ARTHROSCOPIC SUTURE ANCHOR VERSUS TRADITIONAL OPEN BANKART REPAIR IN THE MANAGEMENT OF RECURRENT ANTERIOR GLENOHUMERAL DISLOCATION

ISAKOS Shoulder Committee
Cancun Mexico 2019
Open Bankart Repair Remains the “Gold Standard” for stability

- Sixty year experience
- Predictable results
- “Can do” operation for most surgeons
Anterior Arthroscopic Suture Anchor Repair described

- Improved fixation hoped to improve outcomes
- Initial good results reported by Snyder, Wolf, Savoie and others
Early results comparable to open surgery but follow-up often short

- Bacilla et al. Arthroscopy ’97
  5% recurrence some only 6 month f/u

- Barber et al. 4/57 recurrent instability mean f/u only 24 m

- Mazzocca et al. AJSM ’04 11% recurrence 36 m mean f/u

- Ide et al. AJSM ’04 7% recurrence 42 m mean f/u

- Bottoni et al AAOS 2005 prospective study, arthroscopic vs open equal results only 24 months f/u
Not all good, however

- Koss et al. AJSM ’97
  2-5 year f/u 30%
  failure rate with
  suture anchors
My journey...

- 1987-20 year old all conference football tackle. Failed arthroscopic stapling. Called Dr. Caspari “well, I guess you’re gonna have to open.”
One-year follow-up

- Division II all American
- Benches 300#
- Maybe open is not so bad…
Comparative studies

- Weber, AAOS 1996 90 open, 33 arthroscopic suture anchor
  - Contact athletes excluded from arthroscopic group - DIFFICULT
  - 3% versus 17% recurrence rate
  - Three times as likely to do overhead sports with scope (p<0.05)
Comparative studies

- Fabbriciani et al. Arthroscopy 2004
- Small study, 30 in each group
- Follow-up terminated at two years - too short
- No recurrences in either group
Comparative studies

- **Kim et al Arthroscopy 2000**
  - Arthroscopic suture anchor versus open Bankart
  - Equal recurrence rates
  - More apprehension in scope group
  - Better Rowe and UCLA scores in scope group
- Shorter f/u in arthroscopic group
Longer-term arthroscopic results now available—suture anchor

- **Castagna et al. AJSM**
  - 31 patients
  - Mean 10.9 year f/u
  - 22% recurrence
  - 71% return to sports

- **Francheschi et al.**
  - 60 patients
  - Mean 8 year f/u
  - 17% recurrence
  - 88% return to sport
Harris et al., J Arth 2013

- Meta analysis of all papers >5 year f/u
- Arthroscopic suture anchor and open Bankart repair had the same long-term outcomes in regards to recurrent instability missed statistical significance by only one percentage point (p=0.059)
- follow-up was significantly longer and recurrences significantly later for the open group
It seems that the question of arthroscopic versus open repair may yet be unresolved.

Weber and Kauffman, AAOS 2005
METHOD
123 patients seen

- all with clinically diagnosed traumatic unidirectional instability
- all with Bankart lesion at arthroscopy
- minimum two year follow-up
- all recurrent subluxation or dislocation—no first time dislocators
Patients allowed to select procedure based on following:

- arthroscopic generally lower morbidity, better motion, less established procedure with slightly higher recurrence rate especially in contact athlete

- open repair higher initial morbidity, slightly less motion, more established procedure, lower recurrence rate
Not Prospective, Not Randomized

Prior studies made randomization ethically difficult
Arthroscopic Suture Anchor Repair

- Standard Arthroscopic exam
- Meticulous debridement of anterior glenoid neck and labrum
- Repair to bone with superior shift
- 3-4 metal anchors and 0 or 1 PDS suture
- Interval closure, permanent suture, thermal not common during study period
Open Bankart Repair

- diagnostic arthroscopy in all cases as previously described (Weber, 1993)
- **Standard subscapularis takedown**
- **#2 ticron suture, metal anchors**
- **medial capsule and labrum repaired to bone, lateral capsule invested over top**
Results
33 patients selected arthroscopic repair

90 selected open repair
Initial follow-up open 31.15 months
follow-up arthroscopic 39.91 months

Final follow-up open 69.5 months
follow-up arthroscopic 95.88 months
Patient demographics

<table>
<thead>
<tr>
<th></th>
<th>arthroscopic</th>
<th>open</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>33</td>
<td>90</td>
</tr>
<tr>
<td>Right/left</td>
<td>22/11</td>
<td>44/46</td>
</tr>
<tr>
<td>Male/female</td>
<td>22/11</td>
<td>81/9</td>
</tr>
<tr>
<td>Age (mean (S.D.))</td>
<td>29.5 (12.6)</td>
<td>28.3 (10.6)</td>
</tr>
<tr>
<td>worker’s comp</td>
<td>3</td>
<td>21</td>
</tr>
</tbody>
</table>
Contact or collision athletes

