

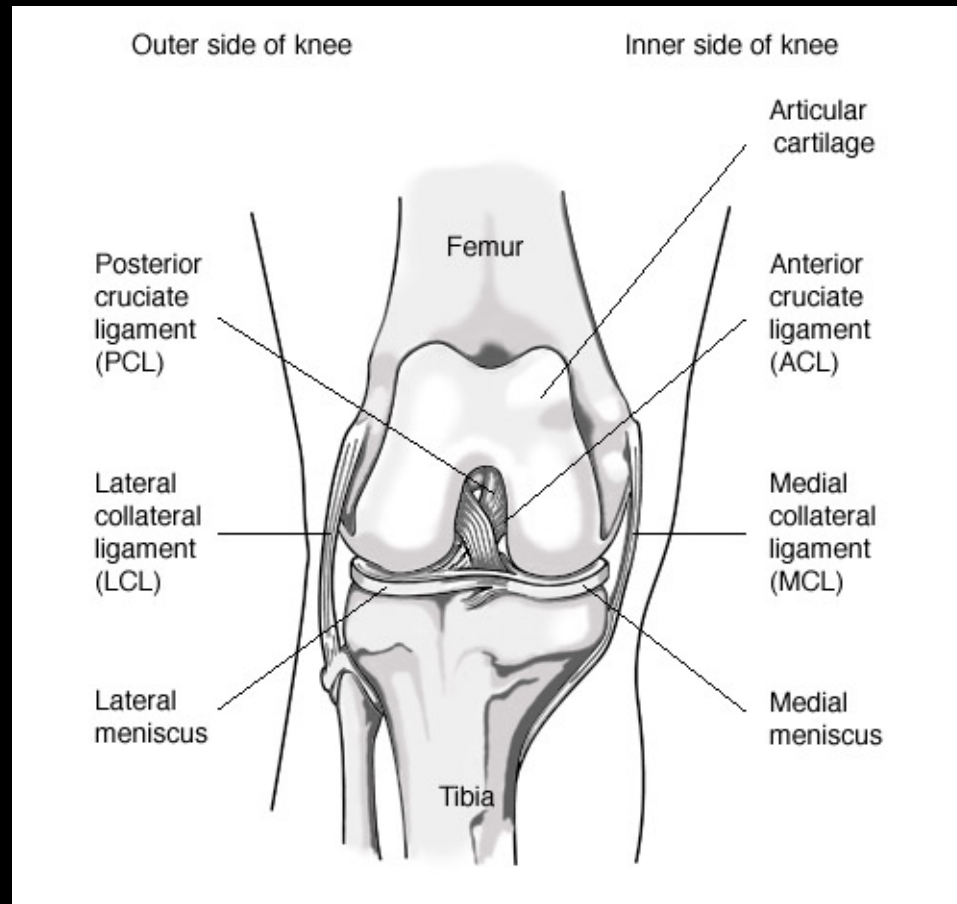
# Essentials in the management of knee pain

