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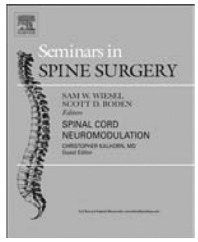

Ambulatory spine surgery: Outcomes compared to inpatient surgery

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A B S T R A C T

The purpose of this paper is to review outcomes of ambulatory spine surgeries to its inpatient counterpart. Ambulatory spine surgeries have been on the rise as there has been evidence to support increased safety, faster healing and increased cost effectiveness with outpatient procedures. However, there has not been a paper to compare the most commonly performed outpatient spine surgery procedure outcomes with inpatient outcomes. These p+rocedures include lumbar microdiscectomy, posterior lumbar decompression, posterior cervical decompression, anterior cervical discectomy and fusion, and cervical disc replacement. Outcomes, risks, and advantages were reviewed for each type of spine surgery.

1. Introduction

Ambulatory surgery is becoming an increasingly important segment in spine surgery. Surgeries performed in the outpatient setting have increased nearly four-fold since the 1990s and continue to rise (Figs. 1 and 2).[1,2] We define outpatient surgery as same day patient arrival and discharge in a hospital setting or ambulatory surgical center (ASC). Much of the increase in the number of same day procedures is due to improved instrumentation and better surgical techniques, in combination with a growing elderly population that desires to remain physically active.[3,4] With the advent of minimally invasive approaches, surgeries can be performed safer and more efficiently, leading to improved outcomes and ultimately better care to patients.[2] Potential benefits of ambulatory procedures include increased safety, faster healing, high patient satisfaction and increased cost effectiveness.[5,6] The most common outpatient procedures include lumbar microdiscectomy, posterior lumbar decompression, posterior cervical decompression, anterior cervical discectomy and fusion, and cervical disc replacement.

Patient risk factors associated with poor outcomes following same day discharge include diabetes, severe pain, congestive heart disease, coronary artery procedures and use of antidepressants.[7,8] It is imperative that we maximize discharge success through preoperative patient education and limited perioperative narcotics doses. Moreover, surgeries performed in the outpatient setting have also shown to be economically beneficial in a time when healthcare costs are rapidly increasing.[3,6] In this review paper we discuss the current literature on outpatient outcomes for commonly

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performed spine surgeries and existing gaps in the literature for future studies.

2. Lumbar decompression

From the over 200,000 discectomies performed annually in the United States, the direct medical costs alone are estimated to be more than 5 billion dollars.[10] In that context, significant work has been conducted to find if lumbar decompression is feasible in the outpatient setting. Although decompression procedures, including discectomy, laminotomy, and laminectomy, have traditionally involved a 1- to 3-day hospital stay, advances in anesthetic care, perioperative monitoring, and minimally invasive surgical techniques, have led physicians to increasingly conduct these procedures in an outpatient setting (Figs. 3–9).

Both prospective and retrospective studies have shown that lumbar decompression is safe as an outpatient procedure. Estimates of complications among studies range from 0% to 2.67%, none of which were reported to be due to the outpatient setting or influenced by the outpatient setting.[11,12] Furthermore, patient satisfaction with outpatient lumbar decompressions is positive. In four different studies utilizing questionnaire responses from 61 to 212 patients, 88% to 93% of patients reported their satisfaction as excellent or good, and less than 5% of patients were dissatisfied.[13–15]

A study conducted by Singhal et al. illustrated the utility of outpatient surgery. In a practice where microdiscectomies previously required an average 2.2 nights of hospitalization, 116 out of 122 consecutive patients selected for outpatient surgery were discharged within one day. Despite a 95% shift to outpatient surgery, there was no demonstrable change in patient outcomes, Furthermore, the authors reported an estimated savings of $1440 dollars per patient from the decrease in stay.[12]

Although outpatient lumbar decompression is a practical option, more attention needs to be paid toward postoperative patient education regarding hematomas and wound care, as well as medication counselling. However, some concerns for outpatient lumbar decompression surgeries were unfounded. Hudak and Perry have shown that decompression in higher risk patients is feasible and safe as well. Significant reductions in the level of pain and disability were found in patients with a body mass index (BMI) greater than 35, or age over 65 years, without sizeable increases in hospitalization requirement (3.4% for the 263 patients who were age >65), or outcomes.[16,17]

