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Assessment Of Functional Outcome Of Management Of Distal End Femur Fractures

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ABSTRACT

Background: Distal femur fractures comprise of 6% of the fractures involving femur approximately. The present study was conducted to assess functional outcome of management of distal end femur fractures.

Materials & Methods: 78 patients of distal end femoral fractures of both genders were recorded. Parameter such as mode of injury, side, fracture subtype was recorded. Functional outcomes were analyzed using Modified Hospital for Special Surgery scoring system

Results: Out of 78 patients, males were 40 and females were 38. Mode of injury was RTA in 40, fall in 18 and others in 20. Laterality was left in 37 and right in 41. Cases were treated with open with locking compression plate in 50 and closed reduction in 28 cases. Range of knee flexion was 102 degrees and average knee score was 89.2. The difference was significant (P< 0.05). Functional outcome was excellent in 55, good in 20 and fair in 3. The difference was significant (P< 0.05). Complications were limb length discrepancy in 3, malunion in 2, shortening in 1 and knee stiffness in 1. The difference was significant (P< 0.05).

Conclusion: Distal end femoral fractures were managed with open reduction with locking compression plate and close reduction. Function outcome was excellent in most of the cases.

Keywords: femur fractures, locking compression plate, Function outcome

Introduction

Distal femur fractures comprise of 6% of the fractures involving femur approximately. Bimodal age distribution is seen.[1] Peak incidence is seen in patients below 40 years of age, commonly males, experiencing high-energy trauma. Incidence again rises in patients >50 years, commonly females, with osteoporosis, who experience relatively low energy trauma.[2] Frequent mechanism of injury is axial load to femur and less frequently rotational forces lead to distal femoral fractures.

Distal femur fractures are complex injuries that involve distal 15 cm of femur both supracondylar and intercondylar, whose management is an arduous task, as these have an inherent tendency for high morbidity.[3]

Supra-condylar and inter-condylar fractures of the distal femur historically have been difficult to treat.[4] These fractures often are unstable and comminuted and tend to occur in elderly or multiple injury patients. If hip fractures are excluded, 31% of femoral fractures involve distal portion. Because of the proximity of these

fractures to the knee joint, regaining full knee motion and function may be difficult.[5] Although open reduction and internal fixation with plate and screws has become a standard method of treatment for many types of fractures, the management of comminuted, intra- articular distal femoral fractures still remains complex and challenging to the orthopedic surgeons. Many of these fractures are the result of high energy trauma which generates severe soft tissue damage and articular and metaphyseal comminution.[6] The present study was conducted to assess functional outcome of management of distal end femur fractures.

Materials & Methods

The present study comprised of 78 patients of distal end femoral fractures of both genders. All gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was carried out. Parameter such as mode of injury, side, fracture subtype was recorded. Functional outcomes were analyzed using Modified Hospital for Special Surgery scoring system. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 78		
Gender	**Males**	**Females**
Number	40	38

Table I shows that out of 78 patients, males were 40 and females were 38.

Table II Assessment of parameters

Parameters	**Variables**	**Number**	**P value**
Mode of injury	RTA	40	0.01
	Fall	18	
	Others	20	
Laterality	Left	37	0.86
	Right	41	
Management	Open treated with locking compression plate	50	0.01
	Closed reduction	28	
Range of knee flexion		102 degrees	-
average knee score		89.2	-

Table II, graph I shows that mode of injury was RTA in 40, fall in 18 and others in 20. Laterality was left in 37 and right in 41. Cases were treated with open with locking compression plate in 50 and closed reduction in 28 cases. Range of knee flexion was 102 degrees and average knee score was 89.2. The difference was significant (P< 0.05).

