Failed Anterior Instability: Why They Failed and How to Fix It

R. Alexander Creighton MD
Chief Sports Medicine UNC
Chicago Sports Medicine Symposium
8/14/15

Disclosures

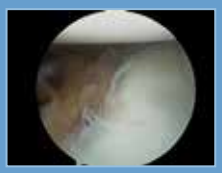
- Arthrex: Institutional Support
- Depuy/Mitek: Institutional Support

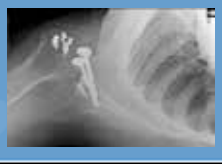
The Dilemma

- Not every instability patient the same
- Set yourself up for failure if try to perform wrong procedure for wrong problem
- High index of suspicion
  - History
  - PE
  - XRAY
  - MRI/CT
  - Previous operative report

When/Why Arthroscopic Repair Will Fail

- Soft Tissue Problems
  - Labrum
  - Capsule/IGHL
- Bone Deficiency
  - Glenoid
  - Humeral Head
- Surgeon
  - Technical
  - Correct Surgery?

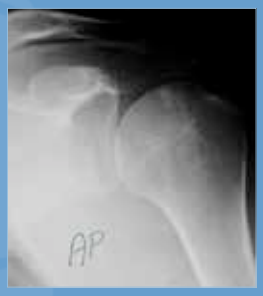




Glenoid defects

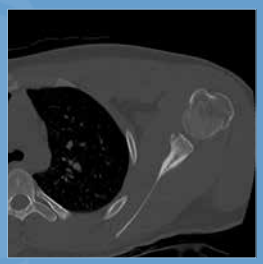
- Incidence with anterior dislocation is 5 to 32%
- Critical size
  - Rowe 30%
  - Itoi 21%
- Location
  - Anterior, not just anterior/inferior

Saito & Itoi-AJSM-2005



Glenoid Defects

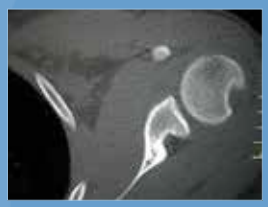
- Type 1-displaced avulsion with attached capsule
- Type 2-medially displaced capsule malunited medial to the glenoid rim
- Type 3-Erosion of glenoid rim
  - A<25%
  - B>25%



Bigliani-AJSM-1998

Hill-Sachs Lesion

- Reported first by Flowers (1861)
- Hill-Sachs(1940) described as compression fracture
- "Nothing can be done if they are found" Bankart, JBJS 1948
- Incidence 32-51%
- If present at 1st dislocation it increases risk of recurrent dislocation



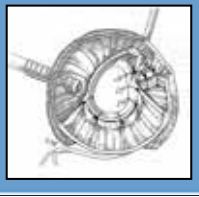
Hill-Sachs Lesion

- Engaging-the lesion engages the anterior glenoid in a normal position of athletic function (90^0 of abduction and ER)
- Nonengaging-the lesion is nonparallel to the anterior glenoid with the shoulder in functional position (engages with arm in extension not flexion)

Burkhart-Arthroscopy-2000

Ideal Surgical Technique

- Ability to define the lesion
- Establish healing potential
- Anatomic repair
- Appropriate ligament tensioning
- Secure fixation
- Treat all associated pathology
- Avoid complications
  - Neurovascular
  - stiffness



Traumatic glenohumeral bone defects and their relationship to failure of arthroscopic Bankart repairs: Significance of the inverted-pear glenoid and the humeral engaging Hill-Sachs lesion.

- Burkhart et al. Arthroscopy 2000
  - 194 cases retrospective review f/u 27 months
  - 21 pts recurrent instability; 14
    - No Bone Loss
      - 4% recurrence; 6.5% contact athletes
    - BONE LOSS
      - 67% recurrence; 89% contact athletes
  - Pts with significant bone loss
    Should undergo a reconstruction,
    Not soft tissue repair

Results and factors affecting outcome of revision surgery for shoulder instability

- Meehan et al. J Shoulder Elbow Surg 2005
  - 28 pts evaluated for failed open or arthroscopic
  - All underwent open revision surgery
  - Satisfactory results found in 21 pts (84%)
  - Negative outcome factors
    - Glenohumeral arthritis
    - Age greater then 30
    - 2 or more previous surgery
    - Bony bankart lesion
    - MDI
    - Surgery of non-dominant arm

The instability severity index score: a simple pre-operative score to select patients for arthroscopic or open shoulder stabilization

- Balg & Boileau J bone Joint Surg Br 2007
  - Prospective case-control study of 131, mean f/u 31.2 months, 19 (14.5%) had recurrent instability
  - Integrated 10-point pre-operative score
    - Age < 20 (2)
    - Competitive Sport (2)
    - Contact sport (1)
    - Shoulder hyperlaxity (1)
    - Hill-Sachs lesion on AP (2)
    - Glenoid loss of contour on AP (2)
  - Conclusion arthroscopic bankart repair is contraindicated with a score over 6, now suggest Bristow-Latarjet

