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The Journal of the Korean Society of Fractures  
Vol.11, No.3, July, 1998

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= Abstract =

## Closed Interlocking Nailing for Femoral Shaft Fracture

-Comparison of results according to fracture comminution and site-

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To compare of result according to fracture comminution and fracture site, we reviewed retrospectively 68 femoral shaft fractures treated by closed interlocking intramedullary nailing. The Winkist-Hansen classification was used to categorize the degree of comminution, and fracture site was categorized to three parts as proximal 1/3, middle 1/3, and distal 1/3. The results were analized and compared in each categorized group.

The average bone union time was delayed in more severely comminuted fracture and in distal 1/3 fracture compared to proximal 1/3 or middle 1/3. Varus angulation deformity was occurred

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more frequently in proximal 1/3 and severely comminuted fracture group, and posterior angulation deformity was occurred more frequently in distal 1/3 fracture group. All but one case showed good functional results regardless of fracture comminution, fracture site and development of malalignment.

**Key Words :** Fracture, Femoral shaft , Closed interlocking intramedullary nailing

2. 가 57 (88%) 가 6  
1960 Küntscher<sup>10)</sup> , 5 .
3. 가 가 가 1 가  
41 , 2 가 15 , 3 가 1  
7.8 .  
1,2,4,8) .
4. 8,10,13) .  
Russel-Taylor 58 , 가 7  
3 , .
5. 1/3 (31 ) ,  
1/3 (19 ) , 1/3 (18 ) ,  
Whinquist-Hansen<sup>13)</sup>  
1991 5 1996 5 가 가 (3 ) , 1 (20 ) , 2 (20 ) , 3 (8 ) , 4 (7  
) , (6 ) .
6. 12 가가 68 가 가  
1. 68 19 81 32 가 .  
40 58 (88 7. 가  
) 57 , 11 .  
가 Thoresen<sup>12)</sup>



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Goodween<sup>7)</sup> , ,  
 ,  
 1.  
 68 1  
 ,  
 1/3 , 1/3 , 1/3 17.6 ,  
 18.8 , 20.8 가  
 (Table 1),  
 가 (p>0.05).  
 Winquist-Hansen<sup>13)</sup> 1 , 2  
 , 3 , 4  
 12.0 , 16.7 , 19.6 , 24.9 29.2 (Table  
 2), 가  
 (p<0.01). 27.2 4

Table 1. Union time according to fracture site

Site	Cases	Union time(week)	Nonunion
Proximal 1/3	31	17.6	0
Mid 1/3	19	18.8	0
Distal 1/3	18	20.8	1

Table 2. Union time according to Winquist-Hansen type

Type	Cases	Union time(week)	Nonunion
Simple	3	12.0	1
1	20	16.7	0
2	20	19.6	0
3	8	24.9	0
4	7	29.2	0
Segmental	6	27.2	0

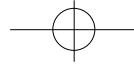
Table 3. Result according to Winquist-Hansen type (by Thoresen method)

Winquist-Hansen type	No. of cases(%)			
	Excellent	Good	Fair	Poor
Simple	3(100)	0	0	0
1	19(95)	0	0	1(5)
2	19(95)	0	0	1(5)
3	5(63)	1(13)	2(24)	0
4	2(29)	3(43)	2(28)	0
Segmental	2(33)	2(33)	2(33)	0
Total	54(79)	6(9)	6(9)	2(3)

Table 4. Result according to fracture site (by Thoresen method)

Fracture site	No. of cases(%)			
	Excellent	Good	Fair	Poor
Proximal 1/3	24(77)	4(13)	3(10)	0
Mid 1/3	17(90)	1(5)	1(5)	0
Distal 1/3	13(72)	1(6)	2(11)	2(11)
Total	54(79)	6(9)	6(9)	2(3)

2. 가  
 Thoresen<sup>12)</sup>  
 68 60 (88%)  
 Winquist-Hansen<sup>13)</sup>  
 , 1,2 95%  
 (Table 3), 3, 4  
 76%, 72%, 66%  
 가  
 1/3 1/3 90%  
 1/3  
 78%  
 Goodween<sup>7)</sup>  
 1 ( )



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1960

3

Küntsch<sup>10)</sup>

가

Thoresen<sup>12)</sup>

가

가

1,2,4,6,9,11)

68

2

4

60

가

8

3, 4

3

10

2

15

1/3

4

1

1.5cm,

2.5cm

1

1

가

8).

가

가

4,5,13).

가

Winqvist-Hansen<sup>13)</sup>

, 1, 2, 3, 4

1/3 , 1/3

, 1/3

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(

. Wiss<sup>14)</sup>

1/3

1/3

5) Winqvist-Hansen

1, 2 , 12 , 3, 4 19 , 5

32

3)

1, 2

, 18

, 20

1

2

3

4

12.0

16.9

19.6

24.9

29.2

27.2

가

가

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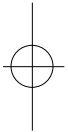
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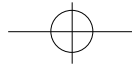
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4)

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(malalignment)

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