

Surgical Treatment of Degenerative Lumbar Scoliosis with Multiple Spinal Stenosis

June-Kyu Lee, M.D., Jun-Young Yang, M.D., Kyung-Cheon Kim, M.D.

Department of Orthopaedic Surgery, School of Medicine, Chungnam National University, Daejeon, Korea

– Abstract –

Purpose : To evaluate changes of scoliotic angle and adjacent segments after surgical treatment of degenerative lumbar scoliosis with multiple spinal stenosis.

Materials and Methods : 23 patients of multiple spinal stenosis with more than 10 degree of scoliotic angle were retrospectively reviewed from March, 1997 to May, 2001. All patients underwent wide total laminectomy & instrumentation by fixation of pedicle screw and autogenous bone graft. And their average of follow up period was 21 months. Lordotic and scoliotic angle was measured with Cobb's method by using simple X-ray. And degenerative scoliosis was analyzed by Simmons' Classification.

Results : Fusion was performed in 3.1 segments and wide total laminectomy was performed in 2.6 segments. And in type of Simmons' classification degenerative scoliosis found in 15 cases, and 8 cases in type . After the surgical correction scoliotic angle was decreased from 14 to 8 degrees, and the lordotic angle increased from 14 to 19 degrees. And no significant changes was found in the last follow up. 16 cases (70%) showed the "excellent" and "good" clinical results and Simmons type II showed better clinical results than those of type I (type I was 9 cases and type II was 7 cases).

Conclusion : Patients with degenerative lumbar scoliosis with multiple spinal stenosis treated with wide total laminectomy and instrumentation by fixation of pedicle screw showed effects in coronal and sagittal balance, and considering instability resulting from involvements in multiple segments and other complex pathologic conditions seems to be important.

Key Words : Degenerative lumbar scoliosis, Multiple spinal stenosis

3,4)

Address reprint requests to

Jun-Young Yang, M.D.

Department of Orthopaedic Surgery, College of Medicine, Chungnam National University

#640 Daesa-Dong, Jung-gu, Daejeon, 301-721, Korea

Tel : 82-42-220-7351, Fax : 82-42-252-7098, E-mail : jyyang@cnuh.co.kr

II

2,10),
 Simmons
 가
 (Excellent)
 가
 (Good)
 (Fair)
 가
 (Poor)
 1997 3 2001 5 3 가
 40 10
 , 1 가 가
 23 3.1(1-6)
 , 21 가 8 , 2.6(1-5)
 가 15 , 41 72 2
 59 . 8
 1 (34 %) , 15 (66%)
 23 23
 18(78%) 14.1
 5 8.0 43%
 . 15 (66%) 8 , 14.2
 (34%) 19.2 가 26%
 . Simmons
 1 2 15
 8 1 11.5
 가 6.9 (30%) 17.6 20 (26%)
 , 2 19 10.1
 가 1 Cage (46%) 8 17.7 (54%)
 1 가
 3 . 3 (1-3)
 , 18 12.6 7.4 (41%)
 , 14.9 18.4 (19%) , 4
 , , (4-6) 5
 Cobb 19.8 10.2 (48%) 18.2
 22.9 (47%) . 2 (1-2)
 Simmons¹³⁾ 1 11 13.3 8.9
 , 가 (33%) 18.2 22.9 (25%)
 , 3 (3-5) 12

14.9 7.25 (51%) 10.7 (flat back)가 Marchesi
15.9 (32%) (Table 1, 2). Aebi¹²⁾가
가 9 , 가 7 , 7
16 (70%) 1 9 , 2 14.2
7 , 2 1 19.2 가 26%
, 2 1
가
Simmons¹³⁾ 2가
가 I
(Fig. 1, 2). II
, II
Kostuik^{8,11)} 1
가 , 15
가 C 가
가
Simmons Jackson¹⁴⁾ 가
93% 37 , 19
50% , Marchesi
Aebi¹²⁾ 86%
50% , 92%
14.1
8 43%
Grubb^{5,6)}

Table 2. Correction rate of scoliosis and Lordosis

	scoliosis (%)	lordosis (%)
Simmons Type I	30	26
Simmons Type II	46	54
Fusion < 4 levels	41	19
Fusion 4 levels	48	47
laminectomy < 3	33	25
laminectomy 3	51	32