Utility of the instability severity index score in predicting failure after arthroscopic stabilization of the shoulder

- Phadnis et al. Am J Sports Med 2015
  - Case-control study, Level III 141 consecutive pts
  - Score applied retrospectively, 19 (13.5%) had recurrent instability
    - Hill-Sachs lesion
    - Glenoid bone loss (HIGHEST RISK OF FAILURE 70%)
    - Age at surgery $\leq$ 21
    - Age at 1st dislocation
    - Competitive-level participation
    - Participation in contact or overhead sports
  - Score is useful preoperative tool, consideration for surgeons to perform alternative forms of stabilization if ISIS $\geq$ 4

Non-Anatomic vs Anatomic Reconstructions

- Non-Anatomic = Provides osseos or soft tissue check-rein that blocks excessive translation & restores stability
  - Bristow/Latarjet = Coracoid transfer
  - Magnuson-Stack = advancement of subscap
  - Putti-Platt = imbrication of subscap
  - Negatives
    - Loss of motion
    - Difficult revisions
- Anatomic = Reconstruction of the actual defects of glenoid and/or humeral head
  - Iliac crest bone graft
  - Allograft (Distal tibia; Glenoid; Humeral head)
  - Negatives
    - Iliac crest
      - Harvest/incisional pain
      - Nerve injury
    - Allograft
      - Cost
      - Graft incorporation
      - Graft resoption

Bushnell-Arthroscopy-2008

Revision arthroscopic shoulder instability repair

- Creighton et al. Arthroscopy 2007
  - 18 pts treated with revision arthroscopic repair
    - 9 were WC, 9 had previous thermal component, 1.55 surgeries prior
  - Surgery
    - 4-portal technique, mean 4.6 suture anchors, 15 RIC
  - 13 pts satisfactory result
    - VAS, SST, ASES
    - 5 of 9 WCs able to return to original work
  - 5 clinical failures
    - 3 for instability, 2 for pain

Franceschi AJSM 2008; Barnes AJSM 2009

Rim reconstruction with autogenous iliac crest for anterior glenoid deficiency: 43 instability cases followed for 5-19 years

- Steffen et al. J Shoulder Elbow Surg 2013
  - Retrospective review
    - 20 primary & 28 revision cases
    - Mean f/u 9.2 yrs
  - Results
    - 8/43 residual pain
    - 3/43 subjective instability, 1/43 re-dislocation and rev
    - 19/40 mild OA, 1/40 moderate
      - Arthrosis progressed by 1 stage in 7 of 35 shoulders
    - Mean residual defect was 4% & defect width 8.3%
  - Conclusion advantage of anatomic reconstruction and good preservation of joint

The latarjet procedure for the treatment of recurrence of anterior instability of the shoulder after operative repair: a retrospective case series of 49 pts

- Schmid et al. J Bone Joint Surg Am 2012
  - 49 consecutive pts had revision instability with coracoid transfer as described by Latarjet
  - Results
    - No repeat dislocation
    - 43 (88%) graded excellent/good, 3 fair, 3 poor
    - Dissatisfaction most associated with persistent pain
    - Progression of arthrosis related to improper graft placement
  - Conclusion is a Latarjet coracoid transfer can restore anterior GH instability. If recurrence associated with chronic pain, pain is likely to persist

Clinical outcomes following revision anterior shoulder stabilization: arthroscopic vs latarjet

- Frank et al. AOSSM 2015 meeting
  - Retrospective review of 91 shoulders requiring revision surgery, F/U 47 months (15 to 78)
    - Arthroscopic group (63 shoulders, average age 23)
    - >25% bone loss latarjet (28 shoulders, average age 27)
    - ASES, SST, WOSI, VAS
  - Results
    - Arthroscopic
      - WOSI 80, ASES(63.7-85.1), SST(6.2-9.1), VAS(2.89-0.81)
      - No patients developed arthritis
      - 12/63 = recurrent (19%)
        - » Number of prior surgeries and baseline hyperlaxity risk factors
    - Latarjet
      - 13 (46%) had more than one previous stabilization event
      - WOSI 71.9, ASES(65.7-87), SST(7.2-10.3), VAS(3.1-1.1)
      - 2/28 = recurrent (7%), 1 rapid arthritis requiring HA at 20 months
  - Conclusions both can lead to satisfactory results, but recurrent instability higher in arthroscopic group (19% vs 7%)

