

Clinical Study

The impact of preoperative depression on quality of life outcomes after lumbar surgery

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Abstract

BACKGROUND CONTEXT: Some, smaller studies have investigated the effect of preoperative depression on postoperative improvement in quality of life (QOL). However, they have not used the Patient Health Questionnaire 9 (PHQ-9) in self-reported depression.

PURPOSE: To assess the effect of preoperative depression as measured by the PHQ-9 on postoperative improvement in QOL.

STUDY DESIGN: A retrospective review at a single tertiary-care referral center.

PATIENT SAMPLE: Patients who underwent lumbar decompression or fusion between 2008 and 2012.

OUTCOMES MEASURES: A self-reported EuroQol five-dimensions (EQ-5D) quality-adjusted life-years Index.

METHODS: Quality of life data were collected using the institutional prospectively collected database of patient-reported health status measures. The EQ-5D questionnaire, PDQ, and PHQ-9 were used. Linear and logistic regression analyses were performed to assess the impact of preoperative depression on QOL improvement.

RESULTS: Elevated preoperative pain (PDQ, $\beta = -0.0017$, $p = .0009$) and worsened depression (PHQ-9, $\beta = -0.0044$, $p = .0359$) were significantly associated with diminished postoperative improvement in QOL, as measured by the EQ-5D. Furthermore, greater depression (PHQ-9, odds ratio [OR] 0.93, $p < .0001$) and pain (PDQ, OR 0.99, $p = .02$) were associated with significantly diminished postoperative improvement exceeding the minimum clinically important difference.

CONCLUSIONS: Increased preoperative pain and depression were shown to be associated with significantly reduced improvement in postoperative QOL, as measured by the EQ-5D. © 2015 Elsevier Inc. All rights reserved.

Keywords:

Lumbar surgery; EQ-5D; PHQ-9; PDQ; Depression; Psychosocial outcomes

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Introduction

In appropriate patients, lumbar decompression and fusion significantly improve the quality of life (QOL) [1–5]. However, such surgical procedures are associated with significant cost and harbor the potential for significant complications [4,6–11]. In an effort to reduce costs and improve the QOL outcomes after spine surgery, researchers have investigated the preoperative risk factors to better identify optimal surgical candidates. These studies have preliminarily identified the risk factors related to comorbidities, demographic, socioeconomic, and psychological factors. Diabetes and smoking, for example, have been shown to increase the incidence of complications and length of stay after lumbar operations for lumbar canal stenosis, prolapsed discs, and thoracolumbar scoliosis [12]. A systematic review of the literature identified a lower level of education, higher preoperative pain level, low work satisfaction, and longer duration of sick leave as risk factors for unfavorable outcomes, as they relate to pain, disability, and return to work [13].

Prior studies have identified a strong correlation between psychological factors, such as depression, and poor clinical outcomes after lumbar spine surgery, as measured by the patient-reported metrics such as the visual analog scale (VAS) and Oswestry Disability Index [4,6–11]. A systematic review of the literature by Celestin et al. [9] noted that preoperative depression, anxiety, and poor coping abilities were associated with reduced surgical benefit after lumbar surgical procedures. Other socioeconomic factors, such as workers' compensation litigation, have also been implicated in worsened postoperative QOL outcomes [14,15]. These findings support the use of preoperative psychosocial questionnaires to better predict the patients most likely to achieve optimal postoperative QOL outcomes. Although other studies have investigated the effect of preoperative depression on QOL outcomes, none have used the Patient Health Questionnaire 9 (PHQ-9) that has demonstrated the highest sensitivity and specificity in assessing self-reported depression among psychosocial questionnaires [16–18]. Furthermore, no studies have used the Pain Disability Questionnaire (PDQ) in conjunction with depression questionnaires to evaluate the effects of pain or preoperative QOL on postoperative outcomes [19].

In the present study, we sought to assess the impact of preoperative depression, and other baseline patient characteristics, on QOL outcomes after lumbar surgery. We hypothesized that lumbar spine surgery significantly improves the QOL outcomes in all patients, but with a statistically significant lower improvement in those with greater preoperative depression.

Methods

Patient selection

A retrospective review was performed of all patients who underwent elective lumbar decompression and fusion

EVIDENCE & METHODS

Context

The negative influence of behavioral health conditions on outcomes after surgical intervention has been surmised on a number of levels. The authors sought to add to this literature by reviewing patient experiences following elective lumbar spine surgery using a variety of quality of life and mental health questionnaires, including the Patient Health Questionnaire-9 (PHQ-9).

Contribution

The authors evaluated results among a series of 919 patients. Elevated levels of preoperative pain and depression (as measured on the PHQ-9) were found to adversely influence postoperative improvement in quality of life as reflected on the EQ-5D.

Implications

The authors' analysis adds to a growing body of literature that improves understanding regarding the influence of behavioral health conditions on outcomes after spine surgery. This study is remarkable due to the amount of data collected on participating patients and the number of individuals included. It remains a retrospective review, however, and one that was performed at a single tertiary center. As a result, the findings may not be generalizable to all individuals encountered in spine surgical practices throughout the nation.

—The Editors

between 2008 and 2012, at a single tertiary-care center for nontraumatic and nonneoplastic indications. Quality of life data were collected using the institutional prospectively collected database of patient-reported health status measures, called the Knowledge Program that includes validated questionnaires such as the EuroQol five-dimensions (EQ-5D), PDQ, and PHQ-9, administered at each pre- and postoperative outpatient visit. Patients included in this study were followed for a minimum of 6 months within the study period, with one of the following diagnoses: lumbosacral spondylosis, degenerative disc disease, lumbar spinal stenosis, lumbar disc displacement, lumbar kyphosis, or lumbar scoliosis. Patients were excluded if they were younger than 18 years at the time of surgery, had follow-up of less than 6 months, or had incomplete pre- or postoperative QOL data.

QOL outcome measures

Health-status measures questionnaires (PDQ, PHQ-9, and EQ-5D) were collected in a prospective manner, preoperatively, and at each subsequent follow-up visit. The previously validated [19,20] PDQ records functional and psychosocial components of pain, with a total score between 0 and 150, with increasing pain reflected by an

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