Studies specifically looking at outpatient lumbar decompression performed with minimally invasive techniques indicate that rates of complications are comparably low (0% - 1.69%) when compared to conventional decompression in outpatient settings. Kamson et al. reported in a study of 178 patients that 91% of patients would recommend minimally invasive lumbar decompression to others. They concluded that MIS techniques for lumbar decompression is a viable option in the outpatient setting as well.[16,18]

3. Lumbar fusion

From 1990 to 2001 the rate of lumbar fusions has increased by 220% and by 2007, 10.6% of all lumbar fusion surgeries were being performed in the ambulatory setting.

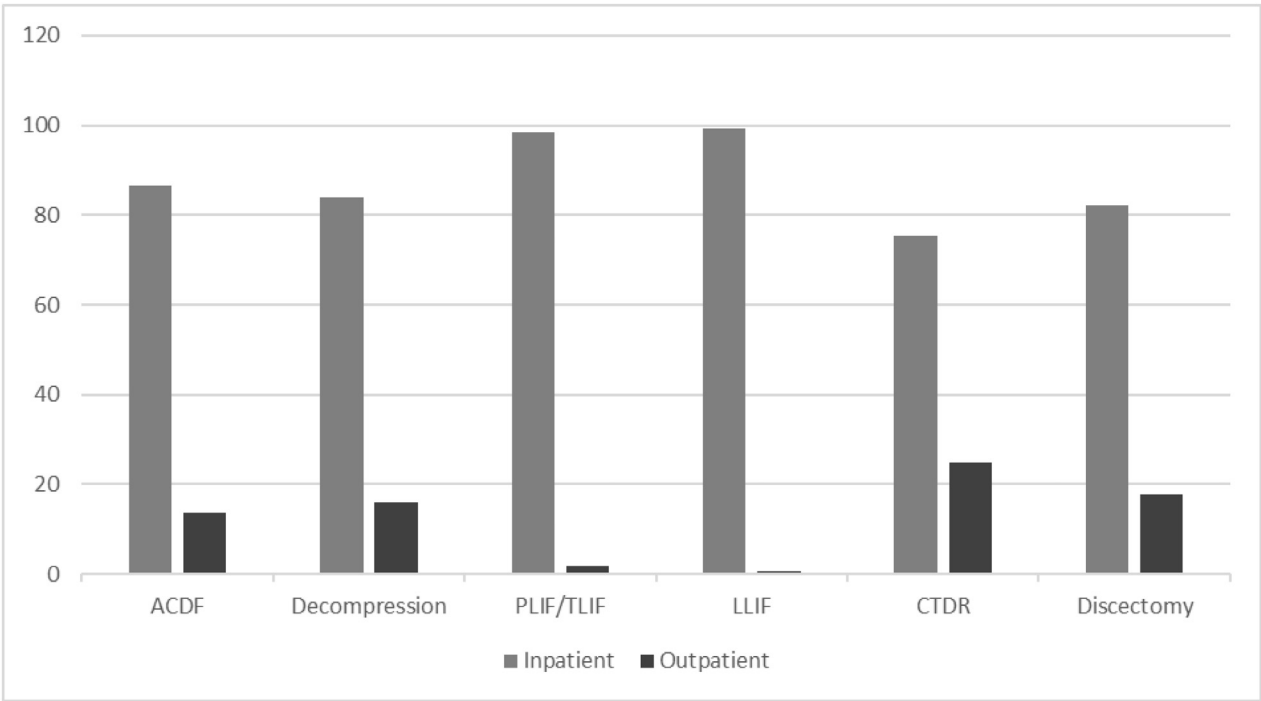

Fig. 1 – Percent of Inpatient versus Outpatient surgeries performed in 2013. Data sourced from the healthcare cost and utilization project initiated by the agency for healthcare research and quality.