



14, 2, 2001 4

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Kirschner

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: K-

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: 1997 1 1999 12 1 가

14

Jager Breitner

Interfragment K-wire and Wire fixation. , Interfragment K-wire and Wire fixation with additional

Transacromial K-wire fixation. , Transacromial K-wire and Wire fixation

Rowe

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가 130

2

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K-

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, K-

15%

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69-7

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2000



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19 59 42
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K- Jager Breitner
K- 6) 1 2 , 2-a 5 , 2-b 5
가 K- , 3 2
4 , 3 , 1 (Table
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Table 1. Case Analysis

Case	Age	Sex	Cause	Associate injury	Treatment method	Functional score	Total units	complication
1	19	F	TA*	No	IKWF‡	98	Excellent	No
2	50	M	TA	Head injury	IKWF	100	Excellent	Pin migration
3	57	F	TA	No	IKWF	100	Excellent	No
4	30	M	Fall down	MRF†	IKWF	94	Excellent	No
5	58	F	TA	Head injury	IKWF & ATWF§	82	Good	Limitation of shoulder motion
6	57	F	Fall down	NO	IKWF & ATWF	100	Excellent	No
7	38	M	TA	MRF	IKWF & ATWF	96	Excellent	Pin infection
8	47	F	Fall down	No	IKWF & ATWF	80	Good	Traumatic arthritis
9	49	F	TA	Spine fracture	IKWF & ATWF	69	Fair	Limitation of shoulder motion
10	39	M	Fall down	MRF	TKWF	94	Excellent	No
11	59	F	TA	No	TKWF	76	Good	Pin migration
12	29	M	TA	Head injury	TKWF	100	Excellent	No
13	47	F	Fall down	No	TKWF	84	Good	Limitation of shoulder motion
14	56	M	TA	MRF	TKWF	84	Good	Traumatic arthritis

*, Traffic accident ; †, Multiple rib fracture ; ‡, Interfragment K-wire and wire fixation

§ Interfragment K-wire and wire fixation with additional transacromial K-wire fixation

, Transacromial K-wire and wire fixation



2
(Fig.1-A,B,C) ,

가 4 6

가 가 (Fig.2-A,B,C) 3 12 3 2 1 6

, 가 가

가 20,22) , Rowe 가

(Fig.3- (Fair), (Poor) (Excellent), (Good),

A,B,C). 2). (Table

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3 Kenny-Haward 가 10

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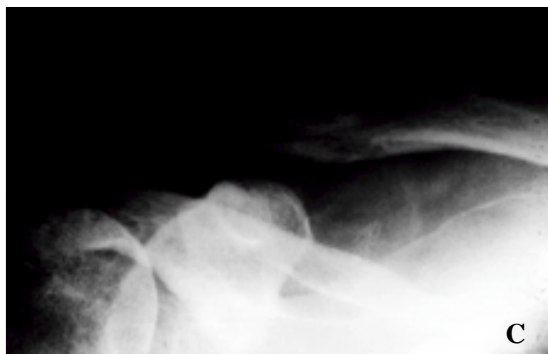
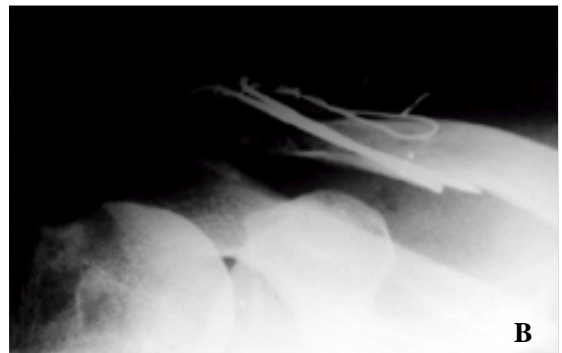
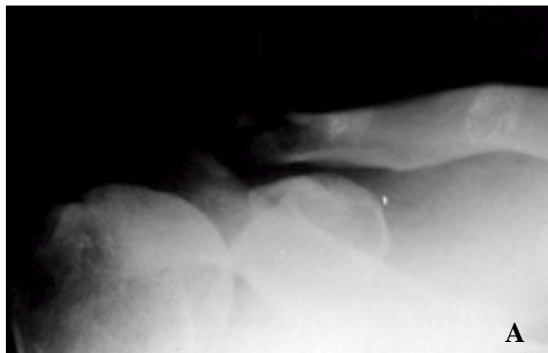


