

Clinical Study

Unstaged versus staged posterior-only thoracolumbar fusions in deformity: a retrospective comparison of perioperative complications

Jeremiah J. Maddox, MD^a, Dena R. Pruitt, PA-C^b, Julie Agel, MA^b, Richard J. Bransford, MD^{b,*}

^a*Southern Bone and Joint, Southeast Alabama Medical Center/Flowers Hospital, 1108 Ross Clark Circle, Dothan, AL 36301, USA*

^b*Department of Orthopaedics and Sports Medicine, Harborview Medical Center/University of Washington Medical Center, Box 359798, 325 9th Ave., Seattle, WA 98104, USA*

Received 17 December 2012; revised 22 July 2013; accepted 30 July 2013

Abstract

BACKGROUND CONTEXT: Improvements in surgical techniques and medical support have made reconstruction of adult scoliosis more feasible. In an attempt to reduce the risk of complications, some surgeons have chosen to stage these procedures.

PURPOSE: We sought to compare a staged group versus an unstaged group of patients undergoing posterior-only instrumentation and fusion from the thoracic spine to the pelvis by a single surgeon for degenerative kyphoscoliosis or residual, progressive adolescent idiopathic scoliosis to assess for a difference in complications.

STUDY DESIGN/SETTING: Retrospective chart review.

PATIENT SAMPLE: We included 143 consecutive patients treated between January 1, 2000, and December 31, 2010.

OUTCOME MEASURE: The primary outcome assessed was perioperative complications. Secondary outcomes included intraoperative blood loss, intraoperative transfusions, ICU stay, and disposition.

METHODS: After institutional review board approval, records were analyzed to identify comorbidities and determine whether the management of each patient was planned in an unstaged or staged fashion. “Failures” were identified in which the plan was for an unstaged procedure but were converted to a staged procedure. Complications were defined as unplanned additional procedures or unexpected medical outcomes within 90 days of surgery. We considered $p < .005$ to be significant.

RESULTS: Fifty-two patients underwent planned staged surgery and 90 underwent planned unstaged surgical procedures. Baseline demographics including American Society of Anesthesiologists (ASA) score, body mass index, and preoperative diabetic and cardiac status were not different between the two groups. Age was greater in the staged group (68 vs. 63 y; $p = .001$). Intraoperative transfusion and invasiveness index as defined by Mirza, were also higher in the staged group ($p < .005$). No difference was identified between the two intent-to-treat groups for complications including infection rate, death, myocardial infarction, stroke, pulmonary embolism, other pulmonary complication, or blindness. Eleven of the 90 unstaged patients were unable to have their surgical procedure completed at the time of the index procedure. The 11 “failures” demonstrated a higher ASA compared with the 79 successfully treated unstaged procedures ($p < .005$), although no differences in complications.

FDA device/drug status: Not applicable.

Author disclosures: **JJM:** Research Support (Staff/Materials): Synthes (B, Paid directly to institution), AO (D, Paid directly to institution); Fellowship Support: Depuy (E, Paid directly to institution), AO (E, Paid directly to institution). **DRP:** Research Support (Staff/Materials): Synthes (B, Paid directly to institution), AO (D, Paid directly to institution); Fellowship Support: Depuy (E, Paid directly to institution), AO (E, Paid directly to institution). **JA:** Research Support (Staff/Materials): Synthes (B, Paid directly to institution), AO (D, Paid directly to institution); Fellowship Support: Depuy (E, Paid directly to institution), AO (E, Paid

directly to institution). **RJB:** Research Support (Staff/Materials): Synthes (B, Paid directly to institution), AO (D, Paid directly to institution); Fellowship Support: Depuy (E, Paid directly to institution), AO (E, Paid directly to institution).

University of Washington IRB Approval # 39447.

* Corresponding author. Harborview Medical Center, Department of Orthopedics and Sports Medicine, Box 359798, 325 9th Ave., Seattle, WA 98104, USA. Tel.: (206) 744-3298; fax: (206) 744-3227.

E-mail address: rbransfo@uw.edu (R.J. Bransford)

CONCLUSIONS: There were no differences in complications between the intent-to-treat groups of staged and unstaged procedures, nor was there a difference comparing the “failures” of unstaged care to successful unstaged patients. Although fraught with potential complications, both techniques may be reasonable approaches. © 2014 Elsevier Inc. All rights reserved.

