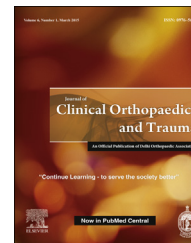


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Surgical Technique

Non-union coronal fracture femoral condyle, sandwich technique : A case report



Kousik Nandy MS, DNB Orthopaedics^{a,*},
Rajeev Raman MS^b, R.K. Vijay MS Orthopaedics^a,
Lalit Maini MS Orthopaedics, DNB Orthopaedics^c

^a Senior Resident, Orthopaedics, Lok Nayak Hospital, Delhi, India

^b Asso. Prof., Dept of Orthopaedics, Medical College Kolkata, India

^c Prof., Dept of Orthopaedics, Lok Nayak Hospital, Delhi, India

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ABSTRACT

Coronal fractures of the femoral condyle (Hoffa fracture) are rare injuries but can be managed with satisfactory outcome if properly treated. We discuss an unusual case of a young adult male presenting with 9 month old neglected Hoffa fracture with pain, stiffness and limitation of knee movement, managed with sandwich bone grafting technique.¹

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1. Introduction

Unicondylar fractures of femoral condyle were first described by Hoffa¹ in 1904. This is a rare injury in adults and reports illustrating management of non-union Hoffa fracture are even more rare. Poor outcome is usual with nonoperative management.^{2–5} Appropriate approach to a patient with Hoffa fracture should be atraumatic anatomic reduction of fracture fragments rigid enough to allow early aggressive range of motion exercises. We discuss the unusual case of a young adult male presenting with 9 month old non-union Hoffa fracture initially treated with conservative management by

osteopaths. This case illustrates the approach to a case of non-union Hoffa fracture with good functional outcome as evident from high Knee Society scores.⁶

2. Case report

A 16-year-old male patient presented to us with chief complaints of pain in the left knee for last 9 months following trauma 9 months ago. The history of antecedent trauma was significant. Following the initial insult patient was unable to stand or walk himself due to intense pain and swelling around the left knee. He was taken to some osteopaths where he

* Corresponding author.

E-mail address: nandykousik@gmail.com (K. Nandy).

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received some indigenous treatment. No radiograph was taken. Irregular intake of painkillers, crepe bandage application and alternate hot and cold fomentation decreased the intensity of his pain but it was never completely painfree. Gradually he developed stiffness of the left knee joint interfering with his daily activities. On taking radiograph (Fig. 1) we found coronal fracture of left medial femoral condyle with smoothening of fracture lines. Diagnosis now stands out to be a case of 9 month old non-union Hoffa fracture in a 16-year-old male patient with limitation of joint movement. History and clinical examination did not reveal any findings suggestive of any other joint involvement. After detailed counselling about the present scenario and probable guarded prognosis we prepared the patient for operative intervention as per protocol in our institute.

We planned for open reduction and internal fixation with bone grafting by a sandwich technique (Fig. 2).

Medial subvastus approach was chosen. After joint inspection, the fracture fragments are separated with a bone spreader and debrided. A rough idea regarding the amount of bone resorption at the fracture site is obtained and approximately a $10 \times 30 \times 10$ mm sized corticocancellous bonegraft was harvested from the iliac crest. The fracture is anatomically reduced and held compressed with Weber bone clamps. Bonegraft was interposed in between the fracture fragments. Two 6.5 mm partially threaded cannulated cancellous screws are applied starting at a level commensurate with the highest point of the trochlear notch, directed perpendicular to the fracture plane in lag mode. A 6 hole 3.5 mm recon plate was applied as neutralisation plate. Tourniquette time was 75 min and blood loss was less than 100 ml. Active assisted range of motion exercises of knee joint was started from the first postoperative day. Weight bearing was restricted for initial 8 weeks but gradual protected weight bearing was started from 10th week onwards as radiographic evidence of union was present. There was no postoperative infection and till date the

active range of motion of left knee joint is 0 to 150 ; painless, no muscle spasm, no crepitus, arc of motion is smooth and. At 1.5-year follow-up, patient is leading his normal day to day activities without any functional limitations with radiological evidence of union (Fig. 3) and full functional range of motion (Fig. 4) with Knee Society score 173 out of 200 points at the final follow-up.

3. Discussion

Hoffa fractures are rare injuries, and lateral fractures are more common than medial fractures. They usually occur as isolated injuries to involved femur, but bilateral Hoffa fracture⁷ and unilateral bicondylar⁸ Hoffa fracture have been reported. In addition, Hoffa fracture with supracondylar intercondylar (AO/OTA 33C) femur fracture have been observed⁹, and reporting authors highlights the need for preoperative detection of Hoffa fracture to select appropriate fixation method for supracondylar fracture femur.

The specific mechanism of injury that produce Hoffa fracture is unknown, but a shearing force on posterior femoral condyle is postulated¹⁰. Lewis et al.⁴ argued that axial load to the lateral femoral condyle with the knee in 90° or more of flexion produces posterior tangential fracture patterns. Four of seven patients in their series were riding motorcycle at the time of injury, placing the knee in 90° of flexion and positioning lateral femoral condyle to an impact. In Hoffa fracture, knee movements particularly weight bearing causes high shear forces along the fracture plane, making nonoperative management unpredictable and adequate stabilisation challenging.

Examination invariably will identify effusion but varus and valgus instability may be subtle. The neurovascular status should be assessed as in high energy knee injuries. Initially anteroposterior and lateral radiographs may be unimpressive,

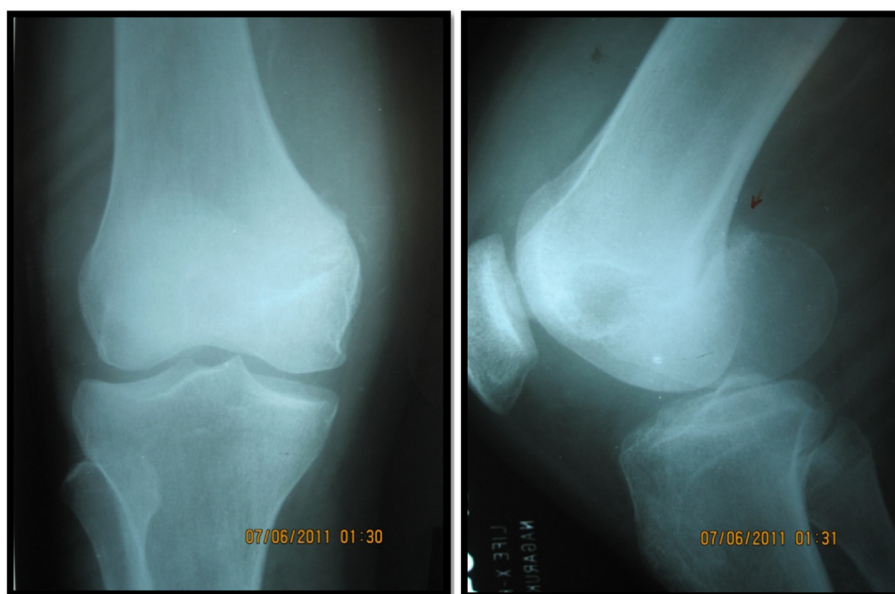


Fig. 1 – Preoperative radiograph.

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