Patellar Instability for Primary Care and Therapists

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Sports Medicine

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Case 1 KD

- HPI
  - 18 yo F c/o L knee pain after feeling a pop in her knee as she fell to the ground, then felt something pop again as she got up to sit on the EMS stretcher.
- PE
  - TTP over the medial side of the patella
  - + Apprehension, 3+ quadrant shift
  - + J sign


R
LEF
KNEE 3 VIEWS (3) Img 1
1144 x 1588 x 14
5 cm

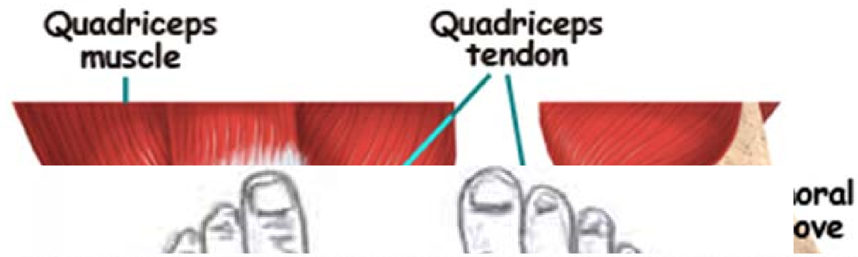

R
LEF
5 cm

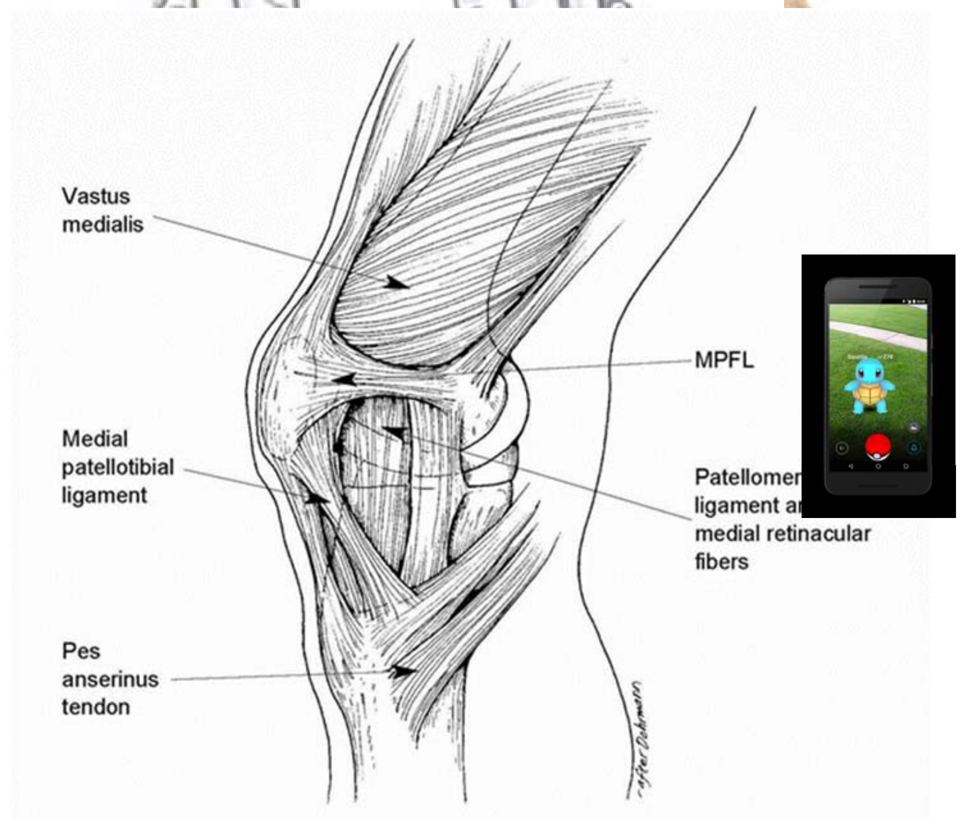
Case 1 KD

- What is the differential diagnosis/prognosis?
- How would you treat it?
- How would you rehab?

