Knee Pain: A Practical Session

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Outline

- Diagnosis
- Examination tips
- Investigations
- Some common knee conditions

Diagnosis

- History
  - Pain – localised vs generalised
  - Swelling
  - Instability / giving way
  - Locking
  - Limitation of function

MECHANISM OF INJURY

- Foot planted or off the ground
- Direct blow - MCL, ACL/MCL, contusion
- Twisting - ACL, patellar dislocation, meniscus
- Jumping or landing - ACL
- Changing directions - ACL
- Fall on the knee
  - foot dorsiflexed - PF
  - foot plantar flexed - PCL

Diagnosis

- Examination – compare to other leg
  - Gait and leg alignment
  - Swelling
  - Muscle wasting
  - Areas of tenderness
  - Provocative tests
  - Range of motion
  - Stability

Examination

- Always compare to the other knee
- If in doubt as to what is normal for the patient, compare it to other limb
- Gives patient an idea of what you are going to do to them on the problematic side if you assess good side first

See patients standing

ROM

Patella

Squat and duck walk

Tenderness

McMurrays

Lachman's

Modified Lachman's

Drawer

MCL

Lateral side

SLR

Extensor lag

Knee extension against gravity

Lachman's Test

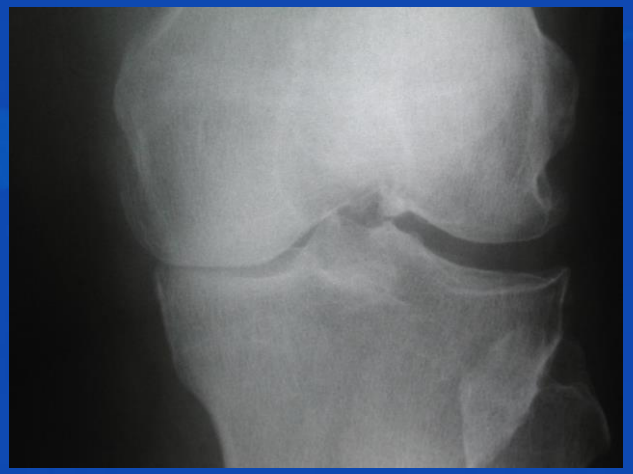
Stability - EUA

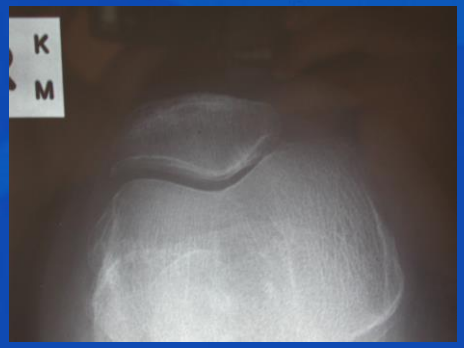
Investigations

- Plain x-rays
- MRI +/- arthrogram – soft tissues
- Ultrasound scan – soft tissues
- CT – bone
- Bone scan – bone turnover / inflammation
- White cell scan – infection
- KT-1000 – measure AP laxity of knee

