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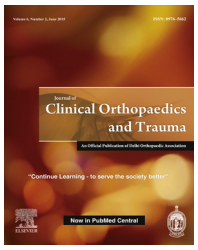

Case Report

Medial femoral condyle fracture following traumatic allogenic bone transfer – A case report

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ABSTRACT

Open fractures can cause an "out-in" injury, wherein a foreign body can penetrate the skin causing fracture. There are few reports of allogenic bone getting embedded in soft tissue, but one causing fracture to the host bone has not been reported till date. We present a case, wherein a large cortical bony fragment from one individual penetrated the thigh of another person causing fracture of medial femoral condyle during a head-on collision involving two motorbikes.

1. Introduction

Open fractures following road traffic accidents are very common and mechanism of injury is "in-out" where the fractured bone fragments penetrates the soft tissue, conversely the opposite mechanism can occur where foreign body can penetrate the skin causing an "out-in" injury making treatment options difficult. There are few reports of allogenic bone getting embedded in soft tissue following road traffic accidents[1–3] and bomb blast injuries[4–6] but one causing fracture has not been reported till date. We present a case, wherein a large cortical bony fragment from one individual penetrated the thigh of another person causing fracture of medial femoral condyle during a head-on collision involving two motorbikes.

2. Case report

A 20 year old male patient initially treated elsewhere was brought to the causality, 24 h after a road traffic accident (2 wheeler vs 2 wheeler motor vehicle collision). The person on the opposite bike had an open comminuted fracture femur and head injury due to which he expired in another hospital.

On examination, two sutured wounds were found over the postero lateral aspect of the right thigh; i)one over the middle 1/3rd measuring 4 cm and ii) the other measuring 2 cm on the lower 1/3rd of thigh. A superficial abrasion over the anteromedial aspect of patella was also noted. The Knee joint was swollen with painful restriction of movements and intact distal neurovascular status.

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Preoperative blood screening revealed a nonreactive hepatitis B, C and human immuno deficiency virus (HIV) screening and radiographs of the knee joint with femur showed comminuted fracture of medial femral condyle with large cortical fragments in the middle and lower thirds of thigh.

In view of communition and unclear fracture morphology, the patient was subjected to computer tomography with 3D reconstruction which revealed comminuted medial condylar fracture with allogenic cortical bone fragments, one abutting the medial femoral condyle and another in middle third of thigh, both corresponding to the sutured wounds(Figs. 1 and 2). Doppler study of the right lower limb was normal.

2.1. *Stage 1*

Patient was subjected to surgery under spinal anaesthesia in lateral decubitus position; exploration was started through previously sutured wounds and the proximal fragment of size 2 inches was removed without much difficulty. The distal fragment which was abutting the medial condyle was not accessible and incision was extended connecting both the previous wounds. After deep exploration the 4 inch fragment was found in the medial head of gastrocnemius, which was completely crushed. The medial condyle had a triangular indentation caused by the cortical allogenic fragment and care was taken not to damage the common peroneal nerve and femoral artery(Fig. 3). A thorough wash was given and wound sutured in single layer over drain.

2.2. *Stage 2*

The patient was made supine and the medial condylar fracture was explored through a curved incision after incising the medial retinaculum.

The fracture fragment had a medial collateral ligament attachment.

The fracture surfaces were prepared after removing all free bone fragments and the fracture was stabilized with two 4.5 mm lag screws (Fig. 4). An image intensifier was used to check for allogenic bone remnants before closure. The knee joint was immobilized for 6 weeks and Patient was counselled regarding the risk of blood borne infections and necessity for subsequent screening.

Suture removal was done on 12th post-operative day and mobilization started from 4th week. Sequential radiographs were taken and the fracture union was assessed. At the end of 3 months, the knee flexion was 120° (Fig. 5) and the patient had full flexion at final followup of 9 months.

3. Discussion

Among Open injuries encountered in road traffic accidents, inside out autologous bone penetrating ones are most common and their treatment protocols have been extensively described in literature.

Penetrating wounds from non-organic sources are frequent in motor vehicle accidents and often such injuries involve the distal limbs.[2] Allogenic cortical bone fragments acting as a projectiles have been reported to cause soft tissue injuries[1–6] and they are more likely to occur with bomb blasts and high energy accidents in the recent times. An allogenic bone fragment penetrating the skin and leading to bony injury as in our case has never been reported till date.

Because of its mechanical properties and light weight, cortical bone has been used in arrowheads and spearheads in war fare and hunting.[6] The same properties are applicable in bomb blast injuries where bony fragments act like secondary projectile.[6] unlike in high energy collisions where the bony

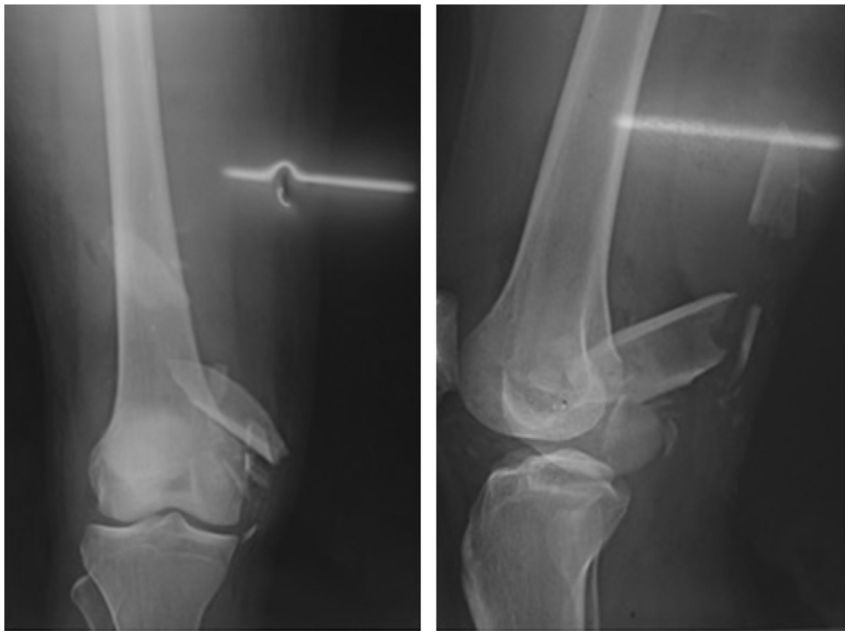

Fig. 1 – Pre-OP X-ray of right thigh with knee AP & lateral views showing medial condyle of femur fracture with allogenic cortical bone on postero-medial aspect of knee.