Fig 1A. 1A. Anteroposterior radiograph of the right clavicle of a 58-year-old man. The fracture showed relative large fragment and short oblique fracture pattern.

1B. Immediate postoperative radiograph : Open reduction & Interfragment K-wire and wire fixation.

1C. Postoperative 5 months radiograph : The fracture showed bony union.

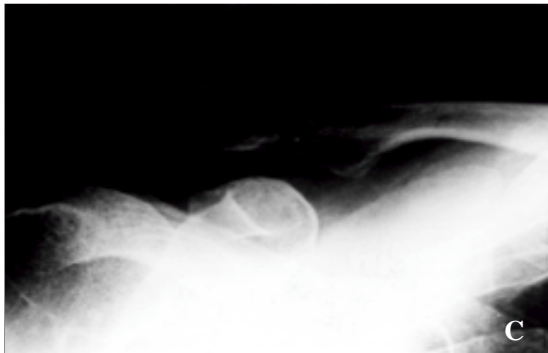


Fig 2A. Anteroposterior radiograph of the right clavicle of a 52-year-old woman. The fracture showed long oblique pattern and osteoporosis

2B. Immediate postoperative radiograph : Open reduction & Interfragment K-wire and wire fixation and additional transacromial K-wire fixation.

2C. Postoperative 15 months radiograph : The fracture showed bony union.

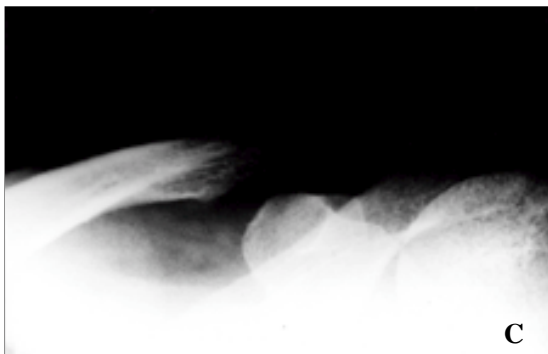


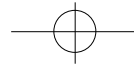
Fig 3A. Anteroposterior radiograph of the left clavicle of a 37-year-old man. The fracture showed comminuted small distal fragment.

3B. Immediate postoperative radiograph : Open reduction & Transacromial K-wire and wire fixation with bone graft.

3C. Postoperative 15 months radiograph : The fracture showed bony union.

