

Knee Imaging

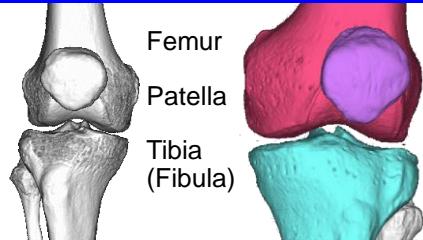
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Knee Imaging

Wisconsin Physical Therapy Association 4/8/11

3 Bones

Bones
Patella
Femur
Tibia
Radiographs
Fluid
Fractures
Ligaments
Menisci



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Knee Imaging

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Patella: [L] "shallow pan"

Bones
Patella
Femur
Tibia
Radiographs
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Fractures
Ligaments
Menisci



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Largest sesamoid bone
➤ Sesamoid: "Bone embedded within a tendon"

➤ Many sesamoids throughout body, particularly in the foot



2 Great Toe sesamoids (100%)

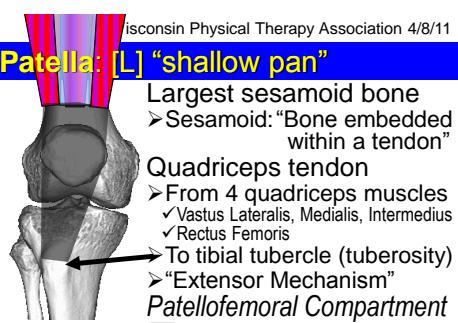
os peroneum (~30%)

Knee Imaging

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Patella: [L] "shallow pan"

Bones
Patella
Femur
Tibia
Radiographs
Fluid
Fractures
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Menisci



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Articular Surfaces

Bones
Patella
Femur
Tibia
Radiographs
Fluid
Fractures
Ligaments
Menisci



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Trochlear groove
➤ trochlea: [L] "pulley"

➤ Patellofemoral compartment

Femoral Condyles

➤ condyle: [Gk] "knuckle"
round knob at end of a bone

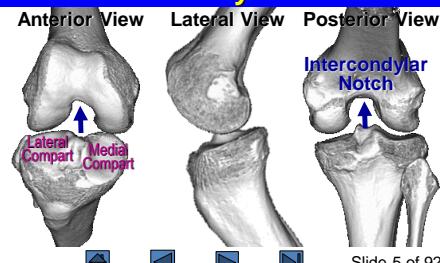
➤ Medial/Lateral compartments

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Femoral Condyles

Bones
Patella
Femur
Tibia
Radiographs
Fluid
Fractures
Ligaments
Menisci



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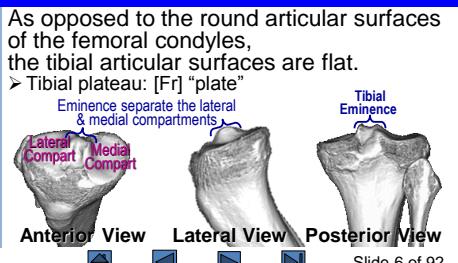
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Articular Surfaces

Bones
Patella
Femur
Tibia
Radiographs
Fluid
Fractures
Ligaments
Menisci



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Tibial Emenence

Bones
Patella
Femur
Tibia
Radiographs
Fluid
Fractures
Ligaments
Menisci



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Knee Imaging

Radiographs (78%)

- Primary modality for knee pain
 - ✓ Arthritis (joint narrowing, osteophytes)
 - ✓ Fractures, loose bodies

MR (21%)

- Internal derangement
 - ✓ Ligament/meniscal tears, cartilage defects
- Occult fractures

CT (1%)

- Surgical planning (of fx seen on radiographs)

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AP View

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci



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AP View

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci

Shows width of lateral, medial compartments

- ✓ Assess for arthritis
- > Doesn't show patello-femoral compartment

Articular surfaces

- > Weight-bearing portions femoral condyles
- > Tibial plateau
- ✓ Assess for displaced fractures

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Lateral View

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci



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Lateral View

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci

Shows lateral view of femoral condyles & tibial plateau

- > Doesn't show med/lat compartments

Shows lateral view of patella

- ✓ Assess for patella fracture
- > Doesn't show patellofemoral compartment

Can show sizable joint effusions... physical exam is more sensitive!



