KNEE CASE STUDY

Acute injury
22 year old netballer

Introduction:

- Sarah is a 22 year old shop assistant.
- She lives with her parents and plays netball on the weekends.
- Last Sunday she had an acute knee twisting injury while playing netball.
- She collapsed to the ground and hobbled off the court.
- Sarah has come to see you two days later with a painful and swollen knee.
- She describes diffuse pain and is unable to localize pain to a specific point.
- On examination, there is a mild knee joint effusion.

What are the possible causes of Sarah's pain?

The possible causes for acute severe post traumatic knee pain with joint effusion are Anterior cruciate ligament (ACL) tear, patellofemoral joint dislocation, fracture or meniscal tear.

Are there any specific questions that you would ask in the history?

It is important to know the rate of development of the effusion.

A rapid onset effusion suggests a haemarthrosis due to an ACL tear, patellofemoral joint dislocation or an intra-articular fracture.

A more gradual or delayed onset effusion suggests a meniscal or chondral lesion as the cause.

What specific examination findings would you try to demonstrate?

Specific clinical signs to search for include the following

1. Is there a joint effusion?
2. Assess the ACL and PCL integrity
3. Assess for a meniscal tear
4. Assess for patellofemoral dislocation findings
5. Assess the integrity of the medial collateral ligament, lateral collateral ligament and posterolateral corner structures.
6. Is the patient able to weight bear? Are there clinical findings of a fracture?

What investigations, if any, would you suggest?

X-ray and MRI

Continued overleaf

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What are the advantages and disadvantages of the different imaging modalities?

The main indication for an x-ray in this clinical setting is to assess for a fracture.

An X-ray will provide bone detail and demonstrate the presence of a joint effusion.

In the setting of a patellofemoral joint dislocation, the sky line x-ray may demonstrate an avulsion fracture from the lateral patellar margin. The x-ray will also give an overview to factors which may predispose to patellofemoral joint dislocation, such as the patellofemoral aligment, joint morphology, patellar height and tibial tuberosity lateralisation.

X-ray cannot provide the specific cause of the internal derangement of the knee.

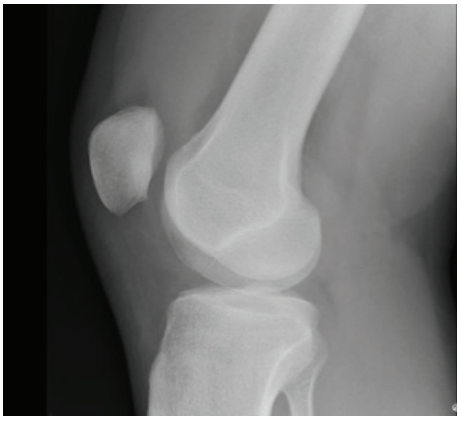
Ultrasound does not have a role as it will only demonstrate an effusion. It cannot assess the cruciate ligaments, menisci or cartilage.

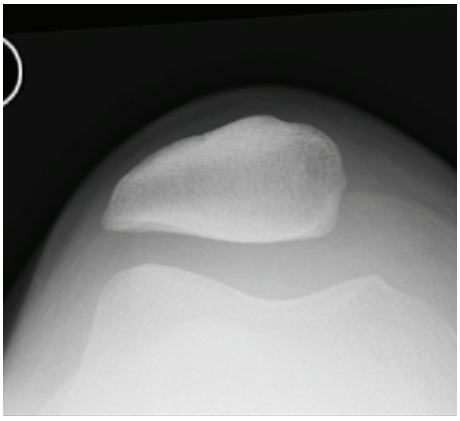
CT is inappropriate as it provides only bone detail and exposes the patient to unnecessary radiation.

MRI is the best investigation in this clinical setting. MRI is able to assess the cruciate ligaments, menisci, cartilage, collateral ligaments and bone marrow.

What does the x-ray show?

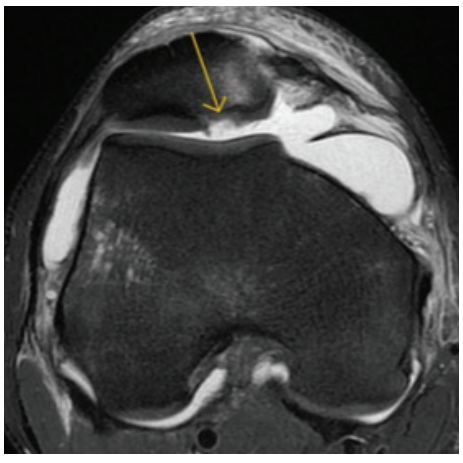
The x-ray shows a joint effusion and gives an overview of patellofemoral anatomy.

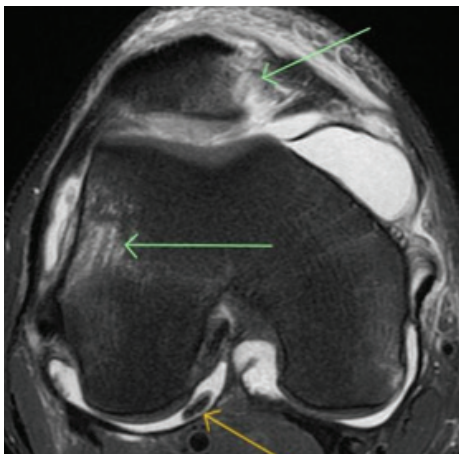




What does the MRI show?

The MRI demonstrates findings of a patellar dislocation. There are bone contusions of the medial patellar and lateral femoral condyle due to impaction. There is an acute tear of the medial patellar retinaculum. Post traumatic chondral defect of the patellar apex with displaced chondral fragment in the posterior medial tibiofemoral compartment.





What are the management options for Patellar dislocation?

The management options for patellar dislocation are conservative or surgical.

What are the general principles in conservative treatment? What are the general principles in surgical treatment?

Acute management

- Depending on pain levels at rest and with WB, Zimmer splint +/- crutches
- Appropriate analgesia, no AIs, regular icing
- Consider aspirating effusion if tense and painful haemarthrosis
- Consider early arthroscopy to washout knee, remove chondral fragment and undertake primary repair of medial patellofemoral ligament. Need to assess risk factors for dislocation - biomechanics - Q angle, hypermobility
- Early activation of quads/VMO
- Gentle early active flexion when pain allows
- Avoid change in direction activities for 4-6 weeks
- Return to sport possible in some at 8 weeks