



Guideline Update: Diagnosis and Treatment of Adult Isthmic Spondylolisthesis

Written by Toni Rizzo

Scott Kreiner, MD, Arizona Orthopedic Surgical Hospital, Chandler, Arizona, USA, and cochair of the North American Spine Society (NASS) Evidence-Based Guideline Development Committee, was joined by Jamie Baisden, MD, Medical College of Wisconsin, Milwaukee, Wisconsin, USA, and Rakesh Patel, MD, University of Michigan, Ann Arbor, Michigan, USA, key members of the Diagnosis and Treatment of Adult Isthmic Spondylolisthesis Guideline Work Group, to discuss recommendations made within the draft 2014 guideline update. The presenters reviewed the guideline development process and the current state of the evidence on natural history, diagnosis and imaging, medical and interventional treatment, surgical treatment, and the cost-effectiveness of treatment for adult isthmic spondylolisthesis.

GUIDELINE DEVELOPMENT PROCESS

The first objective of the update was to provide evidence-based recommendations to address key clinical questions about the diagnosis and treatment of adult isthmic spondylolisthesis. The guideline also aimed to reflect contemporary treatment concepts for symptomatic isthmic spondylolisthesis, as reflected in the highest-quality clinical literature available on this subject as of June 2013. This guideline focused on the care of adult patients only.

The work group consisted of neurosurgeons, orthopaedic surgeons, pain and rehabilitation specialists, neuroradiologists, and nonphysician practitioners who specialize in spine care. The work group members were trained in the NASS Fundamentals of Evidence-Based Medicine Course.

The guideline development process involved defining isthmic spondylolisthesis, reviewing existing clinical questions, and identifying new clinical questions to address. The update was based on a complete literature search of English-language references in MEDLINE (PubMed), EMBASE, the Cochrane Library, and bibliography review. Retrieved abstracts were reviewed to identify full-text articles for review. The evidence analysis was conducted using NASS evidentiary tables. The work group reviewed the evidence and formulated evidence-based recommendations and consensus statements. The guideline is reviewed and revised approximately every 5 years.

NASS LEVELS OF EVIDENCE

The recommendations were graded according to the quality of the available evidence. Level I evidence consists of high-quality randomized clinical trials (RCTs), prospective studies, testing of previously developed diagnostic criteria on consecutive patients (with universally applied reference gold standard), and systematic reviews of level I studies. Level II evidence consists of lesser-quality RCTs and prospective studies, prospective comparative studies, retrospective studies, untreated controls from RCTs, development of diagnostic criteria on consecutive patients (with universally applied reference gold standard), and systematic review of level II studies. Level III evidence consists of case-control studies, retrospective comparative studies, diagnostic studies of nonconsecutive patients (without consistently applied reference gold standard), and systematic review of level III studies. Level IV evidence consists of case series, case-control diagnostic studies, and diagnostic studies with a poor reference standard. Level V evidence is based on expert opinion.

For economic and decision analyses, level I evidence consists of values obtained from many studies, with multiway sensitivity analyses. Level II evidence consists of values obtained from limited studies, with multiway analyses. Level III evidence consists of analyses based on limited

Peer-Reviewed
Highlights From the

**North American Spine
Society Annual Meeting**

November 12–15, 2014
San Francisco, CA, USA



alternatives and costs and poor estimates. Level IV evidence consists of analyses with no sensitivity analyses. Level V evidence is based on expert opinion.

Each recommendation was graded as follows:

- A. Recommended: ≥ 2 consistent level I studies
- B. Suggested: 1 level I study with supporting level II or III studies or ≥ 2 consistent level II or III studies
- C. May be considered; is an option: 1 level I, II, or III study with supporting level IV studies or ≥ 2 consistent level IV studies
- I. Insufficient or conflicting evidence not allowing a recommendation for or against

Each recommendation section includes recommendations for future research when there is limited or no evidence.

SUMMARY OF WORK GROUP RECOMMENDATIONS

Isthmic spondylolisthesis was defined by the guideline work group as the anterior translation of one lumbar vertebra relative to the next caudal segment as a result of an abnormality in the pars interarticularis. When symptomatic, this causes a variable clinical syndrome of back and/or lower extremity pain and may include varying degrees of neurologic deficits at or below the level of the injury.

The work group addressed the issue of whether spondylolysis (unilateral or bilateral, identified in adolescence or adulthood) is likely to progress to symptomatic spondylolisthesis. The group's grade B recommendation was that spondylolisthesis occurs in 40% to 66% of patients with bilateral spondylolysis and that spondylolisthesis is unlikely to occur in patients with unilateral spondylolysis.

With regard to medical and interventional treatment, there was insufficient evidence to make a recommendation for or against the use of physical therapy or exercise for the treatment of isthmic spondylolisthesis (grade I). There was insufficient evidence regarding the impact of the degree of radiologic grade, sagittal spinopelvic alignment, sacral and spinopelvic parameters, or dynamic instability on the outcomes of patients undergoing medical or interventional treatment (grade I). There also was insufficient evidence to make a recommendation for or against the use of medical or interventional treatment for the long-term management of isthmic spondylolisthesis (grade I). There was no evidence to address the other questions regarding medical and interventional treatment for isthmic spondylolisthesis in adults. The work group was unable to generate recommendations due to the paucity of literature addressing the roles of pharmacologic treatment, manipulation, steroid injections, and ancillary treatments (eg, bracing, traction, electrical stimulation, and transcutaneous electrical stimulation).

There was no evidence for the questions regarding value and cost-effectiveness. The work group was unable to generate recommendations due to the paucity of literature addressing these questions:

- Which medical or interventional treatment method for isthmic spondylolisthesis is the most cost-effective?
- Is surgical treatment cost-effective compared with medical and interventional therapies?
- Which surgical treatment method is the most cost-effective?

The guideline on adult isthmic spondylolisthesis is currently under review by the NASS board. Therefore, these recommendations are considered draft recommendations.

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