

가

[]

: (proximal femoral nail)

:

47

가

76.8 (62~96) , 15 (12~24) .

:

, 47 43 (91.5%)

3.0 mm

2.6

1 (2.1%)

(cut - out)

1 (2.1%),

가 1 (2.1%)

:

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*

2002 46

| | | |
|---|--------------------|---------------------------|
| | 6.5 mm | (anti-rotational hip pin) |
| | | |
| | | 5 cm |
| 13) | | |
| | | 가 |
| | | Cobbs elevator bone |
| | hook | 가 |
| | | Wayne county 8) |
| 8~18% | 1,4,10,17) | 125 130 |
| | | 17 mm |
| (proximal femoral nail, PFN [®] , Mathys Medical, Bettlach, Switzerland) | | |
| | | 48 |
| | | 6 |
| | | Ceder 5) |
| | | 가 |
| | (Table 1) | |
| | 가 | 가 |
| 2001 1 | 2002 2 | |
| | 12 | |
| 47 | 가 35 (74.5%), | |
| 가 12 (25.5%) | 76.8 | |
| (62~96) | 15 (12~24 | |
|) | AO/ASIF | |
| | Singh 16) | |
| Laros Moore ⁹⁾ 가 | (grade I, II, III) | |
| (grade IV, V, VI) | | |
| | AO/ASIF | |
| | 가 | |
| | | |
| 240 mm | 17 mm, | |
| 10, 11, 12 mm가 | | |
| 125 , 130 , 135 가 | 130 | |
| | | |
| 11 cm 6 | | |
| | | |
| 11 mm | | |

Table 1. Motility assessment (Ceder et al.)

| score | mobility | preop. | postop. |
|-------|---|--------|---------|
| 0 | confined to bed | 0 | 0 |
| 1 | wheelchair or require support by another individual | 0 | 1 |
| 2 | walking frame | 1 | 3 |
| 3 | rotator | 1 | 2 |
| 4 | quadriped | 1 | 3 |
| 5 | walking stik | 14 | 14 |
| 6 | require no support | 30 | 24 |

가 , 1

125 130

가

AO/ASIF A2 , 47 43 (91.5%)

34 (72.3%), A3 13 (27.7%) , Singh , 37 (78.7%)

34 (72.3%) , (Table 1).

13 (27.7%) , 가

(Table 2).

5.3 2.6 , 10

1 mm 9 mm 3.0 mm

Table 2. AO/ASIF fracture classification and Singh osteoporosis classification

| | 31-A21 | 31-A22 | 31-A23 | 31-A31 | 31-A32 | 31-A33 | Total |
|-----------|--------|--------|--------|--------|--------|--------|-------|
| Singh I | 0 | 1 | 1 | 0 | 0 | 1 | 3 |
| Singh II | 2 | 4 | 2 | 1 | 1 | 1 | 11 |
| Singh III | 4 | 6 | 5 | 1 | 2 | 2 | 20 |
| Singh IV | 1 | 3 | 1 | 0 | 1 | 1 | 7 |
| Singh V | 2 | 2 | 0 | 1 | 0 | 0 | 5 |
| Singh VI | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Total | 9 | 16 | 9 | 3 | 4 | 6 | 47 |



Fig. 1A. Initial radiographs in a 78-year old woman showing unstable intertrochanteric femoral 31-A3 fracture type.
1B. Radiographs taken 12 months after the operation showing well positioned femoral neck screw and achieved radio-graphic union.

