Posterior Shoulder Instability: Arthroscopic Treatment

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Objectives

- Define posterior shoulder instability
- Discuss the pathogenesis
- Discuss the evaluation and work-up
- Discuss the non-operative treatment
- Discuss the surgical treatment
  - Open treatment
  - Arthroscopic treatment

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Objectives – 7 min

- Define posterior shoulder instability
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Posterior Instability - Introduction

- 5%-20% of all glenohumeral instability: Incidence may be rising:
  - Increased participation in collision sports:
    - > 1million participate in HS football
  - Improved recognition: It's always been seeing us but now we're seeing it too

Presentation

- Traumatic
  - Posterior force to anterior shoulder with arm adducted
    - Automobile accidents (head on collision)
  - Seizure or Electric Shock
    - IR > ER, Can be bilateral
- Atraumatic
  - Multidirectional (MDI): Posterior/Inferior
  - Repetitive: Football blocking, weightlifting
- Combination (acute on chronic)
  - Prodrome followed by traumatic event

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Posterior Instability - Heterogeneous

Classification:

- Traumatic posterior instability
  - Subluxation or dislocation; one or several
  - Labrum tear +/- Reverse Hill-Sachs
- MDI – posterior and inferior instability
  - Capsular stretch and labrum attenuation, often without tear
- Posterior labrum tear
  - With pain +/- instability
  - Frequently lumped together

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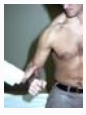
Physical Examination:

- Palpation
  - TTP posterior joint line, anterior (rotator interval)
- Inspection
  - Looking for signs of acute trauma
  - Asymmetry - loss of anterior fullness in posterior dislocation
- Strength
  - ER at side (posterior cuff)
    - Weakness was related to contusion (acute)
    - Weakness may relate to a spinoglenoid notch cyst/ SSN compression
  - Supraspinatus
  - Internal rotators
  - Deltoid
    - Axillary nerve palsy
  - Peri-scapular strength (dyskinesis)



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Instability Exam

- Inferior sulcus
- Load and shift test
- Posterior drawer
- Jerk test
- Kim test
- Apprehension/relocation
- Generalized ligamentous laxity (in MDI)

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Non-Operative Treatment - Posterior Instability

- When?
  - Atraumatic posterior instability
  - Traumatic with modest instability
  - Posterior labrum tear without instability (weightlifting injury)
- Pillars of Non-operative treatment:
  - Periscapular muscle strengthening/neuromuscular control
    - Scapular PREs
    - Plyometrics
    - Rhythmic stabilization
  - Core strengthening
  - Rotator cuff strengthening
  - Gradual return to sport
  - Minimum 3-6 months to gauge effectiveness

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Arthroscopic Repair

- Timing
  - Acutely: trauma with gross instability + bony/labrum injury
  - After failure of conservative Rx of traumatic/atraumatic posterior instability or bidirectional posterior-inferior instability (MDI)
- Indications
  - Posterior labrum tears
  - Small bony reverse Bankart lesions
  - Bi-directional (posteroinferior) instability (MDI)
- Components
  - Labrum repair
  - Addressing capsular stretch
  - Selective rotator interval plication (?)

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Technique

- Positioning:
  - Lateral decubitus
  - Beach chair
    - Less access inferiorly
- Exam under anesthesia
  - Posterior drawer (++ or +++)
  - Sulcus (with, without ER)
  - Jerk test

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Portals

- 2 working portals:
  - Anterior, posterior
- Accessory anterior portal
  - Trans-subscapularis, 5 o'clock
- Accessory posterior portal
  - Port of Wilmington, 7 o'clock
  - Blunt dilators (axillary nerve)

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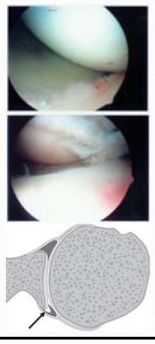
Diagnostic Arthroscopy

- Evaluate
  - Entire labrum (post, ant, sup, inf)
  - Capsule
  - Chondral surfaces
  - Cuff and biceps
  - Rotator interval
- Skybox view
- Labrum tear
  - more variable than for anterior instability
- Reverse Bankart
- Fissures, Kim's lesion
  - Antoniou and Harryman 2000
- Reverse Hills-Sachs