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# Anatomy of the knee joint



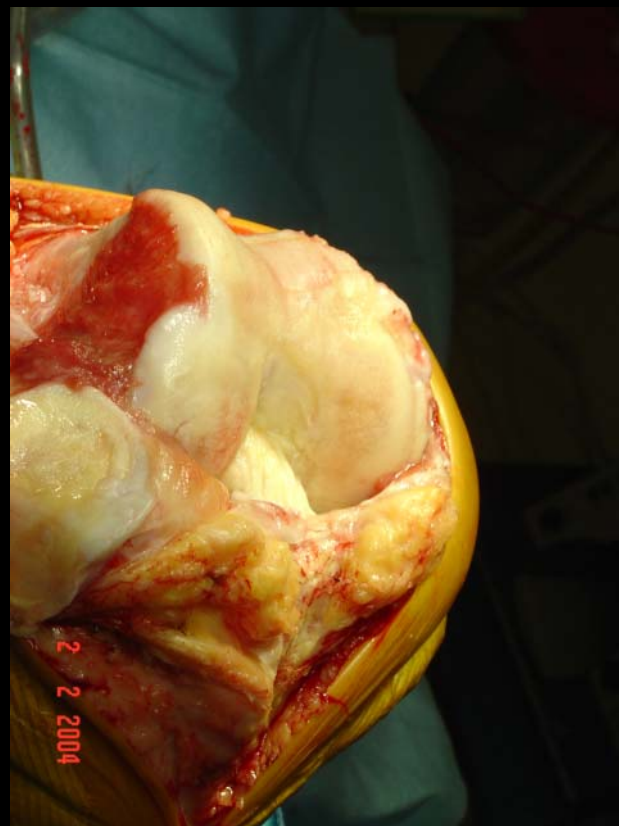
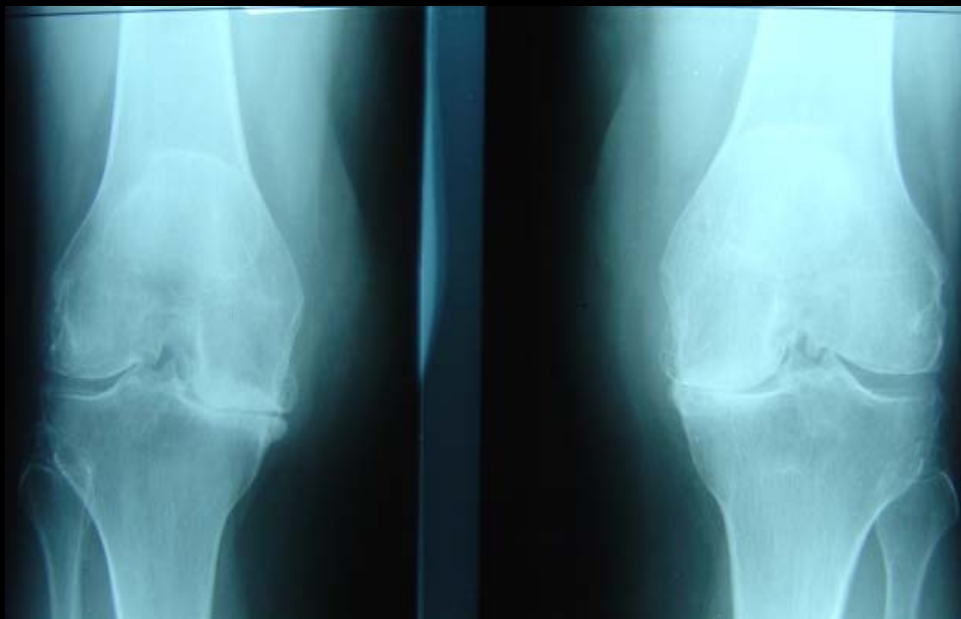
# Important note

- **Hip pain is referred to the knee because the hip and knee joint have same the nerve supply.**
- **The hip should always be examined when a patient presents with a painful knee.**

# Conditions

- Osteoarthritis
- Meniscal tears
- Ligament injuries
- Osteonecrosis
- Osteochondritis dissecans
- Patellar dislocations and subluxations
- **Osgood-Schlatters disease**
- **Pre and infra patellar bursitis**
- **Baker's cyst**
- **Iliotibial band syndrome**
- **Chondromalacia patella**
- **Jumper's knee**

# Osteoarthritis



# Non operative Rx

- Analgesics and NSAID
- Weight reduction
- Physiotherapy
- Walking aid
- Modification of activities
- Braces to offload the affected part of the joint
- Injections of viscosupplements and steroids

# Operative Rx

- Failure of non-operative methods.
- When ADLs are affected
- Quality of life is affected

# Surgery

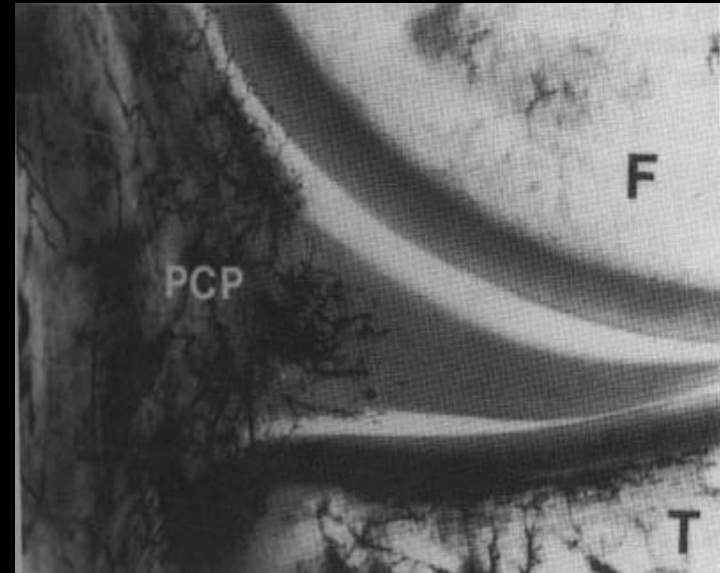
- Arthroscopic debridement
- Realignment procedures (osteotomy).
- Partial/Total knee replacement.



