

3

-

. . . . .

---

[ ]

: Rockwood 3 - Phemister  
 modified Phemister .  
 : 1992 2 2001 8 3 -  
 1 가 45 , 45 . 28.1  
 , 가 42 , 가 3 .  
 , 7.8 . -  
 15 Phemister (I ), 가 30  
 modified Phemister (II ). 16.2 ,  
 UCLA shoulder  
 scoring system acromio - clavicular separation scoring system .  
 : II 2 , K - 가 1 .  
 , , II 2  
 가 . UCLA shoulder scoring system I, II 93.3%, 6.7% ,  
 acromio - clavicular shoulder scoring system II 90%, 10% .  
 : 3 - Phemister  
 .  
 : - , Phemister , Modified Phemster , Rockwood  
 3

---



---

: 138-708, 가 58  
 : (02) 3400-1247, Fax: (02) 449-2120  
 e-mail: hsh@nph.go.kr

\*

2002 46 .





**Fig. 1A.** Roentgenogram of 17 year-old male with type III acromioclavicular separation.

**1B.** Acromioclavicular separation was treated by Phe-mister technique.

**1C.** Roentgenogram after removal of K-wires at post-operative 1 year 3 months.



**Fig. 2A.** Roentgenogram of 26 year-old male with type III acromioclavicular separation.

**2B.** Acromioclavicular separation was treated by modified Phe-mister technique.

**2C.** Roentgenogram after removal of K-wires at post-operative 2 years.

가

Acromio-clavicular separation scoring system<sup>15)</sup>

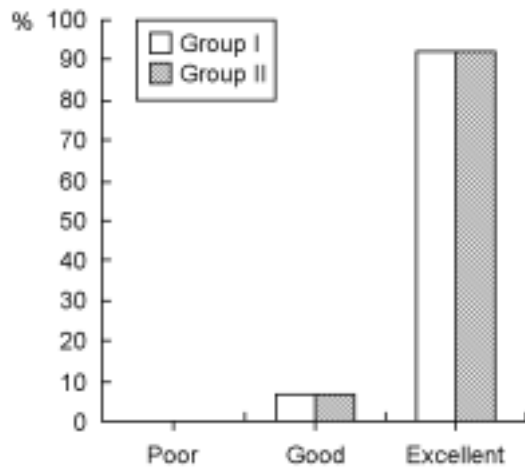
(athletic fitness)

가

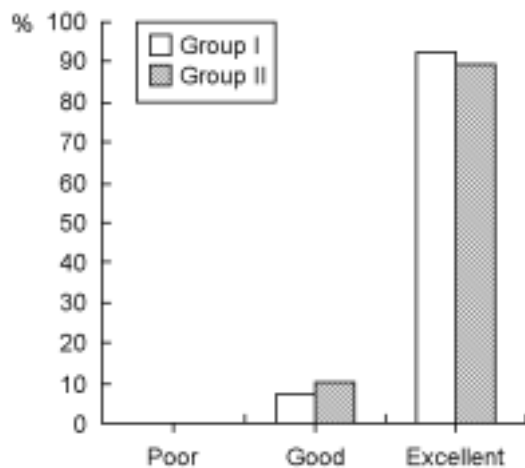


**Fig. 3A.** Roentgenogram of 35 year-old male with type III acromioclavicular separation.  
**3B.** Acromioclavicular separation was treated by modified Phemister technique.  
**3C.** After postoperative 3 weeks roentgenogram showed K-wire migration.  
**3D.** Roentgenogram after removal of K-wires at postoperative 2 years.

		Pedersen <sup>21)</sup>		Rosenorm <sup>21)</sup>	
		I		I	
		, II		가	
		2		(demineralization)	
		, 1		가	
3 K-		I 4 , II 6		가	
(Fig. 3).		(osteoarthritis)		I II	
II 2		(Table 1).			
가		-		(coracoclavicu-	
(sling) 4		lar interval ratio)		I 2.45	
		1.27		, II 2.47	
		1.25		II	
		(p=0.008, Mann-Whitney )			
ance)가		UCLA shoulder scoring system <sup>9)</sup>			
velpeau		, 가 I 14 (93.3%), I 1 (6.7%)			

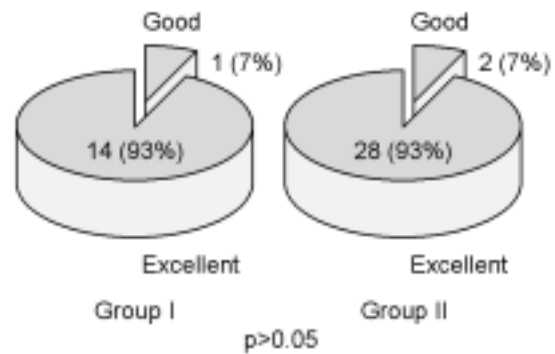


**Fig. 4.** 14 cases, 1 case, and 0 case for group I and 28 cases, 2 cases, and 0 case for group II were excellent, good and poor respectively in UCLA shoulder scoring system.

