Surgical Management of Instability and SLAP Lesions

Gerald R. Williams, Jr., MD
John M. Fentin, Jr., MD Professor,
The Rothman Institute
Sidney Kimmel Medical College,
Department of Orthopaedic Surgery
Thomas Jefferson University

Conflict of Interest Slide
- Board of Directors– AAOS
- Stipend
- Royalties
- DJO- shoulder arthroplasty
- Depuy: shoulder arthroplasty
- Lippincott, Williams, and Wilkins: shoulder texts
- IMDS/Cleveland Clinic: arthroplasty
- Research: Tornier, Depuy, Synthesome
- Stock Ownership: In-vivo therapeutics, CrossCurrent Business Analytics, LLC, OBERD, LLC, Force Therapeutics

Agenda
- Instability
  - Indications
  - Technique
  - Results
- SLAP lesions
  - Indications
  - Technique
  - Results

Indications
Prognostic factors

Boileau, et. al. JBJS BR

Operate for instability not pain
Soft-tissue procedures good for soft-tissue problems
Soft-tissue stretch must be addressed with more than 5 dislocations
Bony procedures good for bone pathology
Seizure disorders controlled (6 months)
Surgical Management of Instability and SLAP Lesions

Indications
- Traumatic unidirectional
  - Anterior
  - Posterior
- Traumatic multidirectional
- Involuntary
  - Atraumatic—very occasionally

Techniques
- Arthroscopic capsulorrhaphy
  - +/- Remplissage
- Open Bankart—3-5 times a year
- Open (arthroscopic) Latarjet
  - Revisions
  - Bipolar bone loss (seizures)
- Open other grafts—allograft, iliac crest

Arthroscopic vs. Open
- Arthroscopic equipment and technique have improved considerably
- Still a role for both
- Consider open in revisions or bone loss situations

Arthroscopic Repair
- No labrum, Healed medially

Results (Penn Score)
Open vs. Arthroscopic

- Arthroscopic repair was as effective as open reconstruction for traumatic, recurrent, anterior glenohumeral instability in our study population
- Newer fixation methods provide reliable fixation for experienced shoulder surgeons
- Arthroscopic repair was not associated with greater patient satisfaction

Bone defects Matter

SLAP Repair

Prognostic Factors

- Age
- SLAP type
- Concomitant pathology
- Injury history
- Desired activity

Type I SLAP

- Very common
- Can be normal finding
- Debridement

Type II SLAP

- Arthroscopic repair
- 1-2 anterior anchors
- 1 posterior anchor-- posterior SLAP
- Posterolateral portal (“Port of Wilmington”)
Surgical Management of Instability and SLAP Lesions

Type II SLAP

Type II Slap

Type III SLAP

Type IV SLAP

Concomitant Pathology

Internal Glenoid Impingement

- AIGHL-- checkrein for ABER
- Int. Imp.
  - AIGHL laxity vs. Posterior capsular contracture
  - Decreased humeral retroversion

Internal Glenoid Impingement

Gerald R. Williams, Jr., MD
SLAP Repair
Conclusions

- Good with isolated lesions, young patients
- High incidence of stiffness in older patients
- Decreasing incidence of repair
- Biceps tenodesis vs. SLAP repair

THANK YOU.
Pathophysiology and Surgical Management of Shoulder Arthritis: Total and Reverse Arthroplasty

Gerald R. Williams, MD
The John M. Fenlin, Jr., MD Professor of Shoulder and Elbow Surgery
Sidney Kimmel Medical College
Thomas Jefferson University
Philadelphia, Pennsylvania

Agenda

- Pathophysiology
- Arthroplasty background
- Anatomic total shoulder arthroplasty
- Reverse total shoulder arthroplasty

Glenohumeral Arthritis Pathophysiology

- Post-traumatic Arthritis
- Avascular Necrosis
- Inflammatory Arthritis
- Rotator cuff
- Capsule
- Bone
- Osteoarthritis