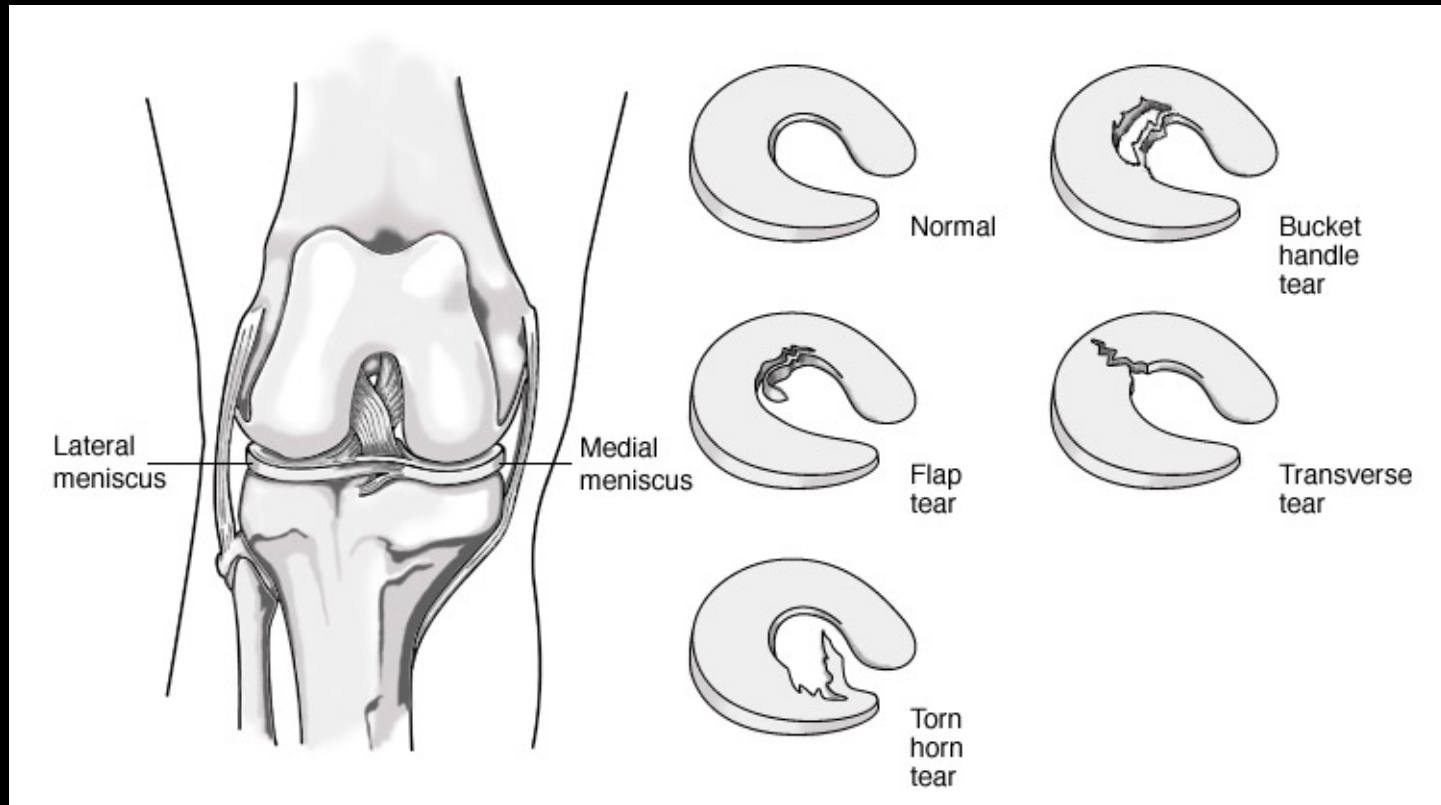
# Meniscal Injuries

# Anatomy

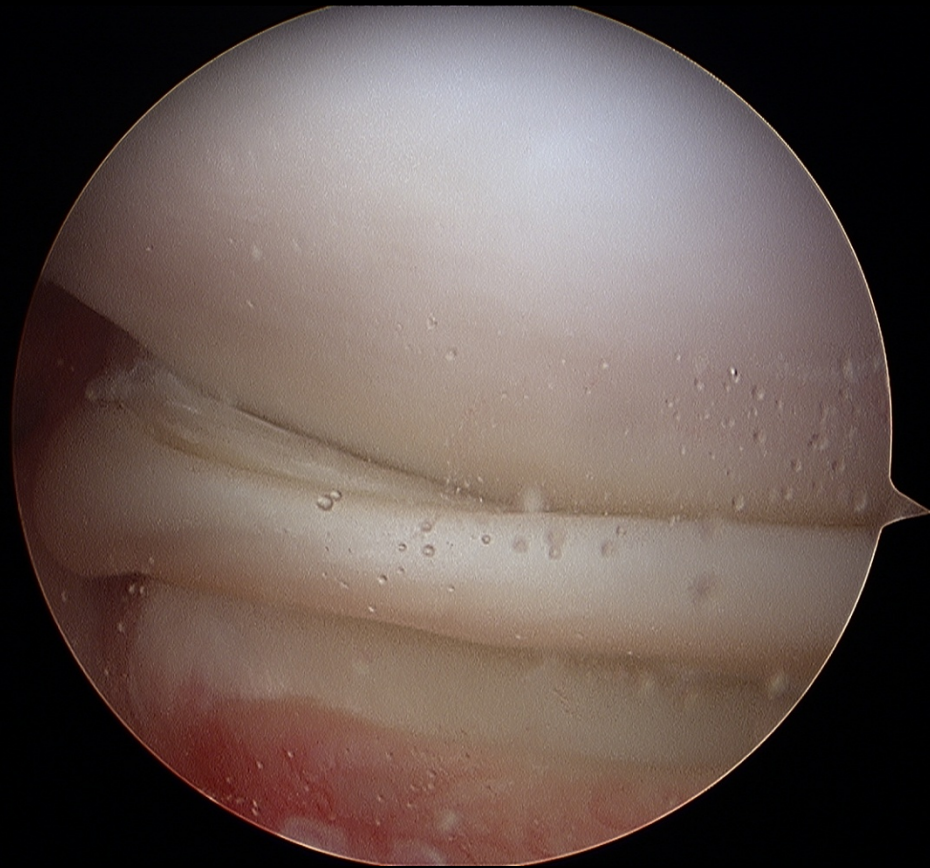
- crescent shaped; triangular in cross-section
- lateral meniscus has twice the excursion of the medial meniscus during knee motion.
- Blood supply:



# Shapes of tears



# Bucket handle tear



# Mechanism of injury

- Twisting injury when the knee is flexed, **pivoting, cutting or decelerating.**
- In athletes, meniscal tears often happen in combination with other injuries
- Older people can injure the meniscus without any trauma

# Signs and symptoms

- "popping" sensation
- Stiffness and swelling.
- Locking and giving way.
- Catching.
- Tenderness over the joint line.
- Effusion.
- McMurray's test
- Apley's grinding test.

# Non-operative treatment

- Small tears on the outer edges often heal themselves with rest.
- RICE
- Physiotherapy

# MRI

If the diagnosis is not clear

Previous surgery

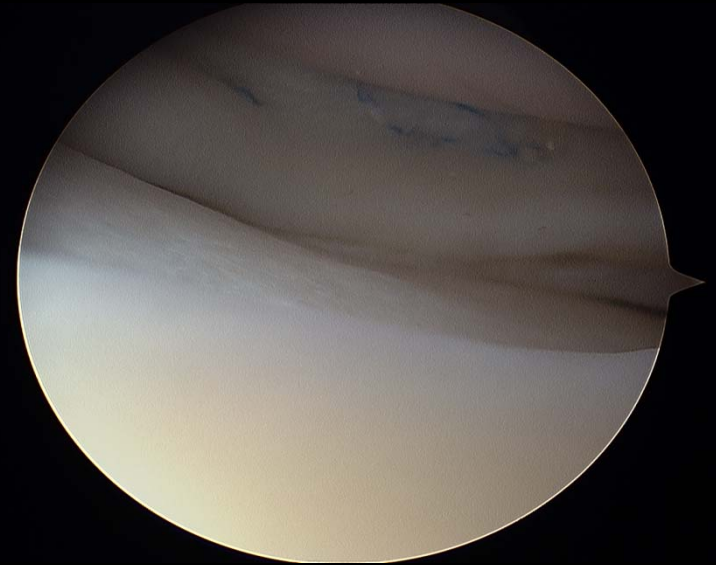
If multiple injuries in the knee are suspected

Where surgery could be technically demanding



# Surgery

- Arthroscopic surgery
  - Partial meniscectomy
  - Repair
  - Ligament reconstruction.



# Ligament injuries

# Anterior Cruciate ligament injury

- Changing direction rapidly
- Slowing down when running
- Landing from a jump
- Direct contact, such as in a football tackle

# Symptoms

- Pain
- “Gave way”
- “Popped out”
- “Buckled”
- Swelling soon after injury due to haemarthrosis

# Signs

- Swelling immediately after injury in 70% pts
- Tenderness
- Decreased ROM
- Lachman test
- Ant Drawer test
- Lateral Pivot Shift test
- Unhappy triad

# Investigations

- X-rays
- MRI

# Non-operative treatment

- Older patient
- Low activity level
- Functionally stable knee
- Physiotherapy

# Operative treatment

ACL reconstruction

Young active pt

functionally unstable knee

- Hamstrings
- Bone patellar Bone graft
- Cadaveric graft
- Synthetic graft

# Posterior cruciate ligament injury

About 5% of all ligament injuries.

