

Relation of Postoperative Deformity with Clinical Results in Degenerative Lumbar Scoliosis with Spinal Stenosis

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– Abstract –

Study Design: A retrospective study

Objectives: This study was designed to compare the clinical results, with the correction of the lumbar lordotic and scoliotic angles, in degenerative lumbar scoliosis patients, with spinal stenosis, who underwent an operation.

Summary of Literature Review: Few studies have compared the postoperative lordotic angle with the clinical results in degenerative lumbar scoliosis, with spinal stenosis.

Subjects and Methods: Out of 68 cases, where the patients underwent posterior decompression, pedicle screw fixation and fusion, due to the degenerative lumbar scoliosis with spinal stenosis, between February 1997 and February 2001, 59 cases, with the possible follow-ups for over 2 year, were studied and are herein reported. The decompression was carried out over a segment that showed the neurological symptom and occlusion of the spinal canal or the compression on the nerve root observed on CT or MRI scans. The pedicle screw fixation and fusion were carried out over the segment that received the decompression. The average age of the patients was 63.4, ranging from 51 to 76 years, and the average follow-up period was 38, ranging from 24 to 56 months. The measurements were performed in relation to the vertebral rotation, scoliotic and lumbar lordotic angles preoperatively, postoperatively and at the time of the final follow-ups, respectively. The clinical results were classified by the Kirkaldy-Willis questionnaire, and the statistical calculations performed through chi-squared and Pearson's correlation tests.

Results: The average lumbar scoliotic angles preoperatively, postoperatively and at the time of the final follow-ups were 15.7 ± 4.9 , 8.9 ± 3.1 and 10.8 ± 4.7 degrees, respectively. The average lumbar lordotic angles were 14.2 ± 6.1 , 20.1 ± 7.3 and 19.4 ± 7.2 degrees, respectively. The vertebral rotation degrees were 0.88, 0.62 and 0.64, respectively. The clinical results by the Kirkaldy-Willis questionnaire indicated over 73% satisfactory results, showing 9 excellent, 34 good, 13 fair and 3 poor cases. The lumbar lordotic angle was statistically correlated with the clinical results ($p=0.04$), while the scoliotic angle ($p=0.41$) and the vertebral rotation degree ($p=0.29$) were not. The scoliotic and lordotic angles had negative correlations, but these were not statistically

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3.1 , 10.8 ± 4.7 (P=0.04)(Table 3).
 6.8(43%) , 1.9 10 24
 4.9(31%) 19 , 5 , 10 35
 grade II 24 , 가 11
 , 0.88, 0.62, 0.64 (P=0.41)(Table 4).
 0.26(30%) , 0.02 grade 0, 24 19 , 가 5 ,
 0.24(27%) grade I, 32 23 , 가 9 ,
 (Table 1). grade II, 3 1 , 가 2
 Kirkaldy-Willis 가 9 , (P=0.29)(Table 5).
 34 , 13 , 3 73% 7 3
 (Table 2).
 20 26 가 , , 3
 15 , 가 11 , 20 33 1 가
 28 , 가 5 .

Table 2. Kirkaldy-Willis questionnaire (last follow up)

I. Excellent: The patient has returned to his normal work and other activities with little or no complaint	9 (15%)
II. Good: The patient has returned to his normal work but may on occasion after heavy work has recurrent back pain requiring a few day 's rest	34 (58%)
III. Fair: The patient has to reduce his working part-time, and may occasionally have recurrence of pain requiring absence from work for one or two weeks, once or twice a year	13 (23%)
IV. Poor: The patient does not return to work	3 (5%)
Total	59

Table 3. Correlation of total lumbar lordosis and clinical result (last follow up)

Total lumbar lordosis	Good	Fair	Total
< 20 °	14	12	26
20 °	27	6	33

P value = 0.04 (chi-square test)

Table 4. Correlation of scoliotic angle and clinical result (last follow up)

Scoliotic angle	Good	Fair	Total
< 10 °	19	5	24
10 °	24	11	35

P value = 0.41 (chi-square test)

Table 5. Correlation of pedicle rotation and clinical result (last follow up)

Pedicle rotation	Good	Fair	Total
Grade 0	19	5	24
Grade I	23	9	32
Grade II	1	2	3

P value = 0.29 (chi-square test)