Keywords: Scoliosis; Deformity; Staging; Complication

Introduction

Adult scoliosis has become an increasingly recognized condition throughout Western society [1]. Spinal deformity in the adult population may be a residual or progression of an adolescent idiopathic type; however, it is often degenerative in origin and is commonly accompanied by axial rotation, lateral listhesis, central and foraminal stenosis, and sagittal plane deformity, giving rise to the term “kyphoscoliosis” [2]. The incidence of scoliosis has been shown to increase with age. A recent study of volunteers showed greater than 60% of individuals over age 60 years have scoliosis [3–6]. In contrast with adolescent scoliosis patients, this more elderly population often presents with significant pain rather than cosmetic concerns. This pain may include the low back, sciatica, and leg discomfort from neurogenic claudication [1].

Traditionally, surgeons have been relatively conservative in their approach to treatment of this complex condition owing to limitations of instrumentation and potential perioperative complications [3]. The availability of progressively more sophisticated operative techniques and improved medical support strategies have made attempts at comprehensive reconstruction of complex structural deformities with neurologic manifestations more feasible. The goals of operative management include decompression of stenosis and anatomic realignment in both the sagittal and coronal planes. In most cases, this leads to relief of leg and back pain and an improvement in walking ability, quality of life, and a decreased need for analgesics [1–3,7].

These procedures are generally lengthy, invasive, and fraught with intraoperative physiologic changes secondary to blood loss and resuscitation [8]. The complications can be devastating, some of which include myocardial infarction (MI), stroke, blindness, and even death. Elderly patients (>65 years) are at an even higher risk because of their age and medical comorbidities [9,10]. The incidence of complications in degenerative lumbar scoliosis posterior fusion and instrumentation tends to be high with rates ranging from 40% to 80% [2,9,11,12]. In an attempt to reduce perioperative morbidity, some surgeons have begun to divide these procedures into more than one stage [12]. Staging of anterior/posterior as well as posterior-only procedures has been previously described [12–14]. As posterior-only approaches to this complex problem have become more common, the decision of whether to stage these procedures is increasingly relevant.

The purpose of this study was to compare a staged group versus an unstaged group of patients undergoing instrumentation and fusion from the thoracic spine to the pelvis for kyphoscoliosis to assess whether there is a difference in complications. We hypothesized that patients with adult scoliosis undergoing thoracolumbopelvic fusions in a staged fashion would have lower rates of stroke, death, blindness, and MI but a higher rate of infections than the unstaged group.

Materials and methods

Institutional review board approval was obtained for this retrospective study. No external funding was obtained in support of this study. Data were gathered by searching the prospectively collected database of a single tertiary referral center by the CPT codes 22802, 22804, 22843, and 22844 from January 1, 2000, to December 31, 2010. The codes describe cases involving seven or more levels of instrumentation or arthrodesis. Cases performed by a single surgeon involving instrumentation and fusion extending from the thoracic spine to the pelvis were included. Patient diagnoses included primary diagnoses of degenerative kyphoscoliosis or residual, progressive adolescent idiopathic scoliosis. Patients treated for acute trauma, neoplasia, neuromuscular conditions, or infection were excluded. Each patient was managed with a posterior-based approach only; patients undergoing anterior or lateral based approaches were also excluded. 142 patients met inclusion criteria were identified and were included in the data collection (Figure).

Preoperative medical records were analyzed to determine whether the management of each patient was planned in an unstaged (90 patients) or staged (52 patients) fashion. There was a trend in earlier years to perform unstaged surgery and a trend in later years toward staging, although no clear time delineation could be identified. Baseline demographics collected on each patient included age, gender, body mass index (BMI), primary or revision surgery, presence of heart disease, diabetes, and American Society of Anesthesiologists (ASA) score. Surgical data collected included estimated blood loss (EBL) and transfusion requirements. For the staged patients, these surgical factors were added and the sum total was used for each of these. Each patient was also given a spine invasiveness index as described by Mirza et al. [15].

In 2006, Mirza et al. described a detailed index for quantifying surgical invasiveness [15]. This surgical

Download English Version:

<https://daneshyari.com/en/article/6212350>

Download Persian Version:

<https://daneshyari.com/article/6212350>

[Daneshyari.com](https://daneshyari.com)