

Change of the Lordosis on Cervical Spine after Anterior Interbody Fusion with Autogenous Iliac Strut Bone Graft

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– Abstract –

Purpose : Various methods have been used to treat traumas and diseases of the cervical vertebrae. For fractures and diseases of the cervical vertebrae, The authors of this paper sought to evaluate the effectiveness of these different methods by checking for the correction of kyphosis, seeing whether bone graft was successful, making clinical evaluation, and checking for the appropriateness of size and shape of the graft.

Methods : Of the 193 patients who visited the Department of Orthopedics at Chungnam National University Hopspital from January, 1997, to March, 2000, and had operative treatments using the anterior approach or the Smith- Robinson technique, 161 cases that were possible for follow-up were chosen for this study. Among the cases chosen, 111 cases had cervical trauma, and 50 cases had disease of the cervical vertebrae. Simple X-ray was taken to measure the curvature of the affected area and also of the overall cervical curvature(lower end of the second cervical vertebra- lower end of the seventh cervical vertebra), and the healing of the bone was evaluated.

Results : Normal range of overall cervical curvature is 16-38 degrees of kyphosis; the curvature after operative treatments for diseased cervical vertebrae was corrected back to the normal range from the reduced angles that existed before the operation. The bone graft was healed in all cases except one(cervical disease), and 15 cases showed prolonged healing. For clinical evaluation using the Robinson scale, 109 cases were excellent, 42 cases were good, and 10 cases were fair.

Conclusion : Anterior interbody fusion operation of the cervical vertebrae using anterior cervical plate fixation on cases of cervical vertebrate damage and diseases performed, and for the bone graft, using grafts with the anterior surface longer than the posterior surface to induce kyphosis of the cervical vertebrae seemed to be effective. Thus, it is believed that above method is effective in inducing anatomical and functional recovery of patients with trauma and diseases of the cervical vertebrae.

Key Words : Cervical spine, Anterior cervical fuvion, Plate fication, Cervical lordosis

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2.

1995 Robinson Smith¹⁴⁾

Caspar
(Laminar distractor)
가 ()

가 9~12 mm ,
1~2 mm
가 2~3
2

가, (Isometric Exercise)

3. 가

1.

1997 1 2000 3

가 11
(Smith-Robinson 26 14.5 , 1
technique) 2 , 3
193 가 161
ORION plate(99), ATLANTIS plate(51
) , AO plate(11)
Smith-Robinson technique

111 (68.94%) ,
50 (31.06%)
3.13:1(122, 39) ,
4.55:1(91: 20) 1.63:1(31: 19) .
40.9 (17 ~73) ,
20 9 (5.60%), 20 33 (20.50%), 30 53
(32.91%), 40 28 (17.39%), 50 27 (16.77%),
60 11 (6.83%) 가

1.

111 96 ,
15 , 3-4
6 , 4-5 17 , 5-6
41 , 6-7 32 ,

3-4-5 3 , 5-6-7 12 6.43 ,
4.97 (Table 1-1, 1-2, Fig. 1).
50 38 ,
12 , 3-4 (p=0.00)
8 , 4-5 7 , 5-6 (p=0.00) (p=0.01)
14 , 6-7 9 , 4-
5-6 7 , 5-6-7 5 .
0.6 , 15.97 ,
5.00 ,
18.78 , 4.40 ,
2.81 .
6.7 , 15.26 ,
5.61 , 20.11 , 4.72 ,
19.29 7.28 4.12 , 4.14
(Table 2-1, 2-2, Fig. 2).
4.03 .
4.76 ,
20.23 ,

Table 1-1. Change of the cervical lordosis(Trauma)

	Initial	Postop	Last F/U
Involve Segment	-6.7	5.61	4.76
C2 - C7	15.26	19.29	20.23

(: degree, (-) : kyphosis, F/U: follow-up)

Table 1-2. Change of the cervical lordosis(Trauma)(Angle-Correction of cervical lordosis)

	Initial-Postop	Initial-Last F/U
Involve Segment	7.28	6.43
C2-C7	4.03	4.97

(: degree, (-) : kyphosis, F/U: follow-up)