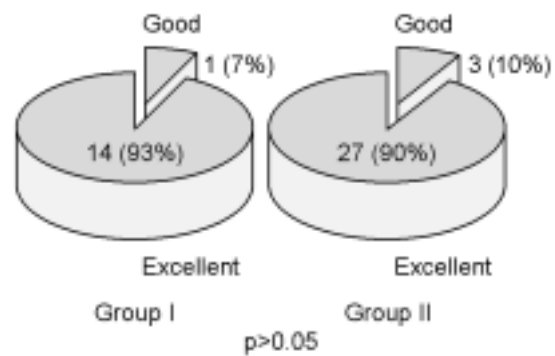


**Fig. 5.** 14 cases, 1 case, and 0 case for group I and 27 cases, 3 cases, and 0 case for group II were excellent, good and poor respectively in A-C separation scoring system.

, II 28 (93.3%), 2 (6.7%)  
( $p=1.000$ , Fisher)  
) (Fig. 4). Acromio-clavicular separation scoring system<sup>15)</sup> 가 , 가 I 14  
(93.3%), 1 (6.7%) , II 27  
(90%), 3 (10%) ,



**Fig. 6.** Results of UCLA shoulder scoring system.



**Fig. 7.** Results of acromio-clavicular separation scoring system.

( $p=1.000$ , Fisher

) (Fig. 5).

- Rockwood

Allman 1) 3

20) 3

25% 100%

4,25,26)

,  
Phemister<sup>17)</sup> 가 -  
modified Phemister<sup>6,24)</sup> .  
24) 6) Kirschner modified  
Phemister<sup>6,24)</sup> .  
,  
,  
,  
가 Insall<sup>11)</sup> .  
Phillips<sup>18)</sup> , Bosworth<sup>5)</sup>  
1172  
(deformity) 3% 37% ,  
(range of motion) 95% 86%, -  
(strength) 92% 87% 가  
McFarland<sup>14)</sup> 3 -  
42 I II  
89%, 92%가 8.1 5.2 가  
가 I .  
80% 2 K-  
, 90% -  
, 92% . Phemister  
13) - 가  
가 80%, 75% 가  
가 -  
-  
가 가 가  
가 , ,  
가  
-  
5가 , -  
1,6,15,17,24) ,  
29) , 2,8) ,  
23,27,28) 가  
가

3 -  
1 45  
Phemister - 가  
modified Phemister  
, 가  
, 가  
93% .  
3  
Phemister  
가 .

## REFERENCES

- 1) **Allman FL**: Fracture and ligamentous injuries of the clavicle and its articulation. J Bone Joint Surg, 19-A: 774-784, 1967.
- 2) **Bailey RW**: A dynamic repair or complete acromioclavicular joint disarticulation. J Bone Joint Surg, 47-A: 858, 1965.
- 3) **Bakalim G and Whippula E**: Surgical or conservative treatment of total dislocation of the acromioclavicular joint. Acta Chir Scand, 141: 43-47, 1975.
- 4) **Bannister GC, Wallace WA and Stableforth PG**: The management of acute acromioclavicular dislocation: A randomized prospective controlled trial. J Bone Joint Surg, 71-B: 848-850, 1989.
- 5) **Bosworth BM**: Acromioclavicular dislocation: end results of screw suspension treatment. Ann Surg, 127: 98-111, 1948.
- 6) **Cho HO, Kwak KD, Kim BY, Sohn SM and Moon JK**: Surgical treatment of acute acromioclavicular dislocation. J of Korean Society of Fractures, 11: 413-419, 1998.
- 7) **Choi KH, Kang CN, Wang JM, Roh KJ and Yoon YG**: Treatment of acromioclavicular separation and fractures by modified Kenny Howard Sling-halter. J of Korean Orthop Assoc, 21(4): 554-562, 1986.
- 8) **Dewar FP and Barrington TW**: The treatment of chronic acromioclavicular dislocation. J Bone Joint Surg, 47-B: 32-35, 1965.
- 9) **Ellman H, Hunker G and Bayer M**: Repair of the rotator cuff: end-result study of factors influencing reconstruction. J Bone and Joint Surg, 68A: 1136-1144, 1986.
- 10) **Fremerey RW, Lobenhoffer P, Ramacker K, Gerich T, Skutek M and Bosch U**: Acute acromioclavicular joint dislocation-operative or conservative therapy. Unfallchirurg Apr, 104(4): 294-299, 2001.
- 11) **Insall JN**: Surgery of the Knee, New York, Churchill Livingstone, 262, 1984.
- 12) **Lee KY, Park MS, Kang KK and Nam MK**: The treatment of acromioclavicular dislocation comparison study between modified Bosworth and Phemister technique. J of Korean Society of Fractures, 8: 193-198, 1995.
- 13) **Lee YS and Kim MK**: Treatment of acromioclavicular dislocation-comparative study between operative and conservative method. J of Korean Society of Fractures, 10(4): 918-924, 1997.
- 14) **McFarland EG, Blivin SJ, Doehring CB, Curl LA and Silberstein C**: Treatment of grade III acromioclavicular separation in professional throwing athletes: results of a survey. Am J Sports Med, 771-775, 1997.
- 15) **Neviasser JS**: Injuries of the clavicle and its articulations. Orthop Clin North Am, 11: 233-238, 1980.
- 16) **Park MS and Lee JK**: The treatment of acromioclavicular separation. J of Korean Orthop Assoc, 20(4): 683-688, 1985.
- 17) **Phemister DB**: The treatment of dislocation of the acromioclavicular joint by open reduction and threaded wire fixation. J Bone and Joint Surg, 24: 166-168, 1941.
- 18) **Phillips AM, Smart C and Groom AF**: Acromioclavicular dislocation. Conservative or surgical therapy. Department of orthopaedics, Lewisham Hospital, Lon-