Patellofemoral Anatomy

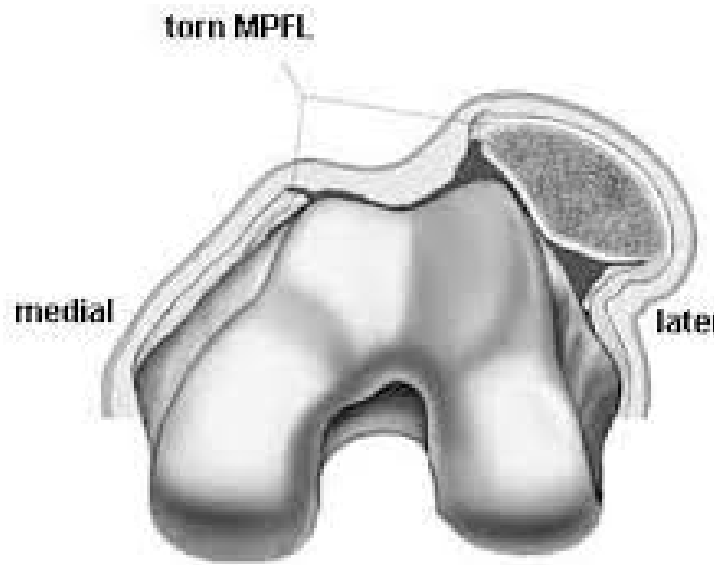
- Patellar Stability
  - Trochlear groove and patellar shape **bony stabilizer**
  - MPFL **soft tissue stabilizer**
    - 53% of restraining force
  - Quads (VMO) **dynamic stabilizer**





Patellar Instability

- Pathology
  - Patellar mal-TRACKING as a DYNAMIC incongruence betwe
    trochlea