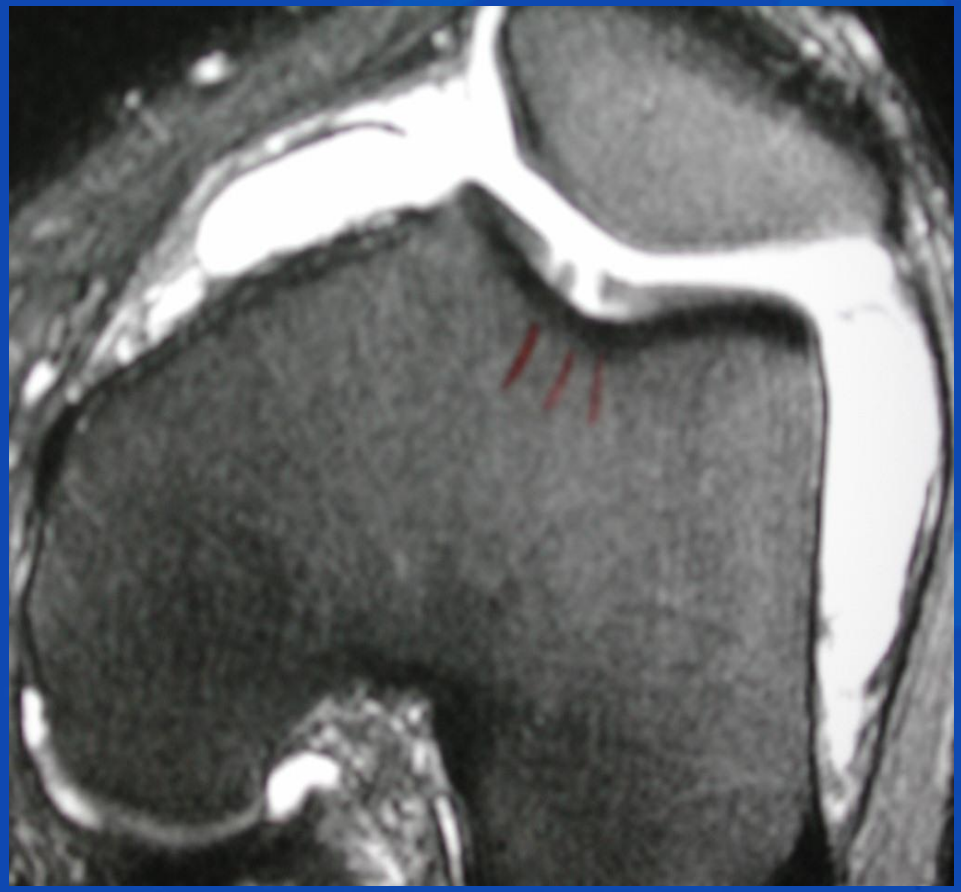
Knee Xrays

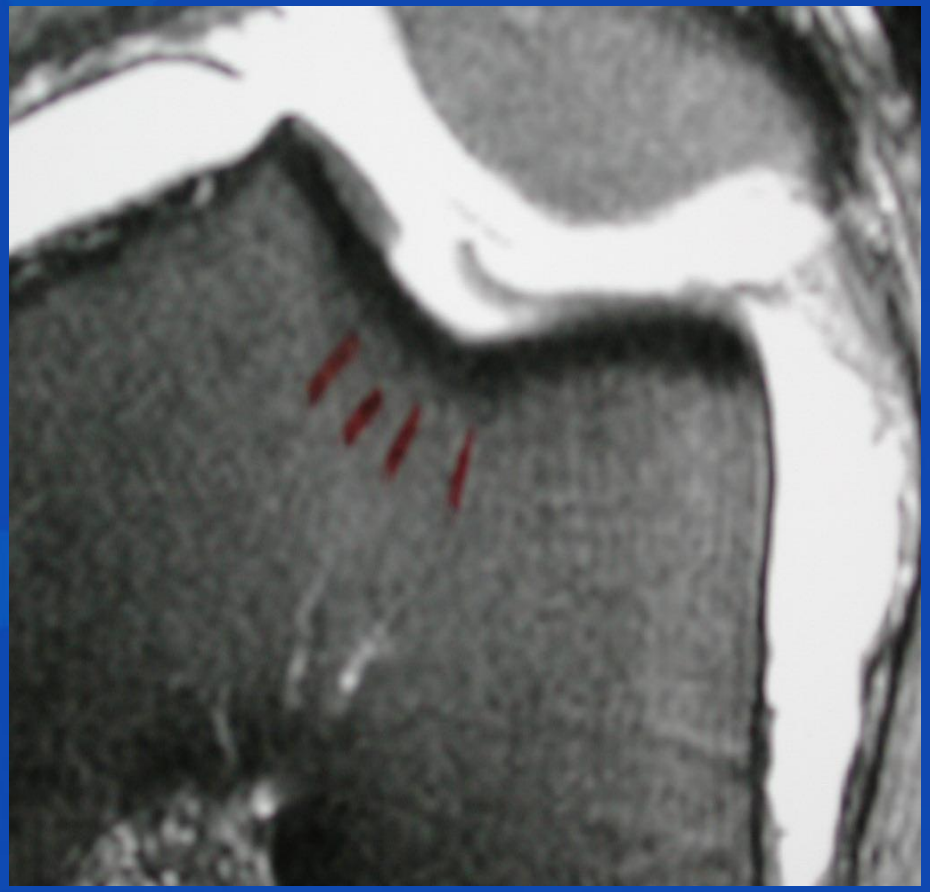
- Should always request 3 views:
  - AP standing
  - 60 deg lateral
  - 30 deg Merchant's view (skyline)