- Arthroscopic 13/33 (39%)
- Open 46/90 (51%)

(football, basketball, snow ski and board, martial arts, ww kayaking, technical climbing, and gymnastics)
## Associated pathology

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Arthroscopic</th>
<th>Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rim fracture</td>
<td>0</td>
<td>2.7%</td>
</tr>
<tr>
<td>Hill Sachs</td>
<td>82%</td>
<td>92%</td>
</tr>
<tr>
<td>Bankart</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Loose bodies</td>
<td>17%</td>
<td>20%</td>
</tr>
<tr>
<td>Labral flap</td>
<td>4.3%</td>
<td>1.3%</td>
</tr>
<tr>
<td>SLAP II</td>
<td>0</td>
<td>4.1%</td>
</tr>
<tr>
<td>SLAP III-IV</td>
<td>0</td>
<td>1.3%</td>
</tr>
<tr>
<td>Partial RCT</td>
<td>8.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Full RCT</td>
<td>4.3%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Revision case</td>
<td>0</td>
<td>5.4%</td>
</tr>
</tbody>
</table>
Recovery of motion, flexion

- 6 weeks
- 12 weeks
- Final

Graph showing motion recovery at different time points for arthro and open methods.
Recovery of Motion, external rotation

- 6 weeks
- 12 weeks
- Final

[Graph showing comparison between arthroscopic and open methods over time]
Complications - other than recurrence, both groups - NONE
Throwing sports, able to return
College or elite level recreational

- arthroscopic 8 of 8
- open 5 of 8
- $chi$ square=3.69, $p<0.05$
## Recurrence data

<table>
<thead>
<tr>
<th></th>
<th>Arthroscopic</th>
<th>Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painful episode</td>
<td>3 (7%)</td>
<td>4 (3.7%)</td>
</tr>
<tr>
<td>Subjective recurrence</td>
<td>4 (9.3%)</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td>Radiographic recurrence</td>
<td>3 (7%)</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td>Combined recurrence, early</td>
<td>7 (21%)*</td>
<td>4 (4.4%)*</td>
</tr>
<tr>
<td>Reoperation, early</td>
<td>5 (15.1%)*</td>
<td>3 (3.3%)*</td>
</tr>
<tr>
<td>Recurrence, late</td>
<td>8 (24%)**</td>
<td>10 (11%)**</td>
</tr>
<tr>
<td>Reoperation late</td>
<td>7 (21%)**</td>
<td>8 (8.8%)**</td>
</tr>
</tbody>
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*p<0.01  **p<0.05
Time to recurrence

Arthroscopic = 18.5 months
Open = 34.6 months
Combined = 24.47 months

One half of all recurrences occur after 2 years
Recurrence data, contact athletes

- Arthroscopic-5/13=38%
- Open-8/46=17%
Functional outcome scores

- **Arthroscopic**
  - Rowe 86.59
  - UCLA 31.15
  - SST 11.50

- **Open**
  - Rowe 85.9
  - UCLA 30.53
  - SST 11.19

(all N.S.)
Discussion
Open Bankart Repair remains a very viable option

- low recurrence
- few complications
- predictable return to high demand non-throwing sports
Open Bankart Repair

- Andrews “80% of collision athletes done open” AAOS Inst Course lect 2002
- Pagnani JBJS 2002 strongly supported open repair in American football players no dislocations 2/58 subluxed post op
- Cohen, et al AAOS 2002 similar for hockey players 50% recurrence with scope, 25% overall
- Uhorchak et al. AJSM 2000 open repair 7% recurrence, 9% contact athletes, 21% dislocate or subluxed
Recurrence versus time

“Nothing hurts a good study like follow-up”

Tendency of program committees and journal to accept less than 2 years f/u—many recurrences occur later—some much later

Open repairs develop recurrent instability later than arthroscopic

Increased rates of recurrence with time also documented by Manta et al. from 10% at 2 years to 30% at five years

Instability surgery series with barely two year follow-up may underestimate recurrences
Propositus for activity scores and recurrence...
Underwent revision open Bankart repair

- Minimal bone loss
- Appropriate rehab
- No complications
- Nice guy

Does anyone really think this is going to remain stable?
Long term instability surgery remains problematic

- 28% recurrence rate in this study
- Only long-term follow-up documents actual rate of instability
- Similar to Castagna (22%) and Franceschi (17%) and Rhee (25%)
- These rates are far higher than the average patient anticipates
Summary

- Open repair remains an excellent option
- Improvement in perioperative morbidity may not offset increased recurrence risk with arthroscopic repair for most patients
- Recurrent instability can often occur later than two years
- Increased recurrence rate age<20 probably related to activity scores.