

13 , 4 , 2000 10

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•

: 1994 1 1998 12 25

Maudsley

14.1 : 13.6 , 12.7 ,
(p>0.05). 6 (24%) ,
1 , 3
1 . Maudsley 25 17 (68%)
, 7 (78%), 10 (63%)
(p>0.05), (81%) (44%)
(p<0.05).

$$\vdots$$

가,

*
* , ,

가 가

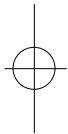
가 16)

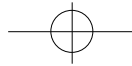
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1004 • / 13 4

, 4 (16%), 18
(72%), 3 (12%) ,
15
(Table 1). 1mm 가
(scapholunate angle) 60 ,
(lunocapitate angle) 15
12
(48%) 13 (52%) (Table
1). Sotto-Hall
Haldeman¹⁵⁾ 16
(64%), 7 (28%), 2
(8%) (Table 2).
1994 1 1998 12 33 12
가 가 25 , 4.
, , Maudsley⁸⁾ 9 (36%) ,
가 가 5 (20%) 가 ,
t-test ANOVA . 2 (8%), 1 (4%),
1 (4%) (Table 3).
1.
25 가 23 (92%) , 5.
18 47 , 20 30 25 13 ,
가 18 (72%) 가 . 9 , 4
3 , 1
2. , 4
가 11 (44%) 가 가 Herbert
, 가 8 (32%), 가 5 (20%) (Table 4). 12 ,
, 가 1 . 7
(Herbert 3 , K-wire 4)
3. 4
Russe¹⁴⁾ 가 (Herbert

Table 1. Classification of fractures by Russe¹⁴⁾

| Classification | No of cases | | Total(%) |
|--------------------|-------------|-----------|----------|
| | Undisplaced | Displaced | |
| Proximal third | 3 | 1 | 4(16%) |
| Waist | | | |
| Horizontal oblique | 1 | 2 | 3(12%) |
| Transverse | 7 | 8 | 15(60%) |
| Vertical oblique | 0 | 0 | 0 |
| Distal third | 2 | 1 | 3(12%) |
| Total(%) | 13(52%) | 12(48%) | 25(100%) |

**Table 2.** Classification of fractures by Sotto-Hall¹⁵⁾

| | Duration | No of case(%) |
|----------|---------------------|---------------|
| Acute | (up to 2weeks) | 16(64%) |
| Subacute | (2weeks - 2months) | 7(28%) |
| Old | (more than 2months) | 2(8%) |
| Total | | 25(100%) |

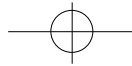
Table 3. Associated injury in the same limb

| Associated injury | No of cases(%) |
|--------------------------------------|----------------|
| Trans-scaphoid perilunar dislocation | 5(20%) |
| Distal radius fracture | 2(8%) |
| Ulnar styloid process fracture | 1(4%) |
| Triquetrum fracture | 1(4%) |
| Total | 9(36%) |

Table 4. Treatment method

| Method | Undisplaced | Displaced |
|--------------------------|-------------|-----------|
| Conservative | | |
| Long arm cast | 3 | |
| Short arm cast | 6 | |
| Operative | | |
| OR&IF with Herbert screw | | |
| with bone graft | 4 | 4 |
| without bone graft | | 3 |
| OR&IF with K-wire | | |
| with bone graft | | 1 |
| without bone graft | | 4 |
| Total | 13 | 12 |

3 , K-wire 1) ,
 1
 가 Herbert 1.
 (Table 4). 25 2 23
 9 6 13.6 ,
 9 1 8
 , 12.7 2
 , 4 가 14.5 , 5 12.5 , 1
 2-4 가 , 10.0 (Table 5). 16
 1 15
 . 16 14.1 , 2 16.0
 6 , 11 14.2 , 2
 11.5 (Table 5).



1006 • / 13 4

Table 5. Mean union time

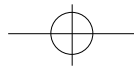
| Method of treatment | Fracture site(No of case) | Mean union time(weeks) |
|------------------------|---------------------------|------------------------|
| Conservative treatment | Proximal third(2) | 14.5 |
| | Waist(5) | 12.5 |
| | Distal third(1) | 10.0 |
| Operative treatment | Proximal third(2) | 16.0 |
| | Waist(11) | 14.2 |
| | Distal third(2) | 11.5 |
| Total | | 13.6 |