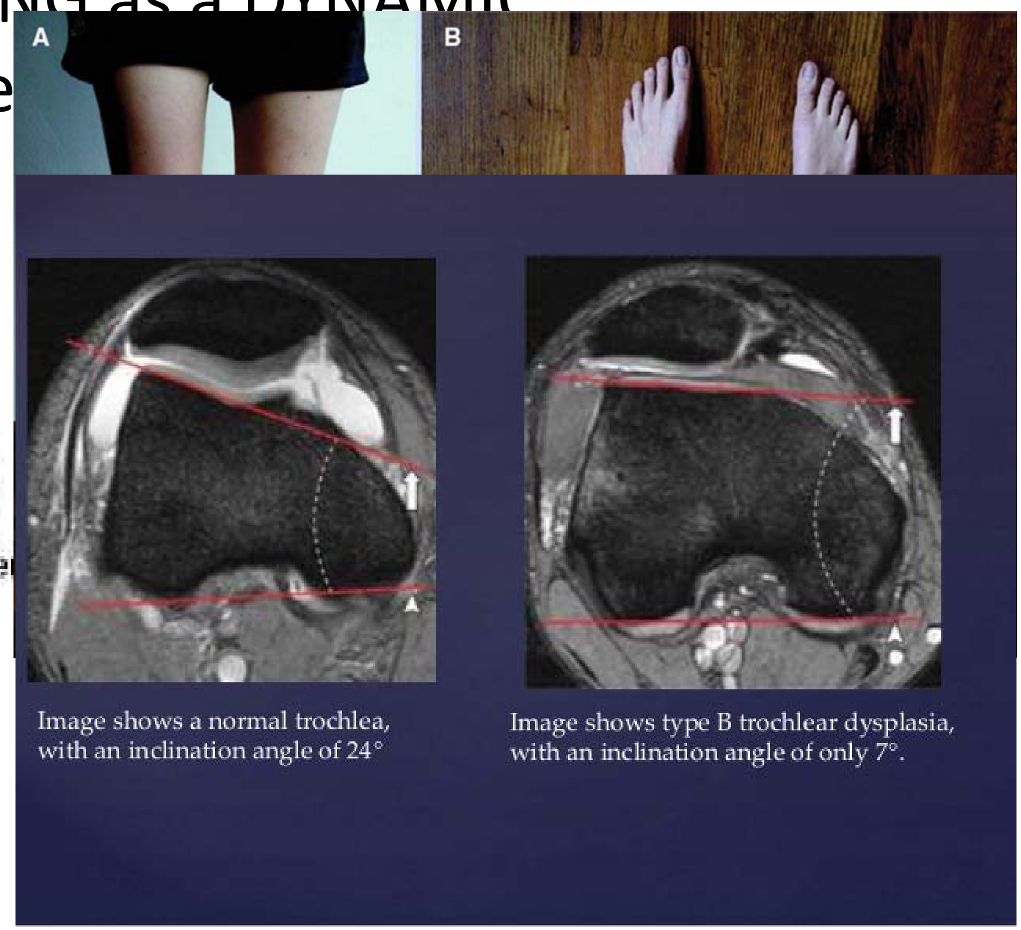
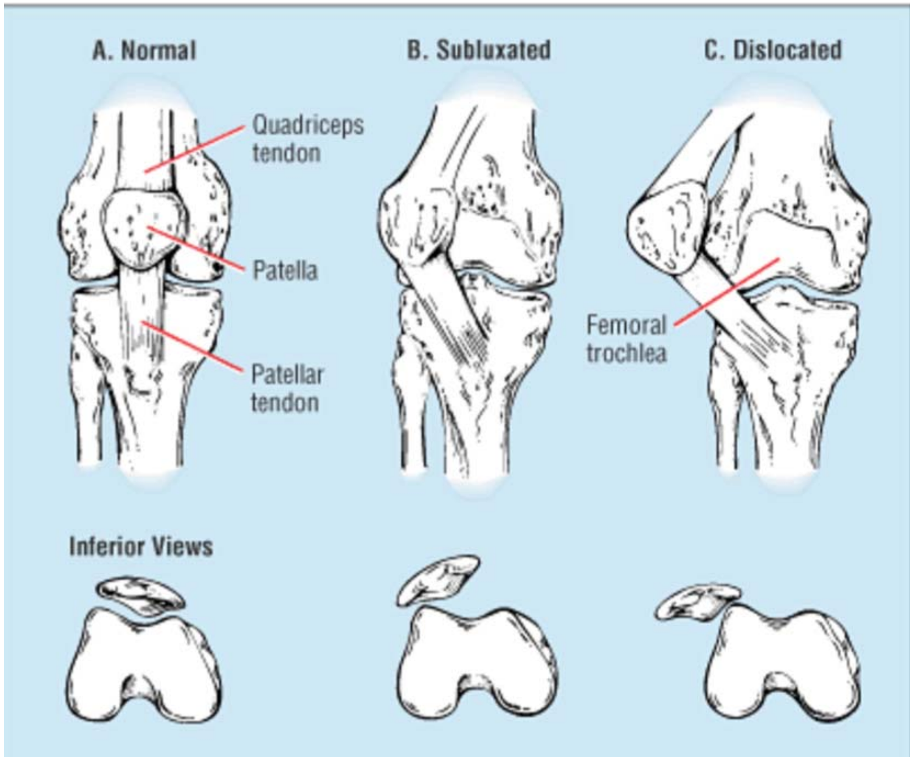


Image shows a normal trochlea, with an inclination angle of 24°

Image shows type B trochlear dysplasia, with an inclination angle of only 7°.

