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Original Article

Epidemiological Survey in the Management of Distal Femoral Fractures amongst Adults Reporting to the Hospital: An Institutional Based Study

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ABSTRACT

Background: Fractures of distal femur are not frequently observed but are severe. The classification systems classify distal femur fractures as three types: unicondylar, extra-articular, and bicondylar. The aim of the present study was to determine the epidemiology and the treatment strategies in management of distal femur fractures.

Materials and Methods: The present study enrolled 15 subjects with distal femoral fractures that were treated by different types of surgical and non-surgical techniques. Chiron classification was used to classify the patients. The surgical for the management included fixation of the metallic implants in cases of closed breaks and external fixation in cases of open breaks in bone and in trans calcaneal traction in orthopedic treatment protocol. All the data thus obtained was arranged in a tabulated form and analyzed using SPSS software.

Results: A total of 1000 subjects reported to the surgical department with fractures, amongst those there were 15 cases of distal femoral fractures. Upon classifying them according to Chiron's classification, 2 belonged to Chiron Group I1, 4 belonged to Chiron Group I2, 3 were of Chiron Group II 1 and 6 were of Chiron group II 2. 8 were operated by osteosynthesis, out of which 5 were treated by internal plate blade 95 °

Conclusion: In the present study, majority of the patients were treated by surgical strategies. Better and recent materials should be employed for optimum management of the patients.

KEYWORDS: Chiron, Distal, Osteosynthesis, Surgical.

INTRODUCTION

Fractures of distal femur are not frequently observed but are severe.[1] Their frequency varies amongst different subgroups that were examined. In England, they showed a frequency of 3-6% of femur fractures in adults and approximately 0.4% of the fractures were studied [1] and they indicated 10% of all the femur fractures.[2-4] The incidence of the fractures is increasing with increasing age in the population, but they are less commonly observed than the proximal femur. In majority of cases, they are due to high-energy trauma and their management is normally surgical. Distal femur fractures observe a bimodal distribution; frequently between 15 and 50 years of age, commonly affecting male patients, because of high-energy impacts, and in patients above 50 years of age, seen affecting females with osteoporosis, because of comparatively low-energy trauma.[5-7] The classification systems classify distal femur fractures as three types: unicondylar, extra-articular, and bicondylar.[8] In the 1970s, fractures of distal femur were treated with open reduction and fixation using different methods and implants. After few attempts of surgical treatment, high frequency of complications were observed that greatly affected the outcomes. The aim of the present study was to determine the epidemiology and the treatment strategies in management of distal femur fractures.

MATERIALS AND METHODS

The present study enrolled 15 subjects with distal femoral fractures that were treated by different types of surgical and non-surgical techniques. The ethical committee clearance was obtained from the institute and enrolled patients hospitalized with distal femoral fractures had a follow up of more than 12 months' time. The patients whose pre or post-operative X-ray records were not present were excluded from the study. The subjects who did not meet the inclusion criteria for follow up were also not included in the study. Chiron classification was used to classify the patients. The surgical for the management included fixation of the metallic implants in cases of closed breaks and external fixation in cases of open breaks in bone and in trans calcaneal traction in orthopedic treatment protocol. The both active and passive rehabilitation of knee was initiated soon after the surgical treatment and continued at physiotherapy department. The epidemiological factors studied include incidence, gender, age and scenario. The type of treatment strategies opted were also noted. All the data thus obtained was arranged in a tabulated form and analyzed using SPSS software.

