

The outcome of non-operative treatment for undisplaced patellar fractures

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The objective of this study is to assess both clinical and radiological outcome of non-operative treatment of non-displaced patellar fractures. As the treatment of non-displaced patellar fractures remain controversial, a question whether prophylactic surgery is indicated and what is the functional outcome of non-operative management were asked and answered in this study. Undisplaced patellar fractures can be safely and effectively managed non-operatively with good outcome results.

Data were collected by retrospectively reviewing all files and roentgenograms of patients with patellar fracture treated non-operatively at McGill University Health Center, Montreal, Canada from 1999 to 2003. This information was obtained from the trauma database of McGill University Health Center Records. The criteria applied for sample collection are patellar fracture with less than 3mm step and intact extensor mechanism. Exclusion criteria include patellar fractures with more than 3 mm step in the articular cartilage, open fractures, ligaments injury, pathological bone, and preprosthetic fractures. The outcome of the treatment was recorded as healed fracture with no

further displacement radiologically and asymptomatic functioning knee clinically. Other relevant information, namely age, gender, mechanism of injury and follow up period were collected.

Twenty-eight patients were extracted from the database, however, only 18 of these patients fulfilled the selection criteria. All of them had clinical and radiological assessment. Ten patients (2 pathological, 3 preprosthetic, 2 failed conservative treatment and 3 lost for follow up) were eliminated from the study. Patients demographic data, 8 (44.4%) males, 10 (55.6%) females, age (20-90 years) mean of 58 years, 15 patients (83%) independent and 3 (17%) from a nursing home. Mechanism of injury included sports injury in 5 patients (27.7%), accident at home in 6 patients (33.3%), motor vehicle accident (MVA) in 4 patients (22.2%) and 3 (16.7%) patients in work injuries. All 18 patients were treated with immobilization (cast or brace) for 2 weeks and early physiotherapy. Follow up period ranged from 6-48 months with a mean of 24 months in which patient had documented clinical and radiological finding in the medical records. Radiological evaluation at 3 months showed no further displacement, osseous union were evident in 16 patients (**Figures 1a & 1b**), 2 patients developed fibrous union, which is asymptomatic. Clinically, 17 patients had no or mild pain and 16 patients had full range of motion and power documented in file notes both in clinical visit and physiotherapy notes. When called for evaluation in this study they were having full range of motion and normal power and we used the contra lateral (uninjured) knee to compare our finding.

