ORIGINAL ARTICLE

Frequency of Union in Cases of Subtrochanteric Femora L Fractures Treated by Fixation with Dynamic Condylar Screw System

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ABSTRACT

Aim: To find out the frequency of union in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system.

Methods: This study was conducted atDepartment of Orthopedic Surgery, Bahawal Victoria Hospital, Bahawalpur from June 2016 to December 2016.Total 93 patients of subtrochanteric femoral fractures were selected for this study.

Results: Total 94 patients with subtrochanteric femoral fractures were selected for this study.Mean age of the patients was 39.56±15.125 years and mean duration of fracture was 4.10±1.973 days. Thirty eight patients (40.4%) were male and 56 patients (59.6%) were female.Type A fracture was noted in 17(18.1%) patients followed by type B 46(48.9%) and type C in 31(33%) patients. Among the 94 patients, union of fracture was noted in 75(79.8%).

Conclusion: Findings of this study showed a high frequency of union in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system.Significant association of age of patients, duration of fracture and type was noted.

Keywords: Femoral Fractures, Internal Fixation,Subtrochanteric, Dynamic Condylar Screw.

INTRODUCTION

Among the all fracture of hip, Subtrochanteric fractures accounted for 10% to 34% cases.[1-2]Subtrochanteric fractures comprises of 10-34% of all hip fractures. Because of biomechanical & anatomical reasons, the sub-trochanteric femoral fractures still a big challenge for Orthopedic Surgeons[3,4,5]. In literature, conservative management of these fractures provide satisfactory results only in 56% cases as compared to 80% invasive management. [6]In last thirty years, near complete elimination of non-invasive management in adult patients and a corresponding increase in invasive management of these fractures[7,8].

Inta-medullary (reconstruction nail, Russel taylor nails, gamma nail)and extra-medullary devices (A.O 95 degree dynamic condylar screws, A.O 95 angled condylar blade plate, Dynamic hip screws)are used for the management of subtrochanteric fractures. [9-11] The A.O dynamic condylar screw (DCS) provides strong fixation in cancellous bone of the neck and head with considerable rotational stability. Intramedullary devices require less surgical exposure, achieve better proximal fixation enable early weight bearing and exert less biomechanical stresses[12]. DCS and DHS are among the best fixationdevices in the armamentarium for subtrochanteric fracture management[13].

DCS is considered a very good device for subtrochanteric fracture because it has many advantages like easy insertion, firm fixation, more strength, and resistant to stress failure with less operative time.But its union rate is not determined in our local population before my study.So a study is planned to find out the frequency of union after subtrochanteric fracture by using DCS.

MATERIAL AND METHODS

This case series study was conducted in the Department of Orthopedic Surgery, Bahawal Victoria Hospital, Bahawalpur from June 2016 to December 2016.

Inclusion Criteria:

- All patients with closed subtrochanteric fractures (within the 1 week of fracture).
- Male or female.
- Age range 20-70 years.

Exclusion Criteria:

- All cases with open fractures. (clinically)
- All cases with history of diabetes mellitus. (On history)
- Patients with previous surgery. (On history)
- Patients with osteoporosis. (Assessed on x-ray)

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Subtrochanteric femoral fractures: Subtrochanteric fractures are fractures that occur in a zone extending from the lesser trochanter to 5cm distal to the lesser trochanter assessed on anteroposterior (AP) radiographic view of femoral shaft.

Types of Subtrochanteric femoral fractures:

Type A =At level of lesser trochanter

Type B =<2.5 cm below lesser trochanter

Type C =2.5-5cm below lesser trochanter

Union is defined as the renewal of continuity in a broken bone and is determined radiologically by loss of gap between fracture fragments upto 8th week.

Data collection procedure: Total 93 cases of subtrochanteric femoral fractures were selected after approval from hospital ethical committee and after taking written informed consent from every patient.After admission temporary skin traction was applied to relieve pain. To choose proper implant size and fracture geometry was assessed preoperative planning on X-rays and was operated on elective list.All the fractures were classified according to A.O classification. Union of fracture was assessed after 8 weeks and findings (in term of yes/no) were recorded in pre-designed proforma. Demographic profile of the patients was also recorded in pre designed profroma.

Data analysis procedure: Data was entered on computer software SPSS version 16. The quantitative variables of the study i.e. age and duration of fracture was presented as Mean±SD. The qualitative variables like gender, frequency of union and type of fracture was presented as frequency and percentages.Stratification was done for age, gender, type of fracture and duration of fracture. Post stratification chi-square test was applied.P. value ≤0.05 was considered as significance.

RESULTS

Total 94 patients with subtrochanteric femoral fractures were selected for this study.Mean age of the patients was 39.56±15.125 years and mean duration of fracture was 4.10±1.973 days. Out of 94 patients, 38 (40.4%) were males and 5(59.6%) were females. Type A fracture was noted in 17(18.1%) patients followed by type B 46(48.9%) and type C in 31(33%) patients. Among the 94 patients, union of fracture was noted in 75(79.8%). Patients were divided into two age groups i.e., age group 20-45 years and age group 46-70 years. Total 65(69.15%) patients belonged to age group 46-70 years and 29(30.85%) patients belonged to age group 46-70 years fracture union was noted in 56(86.15%) patients and 19(65.52%) patients respectively.

