Management of Humeral Bone Loss in Anterior Shoulder Instability

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Disclosure

• Smith and Nephew Endoscopy – fellowship support
Importance

- Bone loss (glenoid or humerus) frequent cause of recurrence
- Kuhn (evidence-based anterior instability):
  - “question isn’t whether arthroscopic Bankart is as good in contact athletes, it is whether it should be done with bone loss”
Burkhart (Arthroscopy, 2000)

- 194 arthroscopic Bankart repairs
- 7/173 failures without bone defects
- 14/21 failures with bone loss
- Contact athletes – recurrence 6.5% vs. 89%
Glenoid Bone Loss

- Bone loss and bony Bankart are very different
When to Address Glenoid Bone Loss

- Best measured on 3D CT scan
- Glenoid defect of around 20%
- Lower threshold
  - Revision surgery
  - Contact athlete
Surgical Options – Glenoid Bone Loss

- Open Bankart repair
- Glenoid bone graft
  - Laterjet (coracoid transfer)
  - Distal clavicle
  - Iliac crest
  - Distal tibial allograft
Hill-Sachs Lesion

- Impaction injury to posterolateral humeral head
- Described by Hill and Sachs in 1940
- Pathognomonic of anterior shoulder dislocation
Incidence of Hill-Sachs

- First-time dislocation: 47-80%
- Recurrent dislocator: approaches 100%
- Larger with dislocations of:
  - Greater duration
  - Multiple recurrences
  - Higher energy
• Regarding Hill-Sachs lesions
  “Nothing can be done about them if they are found”
Surgical Treatment Options

- Ignore
- Restrict external rotation (over-tighten capsule)
- Fill defect (allograft)
- Humeral head-plasty
- Remplissage (infraspinatus tenodesis)
- Rotational osteotomy
- Glenoid augmentation (Laterjet)
- Metal – hemi-CAP or hemiarthroplasty
When to Address Hill-Sachs Surgically

- **Size** – 20-30% of articular surface
- **“Engaging” Hill-Sachs** – Burkhart
  - Engagement point is >70 degrees abduction, without extension
- **Failure of prior surgery**
Restrict External Rotation

• Open Bankart repair
  – 10-20° ER loss common
• One cm capsule = 20 degrees
• Generally done with open Bankart repair / anterior capsulorraphy
Humeral Head-Plasty

- Percutaneous technique
- 14 cadavers
- None had recurrent dislocation
  - Kazel, et al., Arthroscopy, 2005
Humeral Head-Plasty

- Open technique, acorn drill, ACL guide
- 4 patients
- No instability at 1 year follow-up
  - Re, et al., Arthroscopy, 2006
Fill Defect with Bone

- Anterior or posterior approach
- Options
  - Osteochondral allograft
    - Fill completely or plugs
Open Osteochondral Allograft

- Open anterior deltopectoral approach
- 18 patients
- >25% articular surface involved
- Open Bankart repair / capsulorraphy

Miniaci, et al., Tech Shoulder Elbow Surg, 2004
Open Osteochondral Allograft

- Osteochondral allograft fashioned to fill defect
- Fixation with headless screws
- Results – no recurrences, 2 required screw removal

Miniaci, et al., Tech Shoulder Elbow Surg, 2004
Posterior Allograft Plug

• Staged procedure
• Arthroscopic Bankart repair
• 6 weeks later
  – Posterior approach
  – Allograft plug
• Case report

Kropf and Sekiya, Arthroscopy, 2007
Remplissage

- Eugene Wolf
- French “to fill”
- Infraspinatus tenodesis / posterior capsulodesis
Remplissage - Technique

• Arthroscopic, includes Bankart repair
• Suture anchors placed within defect
• Sutures passed through infraspinatus tendon
• Knots tied in subacromial space
• Tip – 2 separate lateral portals
Remplissage – Results (Wolf)

• 20 patients with follow-up (of 22)
• Follow-up 25-57 months
• 2 suffered traumatic re-dislocations
• 2 other second-looks – tendon healed
• No loss of ROM
Remplissage – Do We Get Our Fill?

- 11 patients, post-op 9-27 months
- Average 1.4 anchors
- 3T MRI scan
- All defects filled 75-100%
- No infraspinatus muscle atrophy
  - Park, et al., AOSSM Specialty Day 2012
Case Report

- 19 yo college wide receiver
- Had open Bankart repair in high school
- Dislocated 3 times freshman year
- Also had ER loss and apprehension
Case Report

- Revised Bankart arthroscopically
- Performed remplissage
Case Report

- Returned to play 3 years without dislocation
Video - Remplissage
Conclusions

- Most need not be treated surgically
- My preference, young patients
  - Large lesions – remplissage
  - Enormous lesions – open allograft
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THANK YOU