Pathophysiology Primary Pathology

- Osteoarthritis
- Posttraumatic Arthritis
- Avascular Necrosis
- Rheumatoid Arthritis
- Cuff Tear Arthritis

Osteoarthritis

Gerald R. Williams, Jr., MD
Clinical Shoulder and Elbow Update 2016

Gerald R. Williams, Jr., MD

Pathophysiology and Surgical Management of Shoulder Arthritis

CT/MRI

Inflammatory Arthritis

Rothman Institute of Orthopaedics at Thomas Jefferson University

Arthroplasty

Decision-making Factors

- Age
- Activity level
- Joint geometry
- Rotator cuff status
- Capsular contracture

Anatomic Shoulder Arthroplasty

Total Shoulder Arthroplasty

Surgical Principles (1970)

- Extended deltopectoral approach
  - Preserve deltoid
- Soft-tissue balancing
- Preserve normal anatomy
- Reconstruct joint anatomically
  - Tuberosity-Head height
  - Lateral offset
  - Version and alignment
- Rehabilitation

Results

- Neer--Results disease dependent
- Neer, Watson, et.al. J.B.S.S., 64A, 1982
- Neer, Shoulder Reconstruction, WB Saunders, 1990
- 90% satisfactory results
- Minimum 2 yr follow-up
- Approximately 30% glenoid lucent lines
- 2/615 revised as of 1988
Anatomic Shoulder Arthroplasty Results

- Torchia, Cofield, et. al. (JSES, 6, 1997)
  - 12 year mean follow-up
  - 44% glenoid loosening
  - 83% good pain relief
  - 117 degrees of elevation (related to cuff disease)
  - Survivorship: 93% at 10 yrs; 87% at 15 years

Post-Operative Subscapularis Failure

- 2.9 % Anterior Instability
- 100% subscapularis rupture

- 87.5% + lift off or abdominal compression
- 92% Subscapularis dysfunction (tuck in shirt)
- Did not study relationship to outcome score

Lesser Tuberosity Osteotomy

- 89% negative ACT; 75% normal LOT
- Substantially better than historical results with soft-tissue repair

- 60% normal ACT (32.5% previous series-- soft-tissue repair)
- 83.3% no subscapularis dysfunction (tuck in shirt)

Other Perspectives

- Tendon-to-tendon repair may be better than peel and equivalent to LTO
  - LTO to Tendon-to-tendon no difference in subscapularis function, easier glenoid exposure– Levine, et.al.
Reverse Total Shoulder Arthroplasty

- Paul Grammont
- 1985
- Dijon, France

Constrained Arthroplasty
Not a new concept

Delta III (Grammont 1987)
How is it Different?

- Large sphere, no neck
- Medialized center
- Valgus neck-shaft angle (155 degrees)

Werner, Gerber, et al.

- Total complication rate 50%
- Reoperation rate 33%
- Primary cases 18%
- Revisions 39%
- Hematoma most common complication

Results

- Werner, Gerber, et al.
  - Total complication rate
    - Total complication rate 50%
  - Reoperation rate 33%
  - Primary cases 18%
  - Revisions 39%
  - Hematoma most common complication

Early Experience

**American Experience**

- Generally lower complication rate
- Benefit of European learning curve
- Still high relative to anatomic implant—similar to when anatomic implant first introduced

**Expanding Indications**

- Revision
- CTA
- Malunion/nonunion
- RA
- Tumor
- Osteoarthritis with cuff tear
- Osteoarthritis with intact cuff and bone deformity
- Post-traumatic arthritis
- Cuff tear without arthritis

**Market Impact**


**Conclusions**

- Shoulder arthroplasty has come a long way
- Many more qualified surgeons performing them
- Outcomes have improved and will continue to
- The best operation I do!