Table 1: Demographics and type of distal femoral fractures

Variable	Frequency
Gender	
Male	10
Female	5
Age range	20-75 years
Side	
Right	8
Left	7
Classification	
Chiron group I 1	2
Chiron group I 2	4
Chiron group II 1	3
Chiron group II 2	6
Chiron group II 5	0

Table 2: Type of management performed

Treatment Protocol	Frequency
Osteosynthesis	8
Internal Plate Blade 95 °	5
Condylar Plate	1
External Fixator	0
Orthopedic	1

RESULTS

A total of 1000 subjects reported to the surgical department with fractures, amongst those there were 15 cases of distal femoral fractures. There were 10 males and 5 females amongst them. The age range of the subjects were 20-75 years with the mean age of 39.2 years. Right side was fractured amongst 8 patients and left side was injured amongst 7 patients. Upon classifying them according to Chiron's classification, 2 belonged to Chiron Group I1, 4 belonged to Chiron Group I2, 3 were of Chiron Group II 1 and 6 were of Chiron group II 2. (Table 1)

Table 2 illustrates the management strategy followed amongst the subjects. 8 were operated by osteosynthesis, out of which 5 were treated by internal plate blade 95 °, 1 by condylar plate and none by external fixator. There was 1 case of whose treatment was orthopedic. The mean time of fracture union was 22 days.

DISCUSSION

Fractures of distal femur are delicate damages that are difficult to be operated and can lead to forever disability and increased morbidity. They are around 4 – 7% of all femoral fractures and make for 31% of the femoral fractures after excluding the fractures of hip.[9-13] Before 1970, a large number of fractures of distal femur were treated by conservative tendencies like skeletal traction and bracing untill the healing of fracture was observed that lead to favorable results, that needed an extensive hospitalization and compromised knee motion.[8,9] After that, alternative technique for unstable distal femur fractures were found, that consisted of double plating, use of endosteal alternative, and anatomically oriented plates.[14,15]

In the year 1980s, different advances in management of fracture were seen for management of the difficult injuries and the clinical outcomes were greatly improved. Indirect reduction technique and improved maintenance of the fracture biology was stated by Mast et al.[16] Different methods of fixation techniques have been given for the management of these fractures like 95° blade plate, condylar buttress plates, dynamic screw, , and retrograde nails.[15–17] The plating lock systems have been seen in Davos Switzerland in the early 1990s, that screwed the lock to a plate further leading to making of a multiple angle contact that avoided any compression of the periosteum, enabling the vascularity of the injured segment.[18,19]

The frequency of distal femur fractures was slightly lesser in the study when compared to the incidence in the literature varying between 3% to 10%.[1-3] The frequency increases with the advancing age of the population in the European countries, in relation with the elevated rate of osteoporosis, but fewer than of proximal femur fractures.[20]

The average age in our study was 39.2 years, that was similar to Bedes L. and al.[21] that showed 39.6 years and Sié Essoh J.B.[22] that had average age of 44 years. Whereas, Pascarella and al.[23] had average age of 62 years. According to Pietu and al.[20] average age was 63.5

years for men and 75 years for women. The difference was normally seen due to developed and developing nations. Road traffic injuries were the prime reason of fractures in the our study, similar to Sié Essoh J.B et al.[22]

CONCLUSION

Distal femoral fractures need to managed with great maintenance in order to get a good quality of walk and knee functioning. In the present study, majority of the patients were treated by surgical strategies. Better and recent materials should be employed for optimum management of the patients.