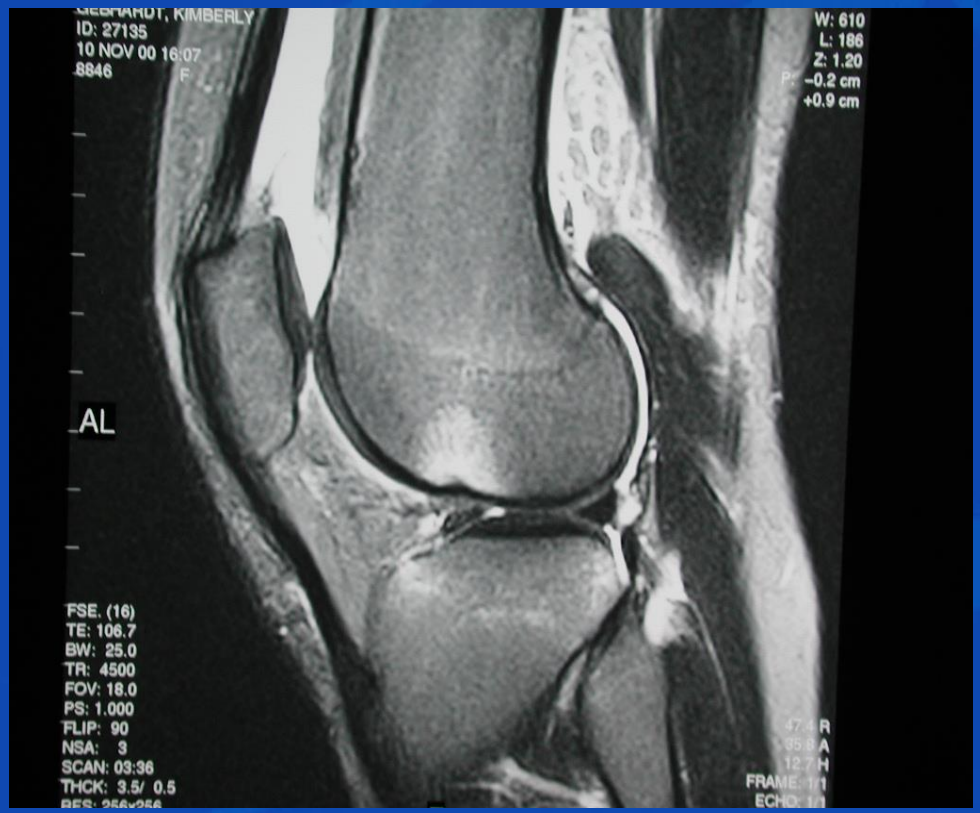


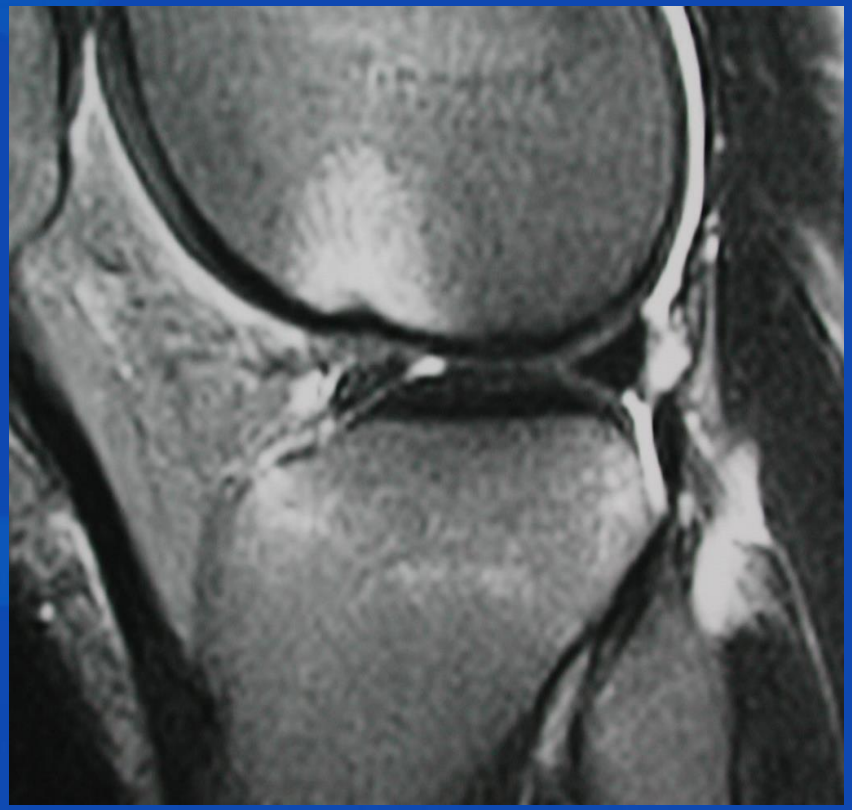
MRI – articular cartilage





MRI – bone bruising pattern





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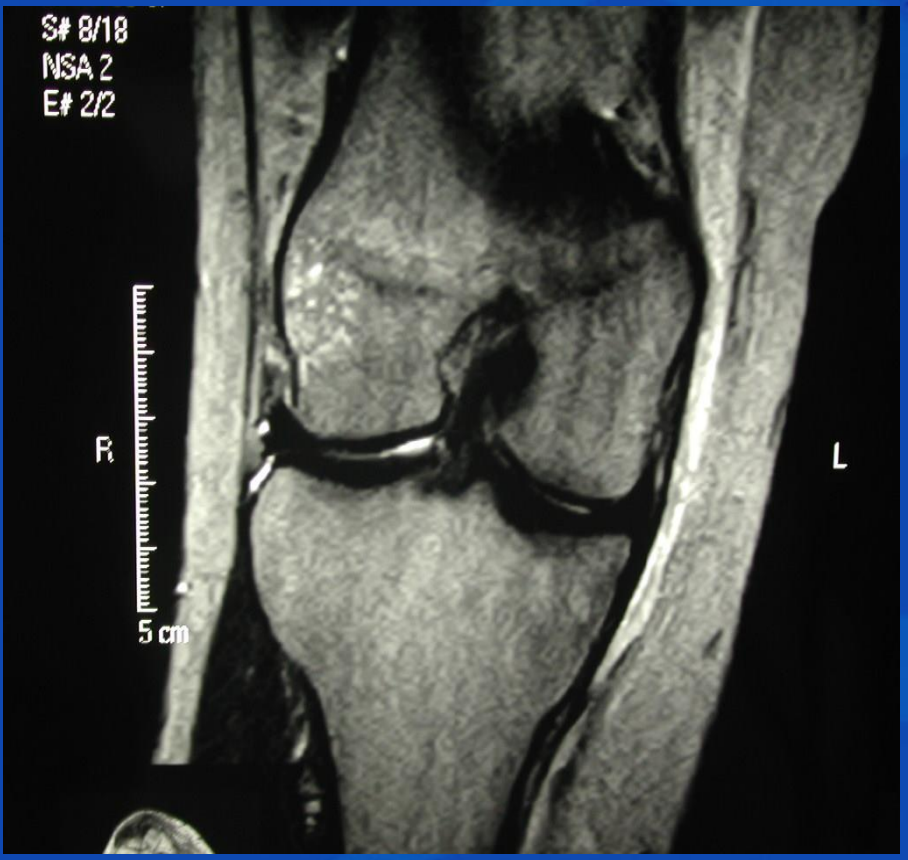
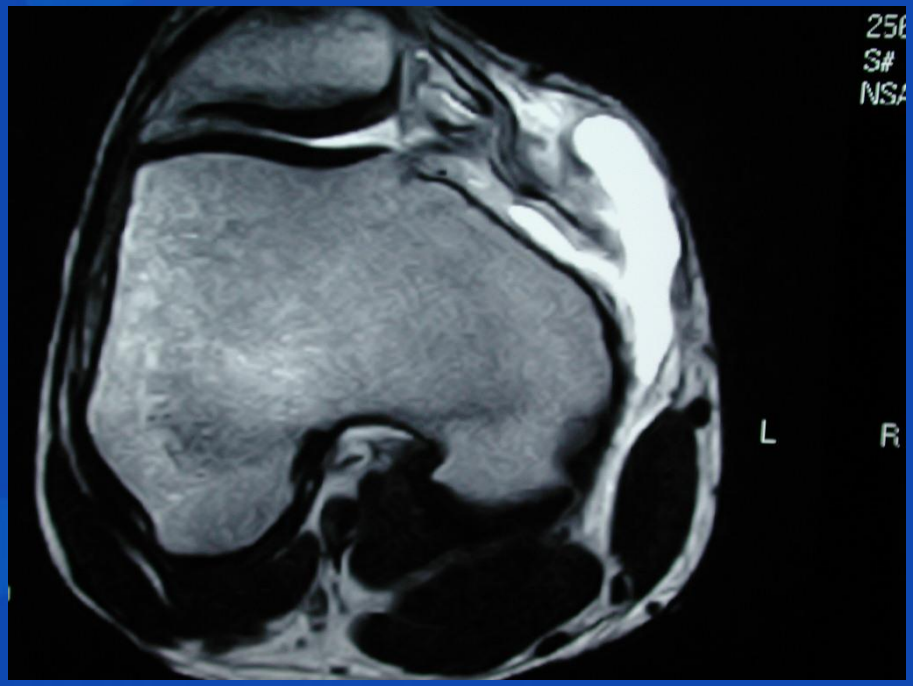