Table 6. Result according to treatment method

| Result | Conservative | Operative | Total(%) |
|-----------|--------------|-----------|----------|
| Excellent | 5 | 6 | 11(44%) |
| Good | 2 | 4 | 6(24%) |
| Fair | 1 | 4 | 5(20%) |
| Poor | 1 | 2 | 3(12%) |
| Total | 9 | 16 | 25(100%) |

2. , 25 17 (68%)
 25 6 (24%) , 9 7 (78%),
 9 1 16 10 (63%)
 , 16 (Table 6).
 1 , 4 1 (25%), 18
 3 1 13 (72%), 3 3 (100%)
 , 2 (Table 7).
 1 13 (81%),
 , K- 12 4 (44%)
 (Table 8)($p<0.05$)

가
 , 1
 (Fig. 1-A) 5
 (Fig. 1-B),
 14 가
 Herbert (Fig. 1-D)
 (Fig 1-E). 45
 3 2
 가
 3. , , 가
 Maudsley⁸⁾ 가 가
 6% 2,13) 60-70%

**Table 7.** Result According to fracture site

| Result | Proximal third | Waist | Distal third |
|-----------|----------------|-------|--------------|
| Excellent | 0 | 9 | 2 |
| Good | 1 | 4 | 1 |
| Fair | 2 | 3 | 0 |
| Poor | 1 | 2 | 0 |
| Total | 4 | 18 | 3 |

**Fig 1A.** Initial radiograph shows non-displaced waist fracture of right scaphoid**1B.** Post-cast immobilization radiograph.**1C.** 12 months after initial injury radiograph shows non union state.**1D.** Internal fixation with Herbert screw and iliac bone graft is performed.**1E.** Final follow up radiograph shows union state.



1008 • / 13 4

Table 8. Result according to duration after injury by Sotto-Hall classification

| Result | Acute fracture | Subacute fracture | Old fracture |
|-----------|----------------|-------------------|--------------|
| Excellent | 9 | 2 | 0 |
| Good | 4 | 2 | 0 |
| Fair | 2 | 2 | 1 |
| Poor | 1 | 1 | 1 |
| Total | 16 | 7 | 2 |

7)

5,10)

6 12

20-30 18 (72%)가

12) 72.2%, 4) 72.5%

가

8-12 ,

12-16 가

2

14.5 ,

5

12.5

1

10

2

16

11

14.2

2

Russe¹⁴⁾

11.5

18 (72%) 가

15 (83%)

Cooney¹⁾

1mm

15

45

1mm

가

screw, Herbert screw

K- , cancellous

,

2

K-

Herbert screw

Soto-Hall Holdeman¹⁵⁾

, 2

16 (64%)

6

2 (8%)

,

,

,

, 가

6 (24%)

2

가

Weber Chao¹⁷⁾, Palmer

11)

3

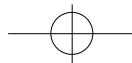
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1 가

,

3

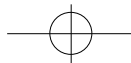
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Maudsley⁸⁾ 가 , 25
17 (68%) 6) 85%, 3)
50%
9 7 (78%), 16
10 (63%)
(p>0.05), 16 13 (81%),
9 4 (44%)
(p<0.05), 가
4
1 (25%)
.
1994 1 1998 12
12 가가
25
가,
가 ,
가 .

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Abstract

A Treatment of Carpal Scaphoid Fracture

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Purpose : To analyze the clinical result of treatment of scaphoid fractures

Materials and methods : From January 1994 to December 1998, we reviewed 25 carpal scaphoid fractures. Conservative treatment was performed in non-displaced, acute fractures and operative treatment was performed in others.

Result : Bony union takes average 13.6weeks of all cases and no statistical difference was seen between conservative treatment group(average : 12.7weeks) and operative treatment group(average : 14.1weeks). The complications were seen in 6 cases(24%), which were non-union in one case among the conservative treatment group, and non-union in one case, osteoarthritis in 3 cases and reflex sympathetic dystrophy in one case among the operative treatment group. Satisfactory results were 17(68%) of 25 cases by Maudsley 's method. No statistical difference was seen between conservative treatment group(satisfactory results:78%) and operative treatment group(satisfactory results:63%)($p>0.05$), but statistical difference was seen between acute fracture group(satisfactory result:81%) and others(satisfactory results:44%)($p<0.05$).

Conclusion : More satisfactory result was seen in acute fracture group than in subacute and old fracture group, therefore we think early diagnosis has important role in result of treatment of scaphoid fracture. Also we think conservative treatment is preferable to non-displaced, acute fracture and operative treatment is preferable to others.

Key word : Carpal scaphoid, Fracture, Treatment