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< >

:

12 : 1996 3 2001 2
가 가 50 26 24
가 , , , , 4 , 1
가 가 2 ,
4 가 1 , 1
4 3 (11.5%)
10 6 (25%)
(p = 0.048).
:

:

17 10

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Table 1. Details of the 50 patients in both groups

		DCP group	IMN group
Gender	Male	19	18
	Female	7	6
Age		17- 82 (41.6)	17- 80 (42.2)
Classification	Simple	Transverse	8 (1)*
		Oblique	12
	Community	Transvers	4 (1)
		Oblique	2
Total		26 (2)	24 (4)

* () numbers of nonunion

가

2,15)

12

18)

가

()

() 가

가

가 , 가 가 가 ,

가

1,4,5,9)

1996 3 2001 2

가

12 가 50

5cm 5cm

가

가 19 가 7

17 82 41.6

가 16 , 6 ,

4 . 20

가 6 , 17 80

42.2 가 16 ,

2 , 4 2

20 , 4

(Table 1).

(AO DCP or LC DCP)

가

가 , 2

(Solid Humerus Nail, AO 14 ,
Metaphyseal/Diaphyseal nail, Zimmer 10)

1996 3 2001 2 가 ,
12 가 50 가 , 1
5cm 5cm .

가 . 13가
American shoulder
and elbow surgeon (ASES) score shoulder score
13)
가
4 , 6
SPSS 10.0
chi square test Fisher 'exact test
Student 's t test
Fisher 's exact test
ASES 37.8 ,
34.2
가 (p=0.713).
4 ,
1
1 6
100 , 90
가 (p=0.486).

Table 2. Final functional results in both groups.

	DCP group	IMN group
ASES* average score	37.8	34.2
Shoulder pain (cases)	0	4
Shoulder impingement (cases)	0	1
Operation Time (min)	100	90
Blood loss (ml)	300	250
Post operative immobilization (weeks)	2	1

* ASES Back pockets, Wash opposite axilla, Comb hair, Carry 10lb at side, Sleep on affected side, Use hand overhead, Lift, Perineal care, Eat with utensil, Use arm at shoulder level, Dress, Pull, Throw.

Table 3. Final radiological results in both groups.

	DCP group	IMN group
Mean union time (Weeks)	10.4	9.8
Nonunion	2 (2)*	2 (4)
Angulation	0	0
Loss of fixation	1 (1)	0
Late metal fracture	0	1 (1)
Heterotrophic ossification	0	0

* () Numbers of requiring 2nd surgery

Table 4. Complication rates in both groups

	DCP group	IMN group
Nonunion	2 (2)*	4 (4)
Infection	0	0
Shoulder pain	0	4 (1)
Shoulder impingement	0	1 (0)
Loss of fixation	1 (1)	0
Late metal fracture	0	1 (1)
Heterotrophic ossification	0	0
Post operative radial nerve injury	1 (0)	0
Total	4/26 (3)	10/24 (6)

* () Numbers of requiring 2nd surgery

300ml,
250ml 가
(p=0.624). 2 ,
1 6
1
(Table 2).
10.4 ,
9.8
(p=0.574. Fig. 1, 2).
2 (7.7%),

4 (16.7%)
20 1 (5%)
20 3 (15%)
6 1
(16.7%) 4 1 (25%)
10
10 1cm
1
(Table 3).
2 , 1 ,
1 26 4
3 (11.5%)
(Fig. 3).
4 , 1 ,
1 24 10
6 (25%)
(Fig. 4).
(p=0.048,
Table 4).
가가 .

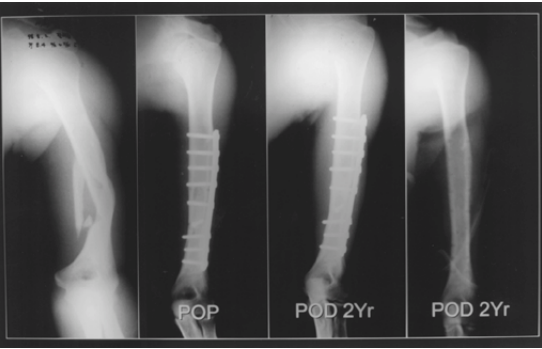


Fig. 1 : Radiographs of the humeral shaft fracture of 23 year old male patient treated with DCP. Postoperative X-ray shows good alignment of humerus. At 2 years after operation bone union was completed, so DCP was removed.