REFERENCES

1. Ehlinger M, Ducrot G, Adam P, Bonnemet F. Distal femur fractures. Surgical techniques and a review of the literature. Orthopaedics and Traumatology: Surgery and Research. 2013; 99:353-60.
2. Lauper N, Sava D, Hoffmeyer P. Fractures of the knee area in the elderly: management and evolution. Rev Med Switzerland. 2012; 8:2434-37.
3. Ascencio G, Bertin R, Mergy B. Fractures of the lower extremity of the femur. Encyclical. Med Chir App Locomotive. 1995; 14:80-A-10.
4. Kolmert L, Wulff K. Epidemiology and treatment of distal femoral fractures in adults. Acta Orthop Scand. 1982; 53(6):957-62.
5. Giles JB, DeLee JC, Heckman JD, Keever JE. Supracondylar–intercondylar fractures of the femur treated with a supracondylar plate and lag screw. J Bone Joint Surg Am 1982; 64:864–70.
6. Kammerlander C, Riedmüller P, Gosch M, Zegg M, Kammerlander-Knauer U, Schmid R et al. Functional outcome an mortality in geriatric distal femoral fractures. Injury 2012; 43:1096–101.
7. Wähnert D, Hoffmeier K, Fröber R, Hofmann GO, Mückley T. Distal femur fractures of the elderly – Different treatment options in a biomechanical comparison. Injury 2011; 42:655–59.
8. Butt MS, Krikler SJ, Ali MS. Displaced fractures of the distal femur in elderly patients: operative versus non-operative treatment. J Bone Joint Surg Br 1996; 78:110–14.
9. Schatzker J, Lambert DC. Supracondylar fractures of the femur. Clin Orthop Relat Res 1979; 138:77–83.
10. Arneson TJ, Melton LJ 3 rd , Lewallen DG, O'Fallon WM. Epidemiology of diaphyseal and distal femoral fractures in Rochester, Minnesota 1965–1984. Clin Orthop Relat Res 1988; 234:188–94.
11. Giles JB, DeLee JC, Heckman JD, Keever JE. Supracondylar–intercondylar fractures of the femur treated with a supracondylar plate and lag screw. J Bone Joint Surg Am 1982; 64:864–70.
12. Heiney JP, Battula S, O'connor JA, Ebraheim N, Schoenfeld AJ, Vrabec G. Distal femoral fixation: a biomechanical comparison of retrograde nail,retrograde intramedullary nail, and prototype locking retrograde nail. Clin Biomech 2012; 27:692–96.
13. Kolmert L, Wulff K. Epidemiology and treatment of distal femoral fractures in adults. Acta Orthop Scand 1982; 53:957–62.
14. Siliski J, Mahring M, Hofer HP. Supracondylar–intercondylar fractures of the femur. Treatment by internal fixation. J Bone Joint Surg Am 1989;71:95–104.
15. Sanders R, Swiontkowski M, Rosen H, Helfet D. Double-plating of comminuted, unstable fractures of the distal part of the femur. J Bone Joint Surg Am 1991; 73:341–46.
16. Mast J Jakob R, Ganz R. Planning and reduction technique in fracture surgery. Berlin: Springer-Verlag; 1989. 140–87.
17. Mallina R, Kanakaris NK, Giannoudis PV. Peri-articular fractures of the knee: an update on current issues. Knee 2010; 17:181–86.
18. Christodoulou A, Terzidis I, Ploumis A, Metsovitis S, Koukoulidis A, Toptsis C. Supracondylar femoral fractures in elderly patients treated with the dynamic condylar screw and the retrograde intramedullary nail: a comparative study of the two methods. Arch Orthop Trauma Surg 2005; 125:73–9.
19. Ali I. Surgical outcome of supracondylar and intercondylar fractures femur in adults treated with dynamic condylar screw. JPMI 2011; 25:49–55.
20. Pietu G, Lebaron M, Flecher X, Hulet C, Vandenbussche E. Sofcot. Epidemiology of distal femur fracturs in France in 2011-12. Orthopaedics and traumatology: Surgery and research. 2014; 100:545-48.
21. Bedes L, Bonnevialle P, Ehlinger M. External fixation of distal femoral fractures in adults multicentre retrospective study of 43 patients. Orthopaedics and traumatology: Surgery and research. 2013; 100:867-72.
22. Sié Essoh JB, Mobiot CA, Traoré A, Lambin Y. Distal femoral fractures treated with condylar buttres plate in a West African hospital. J clin Orthop Trauma. 2012; 3(2):98-102.
23. Pascarella R, Bettuzzi C, Bosco G. Results in treatment of distal fractures using polyaxial locking plate. Strategies. Trauma Limb Reconstr.2014;9(1):13-8.

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