Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr ICV 2018= 82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of 80 cases of patellar fractures

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ABSTRACT:
Background: Fractures of the patella are serious injuries with a broad range of subtypes.3 These injuries account for about 1% of all skeletal injuries and are most prevalent within the age group of 20–50 years.The present study was conducted to assess 80 cases of patellar fractures. **Materials & Methods:** 80 patients of patellar fractures of both genders were enrolled. Parameters such as fracture, dislocations, etiology of fracture, associated injuries were recorded. **Results:** Etiology was road traffic accident in 54, fall in 16 and domestic violence in 10 cases. The difference was significant (P< 0.05). Management done was open reduction and fixation in 46 and closed reduction in 34cases. The difference was significant (P< 0.05). **Conclusion:** Maximum cases were treated by open reduction and fixation. The most common cause of fracture was road traffic accident.
Key words: Fracture, Road traffic accident, Patella

Received: 18-10-2019 Accepted: 24-11-2019

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This article may be cited as: Sukhabhai PB, Shankar U. Assessment of 80 cases of patellar fractures. J Adv Med Dent Scie Res 2019;7(12):317-319.

INTRODUCTION

Fractures of the patella are serious injuries with a broad range of subtypes.[3] These injuries account for about 1% of all skeletal injuries and are most prevalent within the age group of 20–50 years. Epidemiologic studies demonstrated that the incidence in men is twice as high as in women.[1] Knee pain is the second most prevalent condition, with patellofemoral pain (PFP) being considered one of the most common forms of knee pain, with a prevalence cited between 15% to 45%. It is described as non-traumatic in nature, with diffuse anterior knee pain on activities that load the joint such as squatting, running, climbing and descending stairs.[2]Displaced comminuted patellar fracture requires surgical treatment. The purpose of surgical treatment is to restore the patellar articular surface and the disrupted knee extensor mechanism. Before surgical repair of the patella a brief preoperative planning should be obtained.[9] This includes the choice of implants, surgical approach and a drawing of the fracture pattern with the estimated implant position. Thereby the surgeon gets acquainted with the fracture pattern and the required equipment can be chosen in advance.[3]

Because of the subcutaneous anterior location, the biomechanical function and the high level of force transmission during extension and flexion, stable reconstruction of patellar fractures continues to represent a major surgical challenge. The majority of cases are caused by direct injury mechanism. The resulting fracture type depends on the trauma mechanism (i.e. direct or indirect), the energy transmitted to the bone and the bone quality.[5]Patellar comminuted fracture is a great challenge for clinical orthopaedic surgeons.[4] The main challenge is that sometimes, it is difficult to obtain anatomical reduction and rigid internal fixation, resulting in poor functional outcome. At present, the treatment methods of patellar comminuted fracture include the following: circumferential cerclage wire fixation, modified

tension band fixation.[5]The present study was conducted to assess 80 cases of patellar fractures.

MATERIALS & METHODS

The present study comprised of80 patients of patellar fractures of both genders. All were informed regarding the study and their written consent was obtained.

Demographic data of patient was recorded. A thorough clinical examination was carried out. Parameters such as fracture, dislocations, etiology of fracture, associated injuries were recorded. Results of the study were compiled in entered in MS excel sheet using SPSS version 16.0. P value less than 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Total- 80		
Gender	**Males**	**Females**
Number	50	30

Table I shows that out of 80 patients, males were 50 and females were 30.

Table II: Assessment of etiology

Etiology	Number	P value
RTA	54	0.01
Fall	16	
Domestic violence	10	

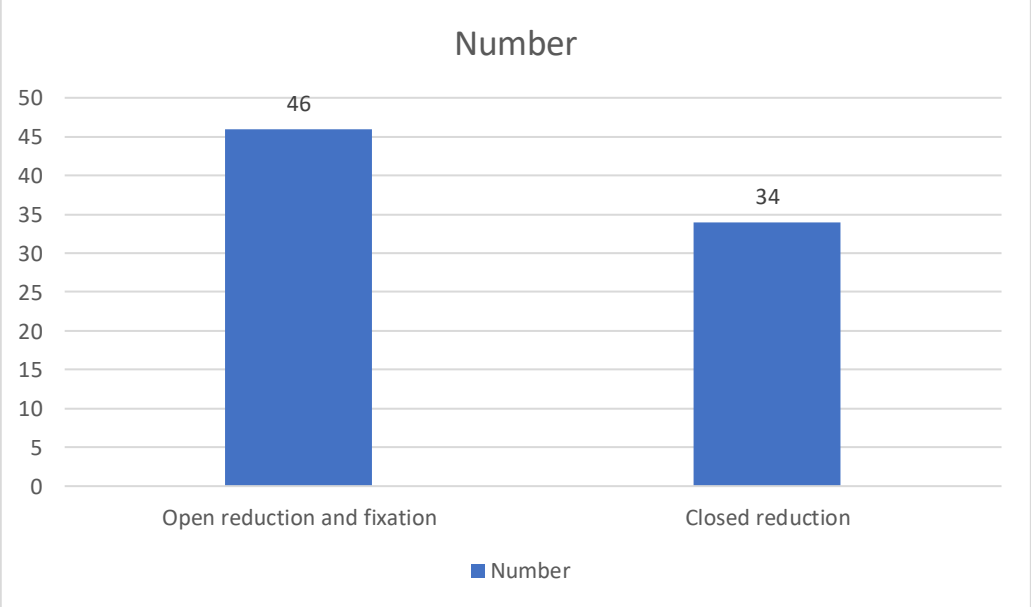
Table II shows that etiology was road traffic accident in 54, fall in 16 and domestic violence in 10 cases. The difference was significant (P< 0.05).

