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:

: 1995 5 2000 7
1 가 가 97 Jensen ,
Singh , tip-apex distance(TAD)
: 97 17 (17%) 가
가 15 (15.4%), 1 , 10 1 80
, telescoping ,
가
:

:

:

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2.

가 70 (72.2%) 가 ,

17 (17.5%), 10 (10.3%) .

가 , 가

가

3.

가

15 (15%) 21

5 가 3

가 , , 2 ,

8,20,24) , , , , ,

1 . 48 (49%)

25 가 ,

가 20 , , ,

.

가 .

4.

Jensen 9) 1

8 (8.2%), 2 32 (33%) ,

3 12 (12.4%), 4 31 (32.0%), 5 14

(14.4%) .

5.

.

1995 5 2000 7

가

(limited)

1 가가 97

12 68 . 2

20.1 .

가

1. , 38mm barrel

32 87 135 가

67.2 , 70 가 36 (37.1%) 가

. 97 가 46 (47.4%), 가 51

(52.6%) 1:1.1 60

23 가 21 (91.3%), 60 74

가 49 (66%) 가 , 2

가 , 4

.

6. Singh 21),
3 Hardy 7),
Wayne-County, telescoping,
Parker¹⁷⁾ Rha 19),
distance(TAD) Baumgaertner 1),
(apex)
3,
9
Barrel 가
Doppelt⁴⁾
15mm 22), 10
15mm 14,19,23),
Chi-square
p=0.05
97 17 (17.5%) 가
15 (15.5%) 가
1 (1%), 10 1 (1%)
46 7 (15.2%), 51 10 (19.6%)
가
, 80 82 10 (12.1%), 80
15 7 (46.7%) 가
80
가 (p = 0.004)(Table 1).
Jensen 1 8 2 32

Table 1. Relationship between age and failure of fixation

Age	No. of patients	No. of failure of fixation(%)
30-39	6	0 (0%)
40-49	4	0 (0%)
50-59	13	4 (30.8%)
60-69	23	3 (13%)
70-79	36	3 (8.3%)
80-89	15	7 (46.7%)

1 (3.1%)가, 3 12
4 (33.3%), 4 31 4 (12.9%), 5 14 8
(57.1%) 가
(p = 0.001),
Jensen 5
(p < 0.001) (Table 2).

Table 2. Relationship between fracture type and failure of fixation

Jensen 's classification	No. of patients	No. of failure of fixation(%)
	8	0 (0%)
	32	1 (3.1%)
	12	4 (33.3%)
	31	4 (12.9%)
	14	8 (57.1%)

Singh 22) 3
43 10 (23.3%)
가, 4
54 7 (13%)
(p > 0.1).

62 4 (6.4%), Wayne-County 17 4
(23.5%), telescoping 17 8 (47%),
1 1 (100%) 가,
telescoping (p = 0.002) 가
(Table 3)(Fig. 1).

가
25% 65 5
(7.7%), 17 8 (47.1%), 15
4 (26.7%) 가
가
(p = 0.002)(Table
4).

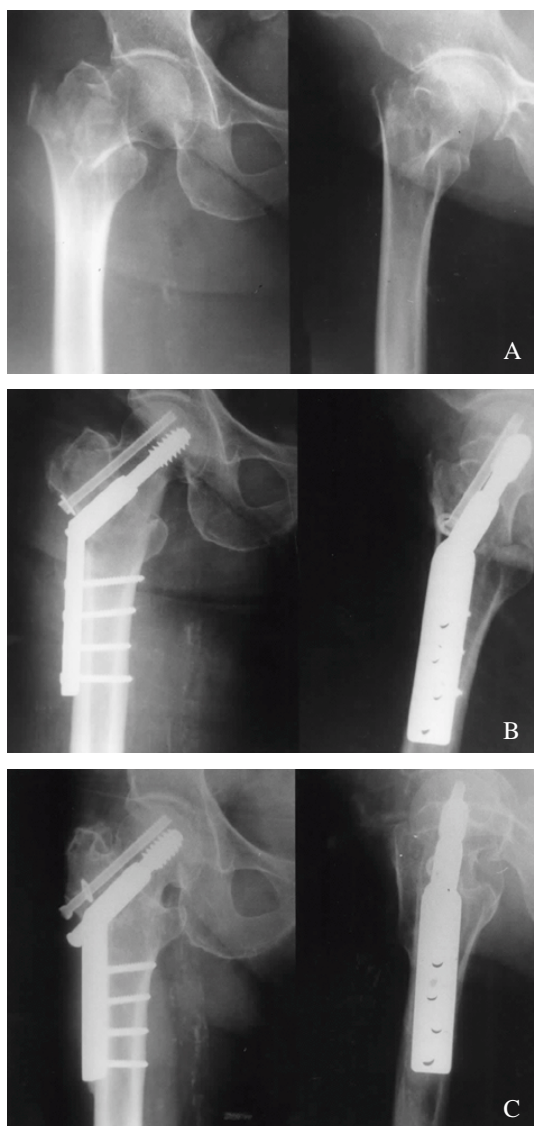


Fig 1-A : radiograph of a 89 years old female shows Jensen type III trochanteric fracture of the femur.