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Knee Imaging

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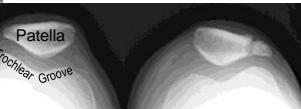
Sunrise View (Laurin View)

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci

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Shows patellofemoral compartment!
✓ Important view to assess arthritis
Shows alignment between patella & trochlear groove.



www.ebjss.omeka.net/items/60/1/55



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Notch View (Rosenberg)

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci

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Notch View (Rosenberg)

Bones
Radiographs
AP View
Lateral View
Sunrise View
Notch View
Fluid
Fractures
Ligaments
Menisci

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Shows width of posterior lateral, medial compartments
✓ Assess for arthritis
➤ Doesn't show patellofemoral compartment

Articular surfaces
➤ Posterior portions femoral condyles
➤ Tibial plateau
✓ Assess for displaced fractures



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Knee Imaging

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Fluid in Joint: Effusion

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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Synovial fluid
➤ From inflamed synovium
✓ Arthritis

Blood: "Hemarthrosis"
➤ From torn vascularized structure
✓ Anterior Cruciate Ligament tear

Fat+Blood: "Lipohemarthrosis"
➤ Fat comes from fatty yellow bone marrow
✓ Indicates presence of intra-articular fracture



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Knee Imaging

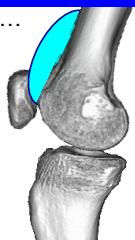
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Suprapatellar Pouch

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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The knee can hold a lot of fluid... not between articular surfaces.
Joint effusions collect in the suprapatellar pouch.
➤ Synovial lined space
➤ Normal extension of the joint capsule
➤ Can easily hold > 40ml



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Effusion on Lateral View

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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No effusion (radiographically)
Large effusion
Radiographs can show sizable joint effusions... but physical exam is more sensitive!



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Knee Imaging

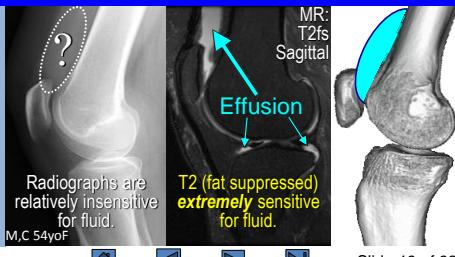
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Effusion on MR

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
- Loose bodies
- Fabella
- Fractures
- Ligaments
- Menisci



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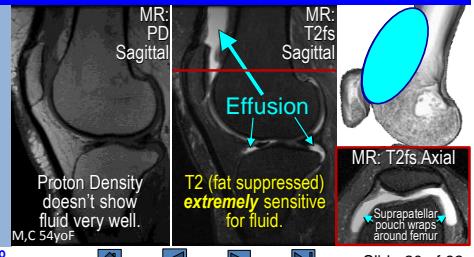
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Effusion on MR

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
- Loose bodies
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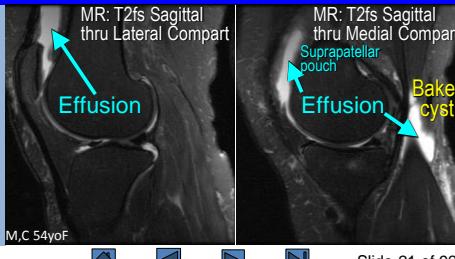
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Knee Imaging

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Effusion on MR

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
- Loose bodies
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- Menisci



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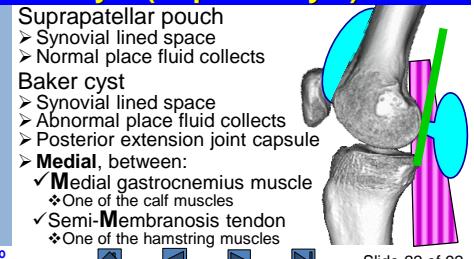
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Baker Cyst (Popliteal Cyst)

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
- Loose bodies
- Fabella
- Fractures
- Ligaments
- Menisci



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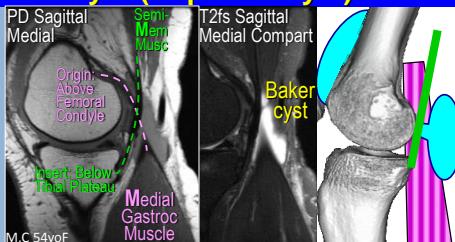
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Baker Cyst (Popliteal Cyst)

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
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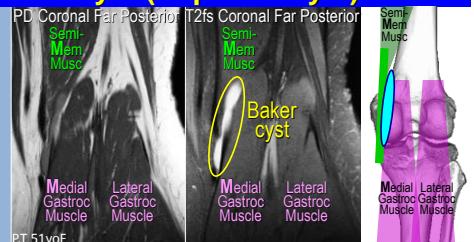
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Baker Cyst (Popliteal Cyst)

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
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Knee Imaging

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Knee Imaging

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Prepatellar Bursitis

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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Prepatellar Bursa