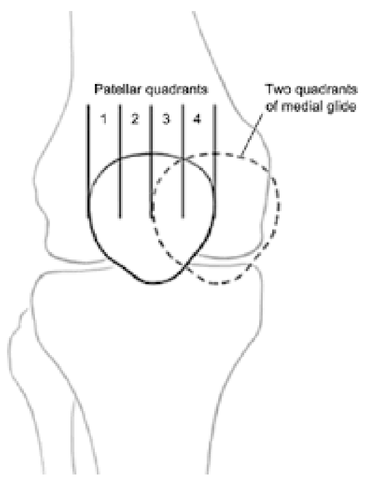
Pathology

- Typical injury pattern
  - strong quadriceps contraction, a flexed and valgus knee position, and an internally rotated femur on an externally rotated tibia

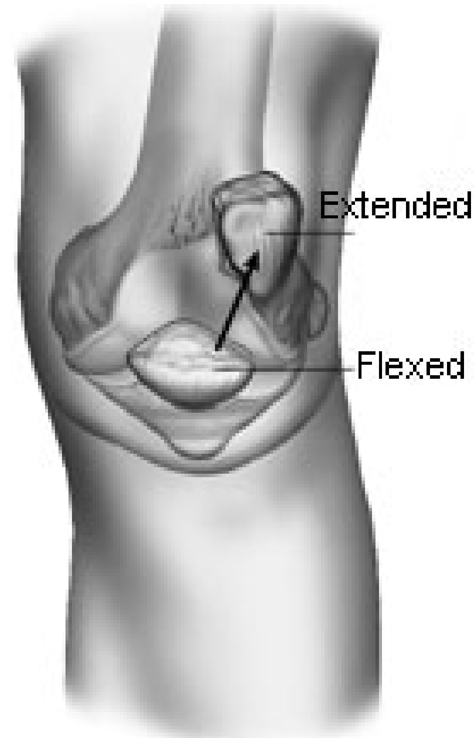


Physical Exam

- Patellar Glide Test
  - Knee in extension, shift patella and it should not shift more than 2 quadrants
- Apprehension Test
  - Flex the knee slightly and shift the patella, discomfort is positive test



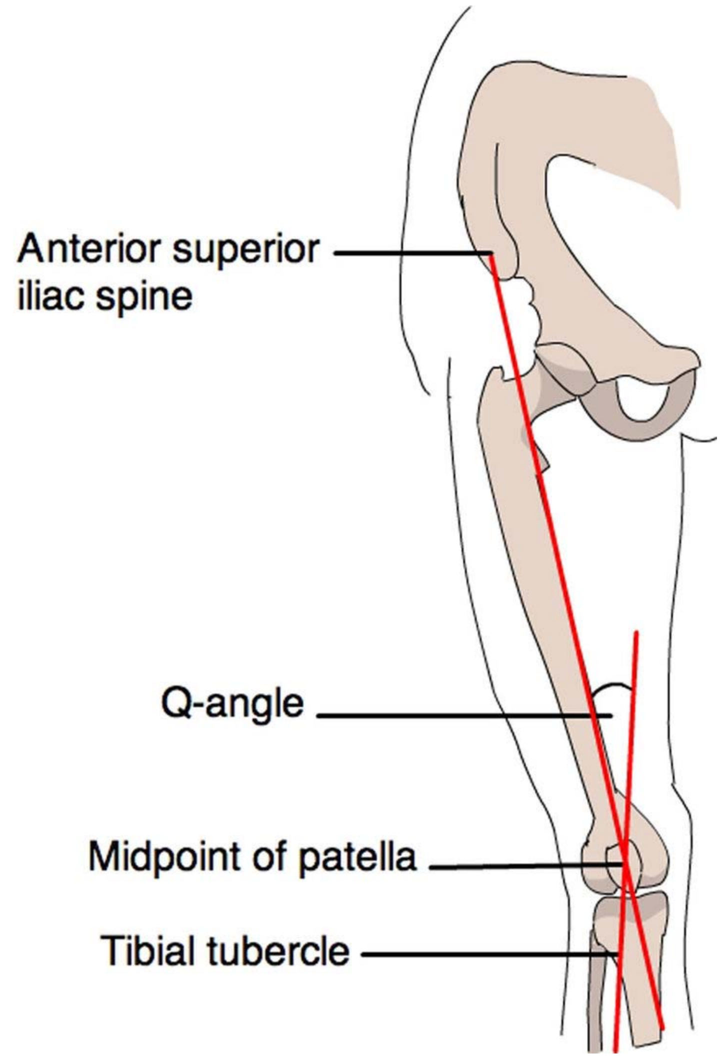
Physical Exam



- J sign
  - Patella is centered with knee in flexion but subluxates laterally as knee goes into full extension in patients with subluxed patella