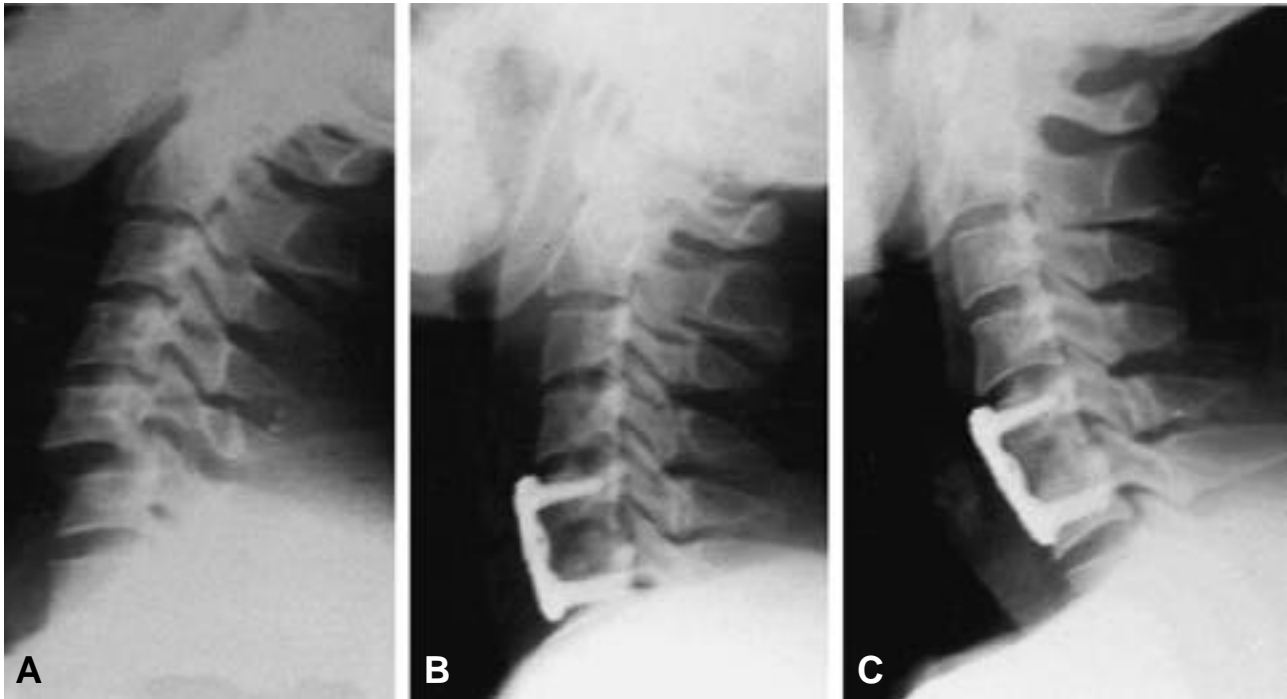


Fig. 1. This case is 39 years old man, who is diagnosed Fracture and dislocation C5-6(A), and then we operated anterior interbody fusion using ORION plate with autogenous strut iliac bone graft(B), and follow up to the postoperative 24 months(C).

Table 2-1. Change of the Cervical lordosis(Disease)

	Initial	Postop	Last F/U
Involve Segment	0.5	5.00	4.72
C2 - C7	15.97	18.78	20.11

(: degree, (-) : kyphosis, F/U: follow-up)

Table 2-2. Change of the cervical lordosis(Disease)(Angle-Correction of cervical lordosis)

	Initial-Postop	Initial-Last F/U
Involve Segment	4.40	4.12
C2-C7	2.81	4.14

(: degree, (-) : kyphosis, F/U: follow-up)