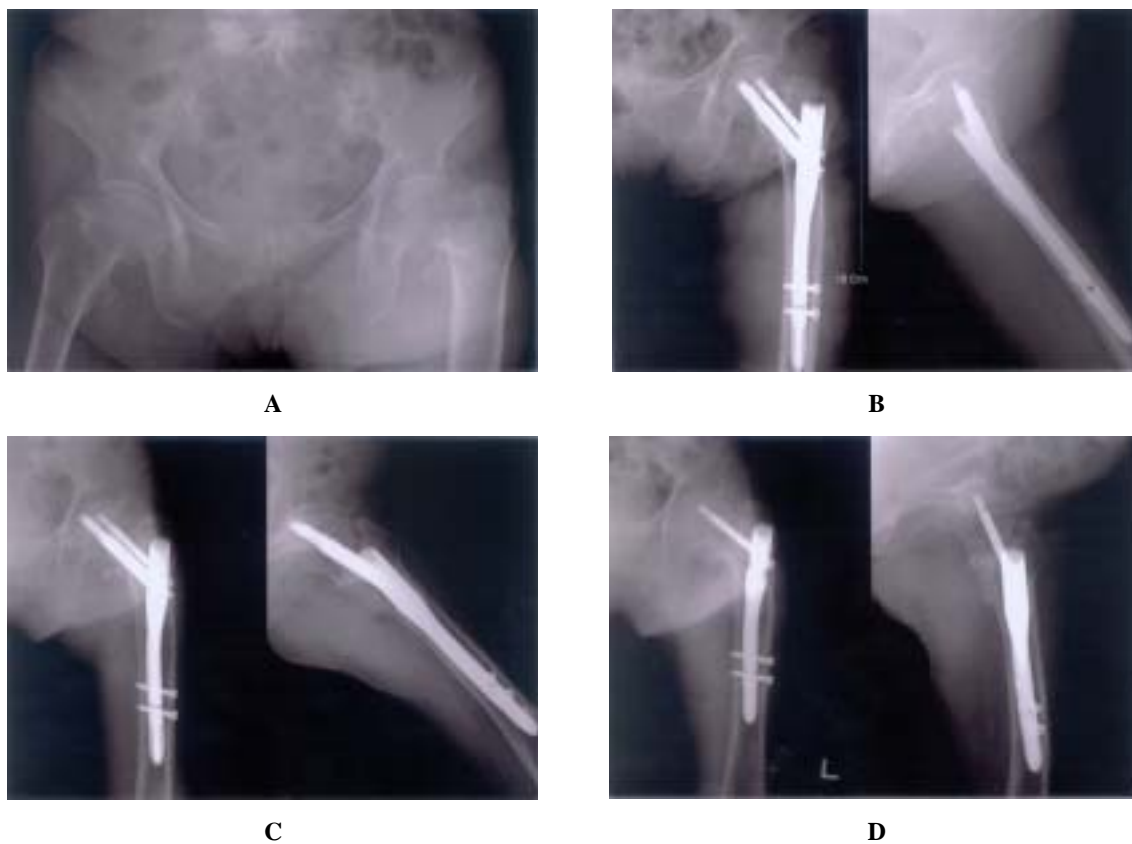


Fig. 2A. Initial radiographs in a 76-year old woman showing unstable intertrochanteric femoral 31-A2 type fracture.
2B. Radiographs taken immediately after the operation showing well positioned screw.
2C. Radiographs taken 4 months after the operation shows that the femoral neck screw did cut-out but fracture was united.
2D. The femoral neck screw was removed because the radiologic union was achieved.

| | | | | | |
|--------|----------------------|----------------|-------|----------------------|---------------|
| | | (Fig. 1-A, B). | | (technical failure) | |
| 4 | (8.5%) | | | (poor reduction) | (malrotation) |
| 3.6 mm | (1.8~4.5 mm) | 25 mm | | | , |
| 가 | | . | | (mechanical failure) | , |
| | 3 | (6.4%) | . 1 | (collapse), | , (bending) |
| (2.1%) | | , | . | | |
| | , | | . | | |
| 1 | (2.1%) | | (cut- | | |
| out) | | | | AO/ASIF | 31-A2 |
| | (Fig. 2-A, B, C, D). | | | | |
| 1 | (2.1%) | . | | | |

, AO/ASIF 31-A3
(piriformis fossa)
,
(bending stress) , 가
, , 가
11) Rosenblum 가
14) (inherent stiff- Wayne county
ness) 가
,
(compressive load)가
,
(drilling)
11) , 가
(collapse) (drilling)
8~18% 1,4,10,17)
,
가
Lustenberger Ganz¹²⁾ 12%
,
10%
Simmermacher¹⁵⁾
(head and 0%, Domingo⁶⁾ 0.3%
neck fragment) 가
18%
. Simme-
rmacher¹⁵⁾ 191
6.4%
(collapse) , 1 (0.6%) Simmermacher¹⁵⁾ 7.6%, Domingo⁶⁾ 12%, Banan³⁾ 16.5%, Al-yassari²⁾ 11.9%
1 (2.1%) ,

Wayne county

(implant failure)

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Abstract**Treatment of Unstable Intertrochanteric Femoral Fracture with the AO/ASIF Proximal Femoral Nail (PFN)**

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Purpose: To review the clinical and radiographic results of the treatment of unstable intertrochanteric femoral fractures with a proximal femoral nail (PFN).

Material and Methods: We reviewed 47 unstable intertrochanteric femoral fracture cases that had been treated with a PFN operatively. The clinical and radiographic results and complications were analyzed. The mean age was 76.8 years old (62~96 years old) and the mean duration of follow-up was 15 months (12~24 months).

Results: The postoperative walking ability was regarded as satisfactory when the patient could walk alone using an walking frame without others aids and satisfactory results was achieved in 43 cases (91.5%). In all cases the radiologic bone union was obtained. The average sliding of femoral neck screw was 3.0 mm and the average change of neck-shaft angle was 2.6 degree. There were three cases of postoperative complication which were including 1 case of cut-out of femoral neck screw, local superficial infection in 1 case and pain complaints over trochanteric area in 1 case.

Conclusion: The PFN is an useful implant for the treatment of unstable intertrochanteric femoral fracture because of the simplicity of the surgical technique and the low level of the complications encountered.

Key Words: Unstable intertrochanteric femoral fracture, Proximal femoral nail

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