Dashboard injuries

Hyperextension

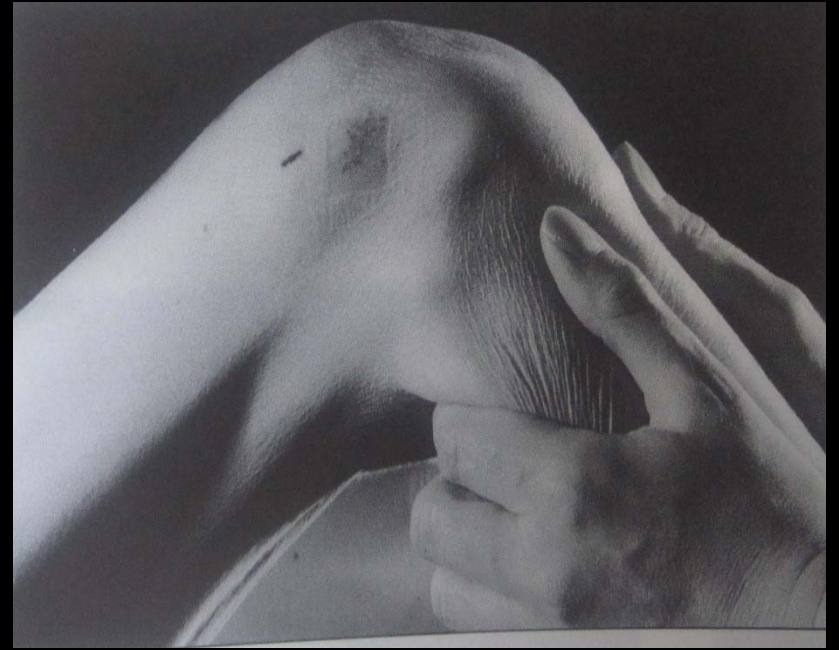
Hyperflexion

Fall on flexed knee with plantarflexed foot





Sag sign



Post drawer test

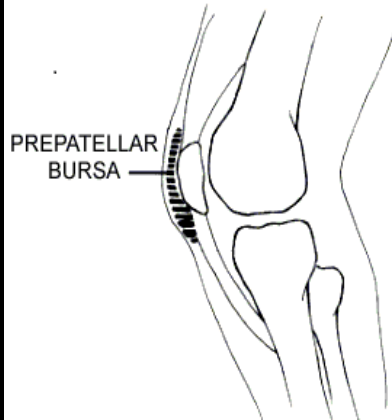
# Treatment of PCL injuries

- Physiotherapy for isolated PCL tears
- Reconstruction when pt has PCL injury with other lig injuries .
- Surgery for avulsion of bone from tibia

# Collateral ligament injuries

- Isolated MCL injury treated with physiotherapy and bracing.
- Isolated LCL injury is very uncommon.
- multiligamentous injuries frequently need surgery

# Prepatellar bursitis (Housemaid's knee)



People who constantly kneel to work.

Direct blows or falls on the knee are common, such as football, wrestling or basketball.

