



BACK PAIN

What We Can Learn From Spine Surgery

LUMBAR SPINAL STENOSIS: SURGICAL OUTCOMES AS THE BENCHMARK FOR SUCCESS IN CONSERVATIVE CARE

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Patients with lumbar stenosis presumably present for conservative care to improve their quality of life and avoid surgery. However, providing clear guidance to these patients can be difficult for a number of reasons. The literature is incomplete and heterogeneous.¹ There is no universally agreed-upon definition for lumbar stenosis.² And systematic reviews scrutinizing different treatment options often offer conflicting results. Some studies show no comparative benefit to surgery versus conservative care,³ whereas others show surgical intervention to be superior.⁴ (This was briefly discussed in [my first article](#)⁵ in this three-part series [June 1, 2016 *DC*].)

Because of these challenges, a pragmatic, rather than dogmatic, approach to decision-making is required. There are three main facets to this process. The first is recognizing our inability to predict with certainty what will work best for whom. The second is having an ongoing awareness of descriptive data from relevant outcome studies. The third is the use of similar outcome measures in routine patient management.

Surgical Outcomes as a Benchmark for Our Care



Despite conflicting reports on the comparative benefit of surgery, many still consider it the definitive form of care, especially in patients who have failed conservative management. As such, a reasonable "target" for conservative care would be to meet or exceed the outcomes that could be expected from surgery.

In this regard, descriptive data, such as average improvements in the Oswestry Disability Index (ODI), pain scales and/or overall subjective patient ratings may be more important to individual patients than which treatment was found to be better as a group. Such data serves as a guide to defining "success" and setting realistic expectations, and builds a foundation for progressive treatment recommendations.

Beyond Comparative Studies: "Show Me the Numbers"

An "as treated" analysis of the SPORT trial found surgical patients to show average improvements on the SF-36 bodily pain score (0-100 scale) of 31.1 points and 23.2 percent on the ODI. SF-36 / ODI scores for patients receiving conservative care were 19.8 and 13, respectively.⁴ The beneficial effect of surgery began to diminish over four years and results between the two groups were similar by year six.

Slatis, et al., randomized 94 long-standing lumbar stenosis patients into surgical or nonsurgical care. Undercutting laminectomy was performed in all 40 surgical cases, 10 of which also had instrumented fusion. Conservative care, managed by a physiatrist, included medications, injections and therapy as deemed necessary.

Mean Oswestry Index in the conservative group vs. surgical group (conservative / surgical) decreased

from 34.7 / 34 (baseline) to 29.5 / 18.5 (12 months), 27.5 / 20.6 (two years) and 29.8 / 24.2 (six years). Leg pain with walking comparisons for the conservative / surgical group were 6.3 / 6.6 (baseline), 4.5 / 2.8 (12 months), 4.8 / 2.8 (two years) and 4.4 / 4.1 (six years). Note that, as with the SPORT trial, outcomes converged over time, showing no difference at the six-year follow-up.⁶

More than 700 central stenosis patients with an average starting ODI between 40-42 percent and undergoing either laminectomy or micro-decompression were followed for one year. Mean 12-month ODI was 23 percent, an average improvement of between 17-19 percent. No clear difference was found between laminectomy and micro-decompression.⁷

A recent RCT compared 143 patients undergoing a minimally invasive decompression (MILD) at one (97 patients), two (42 patients) or three (4 patients) levels to epidural steroids. The minimal clinically important difference (MCID) was set at >10 percent for ODI and > 2 for pain (0-10 scale).

At six months, MCID for ODI / pain was attained in the surgical group by 62.2 / 55.9 percent, respectively, as compared to 35.7 / 33.3 percent in those receiving ESIs. Mean baseline / final ODI for the MILD group was 53 percent / 34.5 percent or an average improvement of 18.5 percent. Baseline / final numeric pain score (0-10) was 7.7 / 4.8, a 2.9-point improvement.⁸

Another recent study randomly assigned 247 lumbar stenosis patients with and without degenerative lumbar spondylolisthesis to surgical decompression alone versus decompression with fusion. No significant difference between the groups was seen at two years. Average two-year ODI in fusion patients without spondylolisthesis improved from 43 percent to 29 percent (14-point change) as compared to those with decompression alone (41 percent to 27 percent (also 14-point change). Fusion patients with spondylolisthesis improved from 41 percent to 25 percent (16 points) as compared to the 41 percent to 21 percent (20-point) improvement seen in the decompression-only group.

Interestingly, patients with degenerative spondylolisthesis who received only decompression also showed the largest average improvements in back and leg pain (0-100 scale): 63 to 26 (37 points) and 65 to 29 (36 points), respectively.⁹

Over the past several years, interspinous distraction devices have been increasingly offered as an alternative to more traditional surgery. Moojen, et al., compared 80 patients receiving the Coflex, an interspinous spacer, to 79 undergoing surgical decompression. Mean back pain VAS (0-100 scale) for the spacer improved from 60 to 23 (37 points). Leg pain improved from 52 to 23 (29 points).

Twelve-month pain and claudication scores were similar between the two treatments. Significantly higher re-operation rates (29 percent of patients) were seen in the spacer group.¹⁰ These results are relatively similar to those of 175 patients who received an X-Stop in an earlier study. Over two years, average VAS decreased from 61 to 39 and ODI from 32 percent to 20 percent.¹¹

So, How Do You Spell "Success" When It Comes to Conservative Care?

Using the sample of surgical outcomes just discussed as examples, conservative care could be considered comparatively successful by attaining the following degree of improvement:

- ODI > 14-16 percent

- SF-36 bodily pain > 25-40 points
- VAS > 2.5-4 points

Regardless of the magnitude of improvement, a final ODI <20 percent, SF-36 bodily pain < 20, and VAS < 2 also would indicate an excellent outcome.

Prior studies have suggested an appropriate surgical MCID is 12.8 for the ODI and 1.8 for VAS pain scores, and that a pain reduction of three or greater (0-10 scale) is the point at which patients consider their surgery a success.¹²⁻¹³ The literature described above is in line with these values, thus also serving as excellent benchmarks for conservative care.

Weighing the Averages and Considering Risks

Descriptive data, although offering a degree of objectivity, also entails the use of averages and thus may not represent the actual outcome of a given patient on an individualized basis. Most of the studies above showed fairly large standard deviations and wide ranges on either side of average. Our challenge continues to be the inability to confidently predict where patients will fall within these ranges.

Because of this, risks also warrant strong consideration. The most recent review, comparing surgical to conservative care, noted adverse effects in 10-24 percent of surgical patients and *none* in those treated conservatively.³

Fusion surgery, an increasingly utilized intervention with debatable benefits, has been found to double the risk of severe complications, especially in elderly individuals.⁹ Other papers note that the reported rates of adverse surgical events vary depending on the study, ranging between 4-45 percent; and that a re-operation is required in up to 28 percent of patients.¹⁴

Finally, several comparative papers have illustrated that any difference between surgical and conservative intervention diminishes over 4-6 years. Considering most conservative treatment in these studies was rendered over a limited time frame, the question arises of whether prolonged nonsurgical management would convey added benefit. ([The Verbiest Trial](#)¹⁵ was designed to assess this; to the best on my knowledge, results have yet to be published.)

In the final article in this series, I will provide more detail regarding the various options for conservative care, with emphasis on manual forms of treatment. Additionally, I will offer thoughts on some of the nuances and paradoxes of lumbar spinal stenosis for consideration.

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