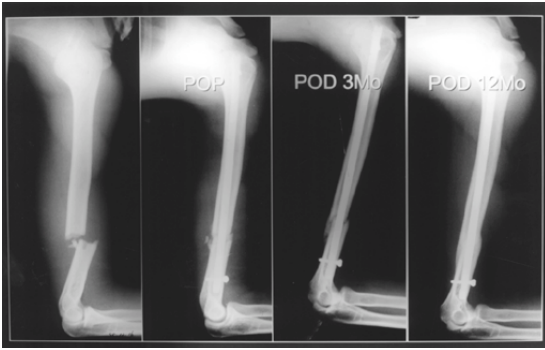


Fig. 2 : Radiographs of the humeral shaft fracture treated with IMN. At 3 months after operation, bone union began, after 1 year it was completed.

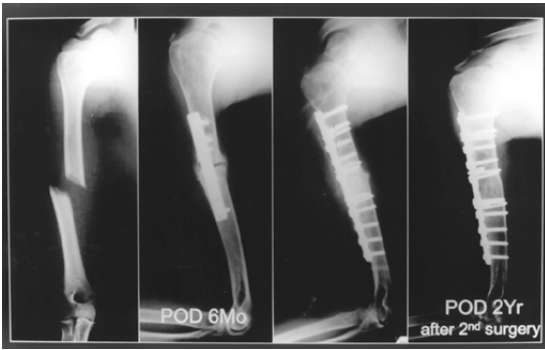


Fig. 3 : Radiographs of the humeral shaft fracture treated with DCP first showing nonunion at 6 months after operation, so more longer plate and autogenous bone graft was applied. Bone union was completed at 2 years.

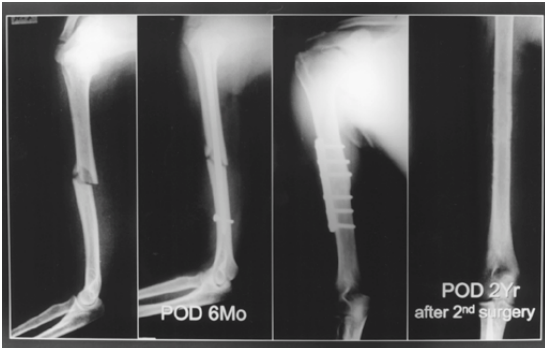


Fig. 4 : Radiographs of the humeral shaft fracture treated with IMN first showing nonunion at 6 months after operation, so DCP and bone graft was applied. Bone union was completed after 1 year.

가 가 , , . Rommens

14) (antegrade) (retrograde) ,

2,15) . 90%가

5% 10)

16,19) .

가 4 1 가 6

가 1 6

Hems Bhullar⁸⁾ 50 50 30% 8

Robinson¹²⁾ 가 가

26 2 24 4

가 7,11) , ,

2-10%, 2-4%, 2-5%, 6) . (15%)

4-12%, 1-2% 1-2%, 17) . 가 가

20 , 30 10) .

2.5cm

Wegner¹⁷⁾ 10% , 4% , 2% 16%

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Abstract

Operative Treatment of the Humeral Shaft Fracture : Comparative Study of Dynamic Compression Plate and Interlocking Intramedullary Nail

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Purpose : We have followed up the patients of the humeral shaft fracture who had been treated with dynamic compression plate or locked intramedullary nail, which are common therapeutic options, compared them and analyzed results and complications.

Materials and Methods : We analyse the clinical results, radiological results and complications of 50 cases of the humeral shaft fracture who were treated with dynamic compression plate(DCP) or intramedullary nail(IMN) at the Pusan National University Hospital from March in 1996 to February in 2001.

Results : We find the no significant difference in range of motion of the shoulder, infection, operation time, operative bleeding loss and second radial nerve palsy but 4 cases of shoulder pain and 1 case of shoulder impingement in IMN group. We find the no significant difference in mean bone union time in both groups but 2 cases of nonunion in DCP group and 4 cases of nonunion in IMN group. Complications happened in 4 case of DCP group (total 26 cases) and 2nd surgery was needed in 3 cases(11.5%). However complications happened in 10 cases of IMN group (total 24 cases) and second surgery was needed in 6 cases(25%).

Conclusion : The treatment results of the humeral shaft fracture with dynamic compression plate is much better than intramedullary nail except specific pathologic or segmental fracture pattern.

Key Words : Humeral shaft fracture, Dynamic compression plate, Intramedullary nail.

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