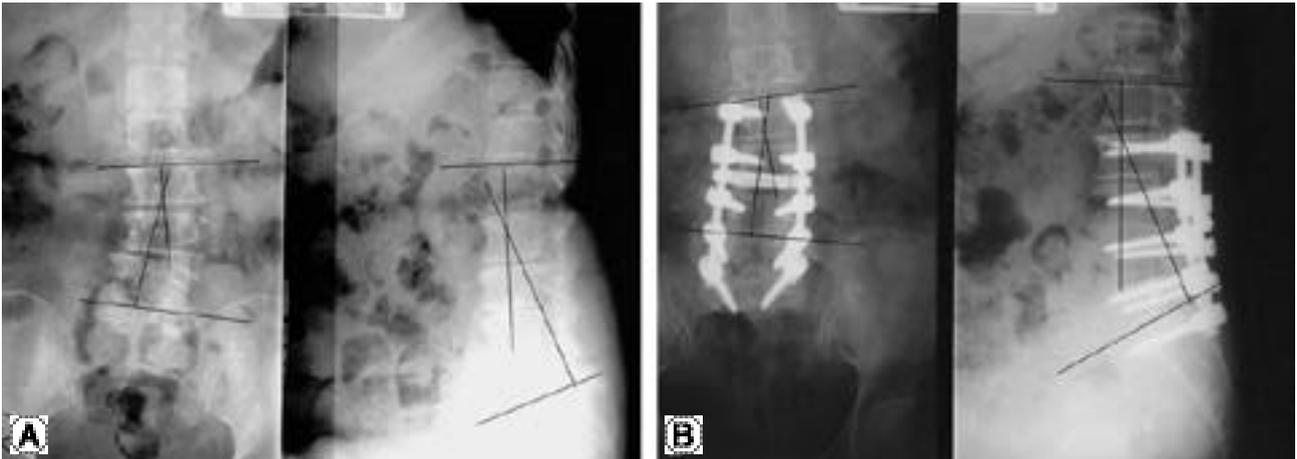


Fig. 1. 67 years old, female. (A) preop, SA: 17 ° LA: 30 ° PR: grade I. (B) last follow-up(24 months), SA: 10 ° LA: 30 ° PR: grade I, CR: excellent (SA: scoliotic angle, LA: lordotic angle, PR: pedicle rotation, CR: clinical result)

가 (r=-0.09, P>0.05). . Grubb¹⁸⁾

가

. Simmons Simmons¹²⁾

가 ,

가

9),

73%

15.7 10.8 31%

Bruce¹³⁾ , Bridwel¹⁴⁾ 10-12)

, Pritchett

Grubb^{9,19)} (flatback)가

, Marchesi Aebi¹⁷⁾

가 ,

. Booth

가 4.5,12). Benner Ehni¹⁶⁾ 20)

가 . Simmons Simmons¹²⁾

가

93%

37 19 50%

. Marchesi Aebi¹⁷⁾ 42%

50% , 86%

. Jackson

McManos²¹⁾

가

Sagittal vertical axis가

22)

Sagittal vertical axis

Sagittal vertical axis,

Nash Moe⁸⁾

grade II

0.88, 0.64 27%

17,21-23)

sagittal vertical axis

가

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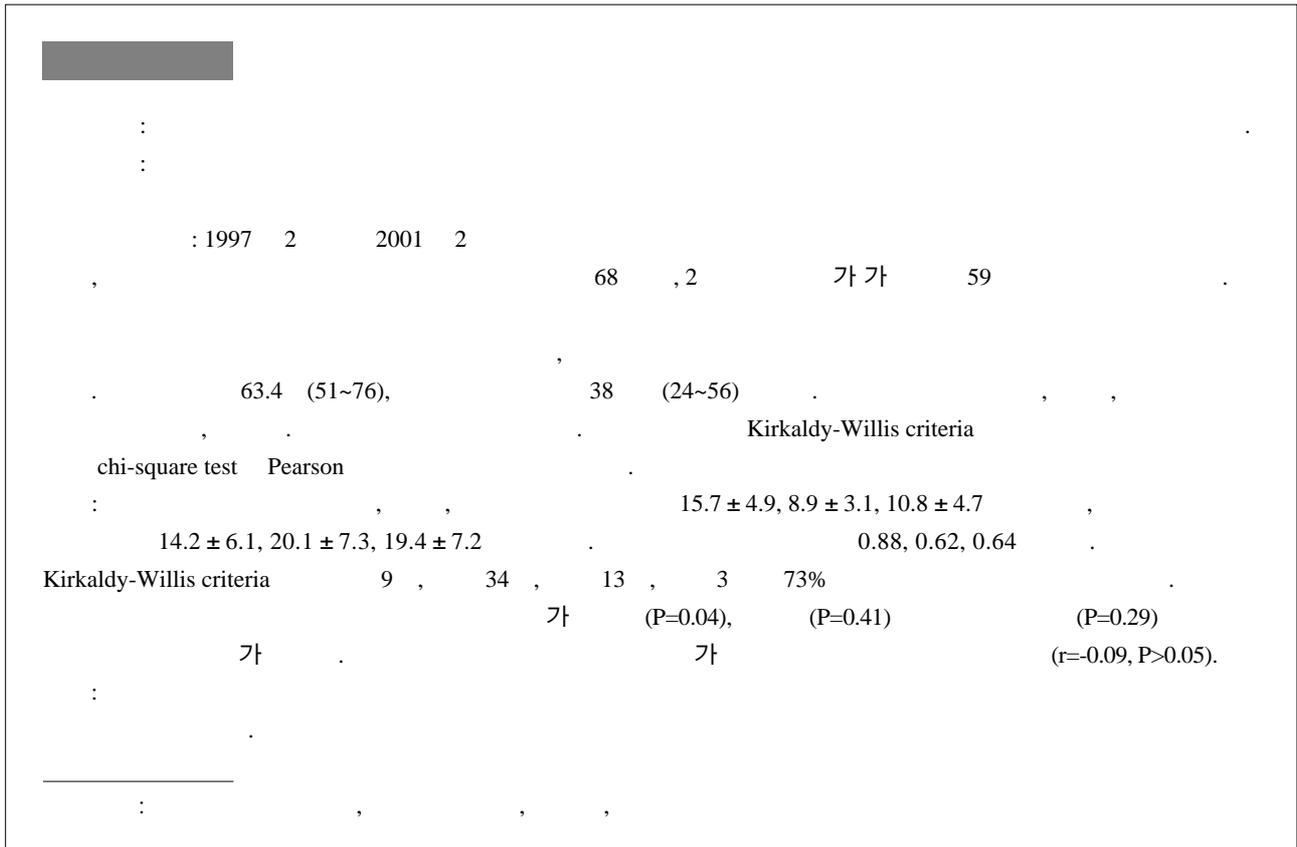
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