Elderly Patients Have Worse EQ-5D Outcomes After Spondylolisthesis Surgery Than Young Patients, Yet They Are Satisfied With Surgery

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Introduction

A recent randomized clinical trial assessing outcomes following surgery for lumbar spinal stenosis and spondylolisthesis excluded patients who were older than 80 years. This study assesses outcomes for patients age>80 years following surgery for degenerative lumbar spondylolisthesis.

Methods

This was a retrospective analysis of a prospective registry. 808 patients underwent surgery for grade 1 degenerative lumbar spondylolisthesis at twelve high-enrolling sites. Elderly patients were identified as age>80 years. Baseline and surgical variables were collected. Numeric rating scale (NRS) back pain, NRS leg pain, Oswestry Disability Index (ODI), EuroQoL-5D (EQ-5D), and the North American Spine Society (NASS) Satisfaction Questionnaire were collected at baseline, 3 months, and 12 months. Reoperation data was collected at 12 months.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the outcomes for patients greater than 80 years of age undergoing lumbar spondylolisthesis surgery (patients who were excluded in a recent large randomized clinical trial) 2) Understand that elderly patients had similar outcomes for satisfaction, pain, and disability 12 months following surgery despite inferior improvement in EQ-5D

Results

Thirty six (4.5%) patients were elderly (range 80-95 years). Elderly patients had lower mean BMI (28.1±4.9 vs. 30.7±6.4, p=0.01), had a higher proportion of osteoporosis (16.7 vs. 6.5%, p=0.04) and were less independently ambulatory at baseline (75.0 vs. 88.0%, p=0.04). Elderly patients received fewer fusion procedures (41.7 vs. 75.8%, p<0.001). There was no difference in satisfaction (elderly 83.3 vs. 83.7% NASS 1/2; p=0.85) and reoperation rate (elderly 8.3 vs. 4.9%, p=0.60) at 12 months. At baseline, the elderly cohort had less NRS back pain (5.6±3.1 vs. 6.9±2.6, p=0.02) and higher EQ-5D (0.62±0.19 vs. 0.54±0.24, p=0.04). At 12 months, both the elderly and the control cohort improved significantly with respect to mean baseline values for NRS back and leg pain, ODI, and EQ-5D (p<0.01 for all comparisons) (Figure 1). In multivariate analysis, elderly status predicted inferior 12-month EQ-5D (OR 0.89, 95% CI 0.82-0.96, p=0.002) and NRS leg pain (OR 3.2, 95% CI 1.2-8.9, p=0.02), but was not predictive of NRS back pain and ODI (both p>0.05).

Conclusions

In adjusted analysis, age>80 years was associated with inferior improvements in EQ-5D at 12 months following lumbar spondylolisthesis surgery. However, the elderly had similar satisfaction, pain, and disability as the younger patients.
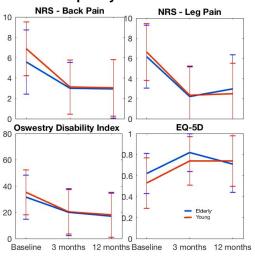
Patient Characteristics

Demographics	Elderly N=36	Young N=772	p value
Age (years)	83.7 ± 3.2	61.4 ± 11.1	<.001**
Female	19 (52.8%)	439 (56.9%)	0.63
BMI	28.1 ± 4.9	31.7 ± 6.4	.01**
Smoker	1 (2.8%)	86 (11.1%)	.19
Comorbidities			
Diabetes Mellitus	10 (27.8%)	133 (17.2%)	.10
Coronary Artery Disease	8 (22.2%)	82 (10.6%)	.06
Anxiety	2 (5.6%)	144 (18.6%)	.046**
Depression	3 (8.3%)	161 (20.9%)	.07
Osteoporosis	6 (16.7%)	50 (6.5%)	.04**
ASA Grade			.18
1 or 2	16 (44.4%)	423 (54.8%)	
3 or 4	19 (52.8%)	318 (41.2%)	
NRS Back Pain, baseline	5.6 ± 3.1	6.9 ± 2.6	.02**
NRS Leg Pain, baseline	6.2 ± 3.1	6.6 ± 2.8	.50
ODI, baseline	31.6 ± 16.8	35.3 ± 17.2	.25
EQ-5D, baseline	0.62 ± 0.19	0.53 ± 0.24	.04**

Perioperative Outcomes

Perioperative Outcomes	Elderly	Young	p value
Estimated Blood Loss (ml)	120.9 ± 118.5	235.9 ± 267.8	.001**
Operative Time (minutes)	142.9 ± 51.7	190.2 ± 90.4	.001**
Length of Hospitalization (days)	2.4 ± 1.8	2.9 ± 1.9	.04**
Discharge Disposition			
Home or Home Health Care	28 (77.1%)	690 (89.4%)	.048**
Not to Home or Home Health Care	8 (22.9%)	82 (10.6%)	

Mean 12-month Change Scores

Mean 12-month change scores	Elderly	Young	p value
NRS Back Pain	-2.7 ± 3.3	-3.7 ± 3.2	0.03**
NRS Leg Pain	-3.1 ± 3.6	-4.0 ± 3.7	0.16
ODI	-16.0 ± 20.1	-17.9 ± 15.2	0.38
EQ-5D	+0.08 ± 0.32	+0.20 ± 0.28	0.04**

Baseline, 3-month, and 12-month Patient Reported Outcomes Following Surgery for Grade 1 Lumbar Spondylolisthesis.

The error bars represent one standard deviation. For both cohorts, there were statistically significant improvements at 3- and 12-month follow up, relative to baseline, for NRS back and leg pain, ODI, and EQ-5D (p<0.001, all comparisons). At baseline, the elderly cohort had significantly lower NRS back pain (p=0.02), but higher EQ-5D (p=0.04). The elderly cohort had significantly higher EQ-5D (p=0.04) at 3 months. There were no significant between-group differences with regards to PROs at 12 months.