MRI – Ligament injuries



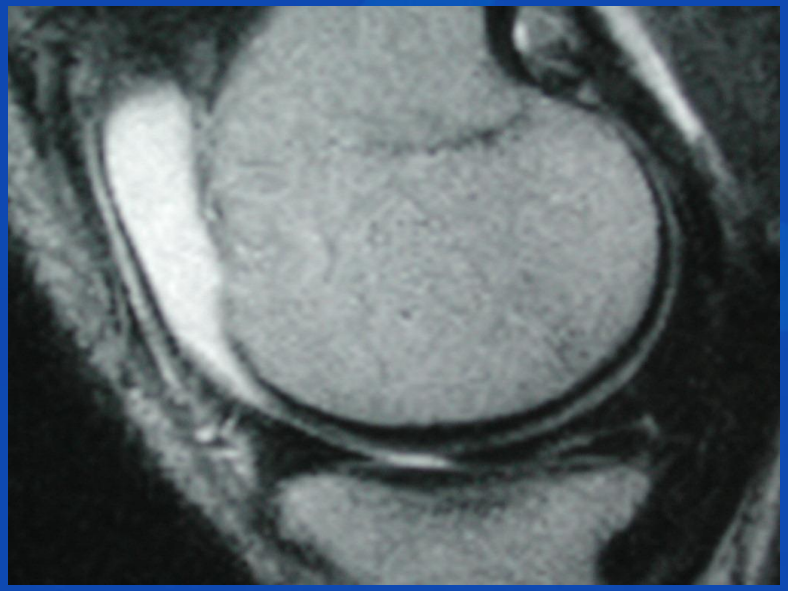
Common Knee Problems

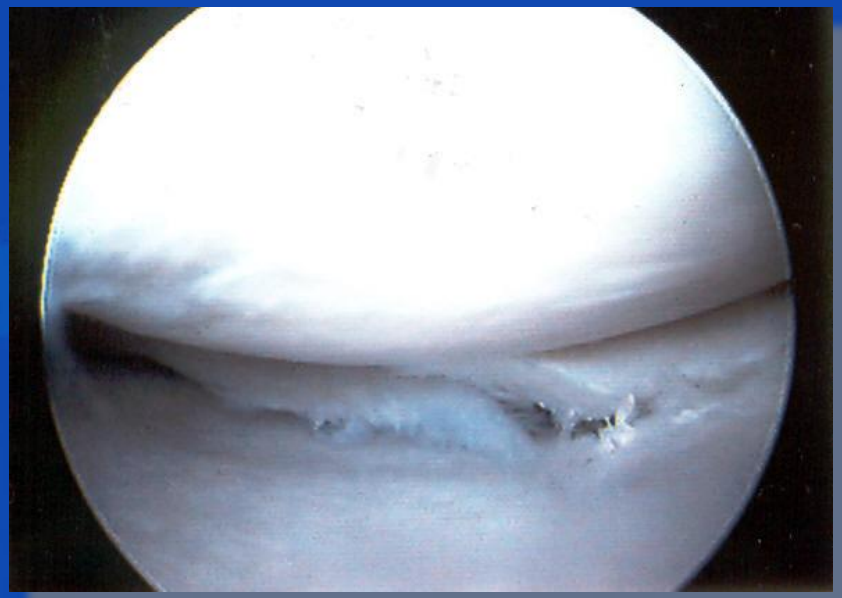
Meniscal tears

- Localised mechanical pain worse on twist
- Irritates knee to cause swelling
- Conservative treatment
  - Ice, NSAIDs, activity modification, ?? Steroid injection
- Consider surgery if
  - Limp, swelling persists, quad atrophy, on-going pain
- Degenerate meniscus tears
  - Non-functional
  - Cannot heal

Meniscus tears

- Principle:
  - Repair if possible
  - If have to excise, conserve as much as



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ACL Tear

- Most ACL tears can be diagnosed by a thorough history of the injury and patient's reaction to it
- Usually non-contact, twisting injury with immediate disability and feeling that a severe injury has occurred
  - 95% unable to continue to play
  - 80% felt like a major injury occurred
  - 80% develop acute immediate haemarthrosis

ACL Tear - Treatment

- Playing with brace and activity modification does not work for young athletes with acute ACL tears
- Prehab the knee and patient
- Reconstruct the ACL – most patients
- Graft – (contralateral) Patella tendon

Indications for ACL recon

- Instability with ADL or recreation
- High risk sports
- Young age
- ? Upper age limit
- ? OA

PCL Injuries

- PCL injuries often missed or misdiagnosed
- Compared with ACL injuries
  - Not as common
  - Not as disabling
  - Difficult to diagnose
  - Will heal with non-operative treatment

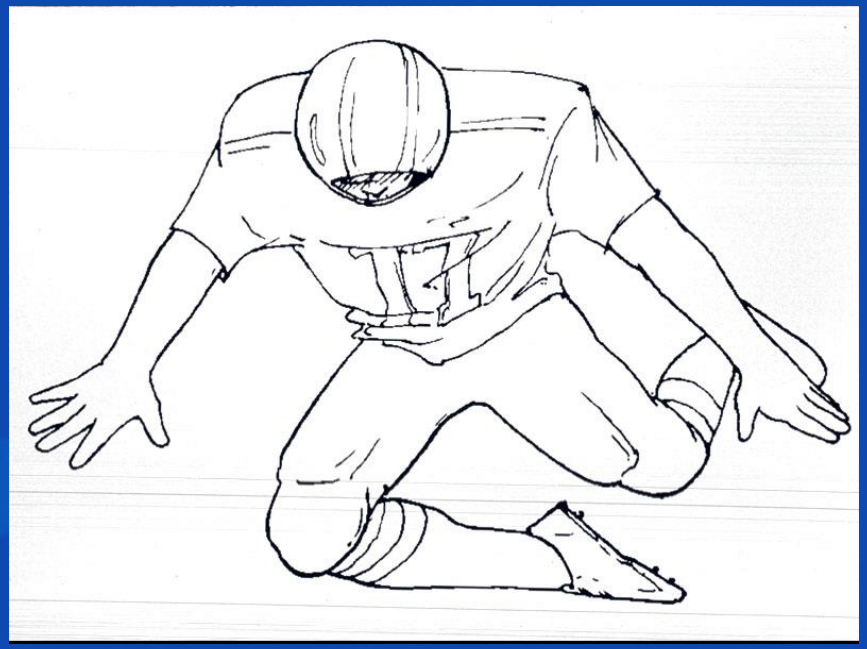
PCL Injury: Posterior Drawer

Isolated PCL Injury

- From dashboard in RTA
- Direct blow to proximal tibia most common mechanism
- Can also occur with twisting (PCL) and lateral blow to the knee (PCL/MCL)

