Knee pain with mechanical symptoms

1. Mechanical symptoms imply either giving way of the knee or locking, occurring as a single symptom or presenting together. Both of these symptoms are associated with recurrent episodes of swelling.

2. Giving way indicates a sense of insecurity. This will most commonly occur whilst descending stairs or taking a step off the kerb or turning while walking or whilst participating in sporting activities like football or golf, which require twisting and turning. Other times when the knee would give way is impact loading, for example landing from a height.

3. Locking. True locking could be considered when patient describes a sudden onset of complete physical block to extension of the knee, which commonly occurs at about 20-30º flexion. From that point on flexion is possible but can be painful. If there is no further extension on passive movement then there is probably a bony block. However, if there is a springy resistance associated with pain then there is the likelihood of meniscal tear, commonly a bucket-handle tear.

4. ACL (anterior cruciate ligament) injuries. Often the result of non-contact pivoting injuries and are commonly associated with an audible pop with immediate swelling.

   PCL (posterior cruciate ligament) injuries. Commonly as a result of direct blow to the anterior tibia with the knee flexed (a dashboard injury) or hyperflexion without a blow. Hyperextension injuries can also result in posterior cruciate ligament rupture.

5. Other causes.

   (i) Quadriceps weakness due to L4 nerve root disc prolapse.
   (ii) Referred pain from an osteoarthritic hip.
   (iii) Chondromalacia Patellae
   (iv) Patellar Instability
   (v) Muscle imbalance

   Therefore, examination of the back and hip is essential, together with neurological examination of the affected leg.

6. Loose body.
   Could be bony, cartilaginous or an osteochondral fragment
   Meniscal flap tears or a bucket handle tear

7. Meniscal tears (most common injury to the knee)
   May present with pain only or pain associated with locking and giving way.
   The medial meniscus is torn approximately 3x more frequently than the lateral meniscus.
   Traumatic meniscal tears are common in young patients with sports-related injuries.
   Degenerate tears usually occur in old patients and can have an insidious onset.

   Discoid menisci – Normally, the menisci are semi-lunar shape.
   Patients with discoid menisci may develop mechanical symptoms of clicking, swelling, locking or popping with the knee in extension along with pain.

8. History – non-contact pivoting injuries e.g. football, squash, netball.
Immediate swelling (haemarthrosis). May develop a tense effusion. Most patients are referred to casualty.
Some patients treated as soft tissue injuries initially present as chronic ACL deficient knee later on with predominant symptoms of giving way. They have a high risk of meniscal tears.

PCL (posterior cruciate ligament) injury – dashboard injury, hyperextension or hyperflexion injuries.

10. X-ray affected knee AP lateral and skyline.

11. History – Young patients: history of sporting injury
Older patient may not have any history of injury.

Locking episodes could be described as a sudden onset of block to extension during their day-to-day work. At that time the knee can be quite painful and requires manoeuvres before they are able to straighten the knee.

Acutely locked knee should be referred to see the orthopaedic surgeon soon.

Pseudo-locking could be due to muscle spasm or cramps and patients would describe that the episodes could occur even at rest. The position of the knee could vary from anywhere from full extension to full flexion.

True locking should also be differentiated from stiffness, which commonly occurs during underlying osteoarthritis. The knee could be stiff after sitting down for any length of time, which gets better within the next few minutes with gentle exercises of the knee.

12. Examination
General examination of the knee.
Look for effusion, joint line tenderness
Lachman's test
Antero-posterior drawer test
Posterior sag (indicative of posterior cruciate ligament injury)

13. Causes

a. Underlying osteoarthritis of the knee
b. Osteochondritis dessicans
c. Meniscal tear
d. Osteochondral fracture
e. Synovial chondromatosis

14. Examination
General examination of the knee
Joint line tenderness
Look for meniscal cysts (most commonly occur in conjunction with horizontal Cleavage tears of the lateral meniscus – they would appear particularly in the posterolateral part of the knee as a firm nodule that appears on flexion of the knee but disappears on extension)
McMurray's test