

Comparison of the Results of the Decompression Methods for Degenerative Lumbar Spinal Stenosis: Comparison of Posterior Element Saving Procedures

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– Abstract –

Study Design: This is a prospective study

Objectives: We wanted to analyze the radiographic and clinical results of the three posterior element saving decompression techniques for treating lumbar degenerative spinal stenosis.

Summary of the Literature Review: Minimal invasive decompression reduces patient morbidity and the hospital stay.

Materials and Methods: We evaluated 30 patients, who were treated with posterior element saving microscopic decompression for their lumbar spinal stenosis (without instability), during the period from March, 2002 and February, 2004. The procedures were bilateral laminotomy (10 cases), spinous process osteotomy (8 cases) and laminoplasty (12 cases). We evaluated the estimated blood loss, the amount of transfusion, the complications and the radiographic instability at the last follow-up. The clinical results were evaluated with using the Oswestry disability index (ODI) and the visual analogue scale (VAS) for buttock and leg pain both preoperatively and at postoperative 1, 3, 6 and 12 months, respectively.

Results: There was no radiographic instability noted for any of the patients at the last follow up. The mean ODI and VAS scores were substantially improved at postoperative 1 month and then they were marginally improved afterwards. However, there were no statistically significant differences among three procedures ($p>0.05$). The mean blood loss and the amount of transfusion for each spinal level were 290 ml and 0.5 U for bilateral laminotomy, 370 ml and 0.9 U for spinous process osteotomy and 180 ml and 0.1 U for laminoplasty, respectively.

Conclusion: There were no significant differences in the radiographic and clinical results among bilateral laminotomy, spinous process osteotomy and laminoplasty. Yet in terms of blood loss and transfusion, laminoplasty was better than the other techniques. We believe that laminoplasty is a useful and safe technique for treating degenerative lumbar spinal stenosis.

Key Words: Lumbar spinal stenosis, Bilateral laminotomy, Spinous process osteotomy, Laminoplasty

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2005

2005

가

3가

(laminectomy)

2002 3 2004 2

(dead space)

가

, 2

1,2)

3)

30

가 가

68.3 (55~82)

가 8 (27%) 가 22 (73%)

14 (12~20)

2,4)

5-8)

2/3

1/3

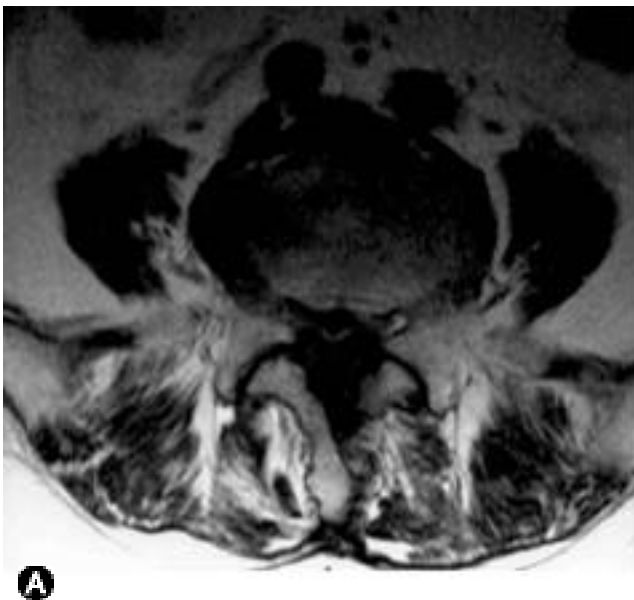
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1/3

Fig. 1. Preoperative MRI image(A) and postoperativeCT image (B) of bilateral laminotomy patient.

(Fig. 1).