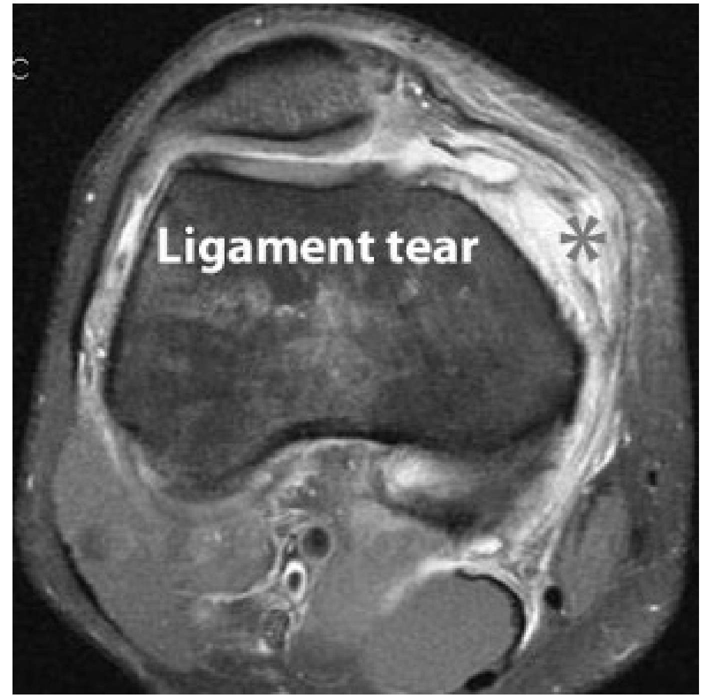
Physical Exam

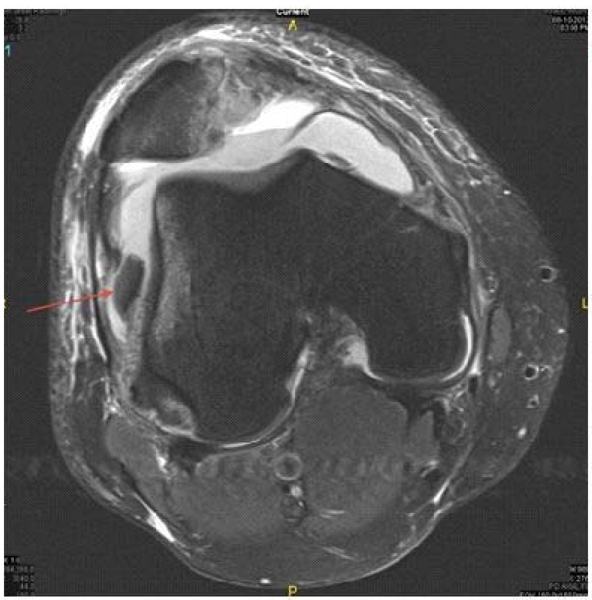
- Q angle
  - Males 10-14 deg
  - Females 15-17 deg

