

· · ·

,

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[ ]

: 가 가

: 1985 1998 1,275 (1,188 , 97 )

52 52

(I), ( ) (II), (III)

(A), (B), (C)

가 ( 1 )

, ( 2 ) ( 3 )

:

4.1% , 1.5%,

2.6% 3.1

2 가 3 1 2 , 1

, 1 III

:

5

3 2 가 ,

,

:

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\*

(R05-2003-000-12396-0)

I

IA - , IB , IC

가 가 가

IIA 가

2,10,15)

가

IIB

가

IIC

가

III

( 5 cm)

IIIA

, Christiansen<sup>4)</sup>

6.3%

3~17.6%

7,8,15)

, Garcia<sup>8)</sup> 1.57%

, Kavangh<sup>10)</sup>

1%

4.2%

, Bethea<sup>3)</sup>

75%

15), 14), 10), 1)

52 I 16 (IA 10 , IB 6 ), II 33 (IIA 6 , IIB 18 , IIC 9 ), III 3 (IIIA 1 , IIIB 2 ) (Table 1, 2).

52 19 가

, 33 가 (11 ~10.8 )

19 11

(57.8%), 8

(42.2%). 33 31 (93.9%)

가 , 2 가 . 33

30 (90.9%)가 ,

9 (27.2%)

**Table 1.** Fracture classification by the Author

## I. Proximal to stem tip

A- undisplaced

B- displaced

C- unstable prosthesis &amp; any type of fracture

## II. Around stem tip (less two cortices proximally &amp; distally)

A- undisplaced fractures; include cortical perforation or fissure

B- displaced or comminuted fractures

C- unstable prosthesis &amp; any type of fractures

## III. Distal to stem tip

A- undisplaced simple or spiral fracture

B- displaced or comminuted

C- unstable prosthesis &amp; any type of fractures

(1985~1998) 1,275 (1,188

, 97 )

52 52

가 31 , 가 21

62.1 (34~84 )

28 , 13

, 3 , 2 , 2

, 4

(I), ( ) (II), (III)

(A), (B),

(C)

**Table 2.** Fracture type & incidence

Type I	16
A	10
B	6
Type II	33
A	6
B	18
C	9
Type III	3
A	1
B	2

( 8.1 ) , III  
 ( III )  
 95  
 6.2  
 2 3  
 2  
 가 , 3 1  
 , 1  
 , 1  
 2  
 ,  
 가 ( 1 ) 1 1.8  
 95 (blade plate)  
 ( 2 ) ( 3 ) 8

가 long  
 fluted stem (S-ROM, Stamford, Conneticut)

Johansson<sup>9)</sup> 가  
 Stuchin<sup>17)</sup>, Mallory<sup>11)</sup>, Schwartz  
<sup>15)</sup>  
 Johansson<sup>9)</sup>, Bethea<sup>3)</sup>, Cooke Newman<sup>5)</sup>, Roffman Mendes<sup>13)</sup> . Duncan  
 Masri<sup>6)</sup> 75 A  
 ( ) 4%, B ( ) 86.7%,  
 C ( ) 9.3% , B  
 BI ( ) 18.5%, BII ( )  
 44.6%, BIII ( ) 36.9% .  
 Johansson <sup>9)</sup>  
 II 가 I , III  
 I ( , ) 가  
 . Tayler<sup>18)</sup> 가  
 2.8  
 fluted long stem

가 . Bethea 3)  
75%



A

B

C

**Fig. 1A.** Type III periprosthetic fracture was managed with plate and wiring technique.  
**1B.** The new fracture developed through remnant screw holes after plate removal.  
**1C.** The fracture reduced with a long plate and a cerclage band proximally.



A

B

C

**Fig. 2A.** A 43 years-old man was admitted by long spiral periprosthetic fracture of femur  
**2B.** Using long fluted stem and cerclage, revision procedure was done. There showed initial stability without any other external support.  
**2C.** At follow-up 6 years, there showed complete union and good clinical result.

33  
 9 (27.2%)  
 가  
 8  
 ,  
 , Duncan Marsi<sup>6)</sup> 가  
 ,  
 가  
 fluted  
 fluted  
 scratch fix 가  
 stem  
 , 가  
 (Fig. 2).  
 Steri<sup>16)</sup> AO 14)  
 , Johansson  
 III  
 5  
 2  
 가  
 , 3  
 가  
 Wang<sup>19)</sup> , Ogden  
 6 100%  
 ,  
 15~20

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**Abstract**

## **The Problems of Plate Fixation in the Management of Periprosthetic Femoral Fracture**

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**Purpose:** The purpose was to evaluate the postoperative periprosthetic femur fracture of hip arthroplasty and relative problems of management using plate fixation.

**Material and Method:** We reviewed 37 cases of femoral fractures out of 1,270 (1,183 primary hips and 97 revision hips) hips which received hip arthroplasty during the observation period (1985~1998). We classified them according to the stability and the location of the fractures related to the stem tip: Proximal (I), middle (around stem) (II) and distal (III). Then we subclassified the fractures as cortical perforation or a fissure, undisplaced (A), displaced (B) and unstable prosthesis (C). we managed periprosthetic fracture with splint applied or cerclage proximal fracture (type I), plate fixation and bone grafts in the stem tip (type II) or distal fracture (type III). In unstable fractures, we revised them with long fluted stems.

**Result:** The average union time is 3.1 months (range, 2~6.2 months). After management of fracture with plate showed 5 complications, two nonunion and three refractures. The causes of nonunion are early weight bearing and a too short plate. The causes of refracture are screw fixation and empty hole just distal to stem tip. The other caused by the roles of stress riser in proximal screw of blade plate in management of supracondylar fracture.

**Conclusion:** We recommend the use of cerclage band system or fixed in a more proximal site in long plate and bone graft. In unstable prosthesis, we had taken a best results after revised with distal fluted stem, in which we don't need further distal stability like a additional cerclage or locking screw and additional bone graft.

**Key Words:** Periprosthetic fracture, Plate, Hip arthroplasty

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