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Case 1 –

- 34 year old
- Fell off a dirt bike 4 years ago
- Pain and grinding with overhead presses and push-ups
- Sense of shoulder giving way
- + Jerk (clunk and pain)
- 2+ posterior drawer

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Case 1 – MRI

- Large posterior labrum tear
- GLAD type lesion
- Small reverse Hill-Sachs

- Surgery vs. rehab
- Desires to return back to overheads lifting

- Surgery

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Case 1 – Setup

- Lateral decubitus
  - Tilt patient back so glenoid parallel to floor
- Portals placed to obtain Skybox view
- Portals so that posterior lateral portal is a working portal
- Good joint distraction

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Case 1 – Examination Under Anesthesia

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Case 1 – Arthroscopy PLR1

Posterior labrum tear
- GLAD type chondral labrum separation
- Anterior labrum

Sub-labral foramen

No SLAP

No cuff / biceps lesion
- Small reverse Hill-Sachs

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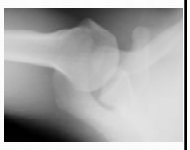
Case 2 –

- 20 year old
- Traumatic instability MVA
- Recurrent posterior instability
- + Jerk (clunk and pain)
- No previous problems



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Case 2 – Bone Reverse Bankart

- 20 year old
- Traumatic instability MVA
- Recurrent posterior instability
- + Jerk (clunk and pain)
- No previous problems

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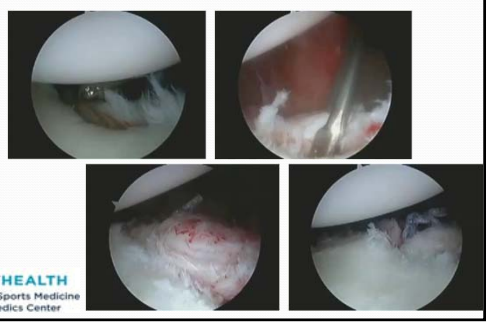
Case 2: Arthroscopic PLR

Incorporating bony reverse Bankart into repair



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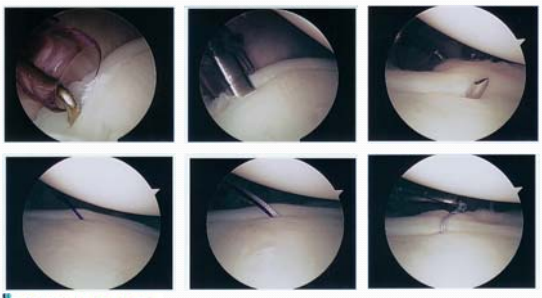
Acute on chronic

MDI with small posterior inferior tear



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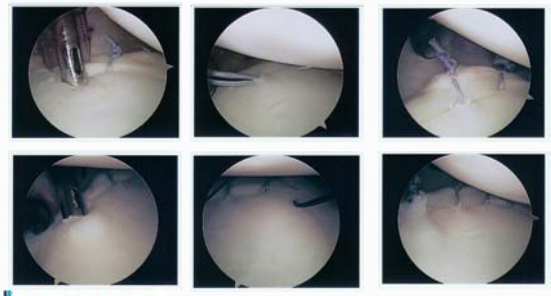

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Rotator Interval Repair

- Popularized by Savoie and others
- Supported by anatomic studies (Harryman et al.)

