Knee Red Flags: what not to miss

ABCs of Musculoskeletal Care

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Red Flags

- Infection
- Dislocated knee
- Lateral structure injuries
- Fractures
- Bucket handle meniscus tear
- Young patients with swelling
- Extensor mechanism injuries

What not to miss

- Diagnosis that can be significantly worse if missed
- Timely treatment is important
- It is just NOT right......!

What not to miss

- History
  - Age
  - Mechanism
  - Co morbidities
- Response to injury
- Appearance
- Examination
  - Range of motion
  - Specific examinations

Medicine is:
Fact finding
Detective work
History and presentation is extremely important
Presentation

- 50 yo with h/o diabetes with acute worsening knee pain x 2 days
- No obvious trauma
- Unable to bear weight
- Limited range of motion
- Physical examination
  - Large effusion
  - Warm
  - Limited Range of motion

Infected Knee

- Aspiration
- Urgent/Emergent surgery

Presentation

- 50 yo with h/o diabetes with acute worsening knee pain x 2 days
- No obvious trauma
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Infected joint

- Increasing pain
- Limited ROM
- May not have systemic symptoms
- Medical co morbidities
- Aspiration
  - >50,000 WBC
  - Can be lower for immunocompromised patients
- Differential diagnosis
  - Inflammatory arthritis
  - Gout – can still have secondary infection

Presentation

- 40 yo with acute injury
- Unable to bear weight
- Limited range of motion
- Physical examination
  - Large effusion
  - Warm
  - Limited Range of motion
  - Gross deformity or laxity

Fracture or Acute ligament injury

- Immobilization
- Further Imaging
Presentation

- 40 yo with acute injury
- Unable to bear weight
- Limited range of motion

Physical examination
- Large effusion
- Warm
- Limited range of motion
- Gross deformity or laxity

Fractures

- Have to have mechanism
- Treatment depends on location and severity
- Location
  - Intra articular require better alignment because it is at the joint
  - Lower extremity require better alignment because of weight bearing
- Severity
  - Displacement
  - Comminution

Extremity Fracture

Fractures
- Have to have mechanism
- Treatment depends on location and severity
- Location
  - Intra articular require better alignment because it is at the joint
  - Lower extremity require better alignment because of weight bearing
- Severity
  - Displacement
  - Comminution

Presentation

- 23 yo pedestrian versus car injury
- Unable to bear weight
- Limited ROM
- Physical examination
  - Moderate effusion
  - Unstable ligament examination

Dislocated knee
  Thorough neurovasular examination
  Urgent referral
Presentation

- 23 yo pedestrian versus car injury
  - Unable to bear weight
  - Limited ROM
- Physical examination
  - Moderate effusion
  - Unstable ligament examination

Dislocated a lot of joints!

Presentation

- 18 yo soccer player injured after being tackled
- "Kid flying across me"
- Unable to bear weight
- Physical examination
  - Good ROM
  - Lateral sided knee pain
  - Difficult examination because of pain
  - ? Numbness down the leg
    - Posterolateral corner injury
    - Thorough neurovasular examination
    - Likely multiligament injuries
    - Urgent referral

Dislocated knee

- Severe limb threatening injuries
- High rate of neurovascular injuries
  - 33%
- High rate of limb amputation
  - 33% of the vascular injured patients
- May not be that swollen
  - Torn capsule and blood goes down the leg
- Usually is the mechanism
  - Ped vs car
  - Obese patients with slip
Presentation

- 18 yo soccer player injured after being tackled
  - “Kid flying across me”
- Unable to bear weight
- Physical examination
  - Good ROM
  - Lateral sided knee pain
  - Difficult examination because of pain
  - ? Numbness down the leg

Posterolateral corner injuries

- Difficult injury to treat
- Different from MCL (95% heal with no issues)
- Outcome is dependent of location of ligament tears
- Earlier repair results are better than late reconstructions
- Earlier repair is within 3 weeks of injuries
  - Initial visit
  - Referral
  - MRI
  - Surgery scheduling

Presentation

- 26 yo history of knee injury a few years back
- May have had “ligament injury”
- Has some occasional locking and pain
- Knee locked after getting up from sitting position
- Painful with weight bearing
- Physical examination
  - Locked knee, ROM 20-90
  - Painful medial side

Bucket Handle Meniscus tears
  - Non weight bearing
  - Urgent referral
  - MRI

Presentation

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Bucket Handle Meniscus tears
  - Non weight bearing
  - Urgent referral
  - MRI
Bucket Handle meniscus tears

- Medial more common than lateral
- Related to chronic ACL injuries or
- History of ACL reconstruction
- Difficult with weight bearing
- Locked knee appearance
- Urgent treatment

Presentation

- 12 yo with swelling of the knee
- Not sure when it happened
- Increases after game
- Some limping but able to continue
- Physical examination
  - Fairly normal gait
  - Moderate effusion
  - No pain
  - Stable ligament

There has to be a diagnosis
No benign pediatric knee effusion

Differential for Effusion

- Traumatic
  - Fracture
  - Ligament tear
  - Bone and cartilage injuries
  - Dislocation
  - Acute meniscus tears

- Atraumatic
  - Synovitis – JRA, synovial process
  - Congenital cartilage injuries - OCD
  - Congenital meniscus injuries - discoid

Radiographs

- Osteochondritis Dessicans
- Location
  - Lateral MFC
  - Central LFC
  - Trochlea lesion
- Prognosis is related to skeletal maturity
Presentation

- 60 yo misstep after party
- Difficult with gait, able to limp
- Cannot go down stairs regular way
- Physical examination
  - Mild limp
  - FROM

Quadriceps Rupture

Mechanisms:
- Indirect Trauma: forced/eccentric muscle contraction with foot planted and knee flexed
- Typically patients older than 40 years
- 3X more common than Patella tendon ruptures
- Bilateral ruptures can occur
  - Usually for patients with chronic disease or steroid use
  - Normal tendons do not rupture under stress loading

Quadriceps Rupture

- Extensor lag on straight leg raise
- Tenderness at superior pole of patella
- Patella may be displaced inferiorly or is sitting low
- Swelling, bruising
Extensor mechanism injuries

- Quadriceps or patella tendon tears
- All full tears require surgical intervention
- Inability to do straight leg raise is a sign of full tear
- Early repair results much better than delay reconstruction
- Tendons may have preexisting injuries or tendinosus

Knee extensor injuries

- Quadriceps tendon rupture
  - 40-60 years old
- Patella tendon rupture
  - 30-40 years old
- Patella tendinitis
  - 20-30 years old
- Osgood Schlatter’s Disease
  - 10-16 years old

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