

Postoperative bracing after spine surgery for degenerative conditions: a questionnaire study

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Abstract

BACKGROUND CONTEXT: A variety of orthoses are routinely applied after spinal procedures but there are limited data regarding their efficacy, especially with the increasing use of internal fixation. At this time, the proper indications for postoperative bracing are not well established.

PURPOSE: To assess the postoperative bracing patterns of spine surgeons.

STUDY DESIGN/SETTING: Questionnaire study.

PATIENT SAMPLE: Spine surgeons attending the “Disorders of the Spine” conference (January 2008, Whistler, Canada).

OUTCOME MEASURES: Frequencies of bracing after specific surgical procedures.

METHODS: A single-page questionnaire was distributed to all spine surgeons attending the “Disorders of the Spine” conference (January 2008). The questionnaire focused on whether surgeons typically immobilize patients after specific spinal procedures, the type of orthosis used, the duration of treatment, and the rationale for bracing.

RESULTS: Ninety-eight of 118 surgeons completed the survey (response rate: 83%). The frequency of bracing was similar between academic and private as well as orthopedic and neurosurgical practices. The difference in the bracing tendencies of fellowship and non-fellowship trained surgeons was found to be statistically significant (61% vs. 46%, $p < .0001$). The duration of clinical experience did not appear to influence the propensity of surgeons to use orthoses.

Bracing was employed more regularly after cervical spine procedures than surgeries involving the lumbar spine (63% vs. 49%, $p < .0001$). In the anterior cervical spine, orthoses were used more often as the complexity of the procedure increased from single to multilevel constructs (55% vs. 76%, $p < .0001$). The frequencies of bracing were not significantly different between noninstrumented and instrumented lumbar fusions. In most cases, bracing was continued for a total of 3–8 weeks and the restriction of patient activity was the most common reason cited by surgeons who use orthoses.

CONCLUSIONS: Although most of the respondents brace their patients postoperatively, there is an obvious lack of consensus regarding the most appropriate type, duration, and indications for immobilization. Further prospective, clinical studies may play a helpful role in evaluating the efficacy of postoperative bracing protocols. © 2009 Elsevier Inc. All rights reserved.

Keywords:

Spine; Bracing; Postoperative; Orthosis; Questionnaire

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Introduction

Postoperative bracing is commonly used after surgical treatment of degenerative conditions of the cervical and lumbar spines [1]. It has been suggested that orthoses may serve to immobilize the spine and increase arthrodesis rates, relieve postoperative pain, and provide the patient with a sense of security after a variety of spinal

EVIDENCE & METHODS

Context

Bracing after spinal surgery is common, but the proper indications for their use remain unclear.

Contribution

In this questionnaire study of surgeons attending a small spine conference, considerable variation in brace usage was reported.

Implications

Bracing after spinal surgery is expensive and, except in uncommon circumstance, is not supported by high levels of evidence. As this study suggests, there is also a high level of disagreement between surgeons regarding the best practice in post-operative bracing. Given the expense, inconvenience and uncertainty of efficacy, the authors' recommendation for controlled clinical trials is reasonable and over-due.

—*The Editors*

interventions [1]. External immobilization may be particularly beneficial for fusion cases in which there is an increased risk of pseudarthrosis (ie, concomitant tobacco use, significant osteoporosis, or multilevel disease) [1].

In the cervical spine, many surgeons regularly apply a soft or hard collar after anterior or posterior fusions [2–4]. The soft, flexible collar is commonly used as a transition to wearing no collar, whereas a more rigid collar (Philadelphia or Aspen) is usually worn 24 hours a day after fusion procedures. Other authors have advocated the use of a halo or cervicothoracic orthosis after more extensive procedures, such as multilevel corpectomies [5]. In the lumbar spine, postoperative immobilization may consist of either corset which is more easily tolerated by the patient or a rigid thoracolumbosacral orthosis which provides a greater degree of immobilization [6].

However, there are a number of unresolved issues that continue to raise doubts about the necessity of postoperative bracing. Certain investigations have suggested that orthoses bring about minimal restriction of segmental motion [7,8]. Although rare, a myriad of adverse events are known to occur as a result of bracing including pressure ulcers, nerve palsies, and skin reactions [1]; in addition, cervical collars may give rise to dysphagia and respiratory complications [9–11]. Many surgeons insist that meticulous surgical technique in conjunction with the increasing use of rigid internal fixation may be sufficient to achieve excellent fusion rates, thereby obviating the requirement for external immobilization in most cases [1].

There is currently a paucity of published outcome studies assessing the efficacy of spinal orthoses as an adjunct to

the operative management of spinal disorders. One retrospective review demonstrated that patients with isthmic spondylolisthesis undergoing noninstrumented fusion procedures were more likely to develop a solid fusion if they were immobilized in a body cast postoperatively rather than a rigid thoracolumbosacral orthosis [12]. A more recent prospective investigation concluded that bracing with a lumbar corset after posterior lumbar fusions did not facilitate pain control or enhance fusion rates [13]. It is clear that the available data related to postoperative bracing remains inconclusive and fails to provide any well-accepted recommendations regarding the use of orthoses after operative interventions involving the degenerative spine; thus, in many instances an individual surgeon's bracing protocol may be largely determined by his or her training or clinical experience rather than any evidence-based guidelines.

The purpose of this study was to assess the postoperative bracing patterns of spine surgeons by assessing their responses to a standardized questionnaire. More specifically, this survey was conducted to report the frequencies with which they choose to use orthoses after a variety of common spinal procedures performed as a treatment for degenerative diseases of the spine and further characterize their preferences and rationale for bracing in each of these clinical scenarios.

Materials and methods

Questionnaire development and administration

A single-page questionnaire was prepared to record the attitudes and preferences of spinal surgeons regarding postoperative bracing after specific spinal procedures (Appendix A). For each of the 7 cervical and 8 lumbar operations listed in this survey, the responses given by the surgeons were subdivided into 4 major parts. The first question asked to surgeons is if they routinely performed the procedure, and if so, whether they used a brace postoperatively. If bracing was initiated after each surgery, the remaining three sections inquired about the type of orthosis that they recommended, the typical duration of treatment, and their rationale for immobilization.

After being preliminarily circulated among the members of our group to ensure its consistency and confirm the adequacy of its design, the questionnaire was distributed to all of the participants attending the 20th Annual "Contemporary Update on Disorders of the Spine" meeting (January 2008, Whistler, British Columbia, Canada). Although this sample population largely comprised orthopedic and neurological spine surgeons, there were a limited number of physical medicine and rehabilitation physicians, physician assistants, nurse practitioners, and radiologists who also completed the survey; however, any data provided by these respondents was omitted from the ensuing analysis. Without exception, all of the questionnaires were immediately collected on site.

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