

ORIGINAL RESEARCH

Evaluation of different risk factors of knee fractures: A clinical study

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ABSTRACT:

Background: A femoral shaft fracture is usually a high-energy injury and, thus, is likely to be accompanied by an injury of adjacent joints such as a knee ligament injury. Hence; the present study was undertaken for assessing the risk factors of knee fractures.

Materials & methods: A total of 100 patients who reported to the department of orthopedics with knee fractures were included in the present study. Complete demographic of all the patients was obtained. Radiographic assessment of all the patients was done. Complete hematological and biochemical profile of all the patients was obtained. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. **Results:** Significant results were obtained while assessing the age-wise distribution of patients. Among 40 females, 23 patients were of postmenopausal status. 69 patients were obese while remaining 31 percent of the patients were non-obese. Osteoporosis was found to be present in 56 percent of the patients. Postmenopausal status and obesity were found to be significant risk factor of knee fractures. **Conclusion:** Early identification of risk factors (obesity and postmenopausal status) for knee fractures is essential for early detection and prevention.

Key words: Knee, Fractures, Risk

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INTRODUCTION

A femoral shaft fracture is usually a high-energy injury and, thus, is likely to be accompanied by an injury of adjacent joints such as a knee ligament injury. However, these associated injuries are often neglected because of severe pain and deformity. There are limited recent epidemiological data pertaining to the patterns of skeletal injury around the knee joint in adult patients. Data on fractures of the distal femur, proximal tibia and patella have been individually reported.¹⁻⁴ Hence; the present study was undertaken for assessing the risk factors of knee fractures.

MATERIALS & METHODS

A total of 100 patients who reported to the department of orthopedics with knee fractures were included in the present study. Detailed demographic of all the patients were obtained. Inclusion criteria for the present study included:

- Knee fractures patients,
- Subjects who gave informed consent,
- Subjects within the age group of 20 to 70 years

- Subjects with negative history of presence of any malignancy

A questionnaire was prepared for recording the risk factors for knee fractures. Radiographic assessment of all the patients was done. Serum samples were obtained for assessing the complete hematological and biochemical profile. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

RESULTS

In the present study, a total of 100 patients were analyzed. Mean age of the patients of the present study was 46.5 years. There were 60 males and 40 females. Significant results were obtained while assessing the age-wise distribution of patients.

In the present study, among 40 females, 23 patients were of postmenopausal status. 69 patients were obese while remaining 31 percent of the patients were non-obese. Osteoporosis was found to be present in 56 percent of the patients. Postmenopausal status and obesity were found to be significant risk factor of knee fractures.

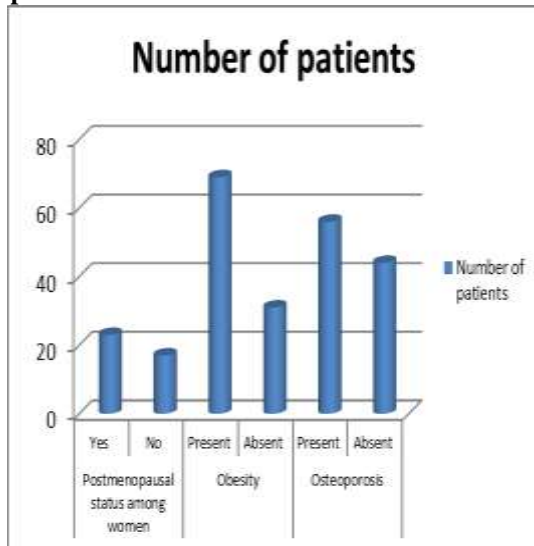
Table 1: Age and gender-wise distribution of patients with knee fracture

Parameter		Number of patients	p- value
Age group (years)	Less than 30	15	0.01 (Significant)
	30 to 40	29	
	41 to 50	36	
	More than 50	20	
Gender	Males	60	0.14
	Females	40	

Table 2: Risk factors for knee fractures

Parameter		Number of patients	p- value
Postmenopausal status among women	Yes	23	0.03 (Significant)
	No	17	
Obesity	Present	69	0.00 (Significant)
	Absent	31	
Osteoporosis	Present	56	0.401
	Absent	44	