People with rheumatoid arthritis or gout



# Symptoms

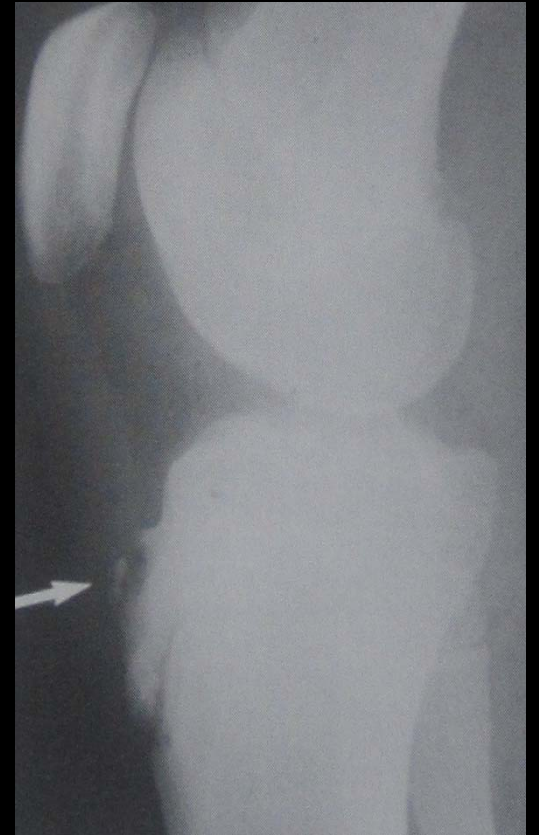
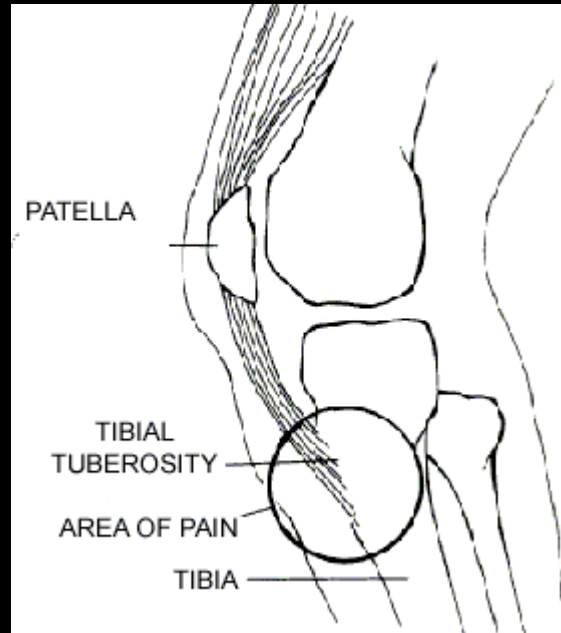
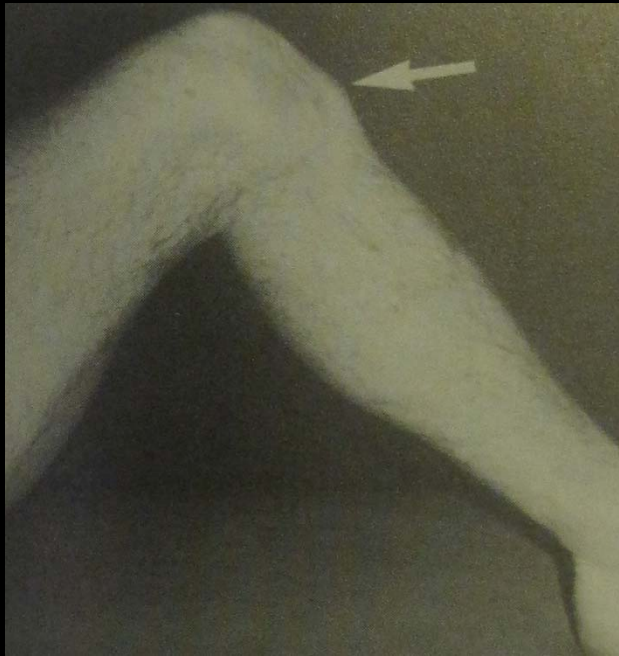
- Pain with activity
- Rapid swelling on the front of patella.
- Tender and warm to the touch.

# Treatment

- Rest. Discontinue the activity
- Apply ice
- NSAIDs
- Surgery only if infected or swelling persists

# Osgood-Schlatter's disease (Traction appophysitis)

- Active growing child.
- Onset of symptoms related to sporting activity.
- Symptoms resolve with rest.
- Prominent tibial tuberosity
- Gradual return to normal activities.
- Rarely POP cylinder during acute phase.
- Very rarely surgery



# Recurrent dislocation Patella

## Symptoms

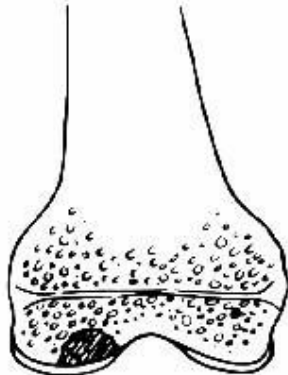
- Knee buckles.
- Patella slips off to the side.
- Anterior knee pain with activity.
- Stiffness.
- Crepitations during movement.
- Swelling.

# Clinical features

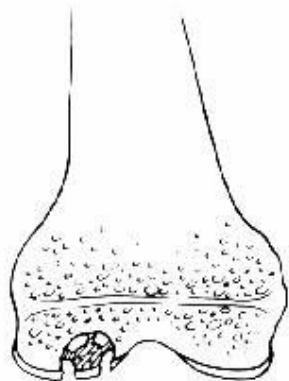
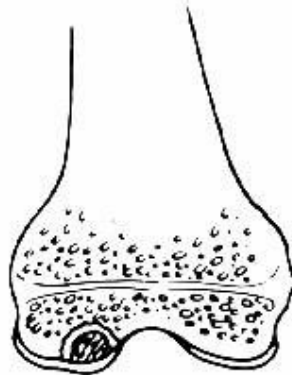
- Lateral dislocation is more common.
- Other joints
- Family history
- Tenderness over medial parapatellar area in acute condition.
- Effusion
- Apprehension sign +ve
- Recurrent dislocation needs surgery

# OSTEOCHONDRITIS DISSECANS

- Small piece of bone separates from main bone.
- posterior lateral aspect of the medial femoral condyle in 70%
- Bilateral in 20-30%
- lateral femoral condyle in 20%
- patella in 10%



A



B



# Investigations

- X-rays & tunnel views
- MRI - to assess the fragment's articular cartilage continuity and the size and viability of its subchondral bone.