- Synovial lined space
- Does not communicate with knee joint capsule
- Normally contains little/no fluid
- Irritation of bursa → marked increase bursal fluid
 - Prepatellar bursitis reported in people who kneel frequently
 - ✓ Housemaid's knee
 - ✓ Preacher's knee



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Prepatellar Bursitis

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

http://en.wikipedia.org/wiki/Prepatellar_bursitis
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Often diagnosed by exam



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Prepatellar Bursitis

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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Prepatellar swelling



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Loose Bodies

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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Fragments of bone/cartilage in capsule

- Loose osteochondral fragment
- May be inconsequential if outside joint
- If remain in suprapatellar pouch,
- or in Baker cyst
- But if between articular surfaces...
 - May cause locking,
 - Destruction articular cartilage

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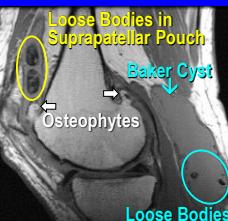
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Loose Bodies

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
Fractures
Ligaments
Menisci

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Loose Bodies

Bones
Radiographs
Fluid
Suprapatellar
Baker cyst
Prepatellar
Loose bodies
Fabella
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Menisci

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Fabella: [L] little bean

- Bones
- Radiographs
- Fluid**
- Suprapatellar
- Baker cyst
- Prepatellar
- Loose bodies
- Fabella
- Fractures
- Ligaments
- Menisci

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<http://www.ajronline.org/cgi/reprint/183/2/352>

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Fractures

- Bones
- Radiographs
- Fluid
- Fractures**
- Patella
- Femur
- OCD
- Tibia
- Occult Fxs
- Ligaments
- Menisci

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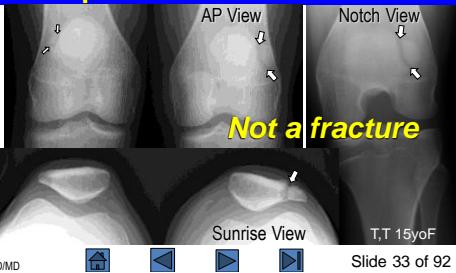
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Bipartite Patella

- Bones
- Radiographs
- Fluid
- Fractures**
- Patella
- Femur
- OCD
- Tibia
- Occult Fxs
- Ligaments
- Menisci

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Bipartite Patella

- Bones
- Radiographs
- Fluid
- Fractures**
- Patella
- Femur
- OCD
- Tibia
- Occult Fxs
- Ligaments
- Menisci

www.radwiki.net/main/index.php?title=Bipartite_patella
JP Lawson. Radiology 1985; 157: 625-631.

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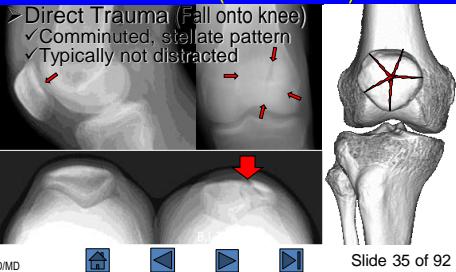
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Patella Fractures (Uncommon)

- Bones
- Radiographs
- Fluid
- Fractures**
- Patella
- Femur
- OCD
- Tibia
- Occult Fxs
- Ligaments
- Menisci

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Patella Fractures (Uncommon)

- Bones
- Radiographs
- Fluid
- Fractures**
- Patella
- Femur
- OCD
- Tibia
- Occult Fxs
- Ligaments
- Menisci

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Knee Imaging

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Femur Fracture

Bones
Radiographs
Fluid
Fractures
• Patella
• Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci



Condyle fractures: rare
Supra-condylar
Inter-condylar } more common

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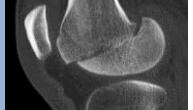
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Femoral Condyle Fracture

Bones
Radiographs
Fluid
Fractures
• Patella
• Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci

Uncommon Fx
➤ Results from shearing of condyle as femur is dislocated across tibia



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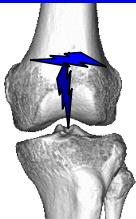
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Femoral Supra/Inter Condylar Fractures

Bones
Radiographs
Fluid
Fractures
• Patella
• Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci

More common
➤ From axial loading
✓ Fracturing between condyles
✓ Fracturing above condyles
➤ Increasingly common
✓ Older females (low energy)
✓ Younger males (high energy)



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Femoral Supra/Inter Condylar Fractures

Bones
Radiographs
Fluid
Fractures
• Patella
• Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci

➤ From axial loading
Femoral shaft impacted into/between condyles
with traction



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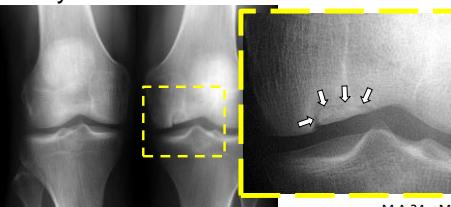
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Osteochondral Defect (OCD)

