

**Xi'an Hong Hui Hospital**  
**Xi'an, Shaanxi, China**



# **The comparison of 2 surgical treatments for lumbar stenosis with degenerative scoliosis in 6-year minimum follow-up**

**Dingjun Hao, Baorong He, Liang Yan**

**Hong Hui Hospital, Xi'an Jiaotong University College  
of Medicine, Xi'an, Shaanxi 710054, China**

*Xi'an Hong Hui Hospital, Xi'an, Shaanxi, China*



# ABSTRACT

## PURPOSE

The aim of the present study was to compare clinical outcomes of 2 procedures used to treat symptomatic lumbar stenosis with degenerative scoliosis (LSDS).

## METHODS

A retrospective cohort analysis of 158 consecutive patients, mean age 67.5 years, with 6-year minimum follow-up, treated for LSDS with laminectomy and short-segment fusion (LSSF), or laminectomy and long-segment fusion (LLSF). The patients were followed-up and assessed with regard to clinical and radiological outcomes. Clinical outcomes were evaluated mainly with use of Visual Analog Scale (VAS), Oswestry Disability Index (ODI), Japanese Orthopaedic Association scores (JOA), Roland Morris Scores (RMS) and a satisfaction questionnaire. Radiological outcomes were assessed on the basis of Cobb's angle on the frontal plane. Patient data including operation time, blood loss, length of hospital stay, length of fused levels and medical expense were also analyzed.

## RESULTS

Eighty patients were treated with LSSF and 78 patients were treated with LLSF. In LLSF group, Cobb's angle was changed from 17.9° preoperatively to 8.9° at last follow-up, which was significantly decreased than LSSF group. All patients in both groups had significantly improvement on clinical outcomes after the procedures, compared with their preoperative period. But ODI and JOA measurement showed that LSSF group got significant better improvement in “walking and standing ability” compared with LLSF group. Higher satisfaction rate and lower medical expense were achieved in LSSF group.

## CONCLUSIONS

Although the deformity correction was limited, laminectomy and short-segment fusion can achieve better results on improving “walking and standing ability”, higher satisfaction rate and lower medical expense for LSDS.

**Key words:** Lumbar stenosis; degenerative scoliosis; laminectomy; fusion

**Table 1. Basic data and Cobb's angle of two groups**

	LSSF group (n=80)	LLSF group (n=78)	<i>p</i>
Age (year)	67.48 ± 6.51	68.59 ± 6.12	0.322
Height (cm)	163.57 ± 7.72	164.23 ± 7.50	0.772
weight (kg)	67.86 ± 8.79	68.23 ± 9.73	0.897
Follow-up period (month)	78.17 ± 10.70	79.50 ± 14.11	0.206
Sex (F/M)	45/35	40/38	0.833
Instrumented length [mean (range)]	3.17 (2,5)	5.23 (2,8)	0.001
Operation time (min)	124.00 ± 48.53	196.23 ± 59.24	0.042
Intra-op Blood loss [mean (range), mL]	525.12 (200,1600)	980.35 (200,2500)	0.031
Hospital stay [mean (range), day]	10.4 (8,14)	10.9 (7,15)	0.665
Preoperative Cobb's angle	17.25 ± 4.83	17.90 ± 4.68	0.536
Follow-up Cobb's angle	15.08 ± 7.87	8.91 ± 6.16	0.031
Improvement of Cobb's angle	1.36 ± 6.69	8.28 ± 4.71	0.002

**Table 2. Functional assessment of two groups**

	LSSF group (mean±SD)	LLSF group (mean±SD)	<i>p</i>
VAS (preoperative)	7.05 ± 2.26	7.76 ± 1.87	0.288
VAS (follow-up)	2.89 ± 2.32	2.32 ± 1.89	0.411
pre-op vs follow-up	<i>p</i> =0.000	<i>p</i> =0.000	
VAS (improvement)	4.16 ± 3.09	5.45 ± 2.28	0.184
ODI (preoperative)	52.83 ± 19.90	66.11 ± 22.91	0.062
ODI (follow-up)	33.03 ± 22.14	28.89 ± 19.86	0.504
pre-op vs follow-up	<i>p</i> =0.002	<i>p</i> =0.000	
ODI (improvement)	19.80 ± 27.15	37.22 ± 27.87	0.076
ODI (improvement rate, %)	10 ± 168	55 ± 29	0.273
JOA (preoperative)	11.59 ± 4.17	11.25 ± 5.34	0.676
JOA (follow-up)	19.82 ± 6.16	22.15 ± 6.05	0.169
pre-op vs follow-up	<i>p</i> =0.000	<i>p</i> =0.000	
JOA (improvement)	8.23 ± 5.52	10.90 ± 5.99	0.153
JOA (improvement rate, %)	49 ± 32	64 ± 29	0.112
RMS (preoperative)	12.95 ± 5.35	15.90 ± 6.45	0.079
RMS (follow-up)	8.77 ± 6.58	7.15 ± 6.18	0.464
pre-op vs follow-up	<i>p</i> =0.004	<i>p</i> =0.000	
RMS (improvement)	4.18 ± 5.54	8.75 ± 7.53	0.161
RMS (improvement rate, %)	22 ± 88	56 ± 36	0.434

**Table 3. Improvement of walking and standing ability in two groups**

	LSSF group (mean±SD)	LLSF group (mean±SD)	<i>p</i>
Walking in ODI (preoperative)	2.38 ± 1.32	3.53 ± 0.96	0.003
Walking in ODI (follow-up)	1.33 ± 1.35	0.74 ± 0.87	0.236
Walking in ODI (improvement)	1.05 ± 1.83	2.79 ± 1.27	0.001
Walking in JOA (preoperative)	0.57 ± 0.93	0.26 ± 0.56	0.308
Walking in JOA (follow-up)	1.76 ± 1.04	2.42 ± 0.77	0.037
Walking in JOA (improvement)	1.19 ± 1.21	2.16 ± 1.07	0.011
Standing in ODI (preoperative)	3.33 ± 1.35	3.89 ± 1.05	0.162
Standing in ODI (follow-up)	2.57 ± 1.54	1.84 ± 1.26	0.105
Standing in ODI(improvement)	0.76 ± 1.61	2.05 ± 1.65	0.033



**Table 4. Satisfactory at last follow-up of two groups**

	LSSF group		LLSF group		p
	n	% Satisfied	n	% Satisfied	
Satisfied to spend rest of life with back as is	55	0.682	46	0.586	0.353
Satisfaction with treatment	65	0.818	51	0.658	0.296
Recommend surgery to others	69	0.864	56	0.727	0.455
Would have same surgery again	69	0.864	56	0.727	0.455
Surgery was a success	65	0.818	55	0.707	1.000

## **Disclosure of Conflicts of Interest**

We certify that all our affiliations with or financial involvement in, within the past 3 years and foreseeable future, any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript are completely disclosed.