

Clinical Study

Return to sports after surgery to correct adolescent idiopathic scoliosis: a survey of the Spinal Deformity Study Group

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Received 4 October 2012; revised 29 March 2013; accepted 14 June 2013

Abstract

BACKGROUND CONTEXT: There are no guidelines for when surgeons should allow patients to return to sports and athletic activities after spinal fusion for adolescent idiopathic scoliosis (AIS). Current recommendations are based on anecdotal reports and a survey performed more than a decade ago in the era of first/second-generation posterior implants.

PURPOSE: To identify current recommendations for return to sports and athletic activities after surgery for AIS.

STUDY DESIGN/SETTING: Questionnaire-based survey.

PATIENT SAMPLE: Adolescent idiopathic scoliosis after corrective surgery.

OUTCOME MEASURES: Type and time to return to sports.

METHODS: A survey was administered to members of the Spinal Deformity Study Group. The survey consisted of surgeon demographic information, six clinical case scenarios, three different construct types (hooks, pedicle screws, hybrid), and questions regarding the influence of lowest instrumented vertebra (LIV) and postoperative physical therapy.

RESULTS: Twenty-three surgeons completed the survey, and respondents were all experienced expert deformity surgeons. Pedicle screw instrumentation allows earlier return to noncontact and contact sports, with most patients allowed to return to running by 3 months, both noncontact and contact sports by 6 months, and collision sports by 12 months postoperatively. For all construct types, approximately 20% never allow return to collision sports, whereas all surgeons allow eventual return to contact and noncontact sports regardless of construct type. In addition to construct type, we found progressively distal LIV resulted in more surgeons never allowing return to collision sports, with 12% for selective thoracic fusion to T12/L1 versus 33% for posterior spinal fusion to L4. Most respondents also did not recommend formal postoperative physical therapy (78%). Of all surgeons surveyed, there was only one reported instrumentation failure/pullout without neurologic deficit after a patient went snowboarding 2 weeks postoperatively.

FDA device/drug status: Not applicable.

Author disclosures: **RAL:** Grants: DARPA (G, Paid directly to institution), DMRDP (H, Paid directly to institution); Other Office: *The Spine Journal* (Deputy Editor), *Journal of Bone and Joint Surgery* (Associate Editor). **DGK:** Nothing to disclose. **LGL:** Board membership: Scoliosis Research Society (Immediate Past President); Grants: Axial Biotech (unknown, Paid directly to institution), DePuy (unknown, Paid directly to institution); Patents: Medtronic (None); Royalties: Medtronic (amount unknown), Quality Medical Publishing (amount unknown); Travel/accommodations: Scoliosis Research Society (travel/accommodations reimbursed), Medtronic (travel/accommodations reimbursed), BroadWater (travel/accommodations reimbursed). **DJS:** Board membership: Scoliosis Research Society (None); Grant: OREF (unknown amount, Paid directly to institution); Payment for lectures: Medtronic (unknown amount); Royalties: Medtronic (amount unknown). **AJB:** Nothing to disclose.

The disclosure key can be found on the Table of Contents and at www.TheSpineJournalOnline.com.

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No reproduced copyrighted materials, no relevant financial disclosures, and no funding source for this study. Institutional review board approval with publication clearance was obtained for this study.

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CONCLUSIONS: Modern posterior instrumentation allows surgeons to recommend earlier return to sports after fusion for AIS, with the majority allowing running by 3 months, noncontact and contact sports by 6 months, and collision sports by 12 months. Published by Elsevier Inc.

Keywords: Return to sports; Sports participation; Spinal deformity surgery; Adolescent idiopathic scoliosis

Introduction

Participation in sports and athletic activities by children and adolescents has become an important aspect of society because of the physical benefits, values imparted by organized sports, and the positive impact on psychological and social well-being of the growing child [1–4]. The decision to allow patients to resume sports and athletic activities after surgery to correct adolescent idiopathic scoliosis (AIS) is based on multiple factors, although none have been scientifically validated. Therefore, the decision can be exceedingly difficult given the paucity of literature concerning this important topic and fear of potential catastrophic neurologic injury [5,6]. The discussion becomes especially complex because of the individual variations in spinal deformity patterns/severity, necessary fusion levels, and the variety and caliber of sports and athletic activities. With rule changes in various sporting activities, most authors differentiate among noncontact, contact, and collision sports. However, spinal deformity surgeons must be prepared to discuss this topic, which is often a source of concern for the patient, parents, and even coaches, allowing an educated consensus opinion regarding return to sport after surgery.

A Medline review of the English-language literature found only five papers addressing the topic of sports or athletic activity after surgery for scoliosis [1,7–10]. In particular, the present study was prompted by a similar investigation by Rubery and Bradford [7] more than a decade ago. The authors reported the survey of 261 Scoliosis Research Society (SRS) members regarding postoperative athletic activity for children and adolescents with scoliosis and spondylolisthesis [7]. However, the study was performed in the era of first- and second-generation spinal implants, and although the authors reported that 53% of respondents thought that the use of instrumentation mattered “a great deal,” the influence of implant/construct type used during scoliosis surgery was not specifically addressed [7]. The survey results also demonstrated the importance of lowest instrumented vertebra (LIV), with 44% of respondents stating the importance of this factor was “moderate” to a “great deal.” [7] However, the authors failed to address the specific LIV that may influence the decision to allow return to sports after scoliosis surgery. In another recent study, Fabricant et al. [10] found a more distal LIV resulted in a stepwise decline in rate of return to play, with Lenke

classification and SRS-22 score also being independent predictors of return to preoperative level of athletic activity after posterior spinal fusion (PSF) for AIS. As most would agree, the teenager instrumented to T12 is different from the adolescent with an LIV of L4.

Despite increased use of modern posterior spinal implants, no study in the last decade has addressed the nature and timing of postoperative return to sports and athletic activities after scoliosis surgery. Recommendations continue to be based largely on anecdote, idiosyncrasies, and axiomatic teaching, with no significant scientific evidence available. Like most important clinical topics in spinal surgery, the need to address this question was prompted by patient requests to obtain an expert “consensus” opinion to provide guidance in allowing their children to return to sports and in what time frame. Therefore, we set out to identify current factors influencing return to sports after surgery to correct AIS.

Methods

A survey was created to evaluate factors influencing sports and athletic activities after spinal surgery for AIS. It was administered to members of the Spinal Deformity Study Group (SDSG), considered expert surgeon-researchers in the treatment of AIS. The SDSG consists of approximately 23 surgeon-researchers and was formed in 2001 with the mission and purpose to efficiently and effectively develop and conduct multicenter studies regarding clinical outcomes in pediatric and adult scoliosis, spondylolisthesis, and related deformities. Surveys included a series of questions regarding surgeon’s demographic and clinical practice, six case scenarios (Table 1), and three different construct types (hooks, all-pedicle screws, hybrid [hooks+pedicle screws]), lowest instrumented vertebra, and postoperative physical therapy to determine their influence on recommendations concerning return to various noncontact, contact, and collision sports (Table 2). Subanalysis was performed based on surgeon factors including type of training (pediatric orthopedic surgeon [ped OS], orthopedic spine surgeon [spine OS], neurosurgeon), surgeon experience (years of practice), and operative volume (average number of AIS cases per year: ≤ 20 low volume, > 20 high volume). Returned surveys were evaluated by hand and responses analyzed using Excel (Microsoft, Redmond, WA, USA).

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