

Herbert

Retrograde Herbert Screw Fixation in Treatment of Nonunion of Proximal Scaphoid Fractures

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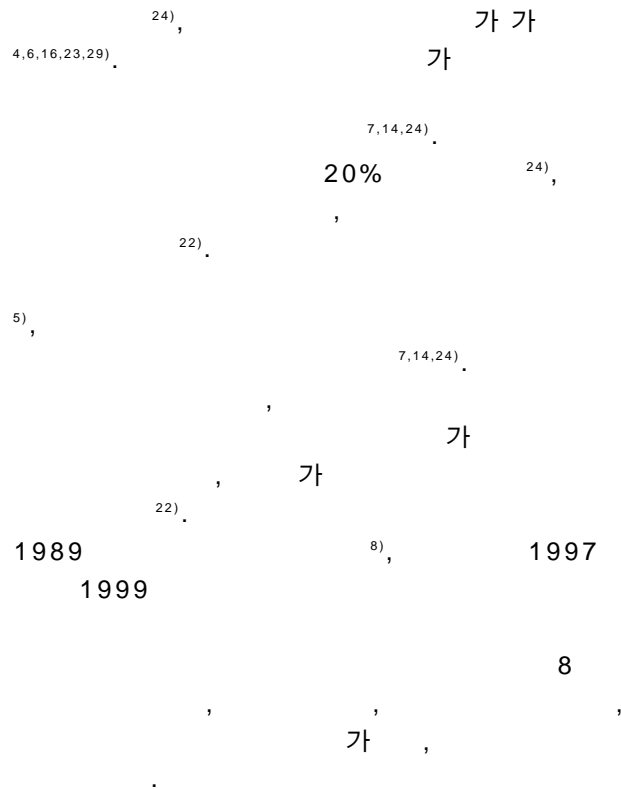
We reviewed eight cases of patients who underwent retrograde Herbert screw fixation with autogenous bone graft for treatment of proximal pole scaphoid nonunions. Most nonunion of the carpal scaphoid can be treated with a high rate of success by use of conventional bone grafting techniques. However, fractures with a small proximal pole fragment may be difficult to treat by use of these techniques.

Eight patients with proximal pole scaphoid fractures with nonunion were treated with retrograde Herbert screw fixation using the dorsal approach and autogenous bone grafting. All patients were immobilized after operation with cast immobilization for an average of seven weeks. Eight patients were all males, with ages ranging between 23 to 26 years. Among the eight cases, four patients were neglected for an average of 13 months, three patients were treated with cast immobilization for 8 weeks, and one patient had a previous surgical treatment.

Union was achieved in all cases and average time to union was 15.3 weeks. Among 8 cases 4 had excellent results and 4 had fair results, according to Maudsley and

Chen protocols. Retrograde Herbert screw fixation should be considered in the treatment of small proximal pole fracture of scaphoid with nonunion.

Key Words : Scaphoid, Proximal pole, Fracture, Nonunion, Herbert screw, Retrograde fixation



tubercle 4 cm , Lister's , 1 , 1 , 3 , 4 가 3 , 1 K 4 (Table 2). 1/4 (viability) 가 free hand technique Herbert 1 8 4 , CT 3 . 8 uptake) (punctate bleeding test) 가 2 (MRI) 3 T1, T2 image 가 2 (scapho-lunate angle) (intrascaphoid angle) 48 가 가 , 가 , 29 69 48 Maudsley Chen 가 가 (snuff box) 4 70 , 60 10 , 10 가 19) 가 (Table 1). 15.3 (fragmenta-tion) 8 가 , 23 26 (: 24). 5 가 가 4

Table 1. Method of assesment in treatment result (by Maudsley and Chen)

Result	Pain	Clinical Tenderness	Stiffness	Economic	Radiologic Union	Appearance
Excellent	-	-	-	Normal work	+	Normal
Good	Mild	-	-	Slight limitation of work	+	Fair
Fair	Discomfort	+	Restric in full Motion	Some work avoided outline	-	Good
Poor	+	+	Limitation	Change to lighter	-	Poor



Fig. 1. **A.** Plain radiograph shows a radiolucent lesion with sclerotic and cystic changes of scaphoid. **B.** After retrograde fixation of proximal pole nonunion fragment with Herbert screw and autogenous bone graft. **C.** 20 Weeks after retrograde fixation of proximal pole nonunion fragment with Herbert screw and autogenous bone graft, plain radiograph shows radiologic union.