Table 1. Change of deformities in the preoperative and postoperative outcomes, respectively

	scoliosis (degree)		lordosis (degree)		Patients number
	Preoperation	Postoperation	Preoperation	Postoperation	
Simmons Type I	11.5	8.0	14.2	19.2	15
Simmons Type II	19	10.1	8	17.7	8
Fusion < 4 levels	12.6	7.4	14.91	8.4	18
Fusion 4 levels	19.8	10.2	11.8	22.4	5
laminectomy < 3	13.3	8.9	18.2	22.9	11
laminectomy 3	14.9	7.25	10.7	15.9	12
total	14.1	8.0	14.2	19.2	

가



Fig. 1. Simple X-ray of 41 year-old female with right lumbar scoliosis (34 degree of scoliotic curve, 12 degree of kyphotic curve). **A.** Preoperative and postoperative AP radiograph showed correction of lumbar scoliosis (15 degree). **B.** Preoperative and postoperative lateral radiograph showed restoration of lumbar lordosis (10 degree of lordotic curve). there were good maintenance at 12 months after operation.



Fig. 2. Simple X-ray of 63 year-old male with left lumbar scoliosis (17 degree of scoliotic curve, 17 degree of scoliotic curve). **A.** Preoperative and postoperative AP radiograph showed correction of lumbar scoliosis (8 degree). **B.** Preoperative and postoperative lateral radiograph showed restoration of lumbar lordosis (18 degree). there were good maintenance at 12 months after operation.

가 가

가 ,

REFERENCES

- 1) **Benner B and Ehni G** : Degenerative scoliosis. *Spine*, 4: 548-552, 1979.
- 2) **Bradford DS** : Adult scoliosis current concepts of treatment. *Clin. Orthop*, 229: 71-87, 1988.
- 3) **Epstein JA, Epstein BS and Jones MD** : Symptomatic lumbar scoliosis with degenerative changes in the elderly. *Spine*, 4: 542-547, 1979.
- 4) **Grubb SA and Lipscomb HJ** : Diagnostic findings in painful adult scoliosis. *Spine*, 17: 518-527, 1992.
- 5) **Grubb SA, Lipscomb HJ and Coonrad** : Degenerative adult onset scoliosis. *Spine*, 13: 241-245, 1988.
- 6) **Grubb SA, Lipscomb HJ and Suh PB** : Results of surgical treatment of painful adult scoliosis. *Spine*, 14: 1619-1627, 1994.
- 7) **Ha KY, Kim KW, Park SJ and Choi YS** : Correction of curve and determination of fixation segment in degenerative lumbar scoliosis. *Journal of Korean Spine Surg*, 7: 211-218, 2000.
- 8) **Kostuik JP** : Adult scoliosis. *The lumbar spine*. W.B. Saunders, 828-915, 1990.
- 9) **Kostuik JP** : Decision making in adult scoliosis. *Spine*, 4: 521-526, 1979.
- 10) **Kostuik JP** : Recent advances in the treatment of painful adult scoliosis. *Clin. Orthop*, 147: 238-252, 1980.
- 11) **Kostuik JP, Isreal J and Hall JE** : Scoliosis surgery in adults. 93: 225-234, 1973.
- 12) **Marchesi DG and Aebi M** : Pedicle fixation devices in the treatment of adult lumbar scoliosis. *Spine*, 17: S304-S309, 1992.
- 13) **Simmons ED** : Surgical treatment of patients with lumbar spinal stenosis with associated scoliosis: *Clin. Orthop*. 384: 45-53, 2001.
- 14) **Simmons EH and Jackson RP** : The management of nerve root entrapment syndrome associated with the collapsing scoliosis of idiopathic lumbar and thoracolumbar curve. *Spine*, 4: 533-541, 1979.



:

가

: 1997 3 2001 5

3

10

1

가 가 23

21

Cobb

Simmons

: 3.1

, 2.6

, Simmons

1 2

15 8

14

8

14

19

가

,

가

,

가 9 , 가 7 , 7 ,

16 (70%)

, Simmons 2 1

(1 9 , 2 7).

:

가 가

,

:

,

:

640

TEL : 82-42-220-7351, FAX : 82-42-252-7098, E-mail : jyyang@cnuh.co.kr