ELSEVIER

CrossMark

The Spine Journal 14 (2014) 1944–1950

THE SPINE JOURNAL

Clinical Study

Selection of patients for ambulatory lumbar discectomy: results from four US states

Kimon Bekelis, MD[a,*], Symeon Missios, MD[b], George Kakoulides, MD[a], Redi Rahmani, BS[c], Nathan Simmons, MD[a,c]

[a]*Department of Neurosurgery, Dartmouth-Hitchcock Medical Center, One Medical Center Dr, Lebanon, NH 03756, USA*
[b]*Coastal NH Neurosurgeons, Portsmouth Hospital, 330 Borthwick Ave, Portsmouth, NH 03801, USA*
[c]*Geisel School of Medicine at Dartmouth, 1 Rope Ferry Road, Hanover, NH 03755, USA*

Received 22 July 2013; revised 29 September 2013; accepted 21 November 2013

Abstract

BACKGROUND CONTEXT: There is a persistent trend for more outpatient lumbar discectomies in the United States.

PURPOSE: To investigate the characteristics of the patients selected for ambulatory procedures.

STUDY DESIGN: Retrospective cohort study.

PATIENT SAMPLE: Forty-seven thousand one hundred twenty-five patients who underwent outpatient and 102,592 patients undergoing inpatient lumbar discectomies and were were registered in the State Ambulatory Surgery Database (SASD) and State Inpatient Database (SID), respectively, for New York, California, Florida, and North Carolina from 2005 to 2008.

OUTCOME MEASURES: Rate of outpatient procedures, 30-day readmissions, and hospital charges.

METHODS: We performed a retrospective cohort study involving patients who underwent outpatient and inpatient lumbar discectomies and were registered in SASD and SID, respectively, for New York, California, Florida, and North Carolina from 2005 to 2008. Logistic regression models were used to demonstrate the association of socioeconomic factors with the odds of undergoing an outpatient procedure.

RESULTS: Male gender (odds ratio [OR], 1.05; 95% confidence interval [CI], 1.03–1.08), private insurance (OR, 1.93; 95% CI, 1.86–2.01), lower Charlson Comorbidity Index (OR, 4.04; 95% CI, 3.17–5.16), and higher volume hospitals (OR, 1.06; 95% CI, 1.04–1.08) were significantly associated with outpatient procedures. Higher income (OR, 0.83; 95% CI, 0.81–0.85), older age (OR, 0.996; 95% CI, 0.995–0.997), coverage by Medicaid (OR, 0.89; 95% CI, 0.83–0.96), African Americans (OR, 0.65; 95% CI, 0.60–0.70), and other minority races were associated with decreased odds of outpatient procedures. The rate of 30-day postoperative readmissions was higher among inpatients. Institutional charges were significantly lower for outpatient lumbar discectomies. The median charge for inpatient surgery was $24,273 as compared with $11,339 for the outpatient setting ($p<.0001$).

CONCLUSIONS: Access to ambulatory lumbar discectomies appears to be more common for younger, white, male patients, with private insurance and less comorbidities, in the setting of higher volume hospitals. Further investigation is needed in the direction of mapping these disparities for appropriate resource utilization.

Keywords: Lumbar discectomy; Ambulatory; Socioeconomic disparities; SID; SASD; Outpatient surgery center

FDA device/drug status: Not applicable.

Author disclosures: ***KB:*** Nothing to disclose. ***SM:*** Nothing to disclose. ***GK:*** Nothing to disclose. ***RR:*** Nothing to disclose. ***NS:*** Nothing to disclose.

Funding: None.

Conflict of interest: None.

The authors KB and SM have contributed equally to this work.

* Corresponding author. Dartmouth-Hitchcock Medical Center, 1 Medical Center Dr, Lebanon, NH 03756, USA. Tel.: (603) 650-5110; fax: (603) 650-4547.