**Table 2.** The scoring System for Evaluation.

	Unit rating (circle one in each category)			Unit Rating (circle one in each category)
I. PAIN(15)		. MOTION(25)		
1. None	15	Abduction 1	51°-170°	15
2. Slight during activity	12	&Forward	120°-150°	12
3. Increased	6	Flexion	91°-119°	10
4. Moderate/severe pain in activity	3		61°-90°	7
5. Severe pain, dependent on medication	0		31°-61°	5
			less than 30°	0
II. STABILITY(25)		Internal rotation		
1. Normal shoulder stable and strong in all position	25	Thumb to scapula		5
2. Mild apprehension in normal use of arm. no subluxation or dislocation	20	Thumb to sacrum		3
3. Avoids elevation and external rotation. Rare subluxation	10	Thumb to trochanter		2
4. Recurrent subluxation(dead arm syndrome)Positive apprehension test or recurrent dislocation	5	Less than trochanter		0
5. Recurrent dislocation	0	External rotation		
		80°		5
		60°		3
		30°		2
		less than 30°		0
III. FUNCTION(25)		. STENGTH(10)(compair opposite shoulder)		
1. Normal function. All activities of daily living. Performs all works. sports/recreation prior to injury. lifting 30+lb. swimming,tennis, throwing.	25	(specify method=mannual,springgace,cybex)		
2. Mild limitation in sports and work. Can throw, but limited in baseball, Strong in tennis, football, swimming, lifting(15-20lb) and combat. performs all personal care.	20	Normal		10
3. Moderate limitation in overhead work and lifting(101b) and athletics. Unable to throw or serve in tennis, Swims side stroke. Difficulty with body care(personal care,back pocket, combing hair, reaching back). Aids necessary at times.	10	Good		6
4. Severe limitations, unable to perform usual work or lifting. No athletics, secondary occupation. Unable to perform body care wihtout aid. Can feed self and comb hair.	5	Combat		5
5. Complete disability of extremity of the shoulder by Rowe.	0	Fair		4
		Poor		0
		TOTAL UNITS		----
		Excellent	(100-85 units)	100
		Good	(84-70 units)	
		Fair	(69-50 units)	
		Poor	(49 units or less)	



2 , Jager Breitner type 2A
1 가 31%
Neer^{13,14)}
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3 3 90 가
가 2 ,
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1

(Table 1).

가

3).

Neer type 2 Jager Breitner type 2A
가
가

2,6,13,16)
1920 200 가

7,14,16,23)

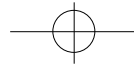
가 가 가
19)
10% 15) 5
44%
3)
12 15% 5)
Albrecht1)

8,9,10,17,18),

가
Webber

11,21) Neer¹⁶⁾ 0.9 4% 11) Dacron sliding , Hessmann 12)
4.4% 0.1%, PDS-banding (Cerclage)
Rowe^{20,21)} 0.8%,
3.7%

Robinson³⁾ 가
45 66%, 22 33%
Edward⁴⁾
45%, 30% , Brunner²⁾



220 • / 14 2

3 (21%)

130

가 10

Rowe

가 20,22)

89.8

Jager Breitner 1 2 , 2-A 5 , 2-B
5 , 3 2 .

(Table 1).

K-

(Fig.1 A,B,C),

(Fig.2 A,B,C),

14

(Fig.3

가 13

A,B,C).

가 4 ,

Kirschner

가 5

가 5 ,

가

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Kirschner

가

3

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8

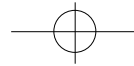
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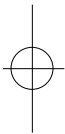
11 (79%)

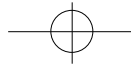
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Abstract

Treatment of the Clavicle Lateral End Fracture by Kirschner wire and Wire fixation

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Purpose : The purpose of this study is to evaluate the effectiveness of Kirschner wire and additional wire fixation in clavicle lateral end fractures.

Materials and Methods : We reviewed 14 cases that were treated by Kirschner wire and wire fixation from January 1997 to May 1999 and followed up for more than 1 year. Average age was 42 years old(male 6, female 8). The fractures were classified according to Jager and Breitner classification : 2 cases of type 1, 5 of type 2a, 5 of type 2b, 2 of type 3. We used 3 types of fixation method : First, interfragment Kirschner wire and wire fixation in simple fracture. Second, first method was reinforced with transacromial Kirschner wire fixation in simple, but osteoporotic bone. Third, fracture was fixed by transacromial Kirschner wire and wire fixation in intraarticular or comminuted fracture.

Results : Bony union was obtained in all cases with average duration of 10 weeks. The functional result of shoulder was evaluated by the scoring system of Rowe : excellent 8, good 5, fair 1 case. The complications were pin migration 2, pin infection 1, shoulder LOM 3, traumatic acromioclavicular joint arthritis 2 cases.

Conclusion : Appropriate use of three types of Kirschner wire and wire fixation technique according to location of fracture, degree of comminution can improve bony union rate and shoulder function.

Key Words : Lateral end of the Clavicle, fracture, Kirschner wire and wire fixation

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