I. Epidemiology of Bone Loss in Shoulder instability
   A. >20% of initial dislocations have some osseous deficiency (1)
   B. A high degree of glenoid bone loss has been demonstrated in failed arthroscopic stabilization procedures (2)
   C. Unfortunately there has been inconsistency in the literature in evaluating and reporting damage to the glenoid in instability series

II. Importance of glenoid bone loss
   A. Main risk factor for recurrence after surgery in many series
   B. “Critical” bone loss may be as low as 13% of glenoid (3)
   C. 4-6 mm of glenoid bone loss usually equates to 20-25% of glenoid (4-7)

III. Patient Selection / Risk Factors (1-6)
   A. Risk Factors for Recurrence after shoulder stabilization surgery:
      1. Age < 20 years
      2. Competitive Athlete
      3. Contact sport (7, 8)
      4. Shoulder hyperlaxity (external rotation > 85 deg with arm adducted; hyperabduction of 20 deg or more than opposite side – Gagey test)
      5. Large / engaging Hill Sachs (Burkhart)
      6. Bony glenoid loss / loss of sclerotic inferior glenoid contour on AP film

   B. Instability Severity Index (9-10)
      1. 10 point scale taking into account above risk factors
      2. > 6 points on scale – 70% of recurrence with arthroscopic repair
      3. ≤ 6 points – 10% recurrence with arthroscopic repair
      4. 2 points given each for glenoid bone loss and Hills Sachs

IV. Possible Indications for Latarjet or other bone augmentation procedure to the glenoid
   A. >10-15% bone loss on glenoid
      1. Especially in situations of partial or complete attritional bone loss
      2. Non-salvageable bony Bankart injury
   B. Combined bone loss situation
   C. Failed prior stabilization procedure with loss of glenoid bone
   D. Patient at high risk of failure of other primary stabilization procedure

A. Pearls for Successful Latarjet Procedure
   A. Modified Latarjet (Burkhart) (11)
      -subscapularis tenotomy
      -capsule fixed to native glenoid - extra articular graft
      -option of congruent arc with coracoid rotated so medial side of graft fixed to glenoid
B. Traditional Latarjet (Walch) (12)
- subscapularis split
- capsule repaired to stump of CA ligament on coracoid

C. Steps for Latarjet
1. ~45 degree Beach Chair Position
   a) Towel or bump under medial border of scapula
   1. Assists in positioning glenoid for easier fixation of coracoid
   b) Arm holder (pneumatic, manual) very beneficial

2. Approach Modified Latarjet
   a) 4-6 cm incision
   b) Deltopectoral interval
   c) Coracoid harvest
   1. Mobilize latera border conjoint tendon
   2. Release pectoralis minor tendon and mobilize medial border of conjoint tendon
   3. Bankart retractor at base of coracoclavicular ligaments
   4. CA ligament - release, can maintain stump for lateral capsular repair
   5. Osteotomize with protective retractors medial
      a. bent saw blade
      b. want ~25 mm coracoid piece to maximize fixation
   d. Coracoid preparation
      1. Pre-drill coracoid
      2. Flatten inferior surface of coracoid fragment using saw - prepare Inferior surface to optimize healing

3. Subscapularis Part I
   a) Tenotomy vs. Split
   b) Tenotomy - horizontal just above anterior circumflex vessels and vertical ½ way between lesser tuberosity and musculotendinous junction
      1. Benefit - increased visualization
      2. Negative - need robust repair of subscap at end of case
   c) Split - Horizontal split at junction of upper 2/3 and lower 1/3
   d) Need significant medial to lateral split in subscap muscle to allow conjoint to traverse muscle at appropriate vector

4. Capsule part I
   a) Horizontal capsulotomy at rotator interval
   b) Vertical capsulotomy 10-12 mm medial to edge of glenoid & capsule / remaining labrum peeled inferior - allows capsule to be “lengthened” and can be fixed over coracoid to create extra-articular graft

B. Glenoid Preparation []
1. Retraction:
   a) Bankart retractor medially
   b) Fukuda retractor in joint
   c) Darrach or Homan(inferiorly
   d) +/- Steinmann pin into glenoid superior
2. Old bony fragments excised
3. Anterior glenoid prepared to flat bleeding surface using saw
a) Drill bone with K-wire to create bleeding surface as needed
b) Must have flat on flat surfaces for coracoid on glenoid - crucial to success!

C. Coracoid Fixation

1. Proprietary drill guides are available - reference off glenoid face
2. Coracoid should be flush or slightly recessed (1mm) from articular surface
   a) Two screws with bicortical purchase in compression mode
   b) Washers optional
   c) Cannulated vs. solid screws, titanium vs. stainless steal
      1. 3.75 mm cannulated titanium fully threaded screw fixation

D. Capsule Part II

1. To create extra-articular bone block
   a) Labrum anchors placed into native glenoid at junction of glenoid and coracoid
   b) 3 anchors: one below inferior screw, one between screws, one above superior screw
2. Mattress sutures through medial edge of capsule - fixes capsule to native glenoid over coracoid graft
3. Rotator interval closure using absorbable suture with are adducted and externally rotated

E. Subscapularis Part II

1. If tenotomy done:
   a) 5-6 modified Mason - Allen #2 sutures to repair subscap
   b) Repair over-run with size 0 absorbable suture
   c) Horizontal split left open

F. Results

1. Hovelius JSES 2004; - 15 year f/u (13)
   a) 1/118 redislocations
   b) 121/118 re-subluxation
   c) 76% very satisfied; 22% satisfied
   d) 24% moderate / severe arthropathy
2. Walch JSES 2014 - 20 year f/u (14)
   a) 68 shoulders; recurrent instability 5.9%
   b) 8.8% grade 3 arthritis
   c) Average Rowe score 89.6
3. Walch JSES 2012; Rugby players f/u - mean 12 yrs (15)
   a) 34 players, no recurrent instability; 14% persistent apprehension
   b) 65% returned to rugby, only 1 did not return due to shoulder
   c) 89% bone block healing

G. Complications

1. Greissler JSES ‘13 Systematic Review 1904 shoulders (16)
   a) 30% complication rate
      1. Recurrent instability 9%
      2. Non-union or fibrous union - 9%
      3. Neurovascular - 2%
      4. Average loss of ER - 13 degrees

Bibliography