Graph 1: Risk factors for knee fractures



DISCUSSION

Age-related fractures are projected to increase nationally from 2.1 million in 2005 to over 3 million fractures in 2025, solely on the basis of growth in the elderly population most at risk. However, changes in the actual incidence of specific fractures could aggravate or, instead, ameliorate this trend.^{5- 8} Hence; the present study was undertaken for assessing the risk factors of knee fractures. In the present study, a total of 100 patients were analyzed. Mean age of the patients of the present study was 46.5 years. There were 60 males and 40 females. Significant results were obtained while assessing the age-wise distribution of patients. Larsen P et al provided up-to-date information concerning the incidence of patellar fractures in a large and complete population spanning a decade and to report on the distribution of fracture classification, trauma mechanisms, and patient baseline demographics. A retrospective review of clinical and radiological records of 756 patellar fractures treated between 2005 and 2014

was conducted. Mean age at the time of fracture was 54±21 years. Mean age was 46±22 years for males and 61±18 years for females. The sex distribution was 425 (56%) females and 331 (44%) males. The incidence of patellar fractures between 2005 and 2014 was 13.1/100,000/ year with a year-to-year variation between 10.5 and 16.5/100,000/year during the 10-year observation period. The distribution of incidence shows an increase with increasing age. Males have the highest incidence of fracture in the 10-to-19-year age group, approximately 15.4/100,000/year. Females in the 60-to-80-year age group have the highest incidence, approximately 36/100,000/year. AO type 34-C3 was the most common fracture type, representing 25% of all patellar fractures, followed by AO type 34-C1, representing 23%.⁹

In the present study, among 40 females, 23 patients were of postmenopausal status. 69 patients were obese while remaining 31 percent of the patients were non-obese. Osteoporosis was found to be present in 56 percent of the patients. Postmenopausal status and obesity were found to be significant risk factor of knee fractures. Ray JM et al retrospectively reviewed the charts of 185 patients treated for patella fractures. The 12 patients of these 185 aged 8 to 16 years were included in this study. The incidence was calculated to be 6.5% of all patella fractures. All patients studied were male with an average age of 12.7 years. Sleeve fractures were the most common type of patella fracture observed (five), followed by transverse fractures (four). Ten of the 12 cases required operative management ranging from irrigation and debridement to open reduction and internal fixation. Partial patellectomy was performed when indicated. Indications for operative management in this age group were similar to those for adults. As in adults, the mechanism of injury was predominantly motor vehicle and motorcycle crashes. Laws requiring seatbelt restraints for children should have a positive effect on the incidence of such fractures resulting from dashboard injuries. One mechanism of injury not reported previously was that of a flexed knee striking the gym wall after performing a basketball lay-up because the basket was placed flush with the wall.¹⁰

CONCLUSION

Early identification of risk factors (obesity and postmenopausal status) for knee fractures is essential for early detection and prevention.

REFERENCES

1. Chu CQ, Field M, Allard S, Abney E, Feldmann M, Maini R. Detection of cytokines at the cartilage/pannus junction in patients with rheumatoid arthritis: implications for the role of cytokines in cartilage destruction and repair. *Rheumatology*. 1992;31:653–661.
2. Holroyd C, Cooper C, Dennison E. Epidemiology of osteoporosis. *Best Pract Res Clin Endocrinol Metab*. 2008;22:671–685.
3. Han HS1, Oh KW, Kang SB. Retrograde intramedullary nailing for periprosthetic supracondylar fractures of the femur after total knee arthroplasty. *Clin Orthop Surg*. 2009 Dec;1(4):201–6.

4. Zingmond DS, Melton LJ, 3rd, Silverman SL. Increasing hip fracture incidence in California Hispanics, 1983 to 2000. *Osteoporos Int.* 2004;15:603–10. [PubMed] [Google Scholar]
5. Wright NC, Saag KG, Curtis JR, Smith WK, Kilgore ML, Morrissey MA, Yun H, Zhang J, Delzell ES. Recent trends in hip fracture rates by race/ethnicity among older US adults. *J Bone Miner Res.* 2012;27:2325–32.
6. Melton LJ, 3rd, Kearns AE, Atkinson EJ, Bolander ME, Achenbach SJ, Huddlestone JM, Therneau TM, Leibson CL. Secular trends in hip fracture incidence and recurrence. *Osteoporos Int.* 2009;20:687–94.
7. Guler F1, Kose O, Erol B, Turan A, Koroglu M, Akalin S. The prevalence of knee injuries ipsilateral to tibial shaft fractures and their impact on clinical outcome. *Eur J Orthop Surg Traumatol.* 2015 Jan;25(1):141-8.
8. Kannus PI, Niemi S, Palvanen M, Parkkari J, Pasanen M, Järvinen M, Vuori I. Continuously rising problem of osteoporotic knee fractures in elderly women: nationwide statistics in Finland in 1970-1999 and predictions until the year 2030. *Bone.* 2001 Nov;29(5):419-23.
9. Larsen P, Court-Brown CM, Vedel JO, Vistrup S, Elsoe R. Incidence and Epidemiology of Patellar Fractures. *Orthopedics.* 2016 Nov 1;39(6):e1154-e1158.
10. Ray JM1, Hendrix J. Incidence, mechanism of injury, and treatment of fractures of the patella in children. *J Trauma.* 1992 Apr;32(4):464-7.