Graph I Assessment of parameters

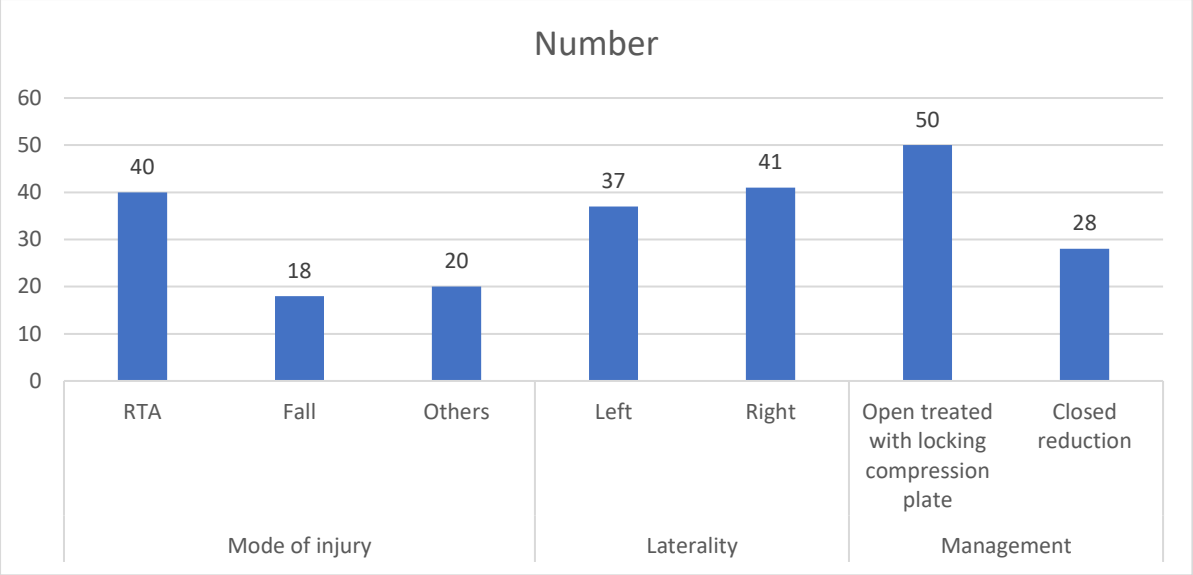

Table III Functional outcome

Functional outcome	Number	P value
Excellent	55	0.02
Good	20	
Fair	3	
Poor	0	

Table III shows that functional outcome was excellent in 55, good in 20 and fair in 3. The difference was significant (P< 0.05).

Table III Assessment of complications

Complications	Number	P value
Limb length discrepancy	3	0.05
Malunion	2	
Shortening	1	
Knee stiffness	1	

Table III shows that complications were limb length discrepancy in 3, malunion in 2, shortening in 1 and knee stiffness in 1. The difference was significant (P< 0.05).

Discussion

Distal femur fractures have been documented as hard to treat as they are unstable due to the pull of the distal fragment by the muscles.[7,8] These fractures often have a potential for long term disability and potential to develop infection.[9] Many of these fractures are the result of high energy trauma which generates severe soft tissue damage and articular and metaphyseal comminution.[10] The incidences of malunion, non- union and infection are relatively high in many reported series. In older patients, treatment may be complicated by previous joint arthroplasty.[11] The present study was conducted to assess functional outcome of management of distal end femur fractures.

We found that out of 78 patients, males were 40 and females were 38. Kishore et al[12] a total of 25 patients were enrolled. Patients were followed up every 2 weeks in the first month,

then monthly for 3 months and then once every 3 months. The average range of knee flexion achieved was about 101°. The average knee score was 88.88 rated using Modified Hospital for Special Surgery functional score. The difference in knee range of motion was statistically significant for closed and open fractures but knee score and age was not statistically significant. Intra-articular fractures tend to have poorer results with respect to pain and function, more so because of the nature of the injury rather than the implant used, which limits the movement and causes loss of strength more than instability.

We found that mode of injury was RTA in 40, fall in 18 and others in 20. Laterality was left in 37 and right in 41. Cases were treated with open with locking compression plate in 50 and closed reduction in 28 cases. Range of knee flexion was 102 degrees and average knee score was 89.2. Konuganti et al[13] in their study 20 cases of distal femoral fractures surgically managed with distal femoral locking compression plate. Highest number of patients was in their 3rd decade (25%) 18 out of 20 patients had closed injury. Type A2 Muller's fracture was the most common fracture type 7 out of 20 patients (35%). The mean follow up period in this study was 8 months. The average range of knee flexion achieved was about 109°. The mean score 81.75 points were rated using Neer's functional score (Max 100).

