

HYPERLAXITY: CAPSULAR AUGMENTATION AND ROTATOR INTERVAL CLOSURE

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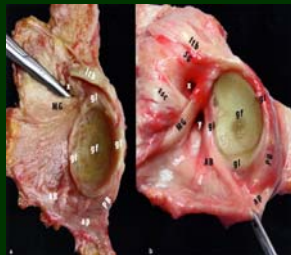
Tulane Institute of Sports Medicine
New Orleans, LA

COI

- Royalties: Exactech < \$1000
- Stock: none
- Consultant: DePuy Mitek, Smith & Nephew, Exactech, Rotation Medical

ANATOMIC STABILITY OF THE SHOULDER

- IGHL complex: Turkel et al: Anterior and Posterior Bands create static stability in varying degrees of Abduction and rotation
- MGHL, SGHL, CHL and biceps add stability in certain positions
- Rotator cuff provides dynamic stability and depend upon scapular position



LAXITY VS INSTABILITY

LAXITY

- Normal looseness or tightness of the shoulder
- Individual variation
- Measured on EUA, which cannot detect instability
- Should be equal side to side

INSTABILITY

- Pathologic abnormal movement of the humeral head on the glenoid producing *symptoms*
- Represents a change from normal due to injury, overuse, fatigue, posture (scapular dyskinesia) etc.

MDI: NEER

- Symptomatic subluxation in 2 or more directions
- True inferior instability
- By definition there has to be rotator interval laxity (Neer: bulging of rotator interval on arthrogram is key to radiologic diagnosis)

MDI/HYPERLAXITY:ANATOMY

- Rotator interval structures lax
 - CHL
 - SGHL
- IGHL laxity
 - AIGHL and PIGHL may be absent or stretched
- General capsular laxity
- Additional tears ?



MDI: EXAM

Observation: scapular dyskinesia

Palpation: tender on distal SS tendon and usually tight over pec minor tendon

Laxity in all 3 directions

+ sulcus that does not diminish with external rotation

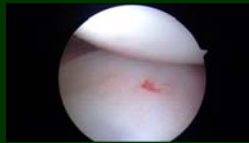
+ sulcus in abduction that is increased over the opposite side

It is important to determine



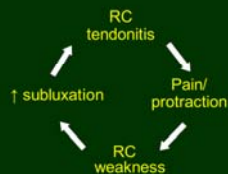
MDI/HYPERAXITY: ETIOLOGY

- Congenital
- Ehrlös-Danos variants
- Capsular insufficiency
- Rotator Interval (CHL and SGHL) laxity



HYPERLAXITY

- Difficult to treat
- PT includes bracing for scapular balance and pain control
- Have to start slow and carefully



HYPERLAXITY

- What do we do when non operative management fails?
- Standard operations do not work in these patients



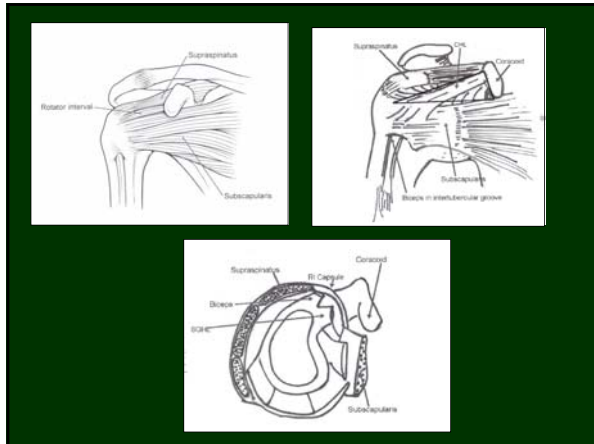
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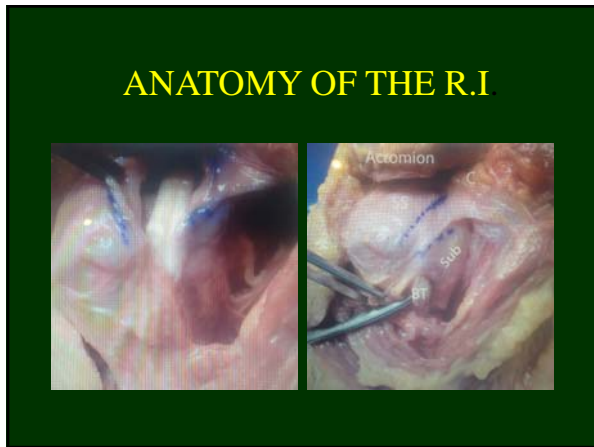
- Areas we can address
 - Rotator interval
 - Capsular augmentation with allograft
 - Capsule-tendon plication



ANATOMY OF THE RI

- Area between supraspinatus and subscapularis
- Triangle shaped
- 2 layers
- Includes SGHL and CHL






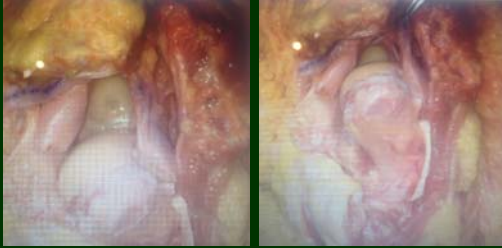
ROTATOR INTERVAL CLOSURE

What are we closing and why?