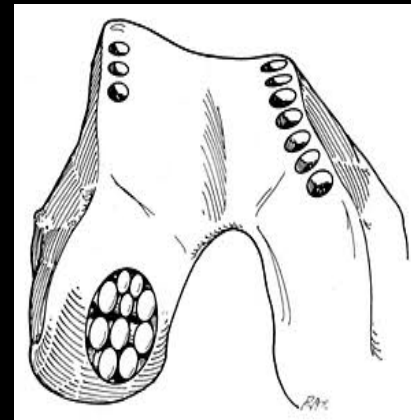
# Treatment

## Skeletally Immature Patient (< 12yrs)

- Non Operative treatment is recommended
- Protected crutch walking and gentle ROM.

## Skeletally mature

- Arthroscopic drilling/fixation/removal of loose body
- Mosaicplasty
- Autogenous chondocyte transplantation.



# Goosefoot (Pes Anserine) bursitis of the knee

- Obesity.
- Osteoarthritis in the knee.
- Tight hamstring muscles.
- Incorrect training techniques, such as neglecting to stretch, doing excessive hill running and sudden increases in mileage.

# Symptoms

- Pain slowly develops on the inside of the knee
- Pain increases with exercise or climbing stairs.
- Symptoms may mimic those of a stress fracture, so an X-ray is usually required for diagnosis.

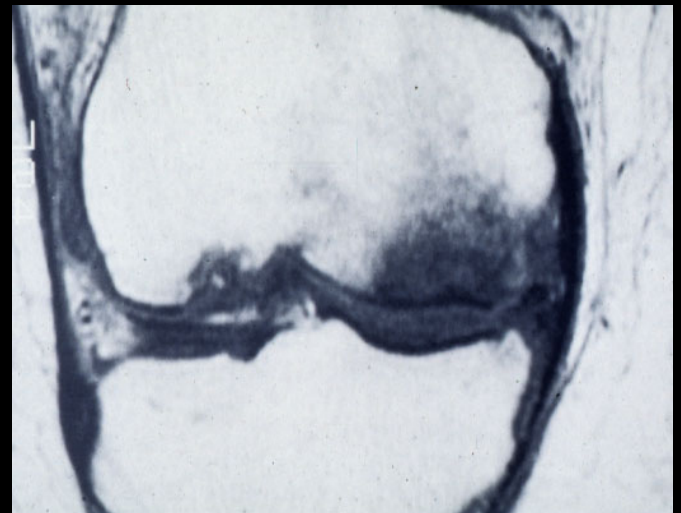
# Treatment

- Rest
- Ice.
- Anti-inflammatory medication.
- Injection of steroids and local anaesthetic into the bursa.

# SPONTANEOUS OSTEONECROSIS OF THE KNEE

## Signs and symptoms

- Sudden pain on the inside of the knee, perhaps triggered by a specific activity or minor injury
- Increased pain at night and with activity
- Swelling
- Tenderness
- Decreased ROM



# Treatment options

## In the early stages of the disease

- Medications to reduce the pain
- A brace to relieve pressure on the joint surface
- Exercises to increase the strengthen of the muscles
- Activity modifications to reduce knee pain

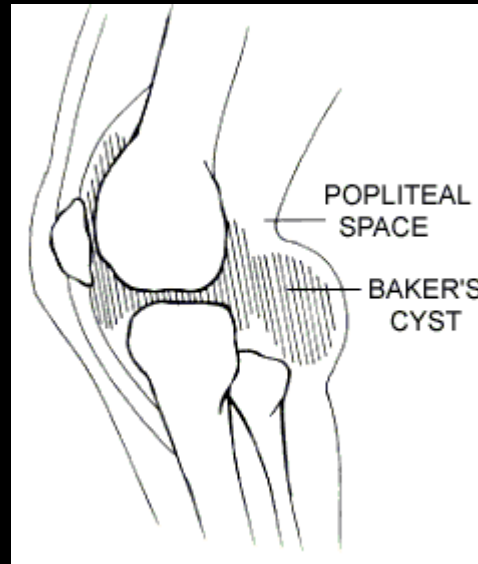
# Operative

- Arthroscopic debridement of the joint
- Drilling to reduce pressure on the bone surface
- Procedures to shift weight-bearing away from the affected area
- Replacement of one or both joint surfaces

# Plica syndrome

- Normal structure .
- Can become thickened and symptomatic.
- Responds to injection of steroids/arthroscopic resection

