

A retrospective study of fracture patella in tertiary care institute

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Abstract

Background: Patella is the largest sesamoid bone, located subcutaneously and has an important role in knee extension mechanism. Patellar fractures account for approximately 1% of all fractures, present a higher prevalence within the age group of 20 to 50 years old and males are twice more affected than females. **Aims and objective:** To study the features of patellar fracture observed in tertiary care institute. **Materials and Method:** The present retrospective study was conducted in Department of Orthopedic at Dr Ulhas Patil Medical College and Hospital Jalgaon. For the purpose of study we studied the data of year 2014 and selected the cases of patellar fracture admitted in the institute during the year. Total 92 cases of patellar fracture were selected in the present study. The details of the case regarding the name, age, sex, occupation, and address were recorded. In all the Patients mode of injury and duration was recorded. The findings of thorough general and clinical examination were also recorded. The collected information was recorded on a prestructured proforma. The findings of radiographs were also recorded and the fracture was classified. **Results:** 30.43% patients were 31-40 years of age followed by 21-30 years of age (23.91%) and 41-50 years of age (18.48%). It was observe that majority of the patients were male (59.78%) with 1.49:1 of male to female ratio. 55.43% patient patellar fracture was on right side. The most common mode of injury was indirect injury with 61.96% patients. Majority of the fractures were Transverse and oblique fractures and it constitutes 84.78% of the patients followed by Comminuted and stellate fractures were observed (11.96%). **Conclusion:** Thus we conclude that patellar fracture were common in young and middle age group male. The common mode of injury as indirect force and Transverse and oblique fractures as common type.

Key Words: Patellar fracture, mode of injury, type.

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INTRODUCTION

Patella is the largest sesamoid bone, located subcutaneously and has an important role in knee extension mechanism.¹ Patellar fractures account for approximately 1% of all fractures², present a higher prevalence within the age group of 20 to 50 years old and males are twice more affected than females.^{2,3} Patellar fractures are classified regarding trace as: transversal,

apex, basis, comminuted, vertical and osteochondral, and regarding degree as: deviated and non-deviated. Transverse fractures are the most common ones, accounting for 50 – 80% of the patellar fractures, comminuted fractures account for 30 -35%, and the vertical ones for 12 – 17%⁴. Subcutaneous location of patella makes it more vulnerable to injury from direct force, which leads to comminute fracture. Indirect injuries occur because of heavy forces from contracted quadriceps with knee in flexed position. Therefore, fracture not only depends on injury mechanism but also various other factors such as patient age, bone quality and degree of knee flexion.^{1,5,6} Indirect violence often causes a transverse fracture. In the indirect violence the quadriceps muscle are forcibly contracted when the entire body weight is transferred to the leg and the knee is semi-flexed in stumbling, for instance. The patella rides high on the femoral condyles where it is firmly kept in place by the quadriceps tendon and the patellar ligament. A sudden contraction of the quadriceps will cause a

transverse fracture of the patella.⁷ However, he points out that a transverse fracture can also be caused by direct violence, e.g. by a blow from an object. Direct violence causes patellar fractures increasingly, not least as a result of the motorism becoming progressively greater. A common cause is when the patella strikes against the dashboard with great force, which has given rise to "dashboard fracture".⁸

MATERIALS AND METHOD

The present retrospective study was conducted in Department of Orthopedic at Dr Ulhas Patil Medical College and Hospital Jalgaon. For the purpose of study we studied the data of year 2014 and selected the cases of patellar fracture admitted in the institute during the year. Total 92 cases of patellar fracture were selected in the present study. The details of the case regarding the name, age, sex, occupation, and address were recorded. In all the Patients mode of injury and duration was recorded. The findings of thorough general and clinical examination were also recorded. The collected information was recorded on a prestructured proforma. The findings of radiographs were also recorded and the fracture was classified as below.

Type I: Transverse and oblique fractures.

Type II: Comminuted and stellate fractures.

Type III: Other types: longitudinal fractures, apical and basal fractures and fractures in the frontal plane. The collected information was entered in the Microsoft excel and was analyzed and presented with appropriate graphs and tables.

RESULTS

Table 1: Distribution of patients according to age and sex

	No. of patients	%
Age group	<20	1.09
	21-30	23.91
	31-40	30.43
	41-50	18.48
	51-60	9.78
	61-70	4.35
	71-80	10.87
	>80	1.09
Sex	Male	59.78
	Female	40.22

In the present study we studied total 92 cases of patellar fracture and it was seen that majority of the patients were young and middle aged. 30.43% patients were 31-40 years of age followed by 21-30 years of age (23.91%) and 41-50 years of age (18.48%). It was observe that majority of the patients were male (59.78%) with 1.49:1 of male to female ratio.

