Knee dislocations

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Learning objectives

1. Describe the clinical findings associated with knee dislocation.
2. Perform a closed reduction of knee dislocation effectively.

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Introduction

Knee dislocations are traumatic injuries associated with a high rate of vascular injury. Treatment is generally emergent reduction and assessment of limb perfusion. However, there is a subset of patients, especially those with a high BMI, who can also sustain knee dislocations from low energy falls and a high index of suspicion is required in this regard. Often these injuries will lead to ligament laxity and stiffness.

Clinical assessment

The patient presents with knee pain, joint deformity, swelling and effusion. Patients who sustain a knee dislocation that spontaneously reduces will show subtle signs of the injury such as abrasions and effusion. A suspicion of a patella dislocation or subluxation should be kept in mind.

A **vascular examination** needs to be performed to rule out popliteal artery injury. *Dorsalis pedis* and posterior tibial artery pulses should be evaluated.

If the pulse is absent, perform immediate closed reduction as this represents a threatened limb. A reduction should be performed before radiography. If the pulse is still absent after reduction, inform the vascular surgeon and go to the operating room for exploration. The orthopaedic surgeon will also be involved to assist with limb stabilisation, often using an external fixator.

Angiographic assessment is mandatory in centres where available. A sequential assessment of the Ankle Brachial Index (ABI) is needed in all cases with a pulse present. This is the ratio of the blood pressure measured at the level of the ankle or the arm. The normal value is above 0.9. The vascular status of the limb should be evaluated and documented before and after the reduction. A neurologic examination should be part of the assessment; sensory and motor function of the peroneal and tibial nerves must be assessed.

Imaging

Obtain **AP and lateral X-ray views**. With reduced knees, irregular/asymmetric joint space is often an indicator of ligament damage. Associated fractures can also be excluded. (See X-ray).

Picture of X-ray: An anterior knee dislocation is seen on these images.

A **CT angiogram** is often performed to rule out popliteal artery injury (See CT scan). Renal function should be optimised before injection of the contrast.

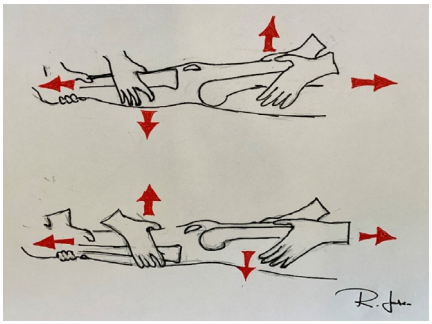
Picture of CT scan: Injected arterial contrast shows obliteration of the popliteal artery.

An **MRI** is invaluable in knee dislocations as the soft tissue injuries are better identified, which aids surgical management planning. Injuries to the periarticular/ intra-articular ligamentous structures (cruciate and collateral ligaments, posteromedial and postero-lateral corner structures) and chondral and meniscal injuries are better identified. (See MRI scan)

Reduction

Traction and gentle manipulation of anterior or posterior translation is the best method to reduce a knee dislocation.

Posteromedial dislocation can be associated with buttonholing of medial femoral condyle through the joint capsule. This makes closed reduction very problematic, and open reduction in the operating room is often needed.
The knee should be splinted at twenty degrees of flexion to maintain the position after reduction.



Schematic: Reduction techniques for knee dislocations.

Essential take-aways

A dislocated knee should be treated as an emergency as it represents a threatened limb.

Immediate reduction should be undertaken without waiting for radiography.

Popliteal artery disruption is seen in 20% to 60% of cases.

A dislocated knee may be part of multiple injuries in a patient and, therefore, ATLS principles should form part of the initial assessment and management of the patient.

Knee dislocations are disabling injuries, and they need appropriate early care to reduce morbidity.