Isolated PCL Injury

- Fall with foot plantar flexed

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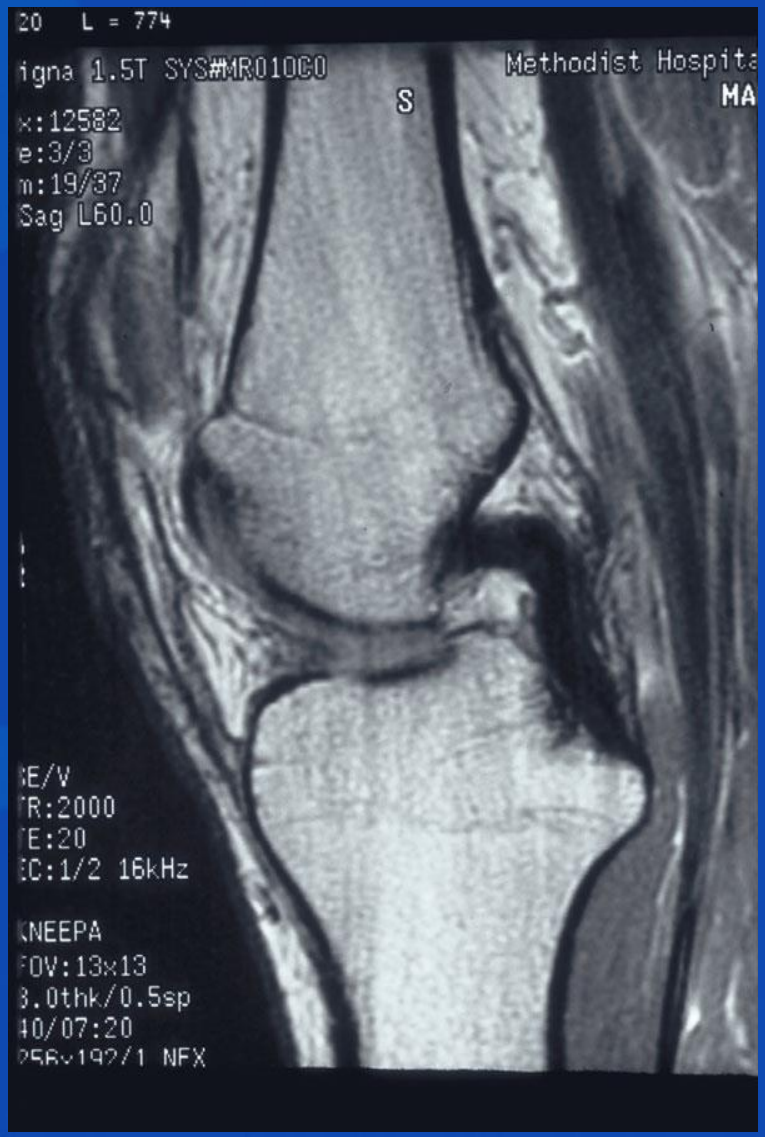
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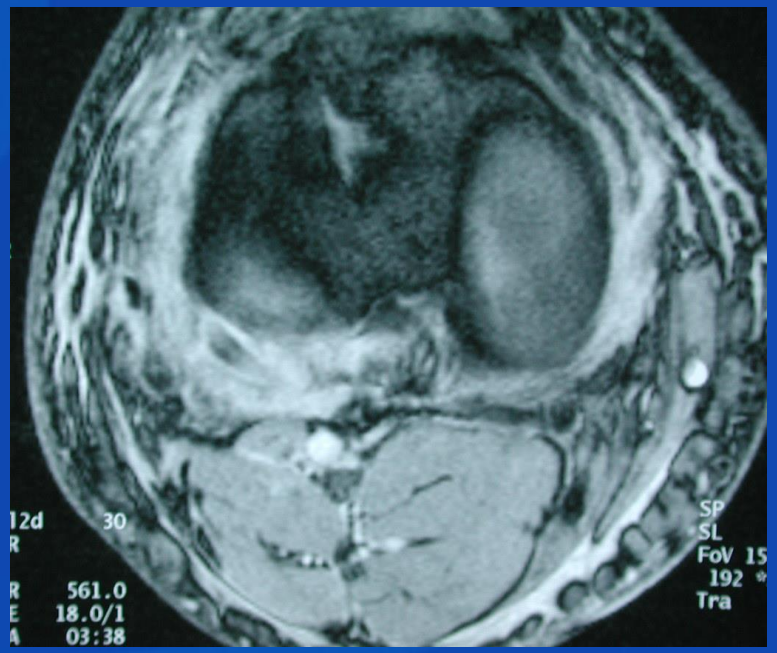
Lateral Side Complex

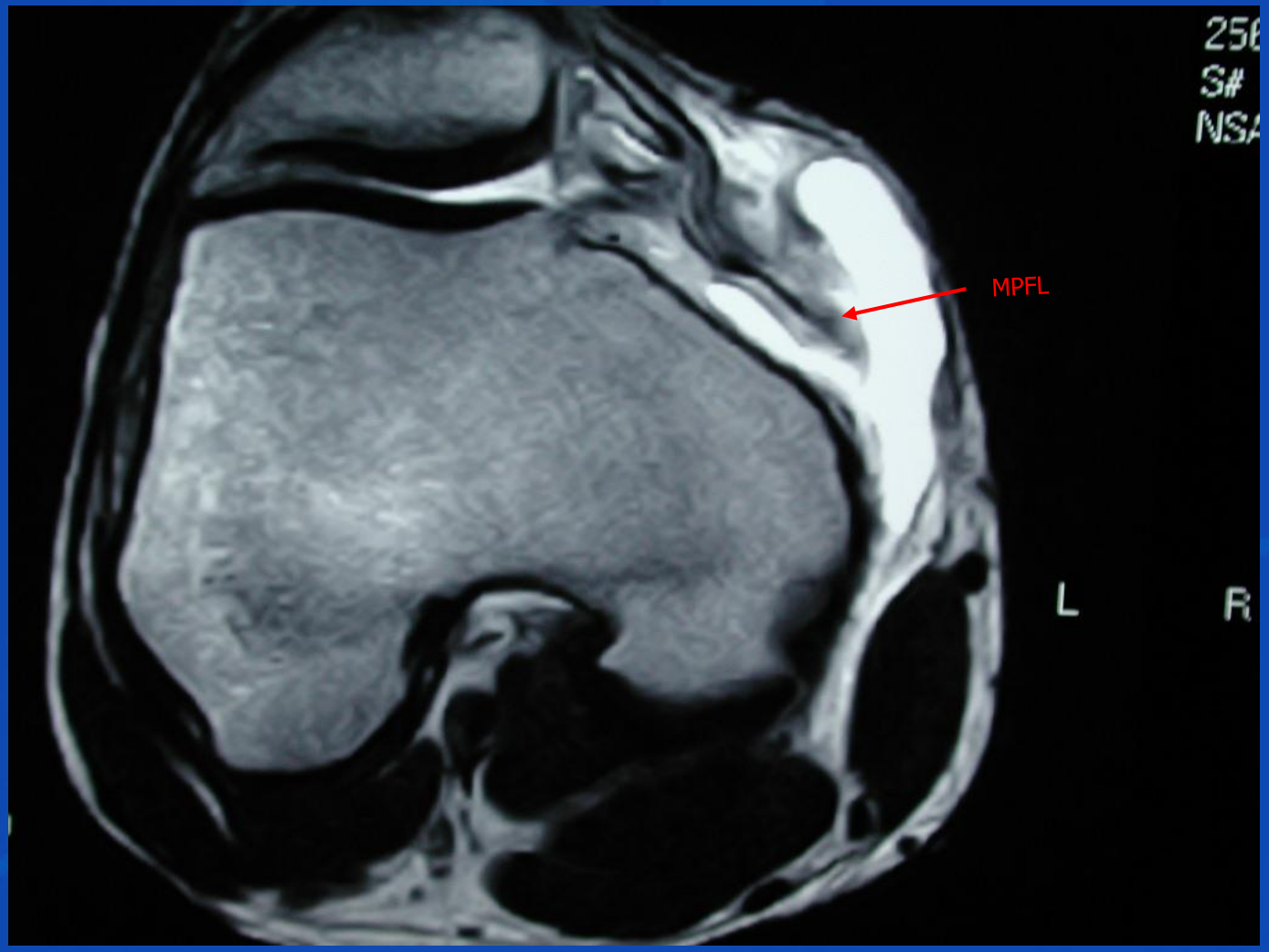


- Lateral capsule
- IT band
- Biceps tendon
- LCL
- Popliteus
- Lateral head of gastrocnemius
- All contribute to lateral stability
- Rarely injured (isolated and in combination)