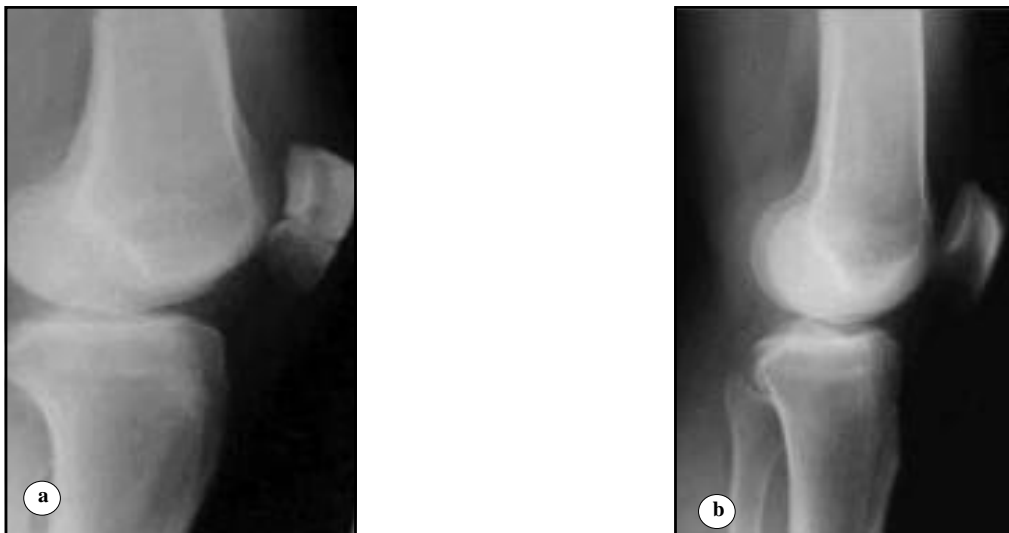


Figure 1 - Radiological evaluation of 37-year-old male with fractured patella following sport injury (a) minimally displaced fracture at the mid-portion of the patella, (b) nine months later with a healed fracture.

Fractures of the patella are generally caused by a direct blow that results in a transverse or slightly oblique fracture of the mid-portion of the patella. Occasionally, fractures can occur from the strain placed on the patella from exertion of the quadriceps muscles. Many patellar fractures have separated fragments due to the strong pull of the quadriceps.

In this study, patient treated non-operatively for minimally to none displaced patellar fracture, fitting the inclusion criteria were having no risk of further displacement and their functional out come in the long term were favorable. Patellar fractures are relatively common and the displaced ones may be treated by a variety of methods with different complication risks (knee stiffness, loss of reduction, osteoarthritis, hardware irritation, infection and nonunion). In an experimental investigation by Fortis et al¹ of the tension in fractures of the patella it showed that there are 2 forces acting on patella surfaces. In principle, compression force posteriorly on the articular surface due to femoral condyles, tensile force anteriorly with 22% displacement and 18.5% loosening or malunion. A study of 104 transverse by Sanderson,² comminuted and polar patella fractures with a follow up period ranging from 3-11 years after being treated by conservative, open reduction internal fixation or patellectomy (partial or total).² It was noted in his study that conservative treatment was good when indicated. Braun et al³ looked at 40 patients with congruous, stable patella fractures followed up for 30 months. They found 80% pain free and 90% full range of motion while Levack et al⁴ concluded that anatomical open reduction internal fixation is difficult when they studied 64 patella fractures and found out that patellectomy gave 60% versus 31% for open reduction and internal fixation. In a study by Pritchett,⁵ an evaluation of nonoperative treatment of widely displaced patella fractures with up to 1 cm gap in 18 low-function and low-demand patients with 4 patients were available in the end of 2 years follow-up with no severe pain.

Several investigators have performed different studies including biomechanical study of cadaver knees and various clinical studies, which have shown what we concluded in our study. We concluded that undisplaced patella fractures could safely be treated by conservative means without risk of further displacement. Prophylactic surgery is not indicated and finally good functional out come can be expected in the long-term.

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Frequency of anemia in pregnancy in Northern Jordan

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Anemia is the most common medical disorder in pregnancy in developing countries.¹ According to the World Health Organization, the prevalence of anemia in pregnancy ranges from 18% in developed countries to more than 55% in developing countries.^{2,3} The development of anemia early in pregnancy is associated with increased risks of inadequate gestational gain, low birth weight, preterm delivery, and increased risk of maternal mortality.⁴ Furthermore, anemia in pregnancy is associated with an increased risk of iron deficiency anemia in infants which may cause adverse behavioral and cognitive development if it is not corrected.⁵ In 1996, the Jordanian Ministry of Health reported a 29% prevalence of anemia in non-pregnant women, which rose to 38% in rural areas.⁵ These values are high enough to require alertness and concern. The present situation of this common and serious health problem is less than ideal and indicates that a lot has to be carried out to detect women at risk and to correct anemia at an earlier stage during pregnancy.

This study attempts to determine the current prevalence of anemia during pregnancy in Northern Jordan, to investigate the possible etiology of anemia in the study region, and to assess the use of iron and folate supplementations. Two-hundred pregnant women were randomly selected from different hospitals in Northern Jordan, during a 3-month period. All subjects were interviewed during regular antenatal visits. The hemoglobin level during first, second and third trimester were