Cleveland Clinic

Debate: Reconstruction for Bony Bankart

Eric T. Ricchetti, M.D.
Current Solutions in Shoulder and Elbow Surgery
Tampa, FL
February 10, 2017

I have something to disclose.

Detailed disclosure information is available via:

"My Academy" app;

Printed Final Program; or

AAOS Orthopaedic Disclosure Program on the AAOS website at
http://www.aaos.org/disclosure

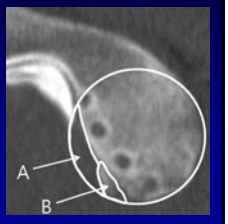
Bony Bankart Repair

- Arthroscopic bony Bankart repair:
  - Good outcomes and low recurrence rates reported in literature
- However, variable presentation of bone may impact fragment healing and outcome:
  - Glenoid defect size
  - Bone fragment size
  - Acute vs. chronic fragment

Sugaya et al, JBJS 2005; Mologne et al, AJSM 2007; Porcellini et al, AJSM 2007; Kim et al, AJSM 2014; Kitayama, JBJS 2015

Bony Bankart Repair

- Park et al, Arthroscopy 2012: Bone healing after arthroscopic bony Bankart repair
  - 31 shoulders evaluated for bone union post-op by CT (3 mo, 1 yr)
  - Mean size of glenoid defect: 14.1±8.6%
  - Mean size of bone fragment: 8.4% (preop), decreased to 6.2% (1 yr post-op)
- Bone union rate: 83.9% (26/31)



Bony Bankart Repair

- Nakagawa et al, AJSM 2015: Bone healing after arthroscopic bony Bankart repair
  - 81 shoulders evaluated for bone union post-op by CT
  - Mean size of glenoid defect: 16.8% (3.5-37.6%)
  - Mean size of bone fragment: 7.9% (0.5-37.6%)
- Significantly higher bone union rate at later follow-up (84.6% at 13 months or more).

Bony Bankart Repair

- Nakagawa et al, AJSM 2015 (cont.): 53 shoulders with CT ≥ 7 months, ≥ 1 year clinic follow-up:
  - **Complete union (62.3%), partial union (5.7%), nonunion (15.1%), fragment absorption (17.0%)**
  - 64.7% vs. 61.1% union rate with glenoid defect > or < 20%
  - Large fragments significantly higher union rate
- Overall, 22.6% recurrent instability rate:
  - **Significant difference based on union: 6.1% for complete union vs. 50% if partial union, nonunion, fragment absorption or no fragment at surgery**
  - 23.5% vs. 22.2% rate with glenoid defect > or < 20%
  - Significantly higher rate (36.4%) with small fragments

Risk Factors for Failure of Arthroscopic Bankart Repair

- Glenoid bone loss known risk factor for failure with arthroscopic Bankart repair:
  - Burkhart & DeBeer, Arthroscopy 2000): **67% recurrence w/ bone defect** (inverted-pear glenoid)
  - Boileau et al, JBJS 2006: **15.3% recurrence with RFs** (glenoid bone loss 1 of 4)
  - Balg & Boileau, JBJS Br 2007: **14.5% recurrence with RFs** (glenoid bone loss 1 of 6 in ISS)
- Recommend Latarjet procedure

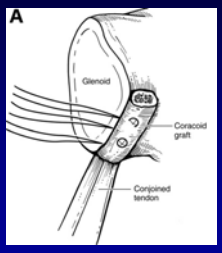
Table IV. Instability severity index score is based on a pre-operative questionnaire, clinical examination, and radiographs

Prognostic factors	Points
Age at surgery (yrs)	
≤ 20	2
> 20	0
Degree of sport participation (pre-operative)	
Competitive	2
Recreational or none	0
Type of sport (pre-operative)	
Contact or forced overhead	1
Other	0
Shoulder hyperlaxity	
Shoulder hyperlaxity (anterior or inferior)	1
Normal laxity	0
Hill-Sachs on AP* radiograph	
Visible in external rotation	2
Not visible in external rotation	0
Glenoid loss of contour on AP radiograph	
Loss of contour	2
No lesion	0
Total (points)	10

* AP, anteroposterior

Latarjet Procedure

- Burkhart et al, Arthroscopy 2007: Results of modified Latarjet procedure for significant bone loss
  - Indication: inverted-pear glenoid with or with engaging Hill-Sachs defect
  - 47 pts, mean f/u of 59 mo
  - Mean Constant score 94.4, mean loss of external rotation of 5.1°
  - **Recurrence rate of 4.9%, compared to 67% in prior study**
  - **97.8% bony union rate (46/47)**

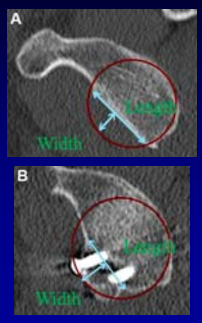


Latarjet Procedure

- Griesser et al, JSES 2013: Systemtaic review of outcomes
  - 45 studies (1,904 shoulders), mean f/u 6.8 years
  - **Recurrent dislocation rate 2.9%, recurrent subluxation rate 5.8%**
  - **90.6% bony union rate (9.4% non- or fibrous union rate)**

Latarjet Procedure

- Assessment of bone graft healing by CT:
  - Garewal et al, Shoulder & Elbow 2014: **26/27 cases with bony union by CT**
    - Mean glenoid bone loss: 26.6±0.9%, bone graft able to make up defect
  - Moon et al, AJSM 2015: **42/44 cases with bony union by CT**
    - Mean glenoid bone loss: 25.3±6%, bone graft able to make up defect



Conclusions from Literature

- Multiple factors impact healing and risk of recurrent instability with bony Bankart repair:
  - Repair does not restore bone loss completely – bone fragment often small relative to glenoid defect.
  - Fragment healing rates not 100% – may may take a long time to incorporate.
  - Often performed in chronic situation – fragment may have decreased healing potential
- Latarjet can reproducibly address all these issues:
  - Adequate size to fully address defect
  - High healing rates, with quicker bony union
  - Chronicity of injury not negative factor

Cleveland Clinic

Every life deserves world class care.

Risk Factors for Failure of Arthroscopic Bankart Repair

- Shah et al, AJSM 2015: Impact of "sub-critical" bone loss
  - 72 arthroscopic Bankart repairs for recurrent instability
- 12.3% recurrence rate at mean of 48.3 months:
  - Increased recurrence seen when glenoid bone loss ≥ 20%, BUT
  - **WOSI increased to level consistent with poor clinical outcome at 13.5% glenoid bone loss**