(spinous process osteotomy technique)

mm 5 30~40
dissector
curved osteotome
가
osteotome
(Fig. 3).
(, 4-5 4 5 10 1 4
) (Fig. 2). , 2 6 ,
1 cm 8 1 2 , 2 4 , 3 2

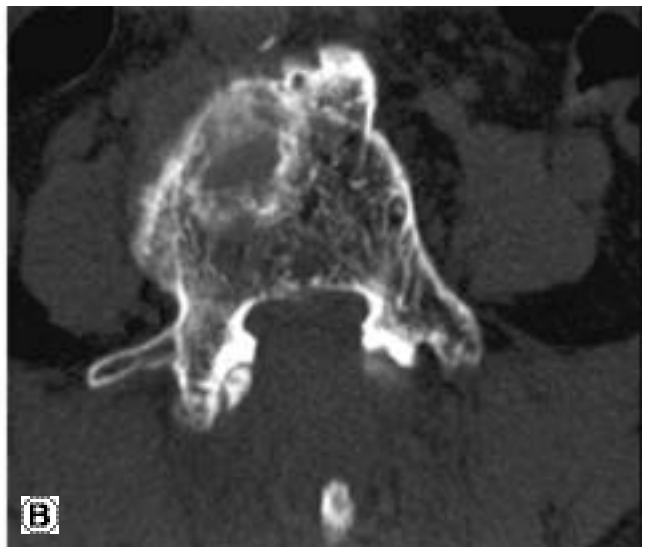
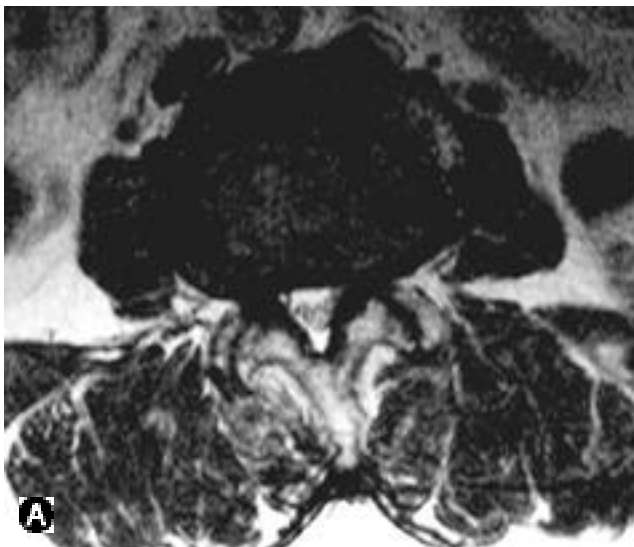


Fig. 2. Preoperative MRI image (A) and postoperative CT image (B) of spinous process osteotomy patient.

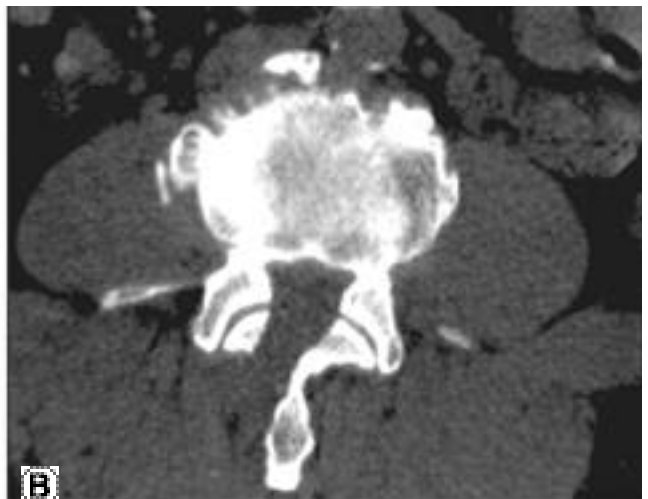
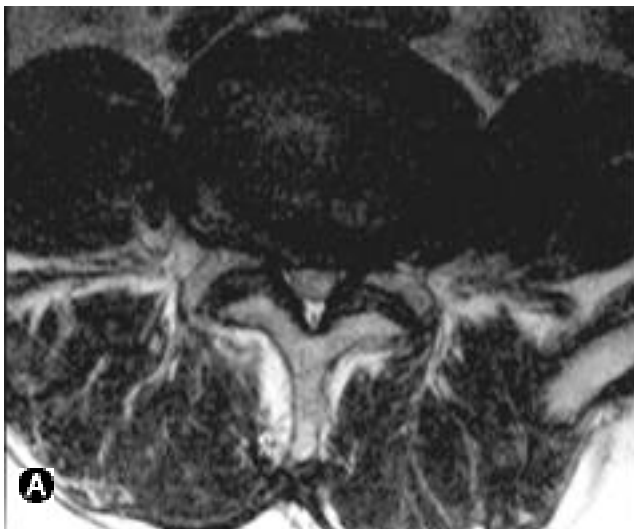