- don, United Kingdom, 353: 10-17, 1998.
- 19) **Poigenfurst, Orthner E and Hoffman F:** Technik und ergebnisse der kora-klavikularen verschraubung bei frischen akromioklavikularzerreissungen. *Acta Chir Austriaca*, 1: 11-16, 1987.
- 20) **Rockwood CA and Green DP:** Fractures in adults. 5th ed, Philadelphia, Lippincott, Williams & Wilkins, 1210-1244, 2001.
- 21) **Rosenorm M and Pedersen B:** A comparison between conservative and operative treatment of acute acromioclavicular dislocation. *Acta Orthop Scand*, 45: 50-59, 1974.
- 22) **Shoji H, Roth C and Chuinard R:** Bone block transfer of coracoacromial ligament in acromioclavicular injury. *Clin Orthop*, 208: 272-277, 1986.
- 23) **Smith MJ and Stewart MJ:** Acute acromioclavicular separation: a 20-year study. *A J Sports Med*, 7: 62-66, 1979.
- 24) **Son MH, Kim BC, Kang NW and Choi TY:** Treatment of acute acromioclavicular dislocation with modified Phemister technique. *J of Korean Society of Fractures*, 12: 686-692, 1999.
- 25) **Thorndike AJ and Quigley TB:** Injuries to the acromioclavicular joint: a plea for conservative treatment. *Am J Surg*, 55: 250-261, 1942.
- 26) **Urist MR:** Complete dislocation of the acromioclavicular joint: the nature of the traumatic lesion and analysis of forty-one cases. *J Bone Joint Surg*, 28: 813-837, 1946.
- 27) **Urist MR:** Complete dislocation of the acromioclavicular joint (follow-up notes). *J Bone and Joint Surg*, 45: 1750-1753, 1963.
- 28) **Weaver JK and Dunn HK:** Treatment of acromioclavicular injuries, especially complete acromioclavicular separation. *J Bone and Joint Surg*, 54: 1187-1197, 1972.
- 29) **Weitzman G:** Treatment of acute acromioclavicular joint dislocation by modified Bosworth method: report on twenty-four cases. *J Bone and Joint Surg*, 9: 1167-1178, 1967.



**Abstract****The Results of Surgical Treatment of Acute Acromio-clavicular Separation, Type III**

**Sung-Ho Hahn, M.D., Bo-Kyu Yang, M.D., Seung-Rim Yi, M.D., Shun-Wook Chung, M.D.,  
Dong-Ho Lee, M.D., Min-Seok Kim, M.D.**

*Department of Orthopedic Surgery, National Police Hospital, Seoul, Korea*

**Purpose:** The purpose of this study is to compare the Phemister technique with the modified Phemister technique for the patients with Rockwood type 3, acromio-clavicular separation.

**Materials and Methods:** The 45 cases of 45 patients received surgical treatment for Rockwood type 3, acute acromio-clavicular separation in our hospital from Feb. 1992 to Aug. 2001 later with the follow-up study were selected as subjects. The average ages were 28.1 years old, male and female were 42, 3 persons, respectively. Physical examination and plain radiography were used for their diagnosis and the intervals between injury and surgical treatment were 7.8 days. In intraoperative finding, we performed Phemister technique in 15 cases according not to be able to repair coraco-clavicular ligament (group I), modified Phemister technique in 30 cases according to be able to repair that (group II). The average follow up period was 16.2 months, and the UCLA shoulder scoring system and the acromio-clavicular separation scoring system were used to obtain clinical results.

**Results:** Only in Group II, the complication after surgery were associated with superficial infection in two cases and K-wire migration in one case. At last follow up, there were no pain and limitation of range of motion in all cases, and two cases in Group II were found to be subluxation in radiography. Clinical results revealed excellent was 93.3%, good was 6.7% in UCLA shoulder scoring system in both groups, and excellent was 90%, good was 10% for group II in acromio-clavicular separation scoring system.

**Conclusion:** The results are considered to be good with only Phemister technique in type 3, acute injury occurred in working ages.

**Key Words:** Acute acromio-clavicular separation, Phemister technique, Modified Phemister technique, Rockwood type 3

**Address reprint requests to** \_\_\_\_\_

Sung-Ho Hahn

58, Karak-dong, Songpa-gu, Seoul, Korea

Department of Orthopaedic Surgery, National Police Hospital

Tel : 02-3400-1247, Fax : 02-449-2120

E-mail : hsh@nph.go.kr