Bones
Radiographs
Fluid
Fractures
• Patella
• Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci

Fairly common



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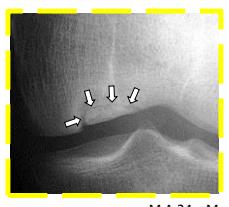
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Osteochondral Defect (OCD)

Bones
Radiographs
Fluid
Fractures
• Patella
• Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci

Fairly common
➤ Fx of bone "osteо" & cartilage "chondral"
➤ Adults: traumatic
➤ Children: idiopathic "osteochondritis dissecans"
➤ Femoral condyles
✓ Medial 4x > Lateral



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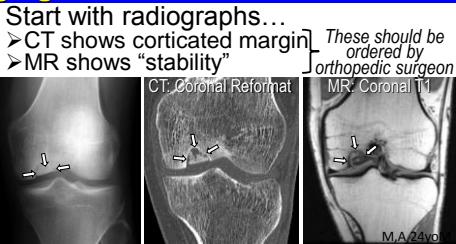
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Imaging Osteochondral Defects

Bones
Radiographs
Fluid
Fractures
Patella
Femur
● OCD
Tibia
Occult Fxs
Ligaments
Menisci

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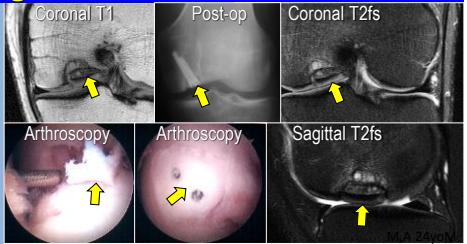
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Imaging Osteochondral Defects: MR

Bones
Radiographs
Fluid
Fractures
Patella
Femur
● OCD
Tibia
Occult Fxs
Ligaments
Menisci

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Knee Imaging

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Tibial Plateau Fractures

Bones
Radiographs
Fluid
Fractures
Patella
Femur
● OCD
Tibia
Occult Fxs
Ligaments
Menisci

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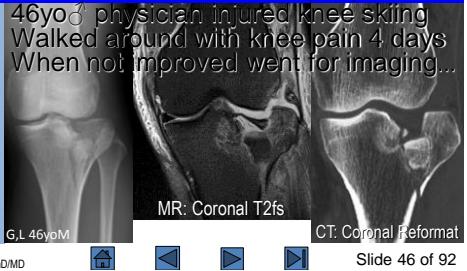
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Tibial Plateau Fracture (SII)

Bones
Radiographs
Fluid
Fractures
Patella
Femur
● OCD
Tibia
Occult Fxs
Ligaments
Menisci

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CT: Coronal Reformat

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Knee Imaging

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Tibial Plateau Fracture (SII)

Bones
Radiographs
Fluid
Fractures
Patella
Femur
● OCD
Tibia
Occult Fxs
Ligaments
Menisci

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Tibial Plateau Fracture (SII)

Bones
Radiographs
Fluid
Fractures
Patella
Femur
● OCD
Tibia
Occult Fxs
Ligaments
Menisci

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Post-operative

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Knee Imaging

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Knee Imaging

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Non-displaced (Occult) Fractures

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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- The way we diagnose fractures on radiographs is to see displaced fragments.
- Non-displaced Fx can be radiographically occult. So how do we detect occult knee fractures?
- ❸ CT often doesn't help.
- Fxs non-displaced by radiographs are non-displaced on CT
- ❸ MR doesn't miss non-displaced Fxs.
- Can't send every ER patient with knee pain to MR

There is a trick!

➤ Look for lipohemarthrosis on cross-table lateral!



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Knee Imaging

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Radiographic Views: In Clinic

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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AP & Lateral views shot with patient standing.



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Radiographic Views: In ER

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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Shot with patient lying on a cart.

- AP view
- ✓ Vertical X-ray beam



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Knee Imaging

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Radiographic Views: In ER

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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Shot with patient lying on a cart.

- Lateral view
- ✓ Vertical X-ray beam
- ✓ Parallel to gravity



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Knee Imaging

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Radiographic Views: In ER

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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UW MSK Policy: All ER knees shot X-Table Lat.

