



Podcast Notes OCD Lesions of the Knee w/ Dr. Meghan Bishop

Incidence

- 1.2% based on knee ATS
- Highest between patients 10-15
- male > female

Etiology

- Constitutional factors
 - Maybe a variation of epiphyseal dysplasia
 - Seen in pts w/ dwarfism, tibia vara, Legg-Calve- Perthes, Stickler's syndrome
- Vascular factors
 - Maybe due to a paucity of vascular supply to femoral condyle
 - Though some studies refute this
- Traumatic factors
 - Possibly due to repetitive microtrauma > chronic osteochondral injury > OCD lesion
 - Shear forces to the lateral aspect of medial femoral condyle
 - VS repetitive impingement from tibia spine (seen when knee rotates medially while loading in flexion)
 - Juvenile OCD- may be disturbance of epiphyseal development > results in small accessory areas of subchondral bone that separate from principal ossification center of epiphyseal plate
 - Adult- more direct traumatic- Simile

History

- Open physes- Juvenile onset OCD vs skeletal maturity - adult form
- Early OCD lesions:
 - Poorly defined complaints
 - Anterior knee pain w/ variable swelling
- Advanced OCD:
 - + catching, locking, giving way

Physical Examination

- ER of tibia during gait- may compensate for impingement of tibial eminence on medial condyle OCD lesion
- Wilsons test- pain w/ IR tibia during extension of knee between 90 and 30 deg w/ pain relief w/ ER
 - Poor predictive value

Imaging studies

- WB AP and lateral x rays
- Notch view + axial view can help identify posterior condyle + trochlea/patella lesion respectively
- X Rays show- lesion size, presence/absence of sclerosis , potential dissection
- Cahill & Berg- zone method to describe + localize lesions
- Tc 99m phosphate scintigraphy
 - Grading system based on degree of scintigraphic activity in relation to plain radiographs
 - Stage 0 - normal in both > to stage 4- inc uptake in both lesion and adjacent tibial surface
- MRI
 - Several people classify characteristics
 - Dipaola- based on MRI appearance + findings w/ potential for fragment detachment
 - Lesions w/ fluid behind joint as partially or completely detached
 - Others add criteria for fragment instability:
 - Area of decreased homogenous signal >5mm in diameter beneath lesion
 - Focal defect <5mm in articular surface
 - High signal line traversing subchondral plate into lesion

Classification

- MC at lateral aspect of medial femoral condyle
- Lateral femoral condyle involvement 15%
 - More commonly assoc w/ discoid meniscus
- Patella involvement around 5%
- Berndt & Harty- 4 stages of chondral lesions of talus- applied to knee lesions
 - I- involvement of small area of compression of subchondral bone
 - II- partially detached osteochondral fragment
 - III- completely detached fragment still in underlying crater
 - IV- complete detachment/loose body
- Guhl- arthroscopic staging- defined by cartilage integrity + fragment stability
 - Type I- cartilage softening but no breach
 - II- breached cartilage thats stable
 - III- definable fragment partially attached (flap)
 - IV- loose body + osteochondral defect at donor site

Natural history and prognosis

- European Paediatric Orthopaedic society
 - When no signs of dissection- prognosis is better
 - Pain + swelling- not good indicators of dissection

- Xray + CT- not useful in predicting dissection
- Sclerosis on pain xray predicts poor response to drilling
- Lesions >2cm have worse prognosis than smaller lesions
- If dissection noted- surgical results better than non-surgical tx
- Lesions in classic location- better prognosis

Management + outcomes

- Early OCD + adults w/ stable lesions
 - Discussion w/ patient + family. Sxs exacerbated by activity/ sporty- should be limited
 - Activity modification, limited WB w/ crutches, braces/casts for non-compliant patients
 - Pain control w/ non-NSAID (acetaminophen)
 - If persistent pain/ episodes of swelling/ effusions> possible surgical intervention
 - Consider concurrent pathology in adults (malalignment, instability, arthritis)

Surgical management

- Indication:
 - Failure of non-op management + unstable lesions
 - Procedure depends on lesion stability
- Arthroscopy + assess stability
 - Assess: integrity of overlying cartilage + lesion stability (intact, not intact + stable, not intact + unstable)
 - Intact cartilage- either stable or not
 - Damaged cartilage- unstable
 - Further divided into- pre detached, hinged, or loose
- Treatments:
 - Stable lesion w/ normal articular cartilage- subchondral drilling
 - Stimulates vascular ingrowth + subchondral bone healing
 - Retrograde drilling technique
 - Transchondral drilling - excellent outcomes
 - Drilling tends to work better in skeletally immature patients
 - Unstable lesions
 - ORIF w/- K wires, cannulated screw, herbert screws, bone pegs
 - Assoc w/ second surgery and complications (implant fx, cartilage damage)
 - Biodegradable implants- assoc w/ sterile abscess formation, synovitis, loss of fixation
 - Loose body removal - rarely effective
 - Compression + bone grafting
 - +/- curettage, reduction, + fixation
 - Partially attached fragment is reflected + fibrocartilage is removed from subchondral surface
 - Headless screws, or 4.5mm headed screw countersunk below cartilage surface

- Hardware is removed after 6-12 weeks
- If full thickness defect
 - ACI, mosaicplasty, osteochondral allograft

AAOS consensus recommendations

- Symptomatic skeletally immature + mature patients w/ salvageable untable or displaced OCD lesions should be offered surgery
- If continued symptoms after OCD tx: have an H&P, x rays, and MRI to assess healing
- If patient received surgery for OCD lesion, that they be offered post-op therapy

Sources:

Crawford, D. C., & Safran, M. R. (2006). Osteochondritis dissecans of the knee. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, 14(2), 90-100.

Chambers, Henry G., Kevin G. Shea, and James L. Carey. "AAOS Clinical Practice Guideline: diagnosis and treatment of osteochondritis dissecans." *JAAOS-Journal of the American Academy of Orthopaedic Surgeons* 19.5 (2011): 307-309.