

Outcome of Different Grafted Bone in Lumbar Posterolateral Fusion

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– Abstract –

Objectives: Using a retrospective analysis on the fusion rate and the postoperative improvement in symptoms, this study evaluated the clinical feasibility of a bone graft in lumbar fusion surgery in the following cases: (1) Group I: local autograft, (2) Group II: local autograft and iliac crest autograft, and (3) Group III: local autograft and customized heterograft.

Materials And Methods: Among the patients who had undergone a decompression and lumbar posterolateral fusion for various lumbar diseases, between January 1997 and December 1999, 178, in who 2 year follow-up observations had been possible, were selected for this study. The patients were allocated to 1 of 3 groups, Group I (47 patients), Group II (57 patients) and Group III (74 patients). For each group, the mean patient ages were 58.3, 49 and 62.4 years old, respectively, with male to female ratios of 24:23, 23:24 and 36:38. Postoperative radiographs were taken at 2 weeks, 3 months and 1 year, and further follow-up observations were conducted at 1-year intervals. The bone fusions was determined, along with the fusion rates, based on Lenke's criteria, and the post-operative clinical outcomes were evaluated as excellent, good, normal and poor, using Kim's method. A statistical analysis was performed with Chi-square tests.

Results: From the follow-up observations for over a year, the radiographic evaluations showed that the fusion rates of Groups I and II, over B: 86.6 and over B: 88.9%, were superior to the over B: 80.1% of Group III, but with no statistical significance. For the clinical outcomes, the 78.1 88% over good results were superior to the 69.4% of Group III, which also showed statistical significance.

Conclusions: The selective use of customized heterograft was assumed to be effective in an insufficient autogenous bone or a difficult autogenous bone collection even though it causes significantly lower improvement in the symptoms.

Key Words: lumbar posterolateral fusion, local autograft, iliac crest autograft, heterograft

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2002

가 , 가 , 가 , 가

가 ,

30 5% 35% 13)

가 , , 가 1997 1 1999 12

가 (116 , 39 , 10 , 7 , 6

2,3,4,5) , 가 25~30%) 2 가

level , 가 , 178 가 47 I

28) , 가 II , 가 57

74 III 50:50 . 가 가

9,15) 가 가

가 (Lubboc) 1).

Table 1. Bone fusion rate (Lenke et al)

A	definitely solid	solid big trabeculated bilateral fusion masses
B	possibly solid	unilateral large fusion mass with contralateral small fusion mass
C	probably not solid	small, thin fusion masses bilaterally
D	definitely not solid	graft resorption bilaterally or fusion mass with obvious bilateral pseudoarthrosis

Table 2. Criteria for clinical results (Kim and Kim method)

Exellent	Complete relief of pain in back and lower limb No limitation of physical activity, Analgeics not used
Good	Relief of most of pain in back and lower limb Able to return to accustomed employment Physical activities slightly limited
Fair	Analgesics used only infrequently, Able to squat on the floor Partial relief of pain in back and lower limb Able to return to accustomed employment with limitation Physical activities definitely limited
Poor	Analgesics used frequently, Mild limitation to squat on the floor Little or no relief of pain in back and lower limb Unable to return to accustomed employment ,Limited physical activiti Analgesics used regularly, Unable to squat on the floor

가

가

60

60

58.3, 49, 62.4

I 24/23, II 23/34, III

36/38 I 2.5, II

2.6, III 2.8

2, 3, 6, 1

1

Lenke¹⁷⁾

(Table 1).

A, 가

가

가

B, C, D

Kim Kim¹³⁾ (Table 2)

Chi-square test, p 가

0.05

가

1.

가 I 135, 1.74 가

II 153, 2.14 가

III 149, 2.05

2.

1 Lenke¹⁷⁾ 가

I 86.6% B 가

II 88.9% B 가

III 80.1% B 가

I, II 가

(P> 0.05, Chi-square test)