We found that functional outcome was excellent in 55, good in 20 and fair in 3. We found that complications were limb length discrepancy in 3, malunion in 2, shortening in 1 and knee stiffness in 1. Schutz et al[14] in their study found that the time to follow-up was on average 13.7 months (minimum 7 months, maximum 33 months). Fractures treated were distal femoral shaft and supracondylar femoral fractures. Eight patients died during the study of causes unrelated to the implant. Of the remaining 104 patients with 107 fractures, 96 patients with 99 fractures were available for complete follow-up (93% follow-up rate). In 90% of all cases treated and followed up, the fracture had consolidated during the period of observation. Twenty-three revision operations were necessary in 21 patients. In two cases, implant failure occurred as the result of a pseudarthrosis. The complications can be attributed in nearly all cases to the severity of the trauma and/or a lack of experience when applying the new style implant to a wider range of indications. The results of the study show that with a sound knowledge of the operative technique and careful preoperative planning this system represents an excellent, safe procedure for the treatment of almost all distal femoral fracture types including periprosthetic fractures of the distal femur. There is generally no need for primary cancellous bone grafting.

The limitation the study is small sample size.

Conclusion

Authors found that distal end femoral fractures were managed with open reduction with locking compression plate and close reduction. Function outcome was excellent in most of the cases.

References

1. Kregor PJ, Stannard J, Zlowodzki M, Cole PA, Alonso J. Distal femoral fracture fixation utilizing the Less Invasive Stabilization System (L.I.S.S.): the technique and early results. Injury. 2001;32:32- 47.
2. Neer CS II, Grantham SA, Shelton ML. Supracondylar Fracture of the Adult Femur – A Study of One Hundered and Ten Cases. JBJS Am. 1967;49(4):591-613.
3. Henderson CE, Kuhl LL, Fitzpatrick DC. Healing Complications Are Common After Locked Plating for Distal Femur Fractures. Clin orthop Relat Res. 2011;469:1757-65.
4. Markmiller M, Konrad G, Sudkamp N. Femur-LISS and distal femur nail for fixation of distal femoral fractures. Clin Orthop and Relat Res. 2004;426:252- 7.

5. Weight M, Collinge C. Early results of the less invasive stabilization system for mechanically unstable fractures of the distal femur. J Orthop Trauma. 2004;18:503-8.
6. Kregor PJ, Stannard J, Zlowodzki M, Cole PA, Alonso J. Distal femoral fracture fixation utilizing the Less Invasive Stabilization System (L.I.S.S.): The technique and early results. Injury. 2001;32(3):32-47.
7. Gaines RJ, Sanders R, Sagi HC, Haidukewych GJ. Titanium versus stainless steel locked plates for distal femur fractures: is there any difference? OTA abstract. 2008;55:8.
8. Schutz M, Muller M, Krettek C, Hontzsch D, Regazzoni P, Ganz R, et al. Minimally invasive fracture stabilization of distal femoral fractures with the LISS: a prospective multicenter study. Results of a clinical study with special emphasis on difficult cases. Injury. 2001;32(3):48-54.
9. Egol KA, Kubiak EN, Fulkerson E, Kummer FJ, Koval KJ. Biomechanics of locked plates and screws. J Orthop Trauma. 2004;18(8):488–93.
10. Zlowodzki M, Bhandari M, Marek DJ, Cole PA, Kregor PJ. Operative treatment of acute distal femur fractures: systematic review of 2 comparative studies and 45 case series (1989 to 2005). J Orthop Trauma. 2006;20(5):366-71.
11. Schandelmaier P, Partenheimer A, Koenemann B, Grun OA, Krettek C. Distal femoral fractures and LISS stabilization. Injury. 2001;32 (3):55-63.
12. Shakti Kishore, Priya Ranjan, Marut Nandan Kumar. A Prospective Study to evaluate the functional outcome of open and closed reduction for distal end femur fractures. International Journal of Health and Clinical Research, 2021;4(22):46-49.
13. Sridhar Reddy Konuganti, Sreenath Rao Jakinapally, Vennamaneni Pratish Rao, Sivaprasad Rapur. Management of distal femur fractures with locking compression plate: a prospective study. Int J Res Orthop. 2018; 4(2):208-213.
14. Schutz M, Muller M, Krettek C, Hontzsch D, Regazzoni P, Ganz R, et al. Minimally invasive fracture stabilization of distal femoral fractures with the LISS: a prospective multicenter study. Results of a clinical study with special emphasis on difficult cases. Injury. 2001;32(3):48-54.