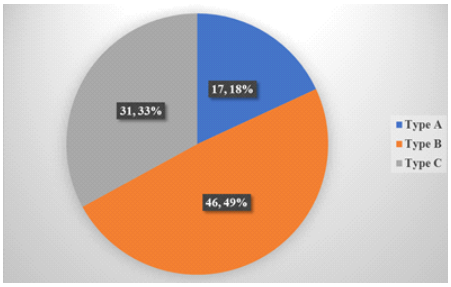

Fig. 1: Gender distribution

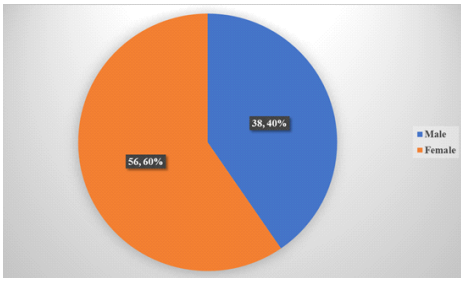

Fig. 2: Frequencies for type of fracture

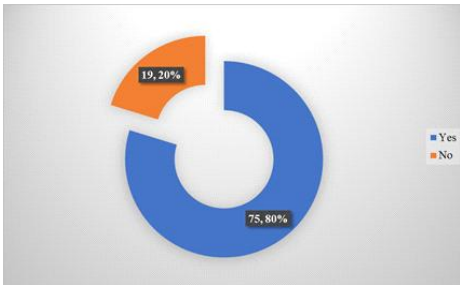

Fig. 3: Fracture union rate

Statistically significant (P = 0.02) association between age groups and union of fracture was noted.Out of 38(40.43%) male patients, union was noted in 30(78.95%) patients and out of 56(59.57%) female patients union was noted in 45(80.36%) patients. Insignificant (P=1.00) association between gender and union was noted.Minimum duration of fracture was 1 day and maximum duration of fracture was 7 days.Patient were divided into two groups according to duration of fracture i.e., 1-3 days and 4-7 days. In 1-3 days duration of fracture group, there were 37 (39.36%) patients and union was noted in 34 (91.89%) patients. Total 57(60.64%) patients belonged to 4-7 days duration of fracture and union was noted in 41(71.93%) patients. Significant (P=0.01) association of union with duration of fracture was noted. Type A fracture was noted in 17(18.09%) patients followed by type B fracture in 46

(78.94%) patients and Type C fracture in 31 (32.98%) patients.Union was noted in 5 (29.41%), 43 (93.48%) and 27 (87.1%) patients.Significant (P = 000) association between type of fracture and union was noted.

Table 1: Stratification for age

Age Group	Union		Total	P value
	Yes	No		
20-45	56(86.15)	9(13.85)	65(69.15)	0.02
46-70	19(65.52)	10(34.48)	29(30.85)	
Total	**75 (79.8)**	**19 (20.2)**	**94**	

Table 2: Stratification for gender

Gender	Union		Total	P value
	Yes	No		
Male	30(78.95%)	8(21.05%)	38(40.43%)	1.00
Female	45(80.36%)	11(19.64%)	56(59.57%)	
Total	75(79.8%)	19(20.2%)	94	

Table 3: Stratification for duration of fracture

Duration of fracture	Union		Total	P value
	Yes	No		
1-3	34(91.89%)	3(8.11%)	37(39.36)	0.01
4-7	41(71.93%)	16(28.07%)	57(60.64)	
Total	75(79.8%)	19(20.2%)	94	

Table 4: Stratification for type of fracture

Type of fracture	Union		Total	P value
	Yes	No		
Type A	5(29.41%)	12(70.59%)	17(18.09%)	0.000
Type B	43(93.48%)	3(6.52%)	46(48.94%)	
Type C	27(87.1%)	4(12.9%)	31(32.98%)	
Total	75(79.8)	19(20.2)	94	

DISCUSSION

The primary objective of management of subtrochanteric fractures is to adequate union and rigid fixation with optimal functional outcome. Management of these fractures is still debatable.

These fractures can be effectively stabilized with 95 angled plates femoral reconstruction nails or trochanteric femoral nails with interlocking options an accurate reduction and meticulous surgical technique with minimal soft tissue dissection can routinely produce good results.[1] Complication rate for unstable fractures treated with a dynamic hip screw or dynamic condylar screw is high, because of high stresses in this particular zone of proximal femur. We choose the dynamic condylar screw for subtrocanteric fracture fixation, because this is used commonly in our setup. [1]

The objective of this study was to determine the Frequency of union in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system.Mean age of the patients was 39.56 ± 15.125 years and mean duration of fracture was 4.10 ± 1.973 days.

In present study, among the 94 patients, union of fracture was noted in 79.8%.In one study by Laghari et al[1] union rate was 93.5% in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system. Findings of this study are comparable with our study.In another study by Rohilla et al,[14] union rate was 100% in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system.

Halwaiet al[15] reported fracture union rate as 77%.Kulkarniet al[16] reported fracture union rate as 90% in their study in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system.

In present study, male patients were 40.43% and female patients were 59.57% patients were female.In one study by Laghari et al,[1]out of 48 cases with subtrochanteric femoral fractures, 60.42% patients were male and 39.58% patients were female which is comparable with our findings.

In present study type A fracture was noted in 17 (18.1%) patients followed by type B 46 (48.9%) and type C in 31 (33%) patients.Laghari et al,[1]reported type A fracture as 37.50%, type B

fracture as 33.34% and type c fracture 29.16% which is comparable with findings of this study.

CONCLUSION

Findings of this study showed a high frequency of union in cases of subtrochanteric femoral fractures treated by fixation with dynamic condylar screw system.Significant association of age of patients, duration of fracture and type of fracture was noted.

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