- Shot with patient lying on a cart.
- Cross-Table Lateral view
- ✓ Horizontal X-ray beam
- ✓ Perpendicular to gravity



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Knee Imaging

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Types of Joint Effusions

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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Synovial fluid

- From inflamed synovium
- ✓ Arthritis

Blood: "Hemarthrosis"

- From torn vascularized structure
- ✓ Anterior Cruciate Ligament tear

Fat+Blood: "Lipohemarthrosis"

- Fat comes from fatty yellow bone marrow
- ✓ Indicates presence of intra-articular fracture



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Knee Imaging

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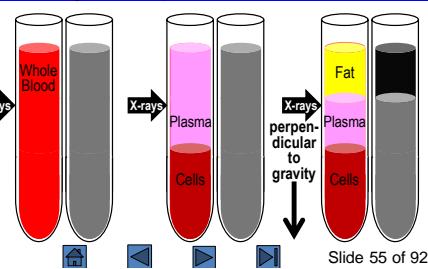
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Thought Experiment

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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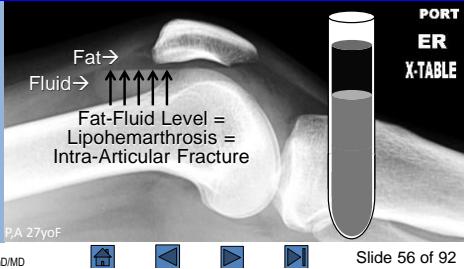
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Lipohemarthrosis on X-Table Lateral

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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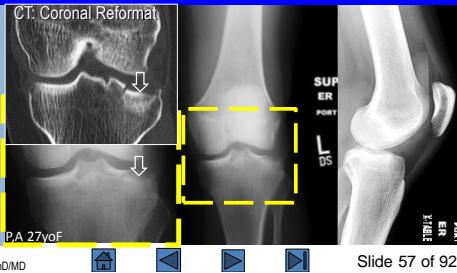
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Lipohemarthrosis on X-Table Lateral

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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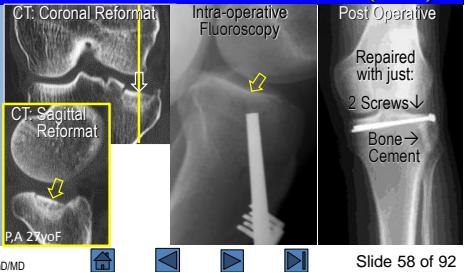
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Impacted Tibial Plateau Fracture (SIII)

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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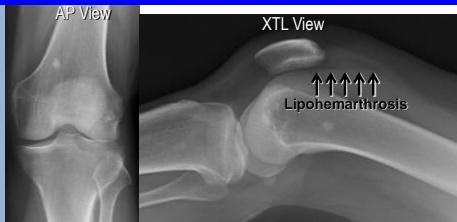
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Occult Fracture

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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Occult Fracture

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
● Occult Fxs
Ligaments
Menisci

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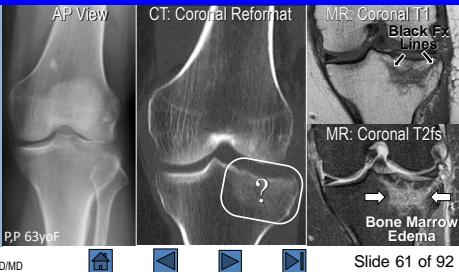
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MR Doesn't Miss Fractures

Bones
Radiographs
Fluid
Fractures
Patella
Femur
OCD
Tibia
Occult Fxs
Ligaments
Menisci

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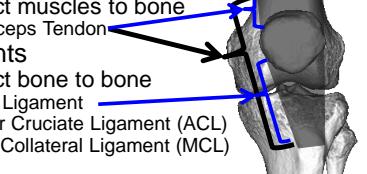
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Ligaments & Tendons

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
ACL Tears
Menisci

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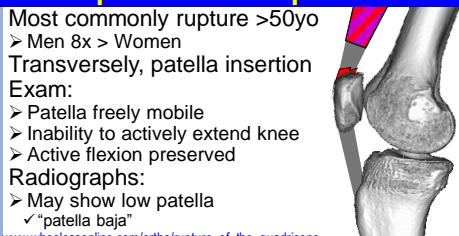
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Quadriceps Tendon Rupture

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
ACL Tears
Menisci

www.whelessonline.com/ortho/rupture_of_the_quadriceps
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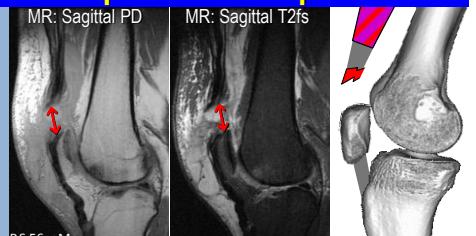
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Quadriceps Tendon Rupture