Patellar Dislocation

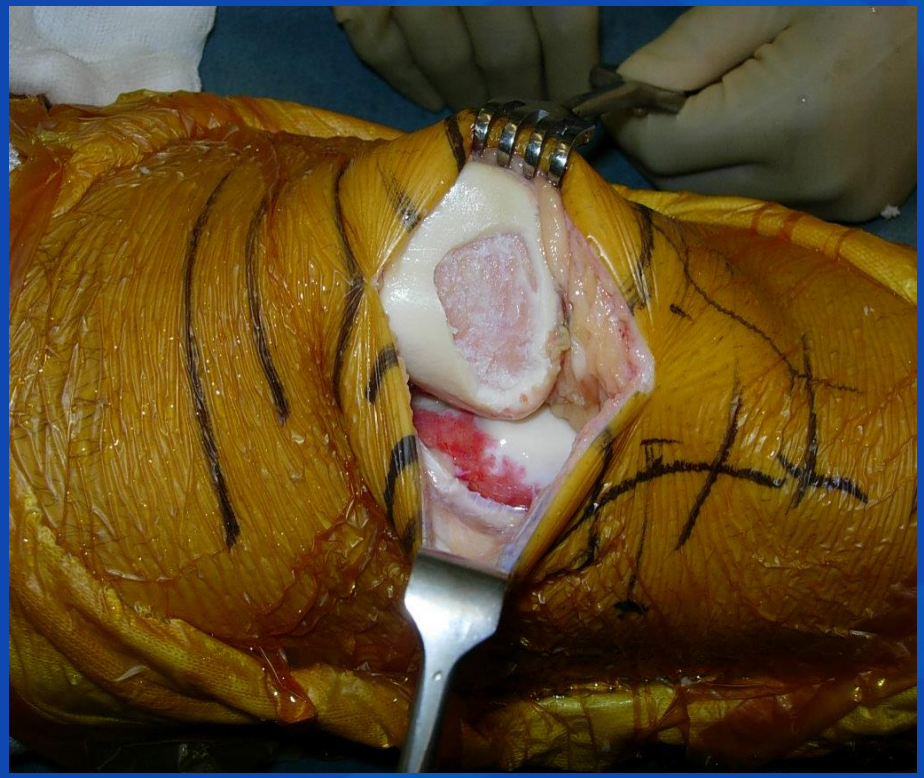
- ACL tear frequently misdiagnosed as patellar dislocation
- Twisting injury
- 2 “pops”
- Medial pain
- Acute haemarthrosis
- Tender over VMO

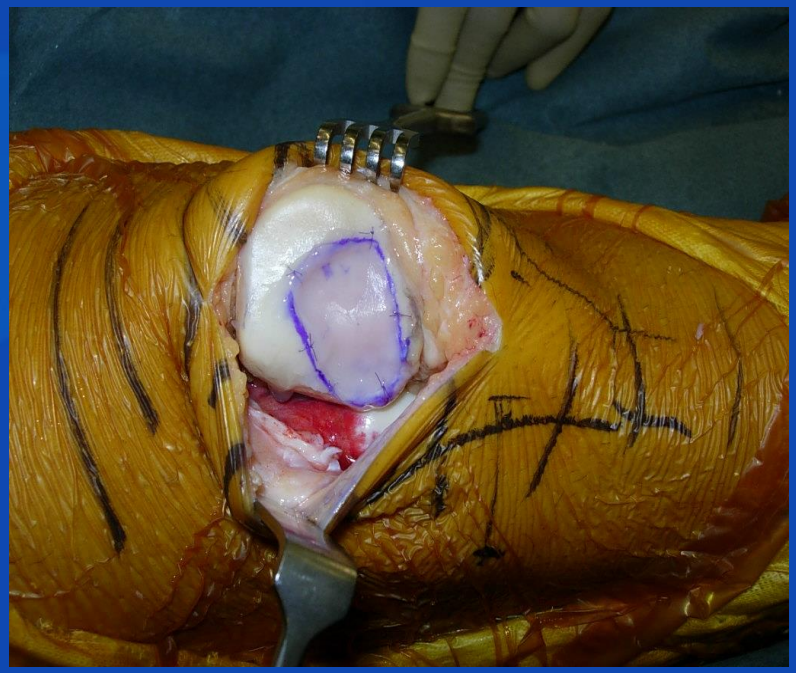
MPFL

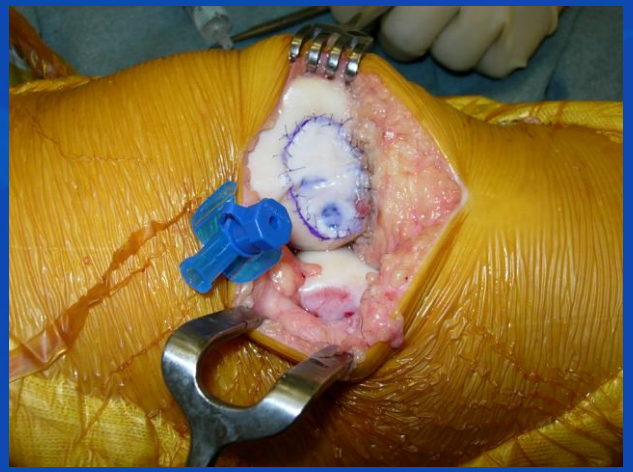


Chondral defects

- Common – PFJ dislocation, ACL, PCL, OCD
- Treatment
  - Stimulate to bleed – microfracture, drill
  - Mosaicplasty
  - Chondrocyte Transplantation
    - Only one to produce hyaline-like tissue
    - Expensive
    - Only done in NICE run studies – few surgeons







Tendonopathy

- Patella, ITB, Hamstring, Gluteals
- Treatment – non interventional
  - Rehab without pain
  - Eccentrics, stretching, shock wave, etc

Tendonopathy

- Interventional treatment
  - Platelet Rich Plasma (PRP)
  - Dry needling
  - Autologous blood injection
  - Surgery
- Rehab post-intervention essential

Arthritis

Traditional treatments

- Analgesia
- Activity modification
  - Stop impact exercise
- Weight loss
- Strengthening and Extension exercises
- Steroid injections

