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CASE REPORT

Spontaneous non-traumatic dislocation of the knee

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Ligamentous injuries of the knee occur during sports and where there is extensive injury associated with subluxation or dislocation. We present a case of an obese female who sustained spontaneous non-traumatic posterior knee dislocation when she caught her foot while rising from the sitting down position. There was associated peroneal nerve injury but an angiogram confirmed no vascular compromise. Surgical ligamentous reconstruction was undertaken.

CASE HISTORY

A 22-year-old obese non-diabetic female (weight : 120 kg ; height : 162 cm) was sitting on a couch when on standing up she caught her left foot on the carpet and twisted her knee. She subsequently fell to the ground with severe pain. There was immediate deformity of the knee. On examination in the emergency department a left knee dislocation was identified. The left dorsalis pedis pulse was present but there was no tibialis posterior pulse. There was no motor dysfunction in her left foot but there was decreased sensation in the common peroneal nerve distribution over her left leg.

Physical examination was limited by pain and swelling. There was no evidence of hyperlaxity. There were no other medical problems and there was no previous history of knee injury or pain.

Anterior-posterior and lateral radiographs confirmed posteromedial knee dislocation and no evidence of osteoarthritis (fig 1).

In the emergency department closed reduction was performed and post-reduction films were normal (fig 2). The vascular and sensory deficit did not improve. An angiogram was performed and this was normal. Subsequently an M.R.I. showed a gross knee effusion and bone oedema. The anterior cruciate ligament was completely disrupted and the posterior cruciate ligament appeared irregular indicating a partial tear. The medial collateral ligament showed a high signal indicating a sprain but there was a complete disruption of the lateral collateral ligament complex and the postero-lateral corner of the knee. The menisci appeared normal.

The patient subsequently underwent a hamstring reconstruction of her ruptured A.C.L. The lateral collateral ligament complex, postero-lateral corner and posterior capsule were also reconstructed. The knee was placed in a full leg cast following which a genu-range brace was used allowing 20-80° flexion. There were no vascular complications in the limb during or after the procedure.

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Fig. 1a, b. — Anteroposterior and lateral radiographs showing the left knee joint in posterior dislocation

Fig. 2a, b. — Anteroposterior and lateral radiographs showing the left knee joint after reduction

DISCUSSION

Complete knee dislocation is a rare severe injury and usually follows high energy trauma during contact sports, traffic accidents, or falls from great heights. It represents one of the few true orthopaedic emergencies. It can be disabling if immediate recognition and treatment are delayed. The injury may present as frank dislocation, a knee that is dislocatable under anaesthesia or a pattern of soft tissue injury which suggests spontaneously reduced dislocation (*4*). Knee dislocation may be classi-

fied according to the position of the tibia relative to the femur as anterior (31%) due to hyperextensive forces, posterior (25%) due to direct anterior trauma, medial and lateral due to severe valgus and varus angulation. Postero-lateral dislocation follows a marked valgus stress and internal tibial rotation causing the medial femoral condyle to buttonhole through the antero-medial capsule. A large number of unspecified dislocations are documented reflecting the tendency towards spontaneous reduction and hence in knee injuries a high degree of suspicion of such spontaneous dislocation must be kept in mind (*1*).

Complete knee dislocation of the non-contact type is exceedingly rare. In this case severe overweight appears to be the principal cause of the complete knee dislocation.

Most dislocations are associated with intra-articular and extra-articular ligamentous injury as well as capsular, vascular and nerve injury (*10*). Nerve injuries mostly related to the common peroneal nerve, are reported in 4.8% of low velocity knee dislocations. Vascular injury occurs in the range of 16% to 60% (*8*). Other complications include ligamentous instability, stiffness, persisting pain and ultimately degenerative disease. Major concerns in treating knee dislocations are the immediate assessment of neurovascular integrity as well as ligamentous stability. Popliteal vessel injuries can result in amputation and a delay of vascular repair of more than 8 hours results in 85% amputation rate (*3*). In anterior dislocation the popliteal artery bowstrings over the back of the femoral condyle and in posterior dislocation there is an increased risk of laceration and rupture of the artery. It must be emphasised that there may be an occult vascular injury due to intimal tears with normal distal pulses and hence an angiogram should be performed immediately (*6, 11*). Nerve injuries due to traction and direct trauma may result in neurapraxia, axonotmesis and neurotmesis ; most of these injuries result in neurapraxia, they do not require intervention and recover within 3 months. Their recovery may be followed up by electromyography. If there is complete palsy at the outset, prognosis for recovery is dismal.

MRI scanning is useful and provides objective and accurate (85%-100%) diagnosis of soft tissue injuries in complex knee disruptions. It also provides information which is useful in pre-operative evaluation and planning, including availability of allograft. It is helpful to limit the potentially disabling sequellae of knee dislocations. It is especially useful when physical examination is limited by pain and swelling (*2*).

However false negatives with lateral collateral ligament tears and postero-lateral capsule disruptions have been described.

Most knee dislocations are associated with rupture or avulsion of both cruciates, with collateral ligament ruptures and meniscal tears. An injury to the popliteal tendon seems to indicate a more severe mechanism of trauma resulting from posterior or postero-lateral dislocation. In this case the P.C.L. was intact even though there was a complete tibiofemoral dislocation. Such cases usually suffer valgus-varus instability due to accompanying disruption of the collateral ligaments.

Non-operative treatment with casting of knee dislocation has been shown to yield mixed results with some patients having residual disabling laxity : 69% reported good results but 30% reported instability (*5*). Acute operative repair of multiple ligamentous injuries can provide better knee stability but frequently causes permanent stiffness : 43% report achieving less than 90° of movement. However repair allows stability and early protected mobilisation and is rewarding (*9*).

In this case report it is our view that the patient put tremendous stress on her knee joint at a particular moment as the result of severe overweight. Morrison and Arden (*7*) have shown that the magnitude of the joint reaction force is two to four times the body weight and if the muscles and ligaments cannot sustain the enormous forces on the joint, the knee subsequently becomes unstable, collapses and dislocates.

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