

KNEE CASE STUDY

Acute injury 24 year old footballer



Introduction:

- Pat is a 24 year old carpenter.
- He lives with his girlfriend and plays football on the weekends.
- On Saturday he had an acute twisting injury while playing football.
- He was trying to evade a tackle and then collapsed to the ground.
- Patrick experienced extreme pain and had to be carried from the field.
- Patrick has come to see you on Monday with a painful and swollen knee.
- He 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 Pat'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

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. A Second fracture is a specific avulsion fracture of the lateral tibial plateau which has a 75% association with ACL tears.

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

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Acute injury: 24 year old footballer



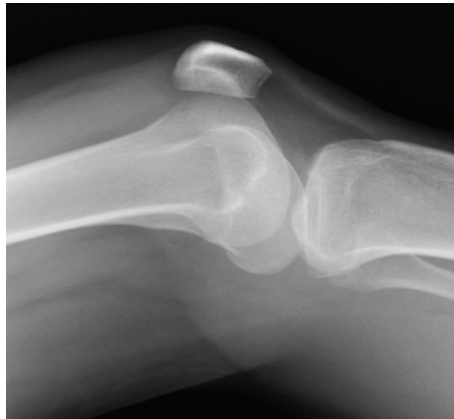
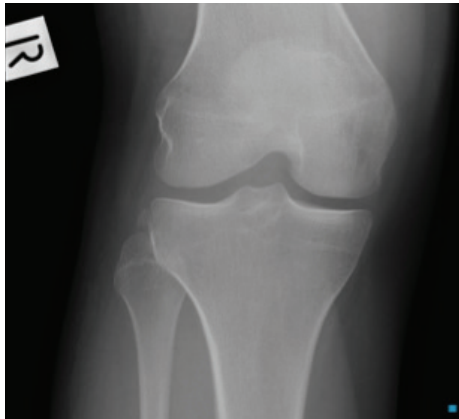
Ultrasound does not have a role as it will only demonstrate an effusion. It cannot assess the cruciate ligaments, menisci or cartilage.

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?

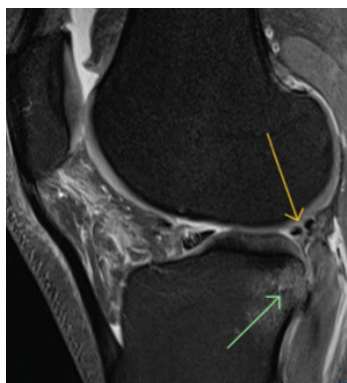
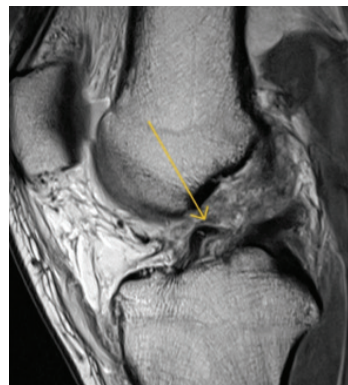
The x-ray shows a joint effusion and a Second fracture.



What does the MRI show?

A: The MRI demonstrates an acute complete ACL tear.

B: The MRI demonstrates a lateral meniscal posterior horn tear and focal bone contusion of the posterior lateral tibial plateau. Grade 3 MCL tear.



What are the management options for Anterior Cruciate Ligament tear, lateral meniscal tear and medial collateral ligament tear?

Given that Pat is keen to return to sport, he and his doctor have elected that he have an ACL reconstruction.

A partial lateral meniscectomy was also performed. The MCL was not repaired.

What are the general principles in Pat's short term and long term management?

- Initial management involves putting Pat into limited motion brace with AROM from 30-90 degrees (full extension tensions MCL so extension block required)
- Adequate analgesia but no anti-inflammatories - can compromise MCL healing and potentially worsen haemarthrosis
- Regular icing
- If Pat presents with tense haemarthrosis and in pain++ can consider aspiration (small infection risk - beware nearby grazes)
- Partial weight-bearing on crutches for 2-3 weeks
- Basic quads setting exercises
- At 4 weeks LMB 0-120, fully WB, light cycling possible (exercise bike)
- At 6 weeks brace off increase quads and h/s strengthening

Surgery vs conservative management

- Australia has the highest surgery rates for ACL tears
- Not everyone needs an ACL reconstruction
- Need to consider age (older less likely), job (carpenter need a stable knee), sport (twist/pivot risk of instability), timing (acute vs allow knee/MCL to settle), instability episodes once acute phase over
- Lateral mensical tear - often heals with or without need for suturing.