Newer Treatments

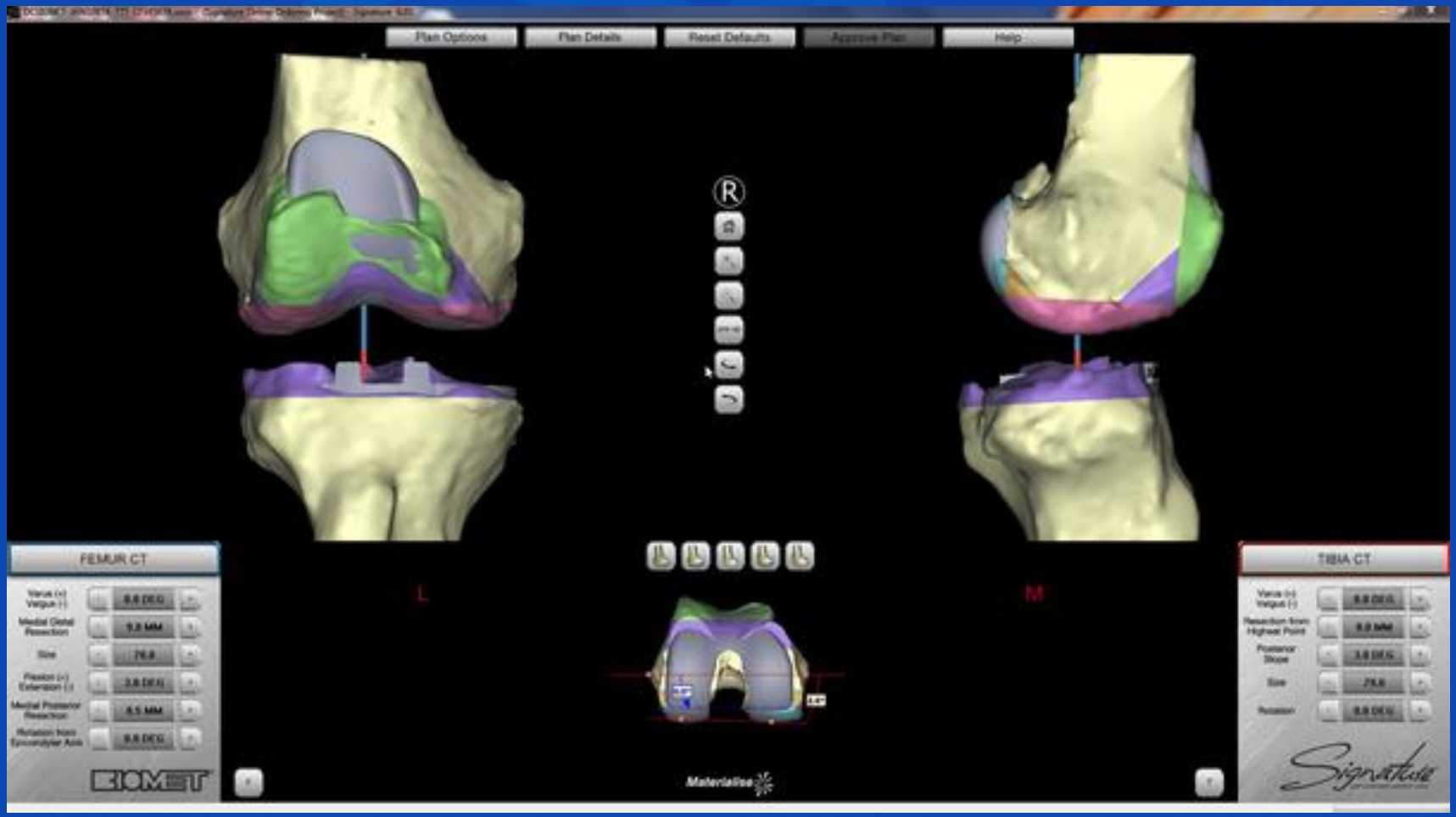
- Hyaluronic Acid injections
- nSTRIDE injections
  - Anti-TNF and IL-1 blockers – can slow arthritis progression ? Reverse it ?
- Sub-chondroplasty
  - For painful bone marrow lesions
- Stem cells
- Articular cartilage regeneration