Table 2: Distribution of patients according to various features of fracture

	No. of patients	%
Side	Right	55.43
	Left	42.39
	Bilateral	2.17
Mode of Injury	Direct	38.04
	Indirect	61.96

It was observed that in 55.43% patient patellar fracture was on right side and in 42.39% patients left sided patella was fractured whereas in remaining 2.17% bilateral patellar fracture was diagnosed. The most common mode of injury was indirect injury with 61.96% patients. Direct injury was the mode of injury in 38.04% patients.

Table 3: Distribution of patients according to type of fracture

	Type	No. of patients	%
1	Transverse and oblique fractures.	78	84.78
2	Comminuted and stellate fractures.	11	11.96
3	Other types: longitudinal fractures, apical and basal fractures and fractures in the frontal plane.	3	3.26

It was observed that majority of the fractures were Transverse and oblique fractures and it constitutes 84.78% of the patients followed by Comminuted and stellate fractures were observed (11.96%).

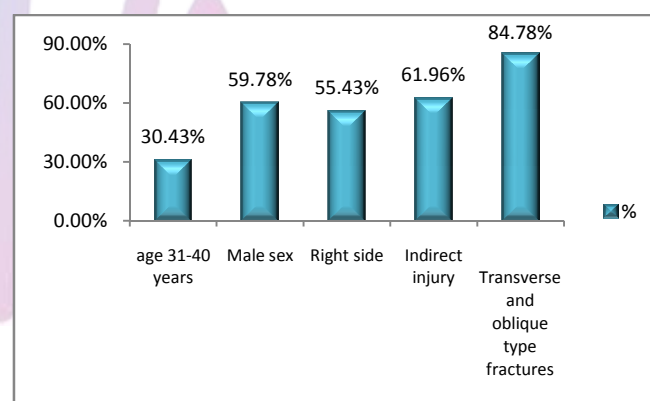


Figure 1: Features of patellar fracture

DISCUSSION

In the present study we studied total 92 cases of patellar fracture out of them 30.43% patients were 31-40 years of age followed by 21-30 years of age (23.91%) and 41-50 years of age (18.48%). The mean age of the study patients was 42.77 ± 16.78 with youngest case 20 years old and the eldest 82 year old. Alexandre Felicio Pailo *et al*⁹ in their study revealed that the average age in cases of patellar fractures was 39.4 years old, ranging from 13 to 87 years old. Mohammad Alamzeb Durrani *et al*¹⁰ observed the mean age of patients with patellar fracture was 40 year with range from 25 to 55 years. Thus it was seen that majority of the patients were young and middle aged.

Similar findings were also observed by Gangadhara Reddy Kota *et al*¹¹ and Siddaram Patil *et al*¹². It was observed that majority of the patients were male (59.78%) with 1.49:1 of male to female ratio. Similarly Siddaram Patil *et al*¹² observed 70% males and 30% females of patellar fracture in their study. In study done by Einolas *et al*¹³, there were 71% males and 29% females. Felicio Pailo *et al*⁹ observed 32% of the cases were females and 68% were males of patellar fracture. Gangadhara Reddy Kota *et al*¹¹ reported that 76.7% of the patellar fractures were seen in males and 23.3% in females. Similarly Sudheendra *et al*¹⁴ recorded 69.8% male and 30.2% female patients while Siddaram N Patil *et al*¹² study showed a prevalence of 70% male and 30% female patients. Thus male predominance has been observed in patellar fracture. It was observed that in 55.43% patient patellar fracture was on right side and in 42.39% patients left sided patella was fractured whereas in remaining 2.17% bilateral patellar fracture was diagnosed. Inconsistent to the present study Siddaram *et al*¹² and Sudheendra *et al*¹⁴ also recorded right side involvement 56% and 60.5% of cases respectively. In contrast Gangadhara Reddy Kota *et al*¹¹ observed 43.3% right side involvement and 56.7% on left side in their study. The most common mode of injury was indirect injury with 61.96% patients. Direct injury was the mode of injury in 38.04% patients. Gangadhara Reddy Kota *et al*¹¹ in their study observed that fall from height (indirect) was the most common mode of injury which accounted for 80% cases followed by road traffic accidents (20% cases). Similarly Sudheendra *et al*¹⁴ showed more number of cases due to indirect mechanism (58.1%) and 39.5% road traffic accidents. Siddaram *et al*¹² in their study reported that 66% fractures were as a result of indirect mechanism as in forceful flexion of the knee against the contracted quadriceps, and 34% cases were due to direct trauma (RTA) to the patella. Thus indirect trauma was the major contributing factor in the patellar fracture. It was observed that majority of the fractures were Transverse and oblique fractures and it constitutes 84.78% of the patients followed by Comminuted and stellate fractures were observed (11.96%). Similarly Schonbauer *et al*¹⁵ also observed Transverse and oblique fractures as most common type of patellar fracture (77.6%). Also in many other investigations it was found to be the most common type of fracture (Paschold *et al*¹⁶, 66% and Seligo *et al*¹⁷, 60%).

CONCLUSION

Thus we conclude that patellar fracture were common in young and middle age group male. The common mode of injury as indirect force and Transverse and oblique fractures as common type.

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