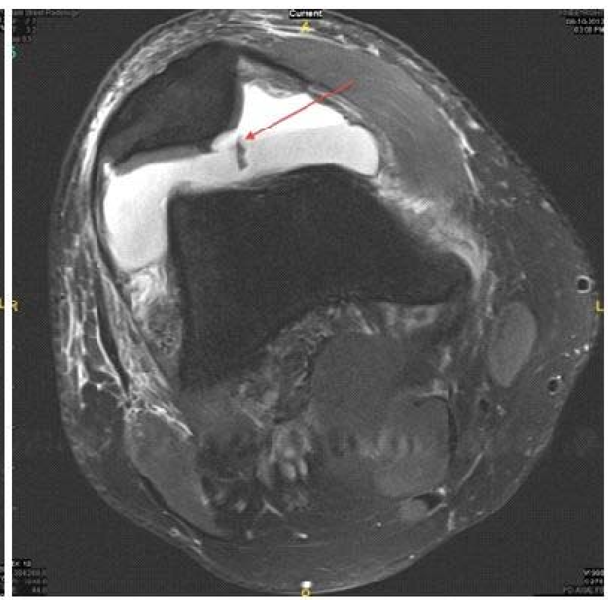


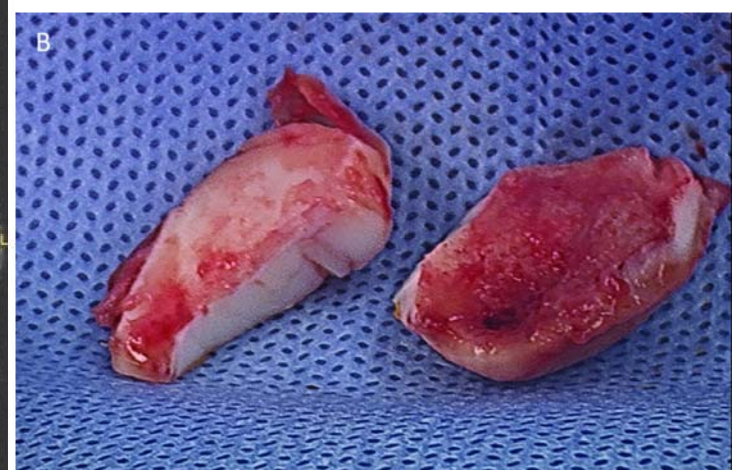
Advanced Imaging

- MRI
  - Occult osteochondral fractures
  - Cartilaginous loose bodies
  - MPFL tear characterization



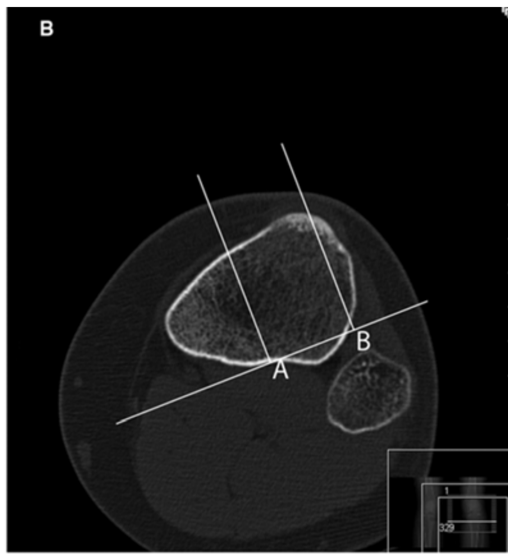






MRI

- TT-TG distance
  - Tibial Tubercle to Trochlear Groove
  - Normal < 10- 15mm



Recurrence/Instability

- 1st Time Dislocation
  – 15- 44% Recurrence (Palmuet, JBJS 2008)

- 2nd Time Dislocation
  – > 50- 65% Recurrence (Fithian, Sports Med Arthrosc Rev 2007)

Recurrence/Instability

- Young
- Female
- Family history
- Bilateral
- Atraumatic dislocations
- Anatomic abnormalities
  - Patella alta
  - Trochlear dysplasia
  - Hypermobility
  - Quad dysfunction