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
ACL Tears
Menisci

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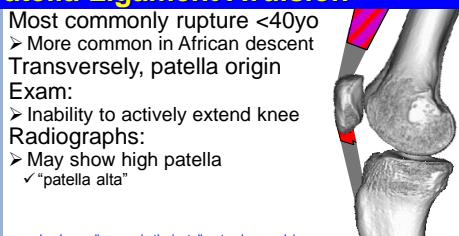
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Patella Ligament Avulsion

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
ACL Tears
Menisci

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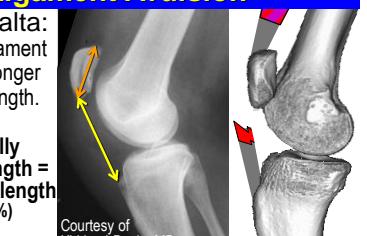
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Patella Ligament Avulsion

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
ACL Tears
Menisci

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Knee Imaging

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Knee Imaging

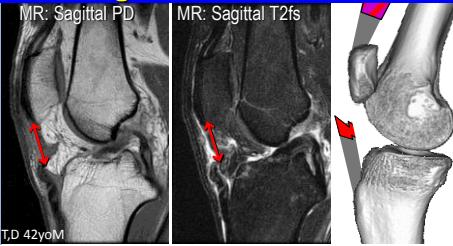
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Patella Ligament Avulsion

Bones
Radiographs
Fluid
Fractures
Ligaments

- Quadriceps
- Collaterals
- Cruciates
- ACL Tears

Menisci



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Knee Imaging

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Medial Collateral Ligament (MCL)

Bones
Radiographs
Fluid
Fractures
Ligaments

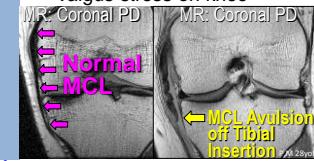
- Quadriceps
- Collaterals
- Cruciates
- ACL Tears

Menisci

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From above condyle to below plateau

- Frequently injured
- ✓ Lateral clipping injury
- ✓ Valgus stress on knee



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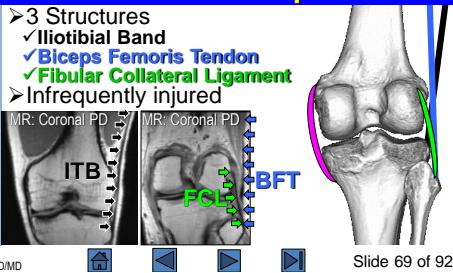
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Lateral Collateral Complex

Bones
Radiographs
Fluid
Fractures
Ligaments

- Quadriceps
- Collaterals
- Cruciates
- ACL Tears

Menisci



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Cruciate Ligaments

Bones
Radiographs
Fluid
Fractures
Ligaments

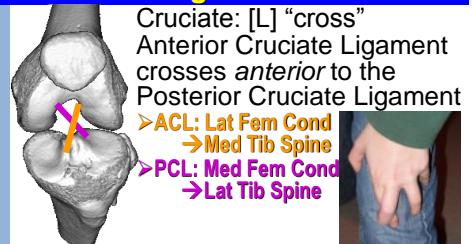
- Quadriceps
- Collaterals
- Cruciates
- ACL Tears

Menisci

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Cruciate: [L] "cross"
Anterior Cruciate Ligament crosses *anterior* to the Posterior Cruciate Ligament

- ACL: Lat Fem Cond → Med Tib Spine
- PCL: Med Fem Cond → Lat Tib Spine



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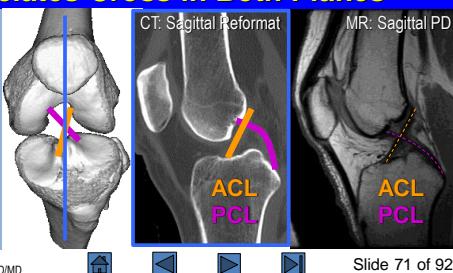
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Cruciates Cross in Both Planes

Bones
Radiographs
Fluid
Fractures
Ligaments

- Quadriceps
- Collaterals
- Cruciates
- ACL Tears

Menisci



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Cruciate Ligament Tears

Bones
Radiographs
Fluid
Fractures
Ligaments

- Quadriceps
- Collaterals
- Cruciates
- ACL Tears

Menisci

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PCL infrequently tears
Surgical reconstruction of the PCL is controversial

- ACL frequently tears
- Requires surgical reconstruction
- Sports related twisting injury
- Torn ACL allows anterior displacement of the tibia relative to the femur.
- ✓ Anterior Draw Sign

