



Current Evidence Regarding the Surgical and Nonsurgical Treatment of Pediatric Lumbar Spondylolysis: A Report from the Scoliosis Research Society Evidence-Based Medicine Committee

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Abstract

Study Design: Structured literature review.

Objectives: The Scoliosis Research Society requested an assessment of the current state of peer-reviewed evidence regarding pediatric spondylolysis with the goal of identifying both what is really known and what research remains essential to further understanding.

Summary of Background Data: Spondylolysis is common among children and adolescents and no formal synthesis of the published literature regarding treatment has been previously performed.

Methods: A comprehensive literature search was performed. The researchers reviewed abstracts and analyzed by committee data from included studies. From 947 initial citations with abstract, 383 articles underwent full text review. The best available evidence for clinical questions regarding surgical and nonsurgical treatment was provided by 58 included studies. None of the studies were graded as level I or level II evidence. Two of the studies were graded as level III evidence. Fifty-six of the studies were graded as level IV evidence. No level V (expert opinion) studies were included in the final list.

Results: Although natural history studies suggest a benign, relatively asymptomatic course for spondylolysis in most patients, both nonsurgical and surgical treatment series suggest that a substantial number of patients present with pain and activity limitations attributed to spondylolysis. Pain resolution and return to activity are common with both nonsurgical and surgical treatment (80% to 85%, respectively). Although it is implied that most surgically treated patients have failed nonsurgical treatment, the specific treatment modalities and duration required before failure is declared are not well defined. There is insufficient evidence to know which patients will benefit from specific treatment modalities (both nonsurgical and surgical).

Conclusions: Because of the preponderance of uncontrolled case series and the lack of comparative studies, only low-quality evidence is available to guide the treatment of pediatric spondylolysis.

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Keywords: Structured literature review; Treatment; Lumbar spondylolysis; Isthmic spondylolisthesis; Evidence-based medicine

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Introduction

The progress of published medical knowledge, changes in societal expectations, and developments in health care economics have lead medical organizations to develop evidence-based documents and products such as clinical practice guidelines, appropriate use criteria, and performance improvement modules. The initial step of each of these is a structured literature review to assess the current state of peer-reviewed evidence. The Evidence-Based Medicine Committee of the Scoliosis Research Society recently undertook a structured literature review of pediatric lumbar spondylolysis. Clinically relevant questions regarding treatment, both surgical and nonsurgical, were proposed by the committee.

Methods

A working definition for lumbar spondylolysis was developed by group consensus. Relevant clinical questions were proposed and refined by group consensus.

Data sources

The researchers performed a thorough and comprehensive literature search with the assistance of a professional

medical librarian (Fig.). They searched the published English-language medical literature from 2011 and earlier to identify individual studies, using the following computerized databases: PubMed (United States National Library of Medicine), Ovid Medline (Wolters Kluwer), Cochrane Database of Systematic Reviews (Cochrane Collaboration resources), Web of Science (Thomson Reuters Web of Knowledge), and Scopus (Elsevier B.V.). Citations and abstracts were retrieved. Abstracts were reviewed for obvious exclusions (ie, studies not associated with pediatric lumbar spondylolysis).

Study selection criteria

Two committee members performed independent review of the abstracts for inclusion or exclusion. Articles were recommended for full text review if the study was expected to provide evidence to answer the clinical questions. Disputes regarding inclusion or exclusion were resolved by group consensus, with preference given to inclusion in unresolved cases. From 947 initial citations with abstracts, 301 articles were included in the full text review. The same inclusion/exclusion process was repeated during full text review. In addition, a hand search of the bibliographies

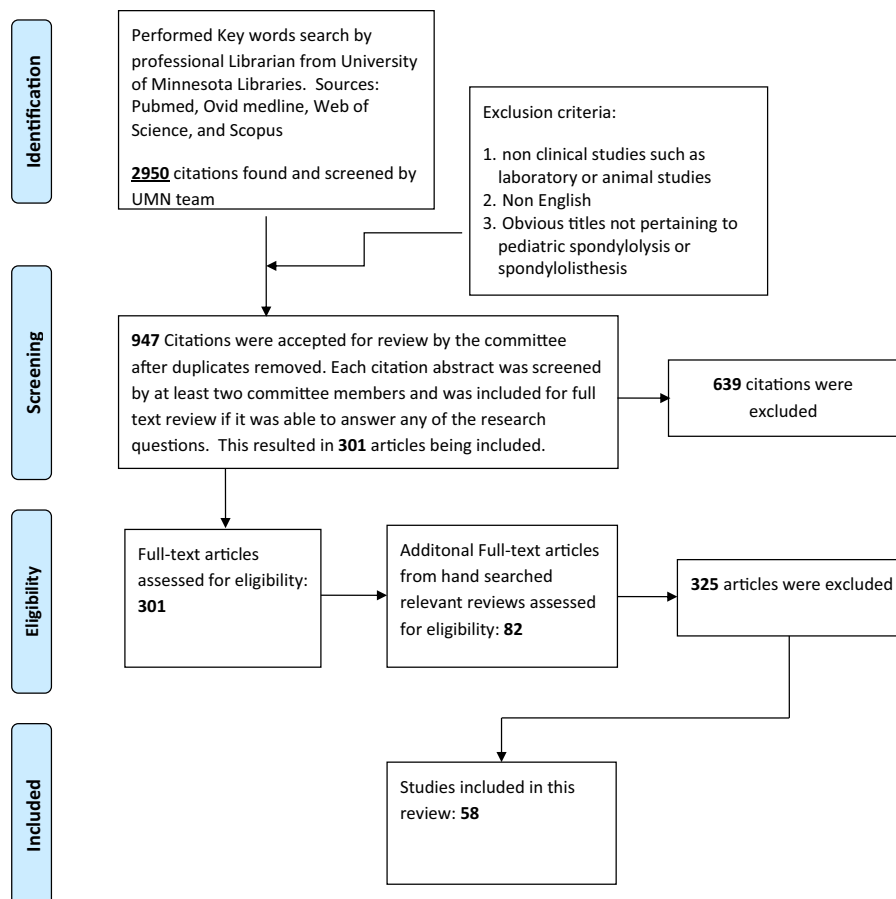


Fig. Flow Diagram

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