가 I 6.5

, II 6.3, III 9.7

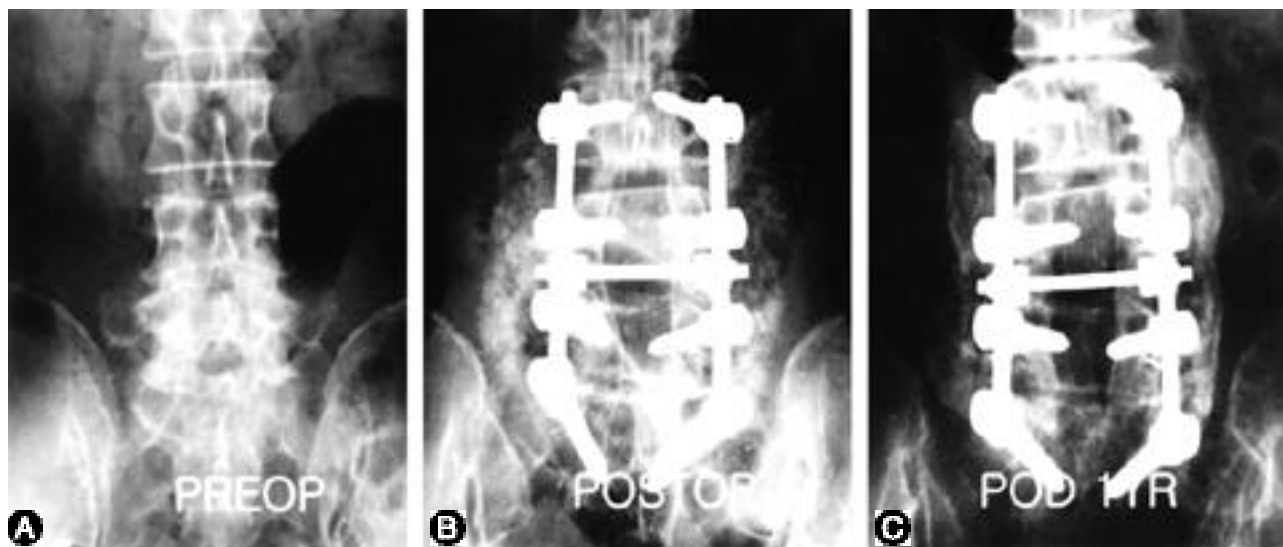


Fig. 1. A. Spinal stenosis L3-4-5-S1 in a 65-year-old female
 B. Postoperative radiograph (Posterior decompression and PLF with autologous bone)
 C. Follow-up radiograph after 1 year (bone fusion rate: A)

3.

I (:78.1%) II (:88%) , III (:69.4%)

가 . (P<0.05, Chi-square test)

65 5

I 1 가 , II 1 , III L5 ,S1 1

1 , 2 . ,

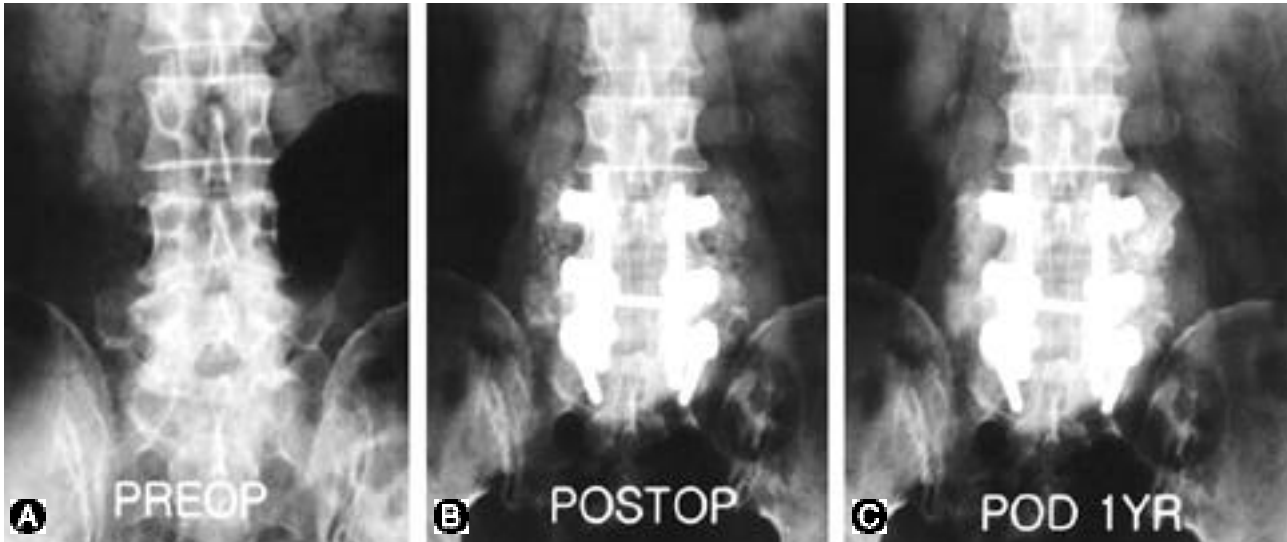


Fig. 2. A. Spinal stenosis L4-5-S1 in a 57-year-old female
 B. Postoperative radiograph (Posterior decompression and PLF with autolocal bone and autoiliac bone)
 C. Follow-up radiograph after 1 year (bone fusion rate: A)

