

14, 2, 2001 4

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( 1 ) : 1992 1 2000 3 1 12 13  
36.6 (21 -51 )

(dash-board injury)

C 8 (62%) 4 가 10 1/3 AO  
가

6 , 7 5 , 2

: 12.1 , 9.9 ,

8 1 1  
, 3 , 2 . 1

가

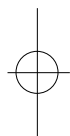
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2가 50

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1. 2.5 -6% , 1992 1 2000 3

가 . 1 12 13 ( 1 ) 36.6 (21 -51 ), 7 , 5 . 6 , 5 (dash-board injury) 가 11 , 1 . (vertical) 가 , AO B2.1 - (basi-cervical) (transcervical) (subcapital) . 13 Garden I 4 , II 4 , III 2 , IV 3 4 . 2 , 9 .

**Table 1.** Complete data of ipsilateral femoral neck & shaft fractures

case	sex	age	Neck Dx		Shaft Dx		missed Dx	method of treatment	union time	
			site	Garden	site	Ao	W-H		neck	shaft
1	M	36	B.C	I	mid	B3	IV	M.P+nail	10	9
2	F	23	B.C	IV	mid	B2	II	M.P+nail	Nu	Nu
3	F	43	B.C	II	prox	C3	IV	M.P+Plate+BG	12	10
4	M	24	B.C	II	mid	C3	IV	M.P+Plate+BG	16	12
5	F	28	B.C	III	mid	C3	IV	M.P+Plate+BG	12	8
6	M	21	B.C	II	mid	A3	I	M.P+Plate+BG	13	12
7	M	51	B.C	III	mid	C3	IV	M.P+Plate+BG	12	10
8	F	53	B.C	IV	dist	B3	II	M.P+Plate+BG	12	10
9	F	26	B.C	I	mid	C2	III	M.P+Nail	12	10
10	M	46	B.C	I	mid	C3	IV	M.P+Nail	10	12
11	M	46	B.C	II	dist	A3	I	M.P+Retro Nail	14	Nu
12	F	39	B.C	IV	mid	C3	IV	M.P+Retro Nail	12	Nu
13	M	40	B.C	I	mid	C3	III	M.P+Nail	10	6

Dx:diagnosis, W-H:Winquist-Hansen, B.C:Basicervical, prox:proximal, mid:middle, dist:distal,

M.P:multiple pinning, nail:unreamed femoral nail, retro:retrograde, plate:dynamic compression plate

Nu: Nonunion



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AO , A 2 , B 3 , (unreamed femoral nail)  
C 8 , Winquist I 2 , (Miss-A nail system 1 ) 5 ,  
II 2 , III 2 , IV 7 , 1 2 ,  
(Table 1).

가  
, 가 , 1 ,  
Injury Severity Score  
, 11 34 ( 20.9 )  
(Table 2).

2.

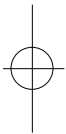
, , ,  
가  
1  
1.  
3.9 , 4.9 . 12.1 ,  
6 , 1 ,  
7 , ,  
1  
AO ,

**Table 2.** Associated injury and Injury severity scores \*

case	Associated injury	ISS
1	chest contusion, sternum, ankle	15
2	SAH, facial bone, clavicle, patella, pubic ramus	15
3	ICH, multiple rib, hemothorax, scapula, humerus, femur(c)†	34
4	ankle & foot	17
5	tibia	11
6	cbr contusion, facial bone	17
7	mandible, ulna, L2,3 transverse process, both patella, tibia condyle	29
8	tibia	11
9	facial bone, PCL injury	26
10	cbr contusion, tibia, foot, femur neck/shaft (c)†	29
11	cbr contusion, tibia, foot(c), femur neck/shaft (c)†	29
12	facial bone, femur supracondyle	21
13	forearm both bone, both patella	18

\* Fracture unless otherwise specified, (c) † contralateral side,

SAH:subarachnoid hemorrhage, ICH:intracranial hemorrhage, cbr:cerebral





36 , Garden Stage IV

2. , 9 가  
9.9 , 8  
8 가 , 14  
2  
, 12  
3  
5 , 3  
1 , 2 (Fig 2-A,B)  
2 23  
1  
3  
1.(Fig1-A,B)  
46  
9



**Fig 1-A.** Initial roentgenogram (left side) of a 46 years old male showed comminuted fracture of right femoral shaft(AO type C3) and transverse fracture of left femoral shaft and ipsilateral femoral neck fracture(basicervical, Garden stage I). Multiple pinning for fracture of the left femoral neck and retrograde IM nailing for fracture of the left femoral shaft. But, after antegrade IM nailing for the right side, missed femoral neck fracture was found(arrow).

**Fig 1-B.** At 1 month, the radiographs showed well maintained fixation on both femoral neck(left side). After 14 months, the right femur had union, but left femur showed nonunion(arrow).



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1  
가 가 가1 , 가  
, Wiss<sup>8)</sup>  
가 , ,  
가  
7),  
, 가, 가 ,  
6 가 .<sup>3)</sup>  
9,10,12) 가  
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, 가 가 가 ,  
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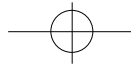
**Fig 2-A.** Initial X-ray(left side) of a 23 years old female showed fracture of the femoral shaft(AO type B2) and ipsilateral fracture of the femoral neck(Garden stage IV, arrow). Antegrade IM nailing and multiple pinning were performed. But the film of 3 months after operation(right inferior) showed, varus deformity & loosening of fixation on femoral neck(arrow).

**Fig 2-B.** For nonunion of neck fracture, removal of pins and fixation of dynamic hip screw with bone graft were done, and open plating and bone graft were done for the femoral shaft fracture(left side). At 2 years, both fractures were united without avascular necrosis of femoral head(right side).



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## Abstract

## Difficulties in the treatment for ipsilateral concomitant femoral neck & shaft fractures

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**Purpose :** This retrospective study was performed to know the difficulties and efficient methods of treatment after several types of operations for ipsilateral femoral neck and shaft fracture.

**Materials and Methods :** Thirteen cases (12 patients) with ipsilateral femoral neck and shaft fracture at the mean age of 36.6(range 21-51), have been followed up over the minimum of one year. All the patients suffered from motor vehicle accidents(11 in dash-board injury), and most of patients associated with multiple injuries including other fractures. All of femoral neck fracture were same type in basicervical area and 4 of them were missed initially. According to the classification of femoral shaft fractures, middle 1/3 fracture was most common in 10 cases and type C in 8 cases. In neck fractures, all cases were treated with multiple pinning, but in shaft fractures, 6 were treated by open plating, 5 by closed antegrade nailing, and 2 by retrograde nailing.

**Results :** The mean union period was 12.1 weeks in neck fractures and 9.9 months in shaft fractures. In complications, there were 1 case of nonunion and 1 case of avascular necrosis in neck fractures, and 8 of delayed union, 3 of nonunion, and 2 of malunion, in shaft fractures. The methods of treatment had no influence on the results of this injury, but we had 1 failure in antegrade nailing prior to operation of neck fracture.

**Conclusion :** After operation of ipsilateral femoral neck and shaft fracture, the shaft fracture needed longer time of union and had many problems in spite of different methods. We suppose that many problems in shaft are affected not only by characteristic mechanism of injury, but also by multiple associated injury.

**Key Words :** Femur, Neck and Shaft, Ipsilateral Fracture