# Baker's cyst



Usually asymptomatic

Doesn't need Rx

Can mimic DVT when ruptures

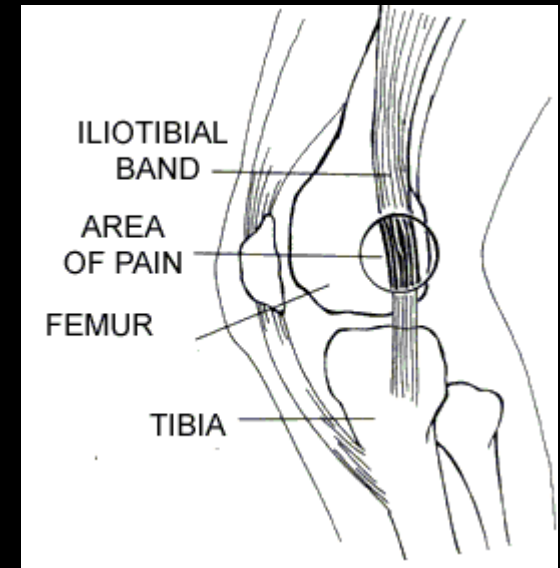
# Iliotibial band syndrome

Friction between Iliotibial band  
and lat femoral condyle

Runners and cyclists

Local tenderness

Ober test



# Treatment

- Rehabilitation is usually successful.
- Surgery is uncommon

# Jumper's knee

Athletes especially basketball and volleyball

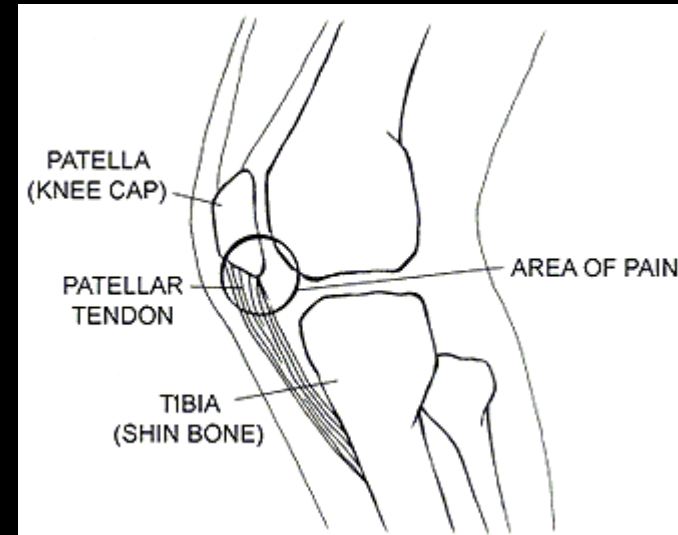
Tenderness near inferior pole

Physiotherapy

NSAID

Injection Platelet rich plasma

Rarely surgery



# Rupture of quadriceps or patellar ligament

- Violent contraction of quadriceps
- Age
- Anabolic steroids
- Repeated injections of steroids

# Acute hot knee

- The aim is to exclude infection
    - Pt is unwell/febrile
    - Knee is swollen hot and has painful reduced movements
    - Bloods
    - Aspirate
    - Urgent Gram staining
    - Culture of the aspirate
- Arthroscopic washout if infected

# ANTERIOR KNEE PAIN

## Differential Diagnosis:

- Osteoarthritis
- Meniscal tears
- Ligament injuries
- Osteonecrosis
- Osteochondritis dissecans
- Patellar dislocations and subluxations
- **Osgood-Schlatters disease**
- **Pre and infra patellar bursitis**
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# Intra articular injection steroids

- There is evidence that steroids cause damage to the chondrocytes.
- Steroid injection may be given
  - Pts unfit for surgery
  - OA is advanced and injection will not alter Rx
- Repeated injections should be avoided

# Injection of viscosupplements

- Physical cushioning.
- Stimulates synoviocytes to synthesize synovial fluid.
- Anti-inflammatory effect.
- Can be used in early OA

# Examination of the knee

## – Gait

Antalgic

## – Expose both legs to mid thigh

## – Look all around

- Wasting
- Swelling      joint line/popliteal fossa/prominent tibial tuberosity
- Scars -previous surgery/ healed sinus

# Look

## –Alignment

Valgus/varus

Flexion contracture

Locking

recurrvatum

## –Shortening

# Feel

- Temperature
- Effusion Wipe test/ patellar tap/ fluctuation
- Tenderness
- Synovial thickening
- Nature of lumps

# Move

- Test normal side first
- Active and passive ROM
- Any pain during movements
- Crepitations during movements
- **Always move the hip joint**

# Special Tests

- For menisci
  - McMurray's test
  - Apley's grinding test
- For ligaments
  - ACL
  - PCL
  - Collaterals
  - Multiligamentous injuries
- Patella
  - Apprehension sign
  - Osmond -Clarke's test

# Investigations

- X-ray
  - AP standing
  - Tunnel
  - Lateral
  - Skyline
- MRI
- US
- Bloods
- CT
- Bone scan

Thank you for listening