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Knee Imaging

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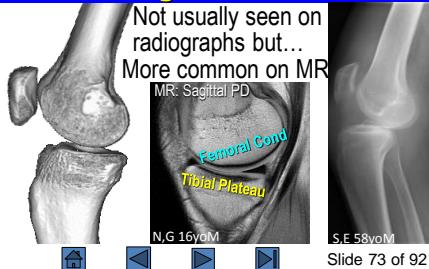
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Anterior Draw Sign = ACL Tear

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
● ACL Tears
Menisci

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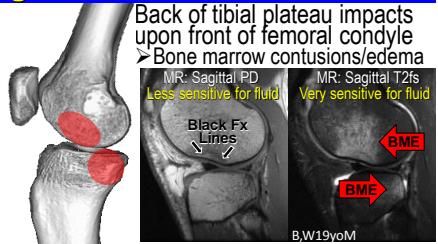
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Kissing Contusions = ACL Tear

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
● ACL Tears
Menisci

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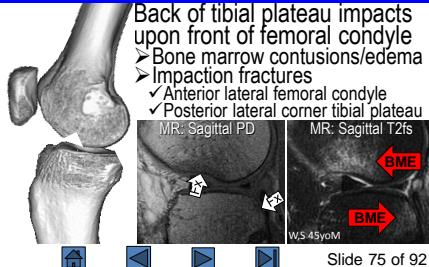
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Impaction Fractures from ACL Tear

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
● ACL Tears
Menisci

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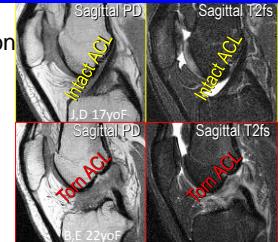
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ACL Tears on MRI

Bones
Radiographs
Fluid
Fractures
Ligaments
Quadriceps
Collaterals
Cruciates
● ACL Tears
Menisci

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Menisci

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci
Normal Anatomy
Horizontal Tear
Longitudinal Tear
Radial Tear
Flipped Fragment
Bucket handle

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- Looking at the menisci is the primary indication for ordering MRI of the knee
- To assess for fractures, arthritis
 - ✓ Order radiographs
- Surgical planning fracture repair
 - ✓ Order CT
- To assess for ACL tear
 - ✓ At least start with physical exam...
- To assess for meniscal tear
 - ✓ Radiographs, PE not helpful
 - ✓ Order MRI!

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Menisci: Function

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci
● Normal Anatomy
Horizontal Tear
Longitudinal Tear
Radial Tear
Flipped Fragment
Bucket handle

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- Curved femoral condyles
- Flat tibial plateau
 - ✓ Composed of fibrocartilage
 - ✓ Triangular in cross-section
 - ✓ Function like "O"-rings...
 - ✓ "C"-shaped

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Knee Imaging

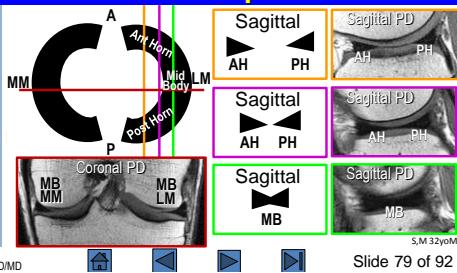
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Menisci: C-shaped

- Bones
- Radiographs
- Fluid
- Fractures
- Ligaments
- Menisci**
- Normal Anatomy
- Horizontal Tear
- Longitudinal Tear
- Radial Tear
- Flipped Fragment
- Bucket handle



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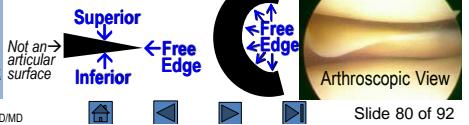
Meniscal Tears

- Bones
- Radiographs
- Fluid
- Fractures
- Ligaments
- Menisci**
- Normal Anatomy
- Horizontal Tear
- Longitudinal Tear
- Radial Tear
- Flipped Fragment
- Bucket handle

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Meniscal tears are seen on MR as increased signal that extends to an **articular surface** on at least 2 slices
➤ 1 slice only touches called "possible tear"
➤ 50% of these are torn at arthroscopy

Articular surfaces:



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Horizontal Tear

- Bones
- Radiographs
- Fluid
- Fractures
- Ligaments
- Menisci**
- Normal Anatomy
- Horizontal Tear
- Longitudinal Tear
- Radial Tear
- Flipped Fragment
- Bucket handle

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"Cleavage tear"
➤ Cleaves the meniscus into upper/lower



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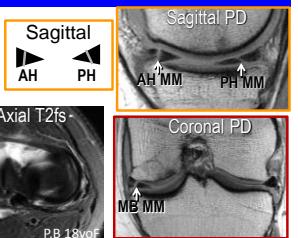
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Longitudinal Tear

