Learning Curve of Arthroscopic Anatomic Glenoid Reconstruction: Comparison to the Arthroscopic Bristow Latarjet

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<table>
<thead>
<tr>
<th>Name</th>
<th>Disclosures</th>
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<tr>
<td>Justin Moga, MD</td>
<td>No disclosures</td>
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<td>George Konstaninidis, MD</td>
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<td>Catherine Coady, MD, FRCS(C)</td>
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<td>Ivan Wong, MD, FRCS(C)</td>
<td>Smith and Nephew Depuy Mitek Stryker</td>
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Introduction

Surgical management of recurrent shoulder instability (RSI) due to bone loss:

• Arthroscopic Bankart Repair (ABR)
  - 35% long-term recurrence rate

• Arthroscopic Bristow-Latarjet Procedure (ABLP)
  - Excellent medium-term outcomes
  - complex and demanding procedure with long learning phase
  - should be performed by expert surgeons

• Arthroscopic Anatomic Glenoid Reconstruction (AAGR)
  - recently proposed alternative to ABLP and ABR
  - excellent short term clinical outcomes
  - learning curve not previously studied
Objective of the study

Investigate the learning curve of AAGR by examining:

- surgical time
- outcome scores
- complication rates

and compare it to the ABLP with respect to these metrics.

HYPOTHESIS

- AAGR will provide similar outcomes while taking less time to learn and perform
Materials and Methods

- Single surgeon, retrospective review of patients managed with either ABLP or AAGR for recurrent shoulder instability
- Data collected on:
  - Surgical time
  - Final graft and screw position (by CT scan)
  - Intra op/Post op complications
  - Post op Western Ontario Shoulder Instability Index (WOSI)
- Study cohorts divided into three equal clusters of nine patients
  - primary outcome
    - change in operative time over successive operations
  - secondary outcome
    - clinical outcome (WOSI)
    - complication rates
    - bone graft position
Surgical Steps

**ABL**
- Diagnostic Arthroscopy
- Subscapularis Split
- Autograft Harvesting
- Graft positioning and fixation

**AAG**
- Diagnostic Arthroscopy
- Allograft Preparation
- Preparation for graft placement
- Graft positioning and fixation
Primary outcome

- Surgical time

**AAGR:**
- Faster procedure
- Optimal surgical time after seven cases

**ABL:**
- More complex surgery
- Optimal surgical time after 17 cases
Secondary outcomes

- WOSI score

Better mid term WOSI score for AAGR
## Secondary outcome

### Complications and Revisions

<table>
<thead>
<tr>
<th>Condition</th>
<th>ABL (n=11)</th>
<th>AAGR (n=28)</th>
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<tbody>
<tr>
<td>Recurrent Instability requiring Revision Surgery</td>
<td>1 (9%)</td>
<td>1 (4%)</td>
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<tr>
<td>Revision Surgery symptomatic non-union</td>
<td>2 (18%)</td>
<td>1 (4%)</td>
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<tr>
<td>Axillary Neuropraxia or isolated sensory deficit</td>
<td>1 (9%)</td>
<td>0</td>
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Higher revision rate for ABLP
Secondary outcome

• Graft positioning AAGR vs ABLP

Medial-lateral

Superior-inferior

Medial-lateral placement more accurate with AAGR

Low graft positioning with both techniques

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### Conclusions

**AAGR is easier to adopt, and suitable as a practical alternative to the ABLP**

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<tr>
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<th>ABLP</th>
<th>AAGR</th>
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<tr>
<td><strong>Surgical time</strong></td>
<td>Mean optimal time = 116.6 min</td>
<td>Mean optimal time = 84 min</td>
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<td>Late plateau and deeper learning curve</td>
<td>Plateaus early (after 7 cases)</td>
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<td><strong>Clinical outcomes</strong></td>
<td>Fair short term WOSI score</td>
<td>Fair short term WOSI score</td>
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<tr>
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<td>Better mid term WOSI score</td>
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<tr>
<td><strong>Complications</strong></td>
<td>Comparable revision rate for recurrent instability</td>
<td>One infection in cohort</td>
</tr>
<tr>
<td></td>
<td>Higher revision rate for other reason</td>
<td>Lower revision rate for other reason</td>
</tr>
<tr>
<td></td>
<td>Higher non union rate (25%)</td>
<td>None non-union</td>
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<td><strong>Graft positioning</strong></td>
<td>Greater intra-articular step off</td>
<td>Much better graft positioning</td>
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Advantages of AAGR

1. **Faster than ABLP** → This study shows a learning curve advantage for AAGR vs ABLP

2. Anatomical advantages:
   a) Spares the subscapularis muscle, avoiding potential adverse impact on range of motion and strength
   b) Spares the capsule and labrum → potentially improving long-term shoulder stability

3. Fewer complications with AAGR provides advantages to patients and healthcare systems

4. Shorter operative time creates a potential benefit to surgeons and healthcare systems

**AAGR is a good alternative to ABLP**
References