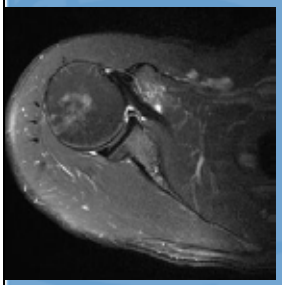
Technique-Lateral position

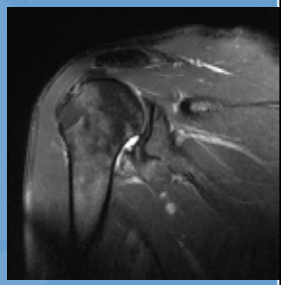
Same patient rolled into beach Chair position
-HAGL
-Anterior Bone RepairAugment

Case 1

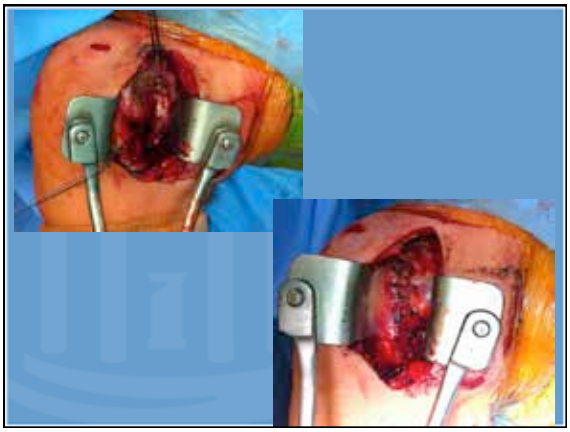
- 31 RHD PT initial right shoulder dislocation diving off 40 foot cliff. Had several more dislocations and the next year underwent arthroscopic repair in Ohio
  - Initially had good result, but sustained repeat dislocation 2 years after index surgery.
  - Rehabbed initially in while in PT school
  - Another dislocation surfing
  - Main complaint is pain and feeling of instability

Case 1



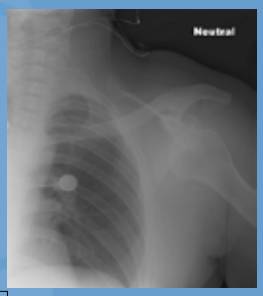


Case 1



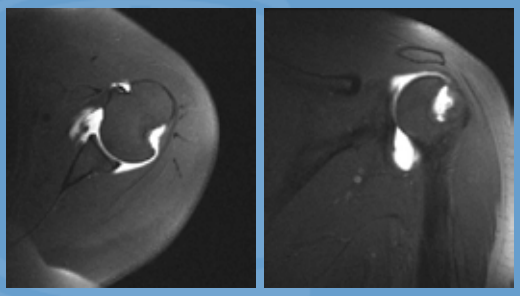
Case 2

- 29 female LHD nurse
  - Failure of previous arthroscopy
  - History of seizures
  - "40" dislocations

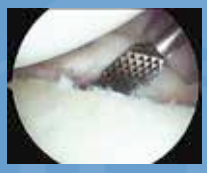


Bushnell-Techniques in Shoulder/Elbow-2007

Case 2

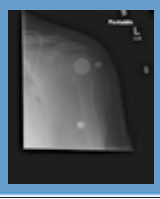


Case 2




Case 2

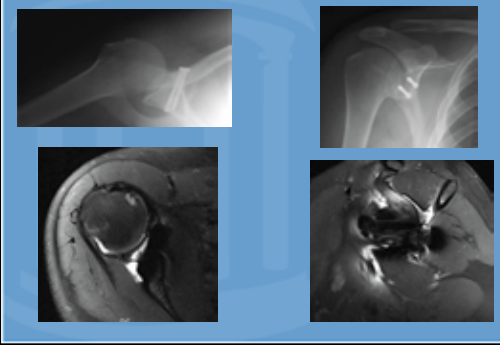


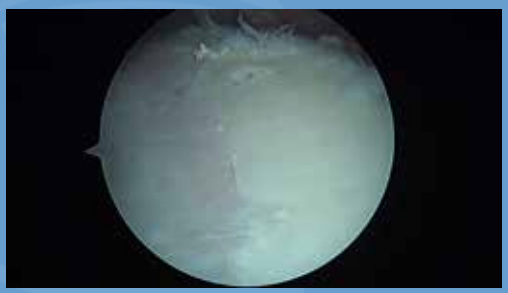
Case 3

- 25 year old RHD HVAC technician, previous failure of arthroscopic repair, then latarjet at age 20
  - Doing well for 5 years
  - Fell down stairs
  - Primarily complains of pain
  - PE
    - Painful arc motion
    - + apprehension

Case 3



Case 3



Conclusion

- Failure of shoulder stabilization surgery often related to uncorrected anatomic pathology
  - Capsular laxity
  - Large glenohumeral bone defects
- Identify patients at risk
  - History, PE, Imaging, previous operative report
- Revision procedures technically demanding, get surgery right 1st time

Thank You