

## Effect of Preoperative Indications Conference on Procedural Planning for Treatment of Scoliosis

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### Abstract

**Study Design:** This study determines the rate of change in the scoliosis surgery plan in cases presented in preoperative indications conference.

**Objectives:** To determine the effect of preoperative indications conference on the plan of surgery and to identify characteristics that increased the likelihood of change.

**Summary of Background Data:** Preoperative indications conferences are used as a teaching and planning tool. Levels of fusion, construct options, and necessity for osteotomies are often debated in the planning of scoliosis surgery.

**Methods:** Scoliosis surgeries were presented at preoperative indications conference with four attending pediatric orthopedic surgeons present. The operative surgeon committed to a surgical plan before conference. A consensus-based plan was made without knowledge of the operative surgeon's preconference plan. Changes of plan were classified as major, minor, or no change.

**Results:** Of the 107 surgical plans, 50 were index surgeries, 13 were revisions, and 44 were scheduled growing rod lengthenings. There were two major changes, including a change to a growing construct from planned fusion, and a change in fusion levels in an adolescent idiopathic scoliosis (AIS) patient. There were 13 minor changes, which included changes in fusion levels (1 to 3; mean = 1.23) and the addition of an osteotomy. The rate of change was 28% for index surgeries and 7.69% for revisions. Of the 14 changes in the 50 index surgeries, there were 8 AIS, 3 cerebral palsy, 1 congenital scoliosis, 1 Ehlers-Danlos, and 1 patient with an undetermined neuromuscular condition. There was 1 change in 13 revision surgeries. There were no changes for growing rod lengthenings and no cancellations as a result of indications conference.

**Conclusions:** Although revision scoliosis surgery is complex, index AIS/JIS surgery was most subject to the influence of indications conference. This likely reflects controversy around choosing levels of fusion.

**Level of Evidence:** IV.

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**Keywords:** Scoliosis; Consensus-based decision making; Surgical planning

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## Introduction

Developing a plan for surgery requires the examination of a variety of factors. Because of the vast collection of variables contributing to the planning process, significant weight is placed on the interpretation of clinical cases by individual physicians. Preoperative indications conferences are commonly held at academic medical centers and are used both to teach, and as a forum for the discussion of surgical planning. Although the exact prevalence of preoperative indications conferences in surgical departments is not explicitly stated within the literature, it is frequently listed as an element of orthopedic surgery residency program curriculums across the United States. Its use as an arena for discussion provides the opportunity for consultation and modification of operative plans based on peer feedback obtained from fellow surgeons [1]. As such, there is the potential for the exchange of information on recent literature, operative techniques, and firsthand experiential insight related to specific surgical interventions, procedures, and outcomes.

Current literature provides support for consensus-based measures as a tool for clinical decision making [2]. Specifically, nominal group decision methods have been used among health-care organizations for the development of educational programs, the establishment of clinical practice guidelines, and technological assessments [3]. These techniques can be used to develop solutions to medical and surgical problems for which there is an inadequate evidence base, no optimal treatment choices, and a lack of understanding of what ideal patient management should be [2,4,5]. In fact, consensus-based decision-making sessions are believed to be advantageous compared with individualized decision making, as collective decision making by experts claims to more effectively identify appropriate treatments [1,6]. Within the field of pediatric orthopedics, clear indications for surgery exist for adolescent idiopathic scoliosis (AIS) and early-onset scoliosis (EOS) patients. However, despite the presence of supported indications criteria and established guidelines for scoliosis treatment, decisions on spinal fusion levels, construct options, and the need for osteotomies are often the subject of debate in surgical planning [7,8]. Furthermore, many of the guidelines on the surgical correction of scoliosis have become more complex, as of late, because of increased controversy and debate [9–13]. Consequently, this has led to increased variability in the choice of instrumentation and surgical approach [9–15].

Preoperative indications conferences provide an appropriate setting to allow a colloquy among clinicians to resolve treatment debates and aid in the development of surgical plans. The purpose of this study is to determine the effect of preoperative spine deformity indications conferences on intended surgical plans, and to identify characteristics that increase the likelihood for alterations in operative plans. Scientific literature is presently scant on

the efficacy and merit of such an intervention. As such, this study will provide foundational information on the influence these decision-making sessions can have on surgical plans.

## Materials and Methods

### Indications conference

Spine deformity indications conferences, within our institution's Division of Pediatric Orthopaedic Surgery, were examined. Four pediatric orthopedic surgeons, one orthopedic surgery fellow, three orthopedic surgery residents, and several medical students and observers attended these weekly, hour-long meetings. All pediatric orthopedic surgeons, participating in the conference, submitted cases to be presented during the meeting. Specific variables related to each participating surgeon (ie, years of practice, fellowship training, number of cases included in study, etc.) are presented in Table 1. Nonparticipant physicians included fellows and/or resident physicians who were present for educational purposes and did not present any subjective opinion to the plan determined by the participating physicians. During the meetings, residents presented each scheduled scoliosis case with the history and physical exam, as well as coronal, sagittal, and lateral bending radiographs. No magnetic resonance imaging (MRI) or computed tomographic (CT) images were included in the conference and any additional supplemental clinical information was provided by the operating surgeon. Before the meeting, the operating surgeon was asked to commit to a plan and was instructed to not discuss this plan with other participating physicians. Discussions commonly revolved around the selection of vertebral levels for fusion, instrumentation types, the choice of traction, and osteotomies.

### Case descriptions

Cases included in the study were elective spine surgeries for patients with AIS and EOS between October 22, 2012, and October 29, 2013. Cases were excluded from the study if they were not preoperative, if fewer than three of the four pediatric orthopedic spine surgeons were present for the conference, or if the operating surgeon was unable to

Table 1  
Descriptive data of orthopedic surgeons participating in preoperative indications conference.

Surgeon	Fellowship trained (pediatric vs. spine)	Years in practice (since completion of fellowship)	Total number of cases included in study	Total number of cases changed
A	Pediatrics	11	60	7
B	Pediatrics	32	11	2
C	Pediatrics	9	27	4
D	Pediatrics	14	9	2
		66	107	15

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