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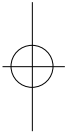
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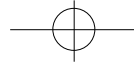
<		>			
:		가,		가	
: 1993 1		1997 12		55	
Singh		(Grade , ,)		(Grade , ,)	
:		24%		(34%) (9%)	
(p<0.05).		9.9mm		(11.5mm) (7.8mm)	
(p<0.05).		3.8		(4.6) (2.7)	
(p<0.05).		16.4		(p>0.05). Clawson	
가		가		가	
13 (57%)				7 (22%)	
:				가	
:		가			
:					

:

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(130-711)

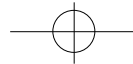
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(32) , , 12 , 9 , 11 , 23 , . Image intensifer 가 , 135 가 , 2 , 4-5 가 , . 가 , 4-6 , 4 , , , , Clawson³⁾ 가 , Singh¹⁴⁾ (grade , ,) , ,) (grade , ,) , 1. 70.2 56 94 , 29 , 26 , 66.3 , 72.6 , 64.1 , 74.4 , 73.3 63.4 가 (Table 1).

2. 1993 1 1997 12 55 가 12(22%) , 가7(13%) , 가2(4%) , 가34 (61%) , Toranzo¹⁷⁾ 3 가가 12 55 3. 55 36 (65%) (21) , (34 Singh¹⁴⁾ , (23) , 2 가 . Singh¹⁴⁾ , ,

**Table 1.** Relation between age, degree of osteoporosis and type of fracture

Age distribution (No. of cases)	Degree of osteoporosis		Type of fracture by Toronzo		
	Low grade	High grade †			
51- 60(4)	3	1	4	0	0
61-70(18)	11	7	14	3	1
71-80(21)	8	13	18	2	1
81-90(9)	1	8	7	2	0
more than 90(3)	0	3	2	1	0

Low grade : low grade osteoporosis group

High grade † : high grade osteoporosis group

Table 2. Relation between type of fracture by Toronzo and osteoporosis

	High energy injured group		Low energy injured group		Total
	Low grade	High grade †	Low grade	High grade	
Type	10(84%)	8(89%)	9(82%)	18(78%)	45(82%)
Type	1(8%)	1(11%)	2(18%)	4(17%)	8(14%)
Type	1(8%)	0	0	1(5%)	2(6%)

Low grade : low grade osteoporosis group

High grade † : high grade osteoporosis group

14 (25%), 4 (12%), 7 (20%), 12
 3, 3, 2, (35%), 8 (24%), 3 (9%)
 4, 2, 9 (43%),
 7 (33%), 7 (21%), 23 (67%)
 5 (23%), 9 (28%) (Table 3),
 70
 (64%).

4.
 Toronzo¹⁷⁾ 3 45 (73%)(Table 1).
 (82%) 7†, 4 8 (14%), 5 2
 (4%) (Table 1,2). 3 7† 6.
 , 21 3 12
 18 (86%), 34 3 27,
 (79%), 23 3 19 (83%),
 32 3 26 (81%)
 (Table 2). 7.

5.
 Singh¹⁴⁾ lag screw shank, Doppelt⁵⁾
 1 (5%), 3 (14%), 5 (24%), 7
 (33%), 4 (19%), 1 (5%)

**Table 3.** Degree of osteoporosis

Singh index	High energy injured group	Low energy injured group	Total(55 case)
	1(5%)	4(12%)	5(9%)
	3(14%)	7(20%)	10(18%)
	5(24%)	12(35%)	17(31%)
	7(33%)	8(24%)	15(27%)
	4(19%)	3(9%)	7(13%)
	1(5%)	0	1(2%)

Table 4. Mechanical complication

	High energy injured group		Low energy injured group		Total(55 case)
	Low grade	High grade [†]	Low grade	High grade	
Varus displacement	1	2	0	1	4(7.0%)
Compression screw loosening	0	0	1	2	3(5.5%)
Compression screw penetration	0	1	0	2	3(5.5%)
Compression screw subsidence	0	2	0	1	3(5.5%)
	1(8%)	5(56%)	1(9%)	6(26%)	13(23.5%)

Low grade : low grade osteoporosis group

High grade[†] : high grade osteoporosis group

Doppelt⁵⁾ . 1. 55 16.4 , 8. 16.1 , 15.7 Clawson³⁾ 4 . Class 1 16.6 , 17.0 (p>0.05), 15.3 , 가 , Class 2 17.2 , 가 , Class 3 16.1 , 12 16.9 Class 가 (p>0.05). 9. 2 , 2. 3 , 15 4 , 20mm 3 , ANOVA . 3 13 (24%)

**Table 5.** Complications (except mechanical complication)

	High energy injured group		Low energy injured group		Total
	Low grade	High grade [†]	Low grade	High grade	
Delayed union	1	0	0	1	2
Pulmonary embolism	0	1	1	0	2
Peroneal palsy	1	1	0	2	4
L.O.M. of hip and knee	0	2	1	4	7

Low grade : low grade osteoporosis group

High grade[†] : high grade osteoporosis group

Table 6. Impaction amount and change of neck-shaft angle

	High energy injured group		Low energy injured group		Total
	Low grade	High grade [†]	Low grade	High grade	
Impaction amount	8.0mm	11.8mm	7.8mm	11.4mm	9.9mm
Change of neck-shaft angle	4.3 °	5.0 °	2.4 °	2.8 °	3.8 °

Low grade : low grade osteoporosis group

High grade[†] : high grade osteoporosis group

Table 7. Mean impaction amount and mean neck-shaft angle change in each group

Group	Mean impaction amount	Mean neck-shaft angle change
High energy injured gr.	9.6mm	4.6 °
Low energy injured gr.	10.2mm	2.7 °
High grade osteoporosis gr.	11.5mm	3.4 °
Low grade osteoporosis gr.	7.8mm	3.4 °
Total	9.9mm	3.8 °

gr. : group

(Table 4), 3.

