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Lumbar surgery in work-related chronic low back pain: can a continuum of care enhance outcomes?

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Abstract

BACKGROUND CONTEXT: Systematic reviews of lumbar fusion outcomes in purely workers' compensation (WC) patient populations have indicated mixed results for efficacy. Recent studies on lumbar fusions in the WC setting have reported return-to-work rates of 26% to 36%, reoperation rates of 22% to 27%, and high rates of persistent opioid use 2 years after surgery. Other types of lumbar surgery in WC populations are also acknowledged to have poorer outcomes than in non-WC. The possibility of improving outcomes by employing a biopsychosocial model with a continuum of care, including postoperative functional restoration in this ''at risk'' population, has been suggested as a possible solution.

PURPOSE: To compare objective socioeconomic and patient-reported outcomes for WC patients with different lumbar surgeries followed by functional restoration, relative to matched comparison patients without surgery.

STUDY DESIGN/SETTING: A prospective cohort study of chronic disabling occupational lumbar disorder (CDOLD) patients with WC claims treated in an interdisciplinary functional restoration program.

PATIENT SAMPLE: A consecutive cohort of 564 patients with prerehabilitation surgery completed a functional restoration and was divided into groups based on surgery type: lumbar fusion (F group, N=331) and nonfusion lumbar spine surgery (NF group, N=233). An unoperated comparison group was matched for length of disability (U group, N=349).

OUTCOME MEASURES: Validated patient-reported measures of pain, disability, and depression were administered pre- and postrehabilitation. Socioeconomic outcomes were collected via a structured 1-year ''after'' interview.

METHODS: All patients completed an intensive, medically supervised functional restoration program combining quantitatively directed exercise progression with a multimodal disability management approach. The writing of this article was supported in part by National Institutes of Health Grant 1K05-MH-71892; no conflicts of interest are noted among the authors.

RESULTS: The F group had a longer length of disability compared with the NF and U groups (M=31.6, 21.7, and 25.9 months, respectively, p<.001). There were relatively few statistically significant differences for any socioeconomically relevant outcome among groups, with virtually identical postrehabilitation return-to-work (F=81%, NF=84%, U=85%, p=.409). The groups differed significantly after surgery on diagnosis of major depressive disorder and opioid dependence

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disorder as well as patient-reported depressive symptoms and pain intensity prerehabilitation. However, no significant differences in patient-reported outcomes were found postrehabilitation. Prerehabilitation opioid dependence disorder significantly predicted lower rates of work return and work retention as well as higher rates of treatment-seeking behavior. Higher levels of prerehabilitation perceived disability and depressive symptoms were significant risk factors for poorer work return and retention outcomes.

CONCLUSIONS: Lumbar surgery in the WC system (particularly lumbar fusion) have the potential achieve positive outcomes that are comparable to CDOLD patients treated nonoperatively. This study suggests that surgeons have the opportunity to improve lumbar surgery outcomes in the WC system, even for complex fusion CDOLD patients with multiple prior operations, if they control postoperative opioid dependence and prevent an excessive length of disability. Through early referral of patients (who fail to respond to usual postoperative care) to interdisciplinary rehabilitation, the surgeon determining this continuum of care may accelerate recovery and achieve socioeconomic outcomes of relevance to the patient and WC jurisdiction through the combination of surgery and postoperative rehabilitation.

Keywords: Lumbar spinal fusion; Chronic disabling occupational spinal disorders; Deconditioning syndrome; Functional restoration; Return to work; Risk factors; Workers' compensation; Opioid dependence; Depression; Biopsychosocial model

Introduction

Lumbar spine surgery rates in the workers' compensation (WC) setting for chronic disabling occupational lumbar disorder (CDOLD) patients have been rising steadily, especially lumbar spine fusion procedures [1,2]. There has also been a debate in the scientific literature about the long-term effectiveness of spinal fusion surgery for chronic (especially discogenic) low back pain [3,4]. Findings, such as low work return, high reoperation rates, and highly prevalent opioid dependence have been demonstrated in different WC jurisdictions [5–7] and have led to limitations on recommendations for spinal fusion in WC claims by the largest evidence-based national guidelines, resulting in a lower surgical approval rates in a growing number of state jurisdictions mandating use of these guidelines [8,9]. It has been suggested that similar guidelines will be incorporated into group health and Medicare settings with the expansion of national health insurance. A large population-based study of fusions within the Washington State WC setting revealed a 22% reoperation rate and a low return-to-work rate of 36%, at 2 years after surgery [7]. A more recent study in the Ohio WC jurisdiction showed similar results, with a 26% return to work rate and a 27% reoperation rate as well as an opioid dependence disorder still noted in 85% of fusion patients 2 years postoperatively [6]. Outcomes in the Utah WC jurisdiction were comparable [10,11].

In contrast, a previous prospective cohort study demonstrated high rates of work status improvement (>80%) and low rates of reoperation and recurrent injury claims for both fusion and discectomy patients in a chronic lumbar WC cohort [12]. This particular study used a "continuum of care approach," with administration of functional restoration after surgery for these patients. An important question is whether lumbar spinal surgery *combined* with subsequent interdisciplinary rehabilitation can improve the results of surgery alone. Such a continuum of care protocol is now quite standard in the treatment of other musculoskeletal disorders of the extremities, especially the knee [13–16]. National treatment guidelines, such as the Official Disability Guidelines, use a biopsychosocial continuum of care model that recommends appropriate steps and limits for sufficient preoperative care and testing, surgical decision-making, postoperative rehabilitation, and, in some chronic pain cases, interdisciplinary functional restoration [9]. Therefore, the major goal of the present study was to take an important step in further evaluating the potential efficacy of such a combined approach with a "worst case" cohort of chronic low back pain (CLBP) patients with WC claims.

Recent studies have documented the importance of psychosocial factors and their impact on outcomes following lumbar surgery [11,17–20], and the impact of psychosocial factors in the development and perpetuation of chronic pain and disability has been widely documented in the literature [21,22]. Because lumbar fusion surgery for nonspecific CLBP is usually performed on patients already demonstrating extensive chronic pain/disability behaviors in the WC setting, the need to pay heed to a biopsychosocial model when contemplating surgery or managing them in postoperative rehabilitation, is becoming more apparent [8,23,24]. The Official Disability Guidelines recognize the length of disability as being one of the most critical risk factors for poor outcomes and higher costs linked to delayed recovery [8,9]. Even under optimum conditions, objective outcome measures declined with increasing length of disability, making this factor a primary selection criterion for determining a worst case WC claim cohort.

The present study evaluated several objective socioeconomic outcomes in a prospective consecutive cohort of lumbar surgical patients with WC claims operated on after already developing CLBP disability despite extensive nonoperative care (average 16–19 months from injury to index surgery). They were all referred to an interdisciplinary