Fig. 3. Preoperative MRI image (A) and postoperative CT image (B) of laminoplasty patient.

12 1 7 , 2
5 .
가 1, 3,
6, 12 Oswesry disability index(version 2.0, 100
point scale)¹¹⁾ visual analogue
scale(10 point scale) 가
Kruskal-Wallis test

1, 3, 6, 12
(p>0.05, Fig. 4).
2) visual analogue scale(VAS)
VAS
7.5 1 , 3 , 6 12
3.0, 3.1, 2.7, 2.6 ,
8.2
3.5, 3.0, 3.1, 2.8 ,
7.8 2.8, 2.9, 2.8, 2.6
가 1
VAS (p<0.05),
1, 3, 6, 12
(p>0.05, Fig. 5).

1. 3.
mm 10 가 4
290 ml(90~400),
370 ml(300~700), 180
ml(50~310)
0.5 U(0-2)
0.9 U(1-1.4)
0.1 U(0-1)
2. 4.
1) Oswestry disability index(ODI)
ODI
57 1 , 3 , 6 12
28, 26, 22, 18 ,
68 45, 1
32, 25, 15 ,
62 30, 28, 20, 17
가 1 ODI
(p<0.05),

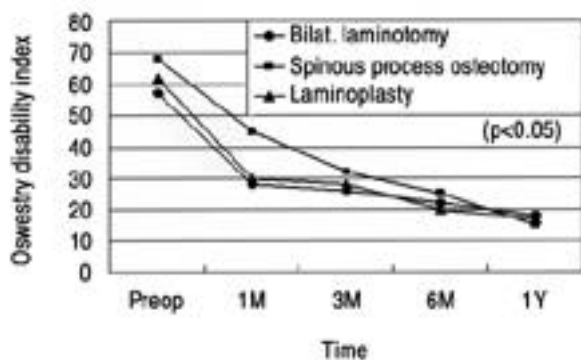


Fig. 4. The serial changes of Oswestry disability index.

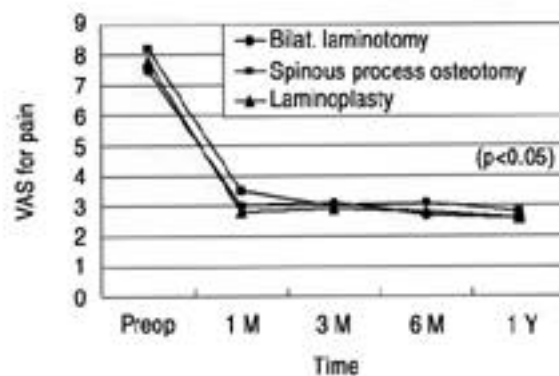


Fig. 5. The serial changes of visual analogue scale for buttock and leg pain.

14

3가

가

가

^{10,19)}.

2

가

²⁰⁾

2

가 VAS ODI가 1

¹²⁾. Niggemeyer ¹³⁾

, 1

가

가

가

가 가

가 가

가

3가

Loupe

가

^{14,15)}.

가

($p>0.05$),

가

(laminectomy)

3가

가

(dead space)

가

²⁾.

가

3가

가

¹⁶⁻¹⁸⁾.

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 ability index(ODI) visual analogue scale(VAS) 가
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