1-B : Immediate postoperative radiograph shows telescoping reduction.

1-C : Postoperative 46 months radiograph shows excessive sliding of screws and medialization of distal fragment.

Table 3. Relationship between status of reduction and failure of fixation

Status of reduction	No. of patients	No. of failure of fixation(%)
Anatomic reduction	62	4 (6.4%)
Wayne-County reduction	17	4 (23.5%)
Telescoping reduction	17	8 (47%)
Loss of Contact	1	1 (100%)

Table 4. Relationship between displacement in A-P plane and failure of fixation

Displacement in A-P plane	No. of patients	No. of failure of fixation(%)
Medial displacementI	7	8 (47.1%)
Anatomic reduction	65	5 (7.7%)
Lateral displacementI	5	4 (26.7%)

Table 5. Relationship between displacement in lateral plane and failure of fixation

Displacement in lateral plane	No. of patients	No. of failure of fixation(%)
Anterior displacement	18	9 (50%)
Anatomic reduction	77	7 (9.1%)
Posterior displacement	2	1 (50%)

Table 6. Relationship between position of lag screw within femoral head and failure of fixation

superior			
	1/1(100%)	1/6(16.7%)	0/0(0%)
anterior	1/1(100%)	10/71(14%)	2/12(16.7%)
	0/0(0%)	1/3(33.3%)	1/3(33.3%)
			posterior
inferior			

No. of failure of fixation / No. of patients (%)

25% , . 19),
77 7 (9.1%), 18 9 (50%), 13,15), 3,5,11,15,19,25), Tip-apex
2 1 (50%) 가
가 distance(TAD)¹⁾
(p < 0.001) (Table 5). 3,6,12,15,16,23) .
2 2 Rha ¹⁹⁾ 70 가 ,
(100%), 80 12 (15%), 15 가
3 (20%) 가 Davis ³⁾ 15) 가
(p = 0.029), 가
7 2 (28.5%), 84 13 80 15 7 (46.7%) 가
(15.5%), 6 2 (33.3%) 가 80 가
(p = 0.004).
(p > Rha ¹⁹⁾,
0.05) (Table 6). Davis ³⁾, ²⁶⁾ 15)
TAD 가 82 Laros Moore¹³⁾
20.3mm , 17 Singh ²¹⁾ 1 -
22.9mm 3 4 -6
(p > 0.1).
가 ,
Rao ¹⁸⁾ Kyle ¹²⁾
가
Jensen 1 2 40 1 (2.5%),
Jensen 3 , 4 5 57 16 (28.6%)
가 가 (p = 0.001).
10 가
, 14,19,23)
5-16.5% 3,15,22)
Davis ³⁾ Hardy ⁷⁾ (p < 0.001),
가가 ,
15) 가
가 (p = 0.002)
17 15 (88.2%)가 ¹⁵⁾
Rha ¹⁹⁾
30% ,

58.3%
가
(p = 0.002)
(Trochanter Stabilizing Plate : TSP)
2)
가
,
, Madson 14)

TAD

80

telescoping

가

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Rha 19)
(p < 0.001)
Davis 3)
Mulholland 10)
Kaufer 10)
, Kyle 12)
(p = 0.029),
Baumgaertner 1)
TAD가 24mm
38mm
TAD가 25mm
TAD
20.3mm,
23.9mm

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Abstract

Treatment of Trochanteric Fractures of the Femur with Compression Hip Screw -Analysis of Factors associated with Failure of Fixation-

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Purpose : This study was performed to analyze the significant factors that may affect failure of fixation in trochanteric fractures of the femur treated with the compression hip screw.

Materials and Methods : From May 1995 to July 2000, the authors analyzed 97 cases of trochanteric fracture of the femur treated with the compression hip screw and followed more than one year. We classified the fracture type by Jensen 's method. We used Singh index for the degree of osteoporosis. In the post-operative radiograph, we checked neck-shaft angle, state of reduction, position of the lag screw within the femoral head, tip-apex distance, and sliding distance of the lag screw. The relationship between these factors and failure of fixation was statistically analyzed.

Results : There were 17 cases (17.5%) of failure of fixation ; 15 cases (15.4%) of excessive sliding of the lag screw, 1 case (1%) of cutting out of the lag screw, and 1 case (1%) of valgus malunion. There were significant relationships between failure of fixation and old age over 80, unstable fracture, telescoping reduction, anterior or medial displacement of the distal fragment, and anterior placement of the lag screw within the femoral head.

Conclusion : Accurate reduction and avoidance of the placement of the lag screw in the anterior part of the femoral head were important factors to prevent failure of fixation in trochanteric fractures of the femur treated with the compression hip screw.

Key Words : Femur, Trochanteric fracture, Compression hip screw, Failure of fixation