2, 2, 4

7 가 (2가 9.6mm, 10.3mm,

(Table 5). 10 7.8mm, 11.5mm (Table 6,7),

(48%), 16 (47%)

, 6 (26%), 20 ,

(63%)

(p<0.05).

13 (18%) , 3.8 ,

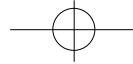
6 (29%), 7 4.6 , 2.7 , 3.4 ,

(21%) (p>0.05) 3.4 (Table 6,7)

2 (9%), 11 (34%) (p<0.05).

(p<0.05).





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4. 가

가

Class 2 2 (17%), Class 3 1 (8%), Class 4 가

9 (75%), 55

Class 2 1 (11%), Class 3 1 (11%), Class 4 21

7 (78%), (38%) 2) 34%, 19) 36%

Class 3 2 (18%), Class 4 9 (82%), Boyd Griffin¹⁾, Evans⁶⁾,

Class 2 3 Toronzo¹⁷⁾

(13%), Class 3 6 (26%), Class 4 14 (61%) Toronzo¹⁷⁾,

12 45 (82%) 가

가 (86%)

Class 가 가 (79%) (83%) (81%)

7(58%), Class가 가 2(17%), 가

Class가 2 가 3(25%), 가

Class 가

가 2(22%), Class가 가

3(33%), Class가 2 가 4(44%)

Class

가 가 6(55%), Class가 (fixed anglenail-plate),

가 4(36%), Class가 2 가 (sliding nail plate)

1(9%), Class (intramedullary fixation device)

가 가 5(22%), Class가 135

가 9(39%), Class가 2

가 9(39%) Class

가 7

(22%), 13 (57%),

(Table 8). 13 (24%)

(29%)

(21%)

(9%) (34%)

Laros Moore⁹⁾

Wolfgang¹⁸⁾

70 Singh¹⁴⁾

Sarmiento Williams¹³⁾가 1:2, Dahl⁴⁾ 1:1.8, 2)

1:1.6 11), Singh¹⁴⁾ . Jacobs⁷⁾

12)

1.1:1

1.9:1

가 , 15.7mm

9mm

9.9mm



55 가
9.6mm 10.3mm
($p > 0.05$), 7.8
mm, 11.5mm
($p < 0.05$), 가
Steinberg¹⁵⁾ 15mm 가
가
가
가 4-5

.Lasson¹⁰⁾

가

REFERENCES

Talor¹⁶⁾ 가 120

3.8

2.7

4.6

($p < 0.05$)

가

가

가 가

.3

15

1

16.4

가

가 Clawson³⁾ 가

Class 가

9

(43%) 11 (32%)

가 , 7 (22%)

13 (57%)

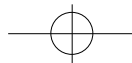
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1993 1 1997 12

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Abstract

**THE RESULT OF SURGICAL TREATMENT OF THE
FEMUR UNSTABLE
INTERTROCHANTERIC FRACTURE USING
COMPRESSION HIP SCREW
- ANALYSIS OF EFFECT OF DEGREE OF FORCE ON TRAUMA
AND DEGREE OF OSTEOPOROSIS -**

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Purpose : To analyse the effect of degree of force on trauma and degree of osteoporosis in femoral unstable intertrochanteric fracture 's result of treatment using compression hip screw.

Materials and Methods : From January 1993 to December 1997, 55 patients who were operated with compression hip screw and followed up for more than 1 year were divided into high and low energy injured group by the mechanism of the trauma and also divided low(grade I, II) and high grade osteoporosis group(grade III, IV) by Singh 's index. We analyze and compare the result of treatment in each groups.

Results : The average rate of mechanical complication was 24%. The mechanical complication rate of the high grade osteoporosis group(34%) was higher than low grade osteoporosis group(9%)($p < 0.05$). The average subsidence of compression screw was 9.9mm and it shows significant difference between low(7.8mm) and high grade osteoporosis group(11.5mm)($p < 0.05$). The average increased varus deformity of neck-shaft angle during follow up was 3.8 ° and it shows significant difference between high energy injured group(4.6 °) and low energy injured group(2.7 °)($p < 0.05$). No difference was seen in each groups for time of bone union($p > 0.05$). In view of functional recovery by Clawson 's method, no difference between pre-injury and post-operative state was seen in 7 cases(22%) in high grade osteoporosis group and 13 cases(57%) in low grade osteoporosis group, thus worse functional recovery was seen in high grade osteoporosis group.

Conclusions : We observed higher mechanical complication rate, more compression screw subsidence and worse functional recovery in high grade osteoporosis group and more varus deformity in high energy injured group. Thus we need more attention to treatment and follow up in high energy injured, severe osteoporotic unstable intertrochanteric fracture.

Key words : Femur, Intertrochanteric unstable fracture, compression hip screw, energy on trauma, osteoporosis