conditions, or bulging or herniated disks.”

As more youth engage in highly competitive and high-impact sports, injuries may be more likely. Because young patients are still developing, problems can be exacerbated.

“Keep in mind that some fractures may not be demonstrated by plain radiographs. It may be worth considering special imaging studies if symptoms persist,” adds Dr. Renkens.

Treatments may involve cessation of activity and weight training. A spine specialist
may prescribe pain medication, and if necessary, a back brace during treatment. Physical therapy can assist with conditioning and rehabilitation. In some cases, surgical treatment may be necessary.

**Data and Findings**

Physicians with Indiana Spine Group actively participate in research studies on an ongoing basis. “In our research, we are continuously evaluating methods to refine the treatment for spine pain as well as developing minimally invasive spine surgery techniques,” says Dan K. Nordmann, M.D., a spinal diagnostic specialist with Indiana Spine Group.

Physicians with Indiana Spine Group are actively recruiting patients for the following studies: Cervical Disc Prosthesis, Flexicore® Intervertebral Disc Prosthesis and Intradiscal Electrothermal Therapy (IDET).

**Study Listing**

**Study:**
Cervical Disc Prosthesis Research Study

**Objective:**
To determine the effectiveness of a cervical disc implant as an option to traditional cervical fusion surgery.

**Principal Investigator:**
Rick C. Sasso, M.D.

**Sub- Investigators:**
Kenneth L. Renkens, Jr., M.D., Thomas J. Puschak, M.D., Thomas M. Reilly, M.D.

**Overall Criteria:**
Patients diagnosed with cervical degenerative disc disease that require surgical treatment for symptoms and/or signs of cervical radiculopathy and/or myelopathy, with or without axial neck pain. Patients must meet specific inclusion criteria. Patients will be randomized to receive the artificial disc or the control.

**Contact:**
Linda Foley, Research Coordinator  (317) 715-5890.
**Study:**
Flexicore® Intervertebral Disc Prosthesis Research Study

**Objective:**
To compare the effectiveness and safety of the Flexicore Intervertebral Disc with the current standard of care - spinal fusion.

**Principal Investigator:**
Rick C. Sasso, M.D.

**Sub-Investigators:**
Kenneth L. Renkens, Jr., M.D., Thomas J. Puschak, Thomas L. Reilly, M.D.

**Overall Criteria:**
Patients diagnosed with degenerative disc disease (DDD) at segments between L1-L5/S1 that meet specific inclusion criteria. Patients will be randomized to receive the artificial disc or control.

**Contact:**
Linda Foley, Research Coordinator (317) 715-5890.

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**Study:**
Intradiscal Electrothermal Therapy (IDET)

**Objective:**
To determine the effectiveness of the utilization of a heat coil in the treatment of lower back pain.

**Principal Investigator:**
Kevin E. Macadaeg, M.D. and Dan K. Nordmann, M.D.

**Overall Criteria:**
Patients diagnosed with a 6-month history of chronic, function limiting discogenic lower back pain with documented failure of conservative care with a rigorous physical therapy program.

**Contact:**
Wendy Adams, Research Nurse (317) 228-7000.
What’s New?

To better serve our patients, Indiana Spine Group now has an office on the campus of Community Hospital North. Thomas J. Puschak, M.D., an orthopaedic spine surgeon, sees patients at this location. Treating both adult and pediatric patients, Dr. Puschak’s goal is to provide patient-focused care. Patient education and communication are an integral part of his care.

Dr. Puschak’s expertise includes treating common back and neck problems, such as herniated discs, lumbar stenosis, cervical myelopathy and radiculopathy, and spondylosis. Additionally, he has extensive experience in treating complex problems, such as infection, tumors, fractures and deformity.

Conveniently located on the north side, patients often be seen within one to two weeks. Communication is also important to Dr. Puschak’s relationship with referring physicians. “My goal is to maintain ongoing communication with referring physicians, and visit summaries are always sent,” states Dr. Puschak.

To refer patients or schedule appointments at any of our locations, call 317.228.7000 or toll-free 866.947.7463.

Indiana Spine Group is a premier provider of medical and surgical care of the spine. Using the most advanced diagnostic and treatment tools available, we treat young children, adults and seniors. We provide comprehensive spine treatment, including orthopaedic spine surgery, neurosurgical spine surgery and non-operative spine treatments.

Providing the full spectrum of spine care