Table III: Management of patients with patellar fractures

Management	Number	P value
Open reduction and fixation	46	0.87
Closed reduction	34	

Table III, graph I shows that management done was open reduction and fixation in 46 and closed reduction in 34cases. The difference was significant (P< 0.05).

Graph I: Management of patients with patellar fractures



DISCUSSION

The patella is a triangular bone situated on the anterior surface of the knee at the distal end of the femur.[6] It is the largest sesamoid bone in the body and makes part of the knee joint. The patella 's primary role is to function as a fulcrum with the aim to increase the moment arm of the quadriceps muscle and thus, knee extensive capacity.Patella is the largest sesamoid bone and has an important role in function of the knee extensor mechanism.[7] Patellar fractures account for 1% of all skeletal fractures and results from direct, indirect or combined forces. Because of its subcutaneous location this bone is prone to injury from direct force that usually resulting

in comminuted fracture. Indirect injury results from violent contraction of the quadriceps muscle in the flexed knee.The patella plays a crucial role in the extensor mechanism to increase the mechanical advantage of the quadriceps.[8] Fractures can be classified based on displacement, comminution, and fracture pattern, which often guide treatment. Modern treatment options include internal fixation using tension bands with Kirschner wires or cannulated screws, lag screw fixation, partial patellectomy, and rarely total patellectomy. Nondisplaced, closed patellar fractures or fractures with less than 2-mm articular steps can be successfully treated conservatively. [9]Open fractures, articular step of 2 mm or greater, and loss of knee extension are indications for surgical intervention.The procedure is performed under epidural or general anaesthesia with the patient placed in a supine position.[10] Peri-operative antibiotics should be administered approximately 30 minutes before skin incision. An intraoperative thorough physical examination – especially focussed on the ligamentous structures of the knee – should be performed prior to placing a tourniquet to the patient's thigh.[11,12]The present study was conducted to assess 80 cases of patellar fractures.

We found that out of 80 patients, males were 50 and females were 30. Ozdemir et al[13] in their study on 20 patellar fractures with TBW reported good and fair results in 55% and 35% of the patients respectively.Yanga et al[14]found that titanium cerclage wiring was associated with high rates of excellent result in comminuted patellar fractures. CW is a simple method that is more applicable in comminuted fractures. The main disadvantage of this modality is the need for knee immobilization for about 4-6 weeks. Although this technique gives less secure fixation, but the pin site problems & need for re-operation in our study was less than TBW.

We observed that etiology was road traffic accident in 54, fall in 16 and domestic violence in 10 cases. We found that management done was open reduction and fixation in 46 and closed reduction in 34cases. Mehdi et al[15] compared the outcome of cerclage wiring (CW) versus Tension Band Wiring (TBW) for treatment of displaced fractures of the patella. Forty- four patients were found that had been operated with either of these two methods: TBW=24, CW=20. Outcome was evaluated by Bostman rating score, at a mean follow up time of 2.3 years. Mean age of all patients was 32.7 years. There was no significant difference regarding the mean age, gender, and mechanism of the fractures in patients treated by two methods of TBW and CW. Atrophy of quadriceps muscle was (1.146 cm ± 0.9cm) in 19 patients with TBW, and (2.3 ± 0.6cm) in all patients with CW, which shows significant difference. No case of infection or non-union had occurred. Good to excellent results in TBW and CW were found in 83.4% and 80% of patients respectively that reveals no major difference. Hardware removal due to pin irritation was performed in 66.6% of TBW and 10% of CW group. There was no significant difference between two groups with respect of PF osteoarthritis.

CONCLUSION

Authors found that open reduction and fixation was main mode of treatment among patients with patellar fractures. The most common cause of fracture was road traffic accident.

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