Knee replacements

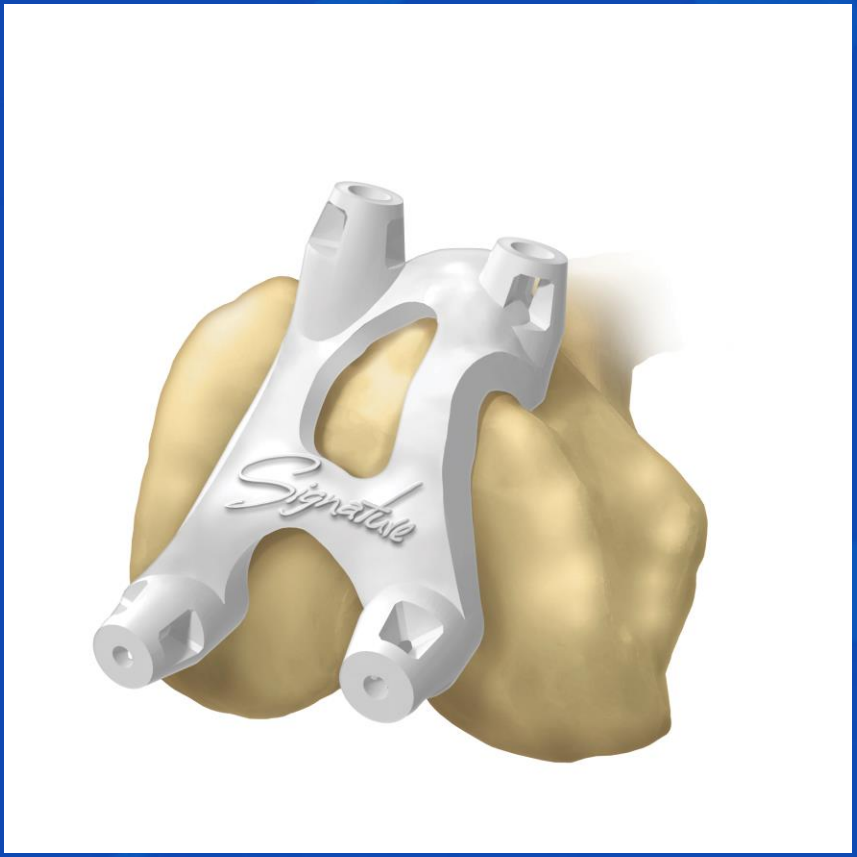
- Traditional

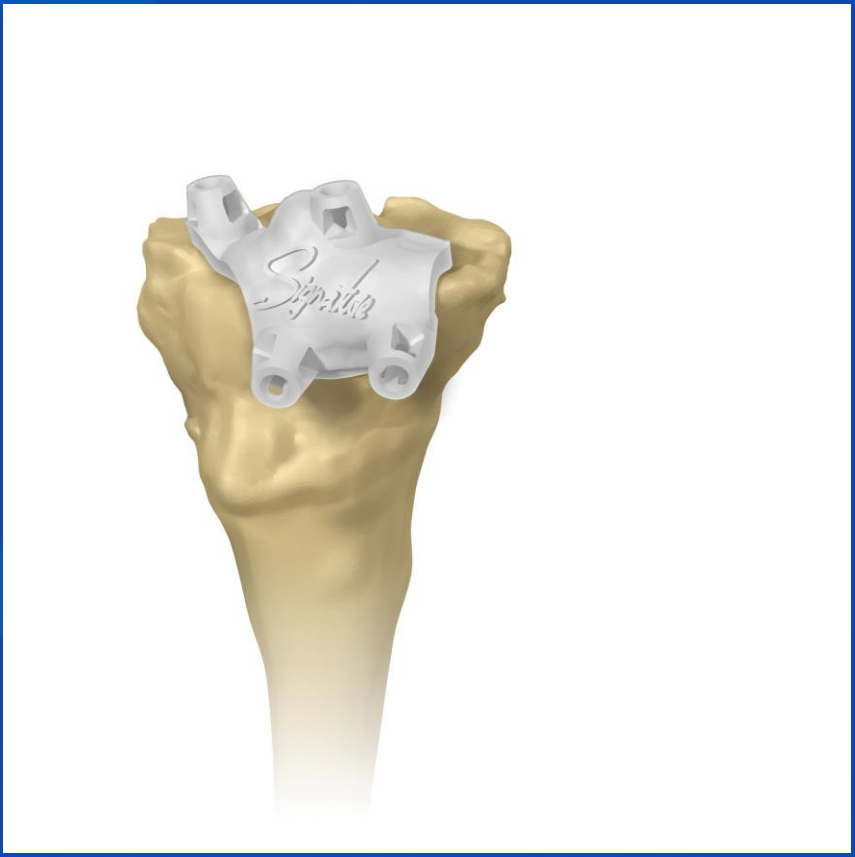
- Patient specific instrumentation
- Customised / Bespoke implants
  - Latter two are less invasive, less bleeding and swelling, less pain, quicker recovery, shorter LOS, better alignment (longer survivorship), less patient dissatisfaction.
  - Not available on NHS

Patient specific instruments

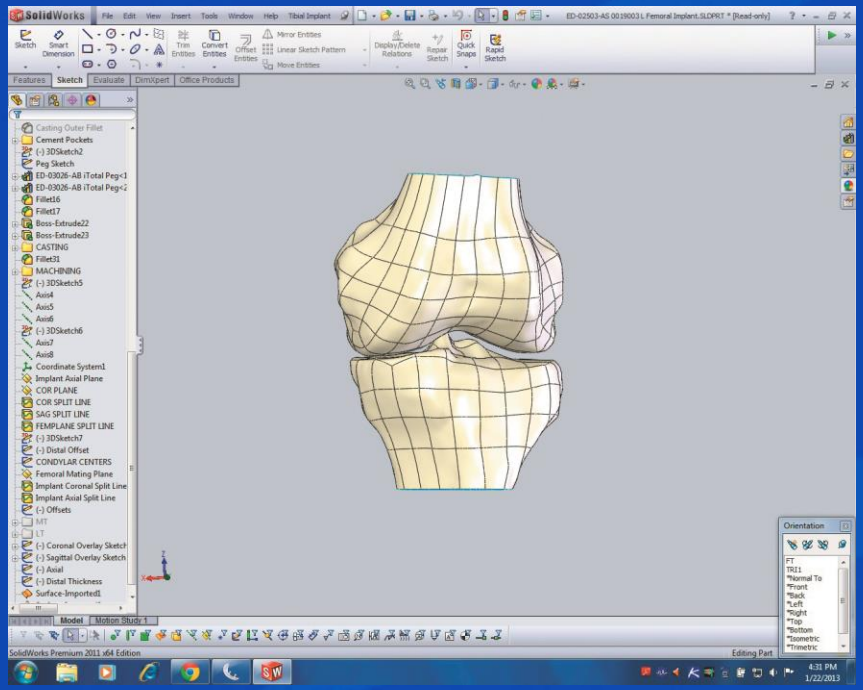


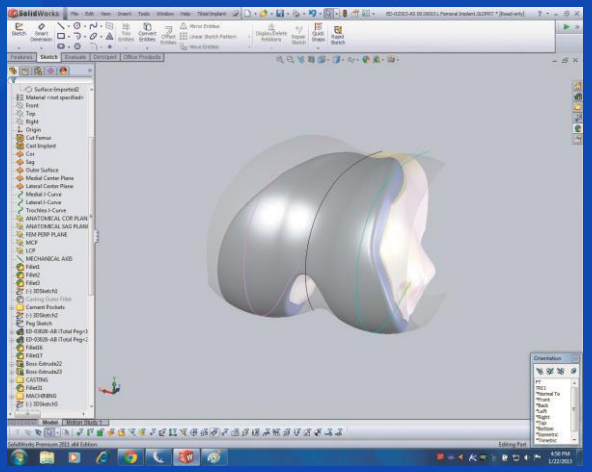
Patient Specific Instrumentation

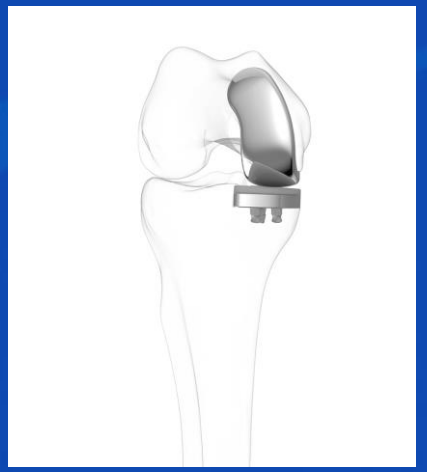




Bespoke TKR and uni







Benefits of Bespoke TKR

- Less invasive
- Less pain
- Less bleeding
- Shorter LOS
- Quicker recovery
- Better alignment
  - Longer survivorship
- Cosmesis

Arthritis summary

- Many early interventions and treatments available
- Knee OA treatment is no longer the domain of
  - "wait till you are old enough to have a knee replacement"
- Refer early as many options are time limited

Who to refer?

- Giving way post injury – ACL, PFJ, LB
- Meniscal tears
- PF dislocations
- OA – especially early OA / failed conservative treatment
- Acute swollen knee

Knee Red flags

- Unable to SLR after injury
- Immediate swelling post injury
- True giving way or locking
- Worsening pain without injury
- Specific night pain
- Pain with fever / night sweats / wt loss
- ? Infection knee joint / TKR

Questions