and oldest (aged 70-80 years) groups did the operative patients reach the norm for their generation. This was also true for type of deformity. Operative treatment was associated with improvement in all deformity types with the largest improvement seen in patients with lumbar scoliosis and SVA > 10 cm.

Registry Data May Prove Useful in Benchmarking Lumbar Spine Surgery Outcomes

Written by Phil Vinall

Björn Strömqvist, MD, PhD, Lund University, Lund, Sweden, presented data from the Swedish Spine Register [Swespine; www.4s.nu] where > 90 000 surgeries are currently included. Prof Strömqvist suggested that these data and data from similar databases may be useful in benchmarking baseline data and outcomes of lumbar spine surgery.

Swespine was created > 20 years ago and now registers > 85% of all lumbar spine surgeries performed in Sweden [Strömqvist B et al. *Eur Spine J.* 2013]. Surgical data are entered by surgeons. All other data are obtained from patients prior to surgery and at years 1, 2, 5, and 10 postoperatively.

To provide examples of the types of data that can be collected from registries and used to benchmark baseline data and surgical outcomes, Prof Strömqvist presented data on several patient-reported outcome measures (PROMs): visual analog scale leg pain, the short form-36 health survey (SF-36), the EuroQol-5D (EQ-5D), the Oswestry Disability Index (ODI), and patient satisfaction with surgery. The reports are based on data from > 45 000 patients who received surgery during a 10-year period.

Historical data from Swespine allows researchers to gain an understanding of the changing indications for lumbar surgery over time. For example, between 2004 and 2013, there was a shift from lumbar disc herniation (LDH) to central stenosis as the most common reason for surgery in Sweden. At the same time, there was a slight decrease in surgery for degenerative disc disease (DDD).

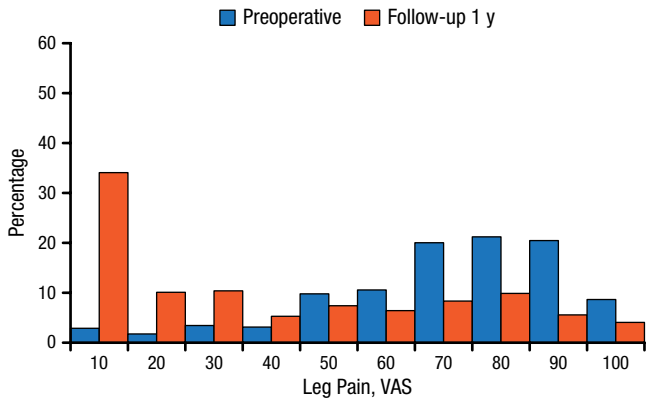
PROMs data from Swespine shows that patients' perception of their leg pain before and 1year after surgery for LDH improved steadily from a mean preoperative score of 67 to a mean postoperative score of 22 (Figure 1).

Among patients receiving surgery for isthmic spondylolisthesis, SF-36 profiles are consistently low prior to surgery; however, by year 1 after surgery there is a significant improvement across all subscales of both physical and mental components ($P < .0001$, all). Improvement is also seen on the EQ-5D at year 1 and these results are maintained at 2 and 5 years after surgery for DDD, central and lateral stenosis, isthmic spondylolisthesis, and in particular, LDH. Patients also report improved scores on the ODI, an index derived from the Oswestry Low-Back Pain Questionnaire used by clinicians and researchers to quantify disability for low-back pain.

One year after surgery, patients' overall level of satisfaction with their surgery outcomes are uniformly high, ranging from 67% of patients treated for lateral stenosis to 83% among those treated for LDH (Table 1). These results are maintained over 10 years.

Prof Strömqvist concluded that the outcome of lumbar spine surgery is generally favorable based on the registry data that has been studied on an annual basis over 10 years. Additional information about the registry, including annual reports, is available at www.4s.nu.

Figure 1. Leg Pain Before and 1 Year After Surgery for LDH



LDH, lumbar disc herniation; VAS, visual analog scale.
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Source: Strömqvist B et al. *Eur Spine J.* 2013.

Table 1. Satisfaction 1 Year After Surgery

	Satisfied	Uncertain	Dissatisfied
LDH	83	14	3
Central stenosis	69	21	11
Lateral stenosis	67	25	9
Isthmic spondylolisthesis	70	18	11
DDD	74	18	8

Data given in percentage.
DDD, degenerative disc disease; LDH, lumbar disc herniation.
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