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= Abstract =

Treatment of femur neck fracture - Attributing factor of postoperative collapse & avascular necrosis -

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We have experienced some difficulties in anatomical reduction and osteosynthesis of femoral neck fracture due to its specific anatomical structures. The purpose of this study are to analyse attributing factors of postoperative collapse and aseptic necrosis in femoral neck fractures. We studied 62 cases of femoral neck fracture treated with the internal fixation from February 1995 to August 1997 at Gil General Hospital. Average follow up period was 1.6years. We analyzed age, sex, operation interval, Garden stage, Pauwel angle, Singh index, fracture site and the fixation method. The results obtained were as follows :

Increased incidence of collapse and aseptic necrosis was noted with higher Garden stage(Garden stage 4), wider Pauwel angle(over type 2), under 40 year or over 60 year old age, woman and larger operative interval.

Key Words : Femur Neck, Fracture, Osteosynthesis.

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		가		SAS		package		Fisher 's exact test	
가									
		62		(6.5%),		(avascular necrosis) 4			
가		가 32		4 (13%),		가 30		6	
		(20%)				(P<0.05).			
		40		18 5		(29%), 40		59	
		12 3		(19.4%), 60		32 9		(28%)	
		가				(P<0.05).			
		가				24			
가		1995 6		42 1		(2.3%)			
1997 8		, 2		(5%)		가		4	
1		가 가		62		6		가 2	
		1.6		가		(33%)		(P<0.05)(Table 1).	
32 (51.6%),		가 30 (48.4%)		40		grade 4 16		가 6 (37%),	
18 (29.0%), 40		59 가 12 (19.4%), 60		가 2 (12%)		가			
32 (52%)		62.7				(P<0.05)(Table 2).		stage1	
2 ,		3		57		10 2 (20%)		가, stage3 22 6	
가						(27%)		, stage4 16	
						4 (24%),		가 4 (24%)	
stage, singh index,		, Garden		(P>0.05)(Fig.1)(Table 3).					
Garden alignment,				Pauwel		30 50		type 2	
				34		가 10 (30%),		2 (6%)	
						(P<0.05)(Table 4).			
				cannulated		52 6		(11%)	
				가					
								4	

Table 1. Relationship between op interval & incidence of aseptic necrosis and collapse

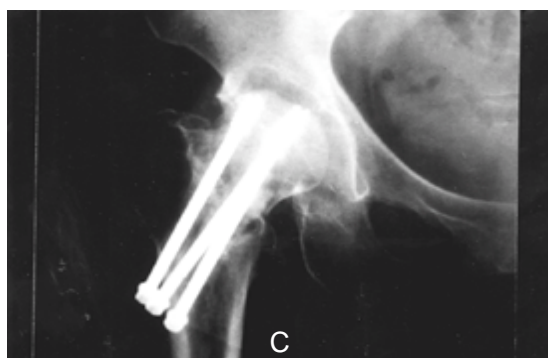
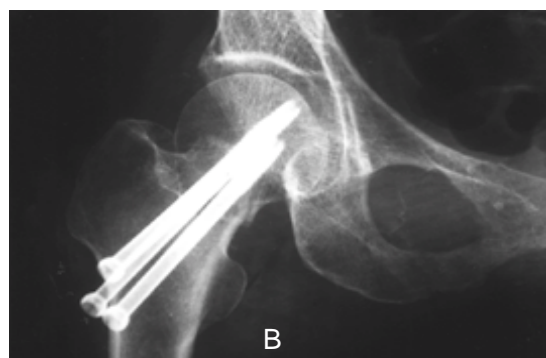
Op interval (days)	No. of cases	collapse	aseptic necrosis
1	42	1	2
2	6	0	0
3	6	0	0
4	6	2	2
5	2	0	0
Total	62	3	4

**Table 2.** Relationship Singh index & incidence of aseptic necrosis and collapse

Singh index	No. of cases	collapse	aseptic necrosis
1	0	0	0
2	6	2	0
3	18	2	0
4	16	6	2
5	12	2	0
6	10	0	0
Total	62	12	2

Table 3. Relationship between Garden stage & incidence of aseptic necrosis and collapse

Stage	No. of cases	collapse	aseptic necrosis
1	10	2	0
2	14	0	0
3	22	6	0
4	16	4	4
Total	62	12	4

**Fig 1.** A 77-year old woman with multiple cannulated hip screw insertion of right femur neck fracture

1-A. Pre-op radiographs showed a femur neck fracture of subcapital type : Garden stage 4, Singh index 4, Pauwel angle 90 °

1-B. Post-op radiographs after osteosynthesis with multiple hip screws : Garden alignment index Ap view ; 170 ° Lat view : 170 °

1-C. Radiographs at 8 months showed osteonecrosis and collapse

1-D. Radiographs after hybrid total hip replacement arthroplasty.

**Table 4.** Relationship between Pauwel classification & incidence of aseptic necrosis and collapse

Pauwel classification	No. of cases	collapse	aseptic necrosis
1	14	0	0
2	34	10	2
3	14	2	2
Total	62	12	4

Table 5. Relationship between method of fixation & incidence of aseptic necrosis and collapse

Method of fixation	No. of cases	collapse	aseptic necrosis
cannulated hip pin	54	6	4
CHS* & plate	8	2	4
Total	62	8	8

* Compression hip screw

(100%) 가 가 subfoveal area
(P<0.05)(Table 5).
alignment index
12 (21%) 가
6 4 (67%) 4.5). 가 20%-30%
가 (P<0.05). 60%-80%
2,6,12,15,16).
가 가 가 ,
가 가 가
가 가 가
1). Cooper⁸⁾가
Massie¹⁴⁾ 12
가 25% 가 12
24 30% , 24 48
Catto^{4,5)} 40% , 1
가 100% 가
Bonfiglio 24
가 42 2 , 10
가, 4 가 6 2
tamponade가 Crawford⁹⁾ 가
2 가 17).



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가 7,13), Barnes³⁾ 27:1293-1301, 1992.

가 20%

55%

20%

가 가

Garden Garden alignment index^{10,11)} 155

180

가 7.3% 53.8%

90%

12 (21%)

가

가 가

가 가

가

40

가

가

1995 6 1997 8

62

가 60 40

Pauwel 가 , 가

가

가 가

가 가

가

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