Femoral osteochondral fracture – a non-contact injury in martial arts? A case report

C. E. Mbubaegbu FRCS and A. J. L. Percy FRCS

Queen Mary's Hospital, Sidcup, Kent, UK

A report of a case of osteochondral fracture of the lateral femoral condyle in a patient doing a karate kick. The problems related to fixation of osteochondral fragments with protruding screws are highlighted and the suitability of Herbert screw fixation noted.

Keywords: Osteochondral fracture, martial arts, Herbert screws, osteochondral fixation

A case is reported of non-contact osteochondral lateral femoral fracture at a site remote from a ligament attachment and from an as yet unexplained causal mechanism. Problems related to fixation with dental screws are highlighted and the ease of fixation with Herbert screws is noted.

Case report

A 16-year-old boy presented in casualty with inability to bear weight on a painful, swollen right knee. The onset of pain occurred suddenly as his right knee shot out during a karate kick. He was practising alone. There was immediate swelling. Radiographs showed an osteochondral fragment (*Figure 1*) in the right knee.

Examination under anaesthesia showed a massive effusion. The ligaments were stable. Arthroscopy revealed haemarthrosis. The anterior cruciate ligament was intact and the menisci were normal. A large osteochondral fragment was seen in the lateral compartment and haematoma covered a crater in the inferolateral aspect of the lateral femoral condyle.

Arthrotomy and fixation of the fragment with two Herbert and two dental screws was performed (*Figure 2*). The patient was immobilized in plaster for 6 weeks. After 3 months the dental screws needed to be removed arthroscopically due to extrusion of one of the screws (*Figure 3*). The second screw which was seen to be protruding at arthroscopy was also removed. The Herbert screws were still well embedded in the now healed fracture. The lateral tibial condyle was badly scoured by the heads of the dental screws. The patient went on to full recovery.

Address for correspondence: Mr C. Mbubaegbu FRCS,
Orthopaedic Registrar, Queen Mary's Hospital, Sidcup, Kent
DA14 6LT, UK

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0306-3674/94/030203-03

Figure 1. Radiographs showing osteochondral fragment in right knee

Figure 2. Fixation of the fragment with two Herbert and two dental screws

Figure 3. Extrusion of one of the dental screws

Discussion

Osteochondral fractures in the knee received little attention until World War II when loose bodies consequent on these injuries were studied in the UK Army Air Force. Similar fractures were reported by Rosenberg¹, Ahstrom², and Kennedy *et al.*³. Rosenberg believed that the fracture of the lateral femoral condyle was due to dislocation of the patella which shears off a fragment of the condyle. The

mechanism suggested is the same as that which produces a patella osteochondral fracture⁴.

These fractures are shear injuries caused by contact between two articulating surfaces. Osteochondral fractures resulting from non-contact events are usually ligament avulsion injuries. The attachment of the particular ligament determines the site of the fracture.

The case reported here is of an osteochondral fracture of the inferolateral surface of the lateral

condyle where there is no ligament attached. Avulsion is therefore not a tenable mechanism. It is too inferior for the mechanism as suggested by Rosenberg. The position is not typical for osteochondritis dissecans. The presumed mechanism may be shearing off of the femoral condylar fragment by the tibial condyle during the lock-home torsional motion required for full extension.

This case illustrated the need to use a method of fixation in which the metal is completely buried preventing frictional extrusion and damage to articular surfaces.

References

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