- Bones
- Radiographs
- Fluid
- Fractures
- Ligaments
- Menisci**
- Normal Anatomy
- Horizontal Tear
- Longitudinal Tear
- Radial Tear
- Flipped Fragment
- Bucket handle

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"Vertical tear"
➤ Separates meniscus into inner/outer



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Knee Imaging

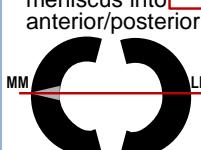
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Radial Tear

- Bones
- Radiographs
- Fluid
- Fractures
- Ligaments
- Menisci**
- Normal Anatomy
- Horizontal Tear
- Longitudinal Tear
- Radial Tear
- Flipped Fragment
- Bucket handle

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Radiates from free edge outward
➤ Separates meniscus into anterior/posterior



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Flipped Meniscal Fragment

- Bones
- Radiographs
- Fluid
- Fractures
- Ligaments
- Menisci**
- Normal Anatomy
- Horizontal Tear
- Longitudinal Tear
- Radial Tear
- Flipped Fragment
- Bucket handle

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Meniscus portion displaced within knee joint
➤ Can cause locking
➤ Decreased motion



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Knee Imaging

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Knee Imaging

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Bucket Handle Tear

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci
Normal Anatomy
Horizontal Tear
Longitudinal Tear
Radial Tear
Flipped Fragment
Bucket handle

Longitudinal tear where inner portion flips into the intercondylar notch, under PCL



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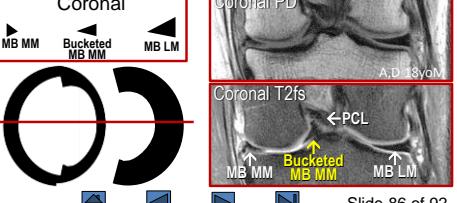
Knee Imaging

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Bucket Handle Tear

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci
Normal Anatomy
Horizontal Tear
Longitudinal Tear
Radial Tear
Flipped Fragment
Bucket handle

Longitudinal tear where inner portion flips into the intercondylar notch, under PCL



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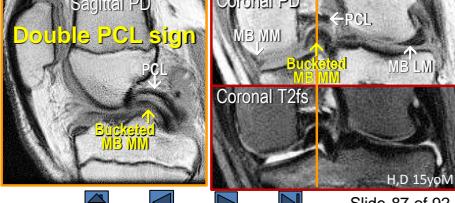
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Bucket Handle Tear

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci
Normal Anatomy
Horizontal Tear
Longitudinal Tear
Radial Tear
Flipped Fragment
Bucket handle

Longitudinal tear where inner portion flips into the intercondylar notch, under PCL



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Knee Imaging

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Knee: What to Order When (WOW)

Always start with radiographs!

- Diagnose arthritis, assess progression
 - ✓ Joint space narrowing, osteophytes
- Diagnose fractures, assess healing
 - ✓ Fracture displacement, articular involvement
- Look for loose bodies
 - ✓ See if bodies move over time
- Screen for unexpected findings
 - ✓ Tumors
 - ✓ Metal foreign bodies

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Knee Imaging

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Knee: What to Order When (WOW)

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci

Radiographs: Need at least 3 views

- 1) AP
 - ✓ Med & Lat: Condyles, Plateau, Compartments
- 2) Lateral
 - ✓ Perpendicular to AP view
 - ✓ Shows Patella
 - ✓ ER: X-Table Lateral may show lipohemarthrosis
- 3) Sunrise
 - ✓ Best view for patellofemoral compartment
- 4) Notch (part of a 4-view series)
 - ✓ Shows posterior condyles

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Knee Imaging

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Knee: What to Order When (WOW)

- MRI:** Frequently ordered for knee pain
- Internal derangement
 - ✓ Meniscal tears
 - ✓ Ligament tears (ACL, MCL)
 - ✓ Cartilage defects
 - Occult/non-displaced fractures
 - ✓ MRI does not miss fractures

BEST IF ORDERED BY KNEE SPECIALIST!

- They may prefer certain sequences
- They may prefer certain MR scanners

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Knee Imaging

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Knee Imaging

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Knee: What to Order When (WOW)

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci

- CT: Infrequently ordered for knee pain
- Primary use is in the ER to assess the alignment of fracture fragments (shown on radiographs) to aid in surgical planning
 - ✓ Should be ordered by the surgical team
 - Occasionally, for patients who are not MR compatible, we will do an Arthrogram-CT to assess for internal derangement
 - ✓ Should be ordered by the knee specialist

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Knee Imaging

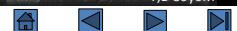
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Questions?

Bones
Radiographs
Fluid
Fractures
Ligaments
Menisci



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