- Shorten the CHL and SGHL
- Tension to subscapularis and supraspinatus with AROM (same principle as Trillat, Bristow and Latarjet procedures



LAX/TIGHT CHL



INDICATIONS for ROTATOR INTERVAL CLOSURE

- True MDI / Hyper-laxity refractory to rehabilitation
- Posterior instability that has a hyper-laxity component
- Adjunctive to “high risk” anterior instability cases

ARTHROSCOPIC ASSESSMENT for PATHOLOGY

- Widening
- “Bulging” out
- “Drooping” SGHL
- Striations, clefts



MDI/HYPERLAXITY

- Wide interval
- Lax SGHL
- Humeral head can be subluxated in all directions
- NO TEARS



TECHNIQUE: KEEP ARM ER TO 90°

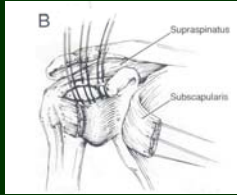
- Savoie: needle/retriever
 - Plicate SGHL to CHL
 - “suspensory ligament”

TECHNIQUE



IS THIS NEW?

Of course not
Repair/Restoration
of anatomy is
always the goal
of a good
surgeon.



HYPERLAXITY SURGERY

1. Plicate capsule with absorbable suture
2. Post plication of tendon and capsule
3. Modified Gallie for IGHL
4. SGHL/CHL allograft reconstruction



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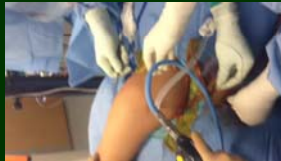
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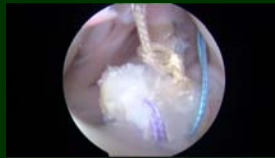
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RESULTS: ARTHROSCOPIC SHIFT

- Treacy: 88% at 5 years
- Lyons: 94% at 2 years
- Snyder: 88%
- Neer: 61% (open)

RESULTS

1. Modified Gallie + interval closure: 80% at 5 years
2. CHL/SGHL + Gallie + post tendon/capsule plication : 10 patients, all stable at 2 years



History of the RI

- **Codman:** The Shoulder: recreation of the suspensory ligament is the most important part of operations on the chronically unstable shoulder
- **Nicola:** Transfer of the biceps into the humeral head to recreate the suspensory ligament is the most important. "know of no failure of this technique". (quote from Codman)

HISTORY OF THE RI

- **Neer:** "Arthrograms show obvious bulging of the rotator interval" in atraumatic instability Neer, The Shoulder
- **Rowe:** Closure of the rotator interval is an essential step in the management of instability of the shoulder. Rowe, The Shoulder

HISTORY OF THE RI

- Warren, O'Brien et al: The rotator interval and its structures play a key role in instability. JSES 4 298-308, 1995; Ortho Trans 8, 1984
- Bigliani: isolated creation of a bankart lesion is not sufficient to produce instability of the shoulder. J Orthop Res 10, 1992

HISTORY OF THE RI

- Warner, JJP et al: The CHL and SGHL provide static restraint to inferior translation. AJSM 20: 1992
- Itoi et al: The structures of the RI provide restraint to both inferior and posterior translation. JSES 5, 1996.

HISTORY OF THE RI

- Harryman et al: Plication of the CHL and SGHL provides increased stability to posterior and inferior subluxation
- Savoie, Field et al: plication of the rotator interval structures (SGHL/MGHL) provides increased success:
 - Anterior: 92 to 97%; Posterior 90 to 96% and MDI 88 to 95%.

CONCLUSIONS

- MDI /Hyperlaxity is due to congenitally lax structures and should be managed by scapular rehabilitation and therapy
- Evaluation and, if necessary, tightening or allograft reconstruction of these structures should be an integral part of the management of the unstable shoulder

CONCLUSIONS

- The painful hyperlax shoulder is not correctable by normal surgical means
- Allograft reconstruction of the problem structures: CHL, SGHL, and IGHL provides stability for up to 7 years in these difficult cases

THANK YOU

**MODIFIED GALLIE: The
Caspari technique**