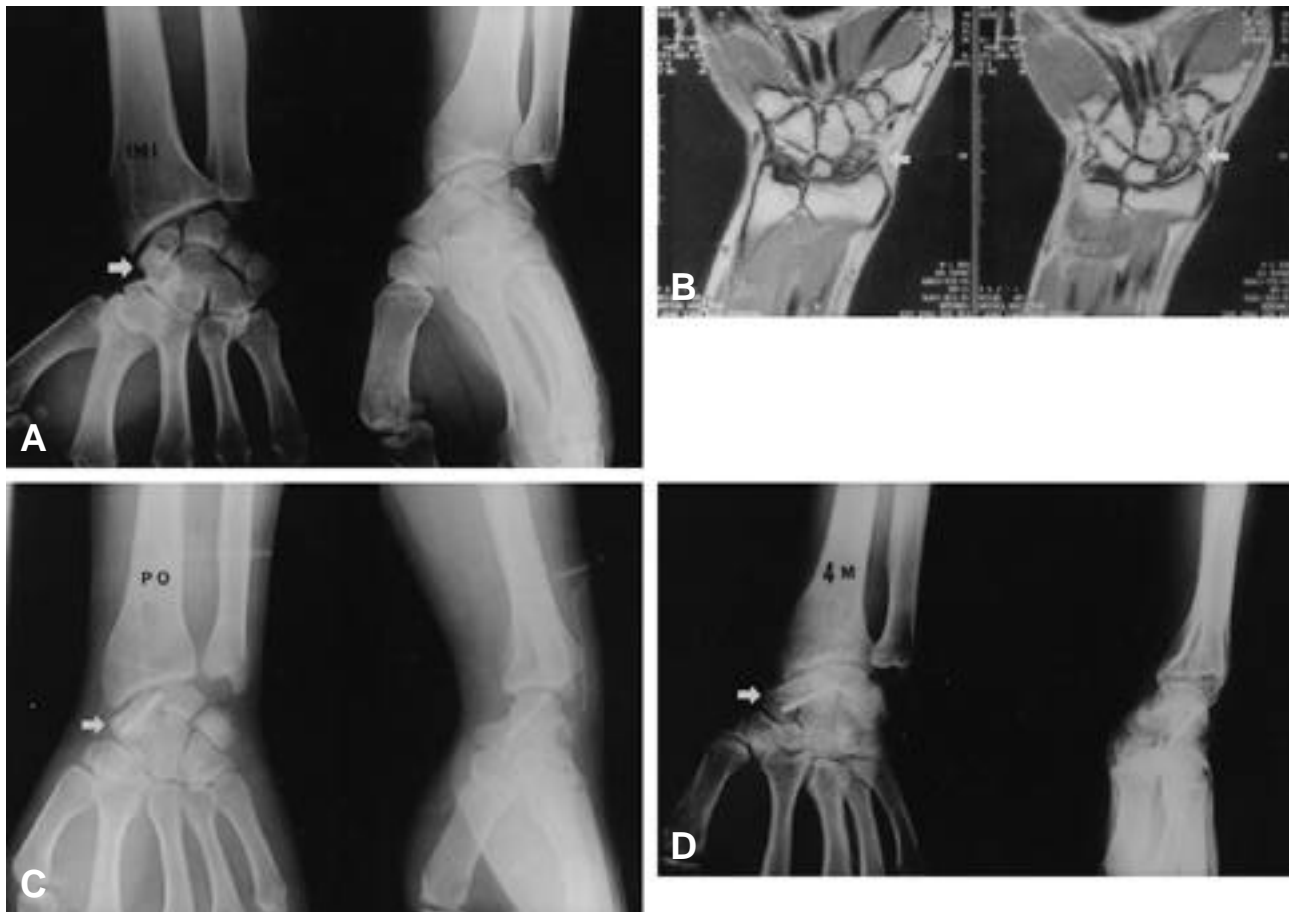


Fig. 2. **A.** Plain radiograph shows a radiolucent lesion with sclerotic and cystic changes of proximal pole of scaphoid. **B.** T2 image of MRI shows decreased signal intensity of scaphoid and inhomogenous, high-signal cystic lesions in the proximal pole of scaphoid. **C.** After retrograde fixation of proximal pole nonunion fragment with Herbert screw and autogenous bone graft. **D.** 20 Weeks after retrograde fixation of proximal pole nonunion fragment with Herbert screw and autogenous bone graft, plain radiograph shows radiologic union.

4 (Fig. 2D) 75 70 가

20 30 가

가 가 , Wagner²⁸⁾, Dwyer¹¹⁾, Mazet Hohl²⁰⁾ 가

. Zemel³⁰⁾ silicone rubber spacer , 21

가 가 3 Swanson²⁶⁾ silicone , silicone 가

가 7,13,21,27) 가

Herbert 7,27) Herbert 가

가 , 가

9) 5 ~ 10% 가 , Titanium 가

가 19) Herbert

23) Herbert

3

가 Botte⁵⁾ 70 ~ 80% (dorsal ridge) 20 ~ 30%

1/3 23) 3) (collapse)가 가

Herbert

가 8 4 , CT 3 1 , 8

3 1 3 T1, T2 image , , ,

가 2 , , , ,

가
 가 Adams Lenoard¹⁾가
 , Matti¹⁸⁾ , Russe²⁴⁾
 12)
 15)
 K
 가
 가 Cooney⁷⁾ Russe
 86%, Matti
 91%, (dorsal peg
 graft)¹⁹⁾ 50%
 95%
 가 가^{2,10)}
 (diffusion)
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 1997 1999
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scaphoid. A new method of treatment with report of one case. New England J Med, 198:401-404, 1928.
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