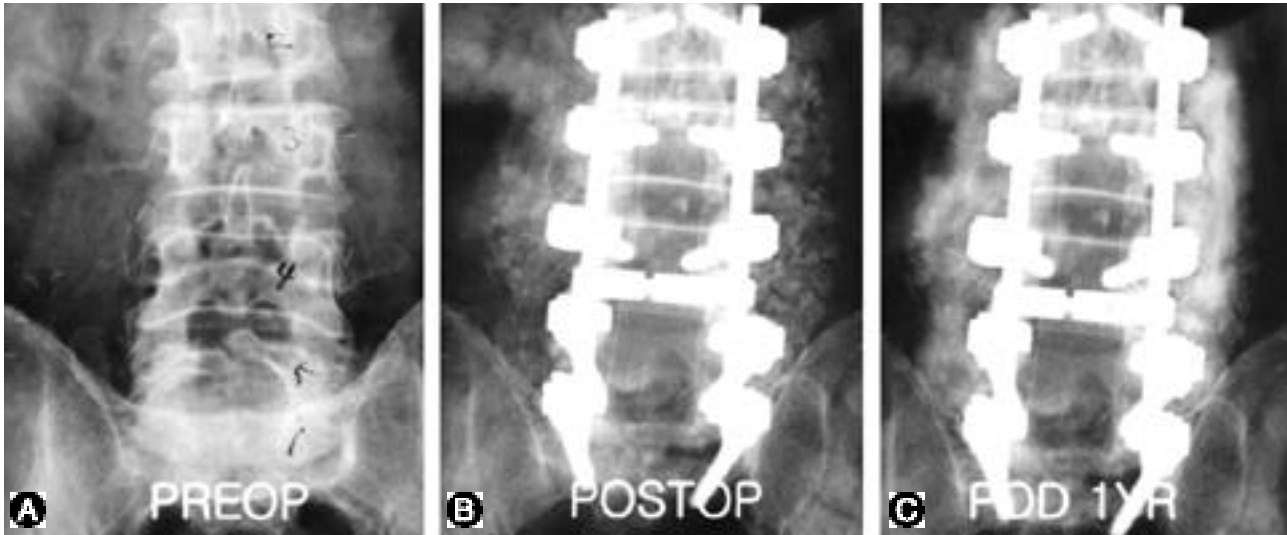


Fig. 3. A. Spinal stenosis L2-3-4-5-S1 in a 66-year-old male
 B. Postoperative radiograph (Posterior decompression and PLF with autolocal bone and xenograft)
 C. Follow-up radiograph after 1 year (bone fusion rate: B)

L4-5-S1
가
(Group I) 1 가 21,23,24,26,27)
Lenke¹⁷⁾ A 가 ,
(Fig. 1). , 가
가
2 가
57 15
L4, L5, S1
1 , 가 ,
가
L4-5-S1 가 가 가 ,
(Group II) 1 8)
A
(Fig. 2). ,
3 , , , , ,
65 10 가 가
L3 가 가
L2-3-4-5-S1 가 () 가 11,12,19,25)
(Lubboc) (Group I) 6)
1 B
(Fig. 3). Lubboc (Trasphy to S.A.,
Clermont-Ferrand, France) 6
가 (Type I collagen, hydrox-
yapatite) . Pounart Squire²²⁾
,
가 (Lubboc)
가 , Chappard⁶⁾
(osteoblast), (Lubboc) 1
(Wover bone) 6
가 20)
16). 가 . Morax²⁰⁾
(Lubboc)
18) 가
가 가 , 7)
(Lubboc)
(osteococonduction)
, 6 12

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가 : 가 , 가 , 가
가 : 1997 1 1999 12 3
가 2 가 178
가 47 , 가 가
57 , 가 74
58.3 , 49 , 62.4 24/23, 23/34, 36/38 2 , 3 , 6 , 1
1 Lenke
Chi-square test
: 86.6%, 88.9% B 80.1% B
I,II
: 78.1%) (: 88%) , (: 69.4%)
가
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1가 3

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