E-mail address: kbekelis@gmail.com (K. Bekelis)

1529-9430/$ - see front matter
http://dx.doi.org/10.1016/j.spinee.2013.11.038

Introduction

In this era of escalating health care expenses and increasingly limited resources, there is a persistent drive for cost containment and increased cost-effectiveness [1]. It has been estimated that the direct medical costs of the over 200,000 lumbar discectomies performed annually in the United States exceeds 5 billion dollars [2,3]. One approach to cost containment is to increase the ambulatory procedures performed [4]. Lumbar discectomy was one of the first spinal procedures to be performed in the outpatient setting [5]. Advances in anesthesia and surgical innovation in the field of minimally invasive surgery have resulted in an explosive growth on this front [4].

Ambulatory lumbar discectomies are frequently performed operations and have an excellent safety profile. Their acute complication rate from large series ranges from 1.5% to 15.8% [6–9]. In postoperative questionnaires, 82% of these patients have reported a good or excellent outcome and that they would undergo the procedure as an outpatient again [10]. Although this practice appears to be safe, the reasons factoring into the selection of patients undergoing outpatient operations have not been investigated. Their implications for clinical outcomes, health care resource use, and health services research can be profound. This knowledge will allow mapping of differences in access to health care delivery and targeting of those populations in an attempt to eliminate any potential disparities.

The present analysis examines lumbar discectomies at a health care population level. We investigated the effect of several socioeconomic risk factors on the rate of outpatient lumbar discectomies and the difference in hospital charges for these procedures in comparison with inpatient lumbar discectomies.

Methods

Data sources

Data were obtained from the Healthcare Cost and Utilization Project (HCUP), sponsored by the Agency for Healthcare Research and Quality (Rockville, MD, USA). States participating in this project submit administrative data on inpatient discharges routinely collected by nonfederal community hospitals to HCUP, which produces standardized State Inpatient Database (SID). State Inpatient Database contains data on demographic information, diagnostic and procedural codes (using International Classification of Diseases-9-Current Modification [ICD-9-CM] and Current Procedural Terminology [CPT-10] codes), hospital charges, length of stay, and discharge disposition for all inpatients in state. Further information on SID can be found at http://www.hcup-us.ahrq.gov/sidoverview.jsp.

Several SID states also use ICD-9-CM and CPT-10 codes to submit similar data on ambulatory surgery to HCUP, which uses this data to produce State Ambulatory Surgery Database (SASD). State Ambulatory Surgery Database captures records from both hospital-affiliated and freestanding surgery centers. Further information on SASD can be found at http://www.hcup-us.ahrq.gov/sasdoverview.jsp. State Ambulatory Surgery Database and SID data were used from the states of New York, California, Florida, and North Carolina from 2005 to 2008.

Cohort definition

To establish the cohort of patients, we used ICD-9-CM (one procedural code from 80.5, 80.50, 80.51, and 80.59,

EVIDENCE & METHODS

Context
As cost containment initiatives have become more prevalent in health care the use of ambulatory lumbar surgery has also increased. Outpatient lumbar discectomy is known to be less expensive and may also decrease the risk of infection and other postoperative complications relative to inpatient surgery. The authors sought to describe the association of patient-based factors with the use of ambulatory lumbar discectomy in New York, California, Florida and North Carolina, USA.

Contribution
The authors found that a number of demographic and clinical factors were associated with increased use of ambulatory lumbar discectomy, including male gender, private insurance and fewer medical co-morbidities.. Perhaps not surprisingly, hospital readmission was lower among patients who had ambulatory surgery and total charges were also less.

Implications
This study is limited by its retrospective design and reliance on administrative datasets with a large number of missing variables (ranging from 0.14%-19.6%) that had to be addressed through imputation. While the authors present some useful information regarding the characteristics of patients who are presently receiving ambulatory lumbar surgery, these findings might not correctly be construed as disparities. It should not be surprising that older and sicker patients do not undergo outpatient procedures or that ambulatory surgery is less expensive. Furthermore, while acknowledging its possibility, the authors did not statistically address the potential for hospital segregation, or clustering of patients at facilities that did not offer ambulatory surgery. Future work in this arena might consider instrumental variable analysis using patient distance from a facility that offers ambulatory services as a proxy for access to these kinds of procedures.

—The Editors