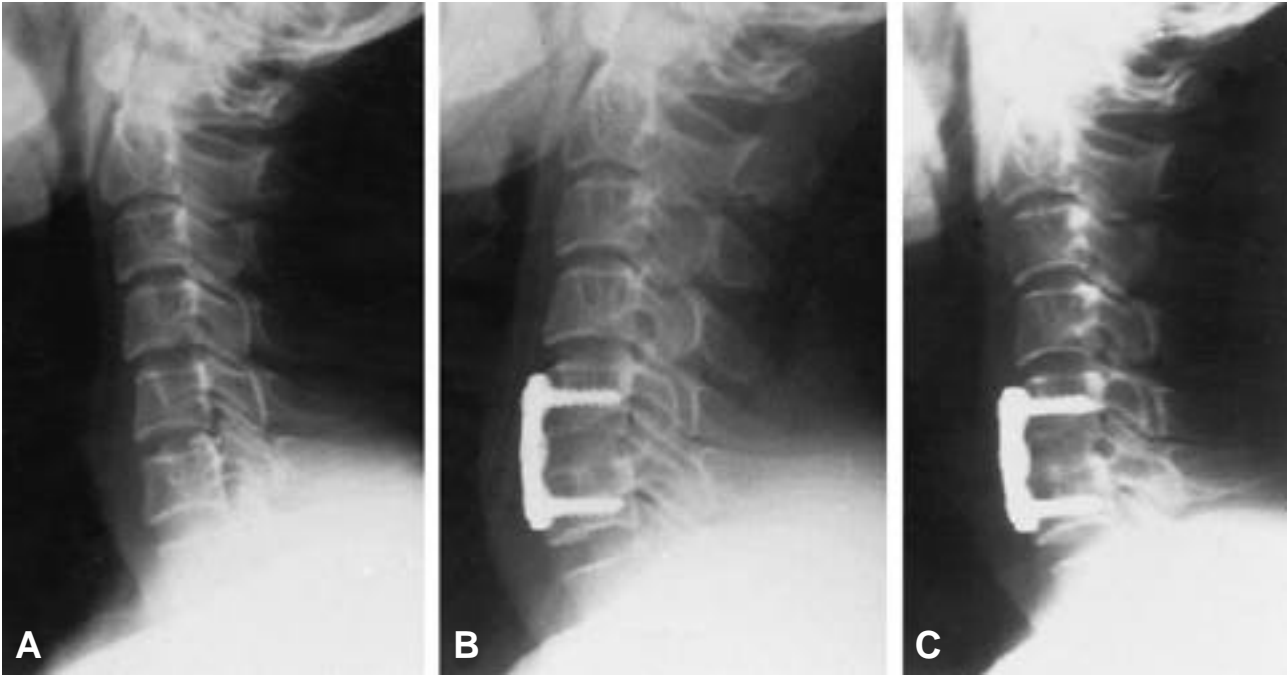


Fig. 2. This case is 33 years old man, who is diagnosed HNP C5-6(A), and then we operated anterior interbody fusion using ATLANTIS plate with autogenous strut iliac bone graft(B), and follow up to the postoperative 15 months(C).

(p=0.00) (p=0.005) 가
, (p=0.055)
(p=0.00)
3.
(bony bridge)
, 1
, 11.2 (8~16)
(Fig. 3),

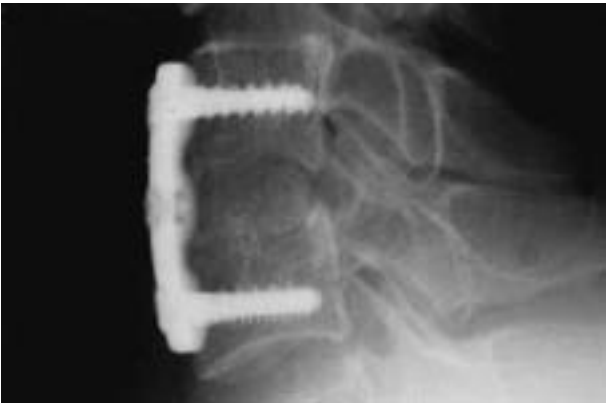


Fig. 3. This simple cervical lateral radiograph shows the fact that the "Initiation of bone union" is "Cancellous Portion".

가 ,

	(Kurokawa method)	(Halovest)
4.	가 . , 2 . Robinson (excellent), (good), 가 (fair), (poor) 109 (73.91%)- :70, :39- lent), 42 (26.08%)- :33, :9- (6.21%)- :8, :2- (fair)	3 . 가 Durbin ⁶⁾ , Jacob ^{10,11)} , 가 가 1955 Robinson Smith .
5.	가 1 (5-6) 3 4).	가 (Fig. 12,16). 2-4,16).



Fig. 4. This simple cervical radiograph is the complicated case which was “screw loosening” that is the case which the patient have Cerebral palsy.

, Caspar ³⁾

. Gassman Seligson ⁸⁾

¹⁷⁾

3.9 5.9 2

가 가

4.72 가 가

4.12 가 가

가

(Isometric exercise)

. Suh ¹⁴⁾ 13

THSP(Titanium hollow screw

and plate) system

가

가 Zdeblick ¹⁸⁾

1

cerebral palsy)

(Athetoid-Dystonic

30~40

⁵⁾

(spondylolytic change),

가

(Halo-vest)

¹⁷⁾

3

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 , , 가,
 : 1997 1 2000 3
 - (Smith-Robinson technique)
 193 가 161 111 , 50
 X-ray (2 - 7) ,
 가
 : 16~38 ,
 가 , 1 ()
 , 15 가 Robinson
 109 (excellent), 42 (good), 10 (fair)
 :
 가

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