**THANK YOU.**

Gerald R. Williams, Jr., MD
Rotator Cuff Repair: Who, When, How

Gerald R. Williams, MD
John M. Fentlin, Jr, MD Professor, The Rothman Institute
Sidney Kimmel Medical College, Department of Orthopaedic Surgery
Thomas Jefferson University

Conflict of Interest Slide
• Board of Directors– AAOS
  • Stipend
• Royalties
  • DJO- shoulder arthroplasty
  • Depuy: shoulder arthroplasty
  • Lippincott, Williams, and Wilkins: shoulder texts
  • IMDS/Cleveland Clinic: arthroplasty
• Research: Tornier, Depuy, Synthesome
• Stock Ownership: In-vivo therapeutics, CrossCurrent Business Analytics, LLC, OBERD, LLC, Force Therapeutics

Agenda
• Cuff aging/natural history
• Patient selection– who and when
• Technique of cuff repair-- how
• Results
• Conclusions

Cuff Aging/Natural History


Cuff Aging/Natural History

Yamaguchi K. et.al, JBJS 77A, 1995

Cuff Aging/Natural History

Yamaguchi K. et.al, JBJS 77A, 1995

Rotator Cuff Repair: Who, When, How

Gerald R. Williams, Jr., MD
Patient Selection
Prognostic Factors

- Acuity
- Size
- Patient factors
  - Age
  - Activity
  - Smoking history
  - DM
  - Tissue quality

Acuity and Size

(Fenlin, Goutallier, Gerber, others)

Patient Selection

Prognostic Factors

- Acuity
- Size
- Patient factors
  - Age
  - Activity
  - Smoking history
  - DM
  - Tissue quality

Early vs. Late Repair

Group 1
3 wks
- Elev 168
- Pain Satis.

Group 2
3-6 wks
- Elev 126
- Pain Satis.

Group 3
6-12 wks
- Elev 129
- Pain Satis.

- Recommended repair within 3 wks

Who?

Favorable
- Young (< 70)
- Small tear
- Healthy
- Non-smoker
- Active
- Recent injury

Unfavorable
- Older (> 70)
- Large tear
- Minimal co-morbidities
- Smoker
- Low demand – i.e. may not need it
- No injury

When?

Early
- Recent injury
- Large tear (i.e. retraction)
- Weakness
- High demand

Late
- No injury
- Small tear
- Minimal weakness
- Low demand
- Increased age
- Co-morbidities
Cuff Repair Technique
Principles (Neer 1972)

- Open superior approach
- Subperiosteal anterior deltoid take-down
- Coracoacromial ligament excision
- Anterior acromioplasty
- Cuff mobilization
- Cuff repair to bone through tunnels
- Early (immediate) passive motion

Arthroscopic Cuff Repair
Technique

- Mobilization
  - Superficial
  - Deep
  - Interval slides/releases
Rotator Cuff Repair: Who, When, and How

SHOULDER AND ELBOW
UPDATE 2016

Gerald R. Williams, Jr., MD

Cuff Repair Principles

? Acromioplasty?

• No type 3s, single tendon tears


Cuff Repair Principles

? Acromioplasty?

• No control group


Cuff Repair Principles

? Acromioplasty?

The Jury is still out

Cuff Repair Principles

? Acromioplasty?

Results

Repair Integrity

• 105 shoulders, avg 5 year f/u
• Supraspinatus-- 20% recurrence
• Two tendons-- 45% recurrence
• Three tendons-- 65% recurrence
• Most patients satisfied-- even with recurrent defect
• Function and satisfaction correlated with integrity

Harryman, et.al., JBJS 73A, 1991

Open vs. Arthroscopic Repair


• Less deltoid morbidity
• Less post-operative pain
• Less subacromial scarring
• Better cuff mobilization/visualization
• Better patient acceptance


• Simple sutures
• Anchors vs. tunnels
• Cuff repair footprint
• Surface area available for healing
• Double row may help
• Technically demanding-- may be volume dependent
Post-operative Integrity


Double Row


Cuff Repair Conclusions

- Complex event
- Right patient
- Right time
- Correct Surgical technique

Acknowledgements

Louis Soslowsky, PhD. Stavros Thomopoulos, PhD, JJ Sarver, J Gimbel, PhD, Cathy Peltz, LM Dourte

THANK YOU.