- Controversial
- Does not improve posterior stability
  (Mologne, Romeo, Provencher et al., AJSM, 2008)
- Potentially Harmful:
- Diminishes external rotation
  - Especially if too much tissue is incorporated
  - Especially if RI closure sutures placed too medially

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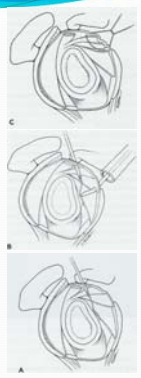
Rotator Interval Repair

- Not a routine part of posterior stabilization
  - Painful posterior labrum tear (without instability)
- Consider if there is an underlying MDI component:
  - Sulcus sign persists with ER
  - Patient with gross-instability who may tolerate some loss of motion
- Consider repair with absorbable suture
  - Titrate during rehab
- Consider limited repair
  - Incorporate RI tissue or anterior portal closure
    - Tie "blindly" or under direct visualization in SA space
  - Do not repair supraspinatus to subscapularis



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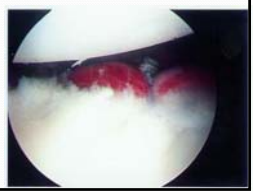
(McLaughlin, Savoie, and Field, 2005)

Paralabral Cysts

- Spinoglenoid notch cysts
  - Suprascapular nerve compression
- Labrum repair +/- cyst decompression
  - Closing the one-way valve



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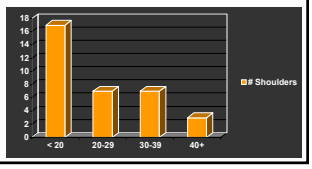
Personal Series- Posterior Instability

- 48 patients 11/2003-9/2008
- ≈ 120 patients currently
- Technique has remained nearly identical since 2003
  - Lateral decubitus positioning
  - Bioabsorbable anchors: from 3.0mm to 2.4mm, from PLLA to TCP composite
  - Percutaneous anchor placement
  - Port of Wilmington for 6,7 o'clock anchor, trans-subscapularis portal for 5 o'clock anchor
  - Selective RI closure: <10%



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Personal Series- Posterior Instability

- 85% had a posterior labrum tear at arthroscopy
- Mean 3.9 anchors (range 2-6)
- Mean 1.7 plication sutures (range 0-4)
- Mean 5.6 sutures (range 3-9)
- 12 with associated SLAP repair
- 8 with associated rotator interval repair
- Adjunctive procedures were uncommon
  - 3 PASTA debridements, 2 loose body removals
- 75% return to organized sport

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Rehabilitation

- Bracing
  - Arm at side or slight ER
  - 4 weeks (+2 weeks on/off, less for older patients)
- ROM
  - AAROM to 90° FE and 20° ER until 4 weeks
  - AROM in FE, ER at 4 weeks
  - IR at 6 weeks
- Strength Recovery
  - Isometrics immediately
  - Therabands at 4 weeks
  - Weight-lifting at 3 months
- Periscapular strength and coordination
- Return to sport
  - Collision sports at 6 months

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Results – Arthroscopic Posterior Capsulorrhaphy

- Abrams et al. 2002
  - 46/48 without recurrence: 4 painful & 2 stiff, 85% return to sport
- Kim et al. 2003
  - 26/27 (96%) stable at 3 years
- Bottoni et al. 2005
  - 31 shoulders (30 patients): 19 scope, 12 open
  - At 40 mos. scope repairs had higher WOSI, Rowe scores
- Provencher et al. 2005
  - 33 patients: 17 labrum repairs, 16 capsular plications
  - 7 failures (4 recurrence, 3 pain), 29/33 (88%) stable at > 3 years
- Bradley et al. 2009
  - 161 overhead and contact athletes, no RI closure
  - 90% G/E results, 93% for contact athletes, 89% return to sport

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Results – Arthroscopic Posterior Capsulorrhaphy

- Bradley et al. 2009
  - 161 overhead and contact athletes, no RI closure
  - 90% G/E results, 93% for contact athletes, 89% return to sport
- Bradley et al. Arthroscopy, 2015
  - 56 consecutive football players with posterior instability
  - At mean 45 months F/U, return to sport 93%, same level 79%
  - 96% satisfied
- Leivadiotou and Ahrens, Arthroscopy, 2015
  - Systematic review
  - 5 Level IV, 1 Level II, 396 shoulders
  - Mean recurrence rate 5%; 92.5% return to sport

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Summary

- Posterior instability is being treated more frequently
- Arthroscopic treatment is better than open
  - Better outcomes
  - Posterior cuff and deltoid are not violated
  - More predictable ROM recovery
  - Higher patient satisfaction
  - More predictable return to sport

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