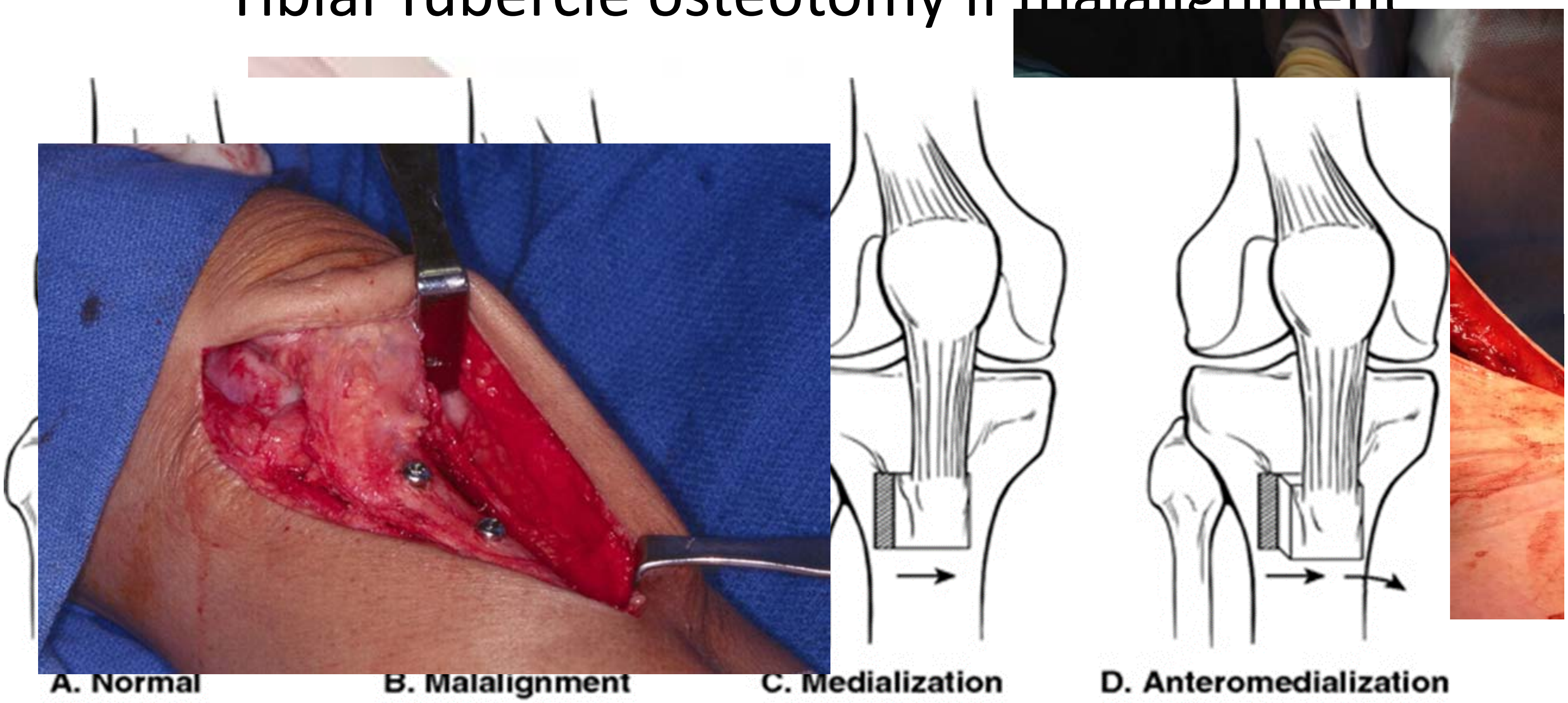
Treatment (Non-operative)

- 4-6 weeks
  - Knee immobilizer, WBAT
- After 4-6 weeks
  - Patellofemoral stabilizing brace thereafter for activities
  - PT for ROM and Strengthening
    - Quadriceps- especially VMO

- *Treatment for 1st time/2nd time

Treatment (Operative)

- Surgery
  - MPFL repair or reconstruction surgery with auto/allograft
  - Tibial Tubercle osteotomy if malalignment



Rehab

- Address dynamic dysfunctions of the leg
  - Core and hip strengthening
    - Improve limb positioning and balance
    - Hip abductors, gluteals, abdominals
  - Closed chain short arc quadriceps exercises



Questions?

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Reading References

- Colvin AC, West RV. **Current Concepts Review: Patellar Instability**. JBJS Am 2008, 90(2): 751-62
- Minkowitz R, Inzerillo C & Sherman OH. **Patella Instability**. Bull NYU Hosp Jt Dis 2007, 65(4): 280-93
- Boden BP et al. **Patellofemoral Instability: Evaluation and Management**. JAAOS 1997, 5(1): 47-57