SHOULDER INSTABILITY IN PATIENTS WITH EDS

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DISCLOSURE

KEITH KENTER
I HAVE NOTHING TO DISCLOSE AND NO CONFLICT OF INTEREST AS IT RELATES TO THIS PRESENTATION

INSTITUTIONAL SUPPORT
NIH (RESEARCH)
SMITH & NEPHEW (EDUCATION GRANT)

JOURNAL REVIEWER/EDITORIAL BOARDS
JBJS, AJSM, BJSM
INDIVIDUALIZED TREATMENT

Single Dislocation ≠ Recurrent Instability
DEFINITIONS

LAXITY
Range of motion of the center of the humeral head with respect to the glenoid fossa due to a external force

INSTABILITY
Symptomatic inability to maintain the humeral head in the glenoid fossa
DEFINITIONS

SUBLUXATION
Partial dislocation
Incomplete separation of joint

DISLOCATION
Frank separation of joint
CLASSIFICATION

DIRECTIONAL

• Anterior

• Posterior

• Multidirectional
CLASSIFICATION

MECHANISMS

• TUBS - Traumatic Unidirectional Bankart Surgery

• AMBRI – Atraumatic Multidirectional Bilateral Rehabilitation Inferior shift
GLENOHUMERAL INSTABILITY

Complex interaction between physiologic laxity to provide range of motion and joint stability.
THE EDS SHOULDER

INCREASED LAXITY

HIGHER RISKS FOR INSTABILITY (MDI)
ANATOMIC CONSIDERATIONS

CONSTRAINTS

• Passive
• Static
• Dynamic
PASSIVE CONSTRAINTS

BONY ANATOMY

- Humeral head
- Glenoid fossa
PASSIVE CONSTRAINTS

INTRA-ARTICULAR PHYSICS

- Negative pressure
- Joint fluid cohesion
PASSIVE CONSTRAINTS

LABRUM

Fibrocartilagenous lip that increases glenoid depth and increases humeral contact area

- 75% superoinferior
- 50% anteroposterior

Clin Orthop 243; 1989
STATIC CONSTRAINTS

- Capsular envelope
- Glenohumeral ligaments
GLENOHUMERAL LIGAMENTS

- **SUPERIOR** - restraint for **inferior translation** in adducted shoulder
- **MIDDLE** - restraint for **anterior translation** in 45° abducted shoulder
- **INFERIOR** - restraint for **anterior and inferior translation** in abducted shoulder
Glenohumeral Ligaments:
- MGHL
- SGHL
- IGH
DYNAMIC CONSTRAINTS

- Rotator cuff group
- Biceps tendon
- Scapular rotators
BIOMECHANICS

HARRYMAN

ANTERIOR TRANSLATION

FLEXION

‘CROSS BODY’ MOTION

POSTERIOR TRANSLATION

EXTENSION

EXTERNAL ROTATION

JBJS 72A; 1990
BIOMECHANICS

KENTER

Anterior Tightening

↓ Abduction
↑ Forward Flexion
↓ ER

No Translation △

ASES; 1999
TREATMENT

• Immediate reduction of the dislocated shoulder

• Physical therapy program
  Rotator Cuff strengthening
  Scapular stabilizer strengthening

• Surgical intervention
EDS SHOULDER INSTABILITY

- Patient education and defining the collagen disorder are paramount

- Modification on activity and work on mechanics

- Core strength, spine posture, RC strength, and scapular muscle strength

- Surgical results about 30% recurrence in patients without anatomic lesions
REHABILITATION
REHABILITATION
REHABILITATION
REHABILITATION
MULTI-DIRECTIONAL INSTABILITY
MISAMORE

- 64 patients ave 16 year (9-30) at 8 years
  43 female / 21 male
- PT program with RC and parascapular strengthening
- 57 patients available at follow-up
  63% (36/57) without surgery
  Pain – 23 good-excellent
  Instability – 17 good-excellent
- Poor response:
  (unilateral/ADLs/hyperlaxity/3months)

*JSES* 14; 2005
SURGICAL MANAGEMENT

• WHEN TO OPERATE

• HOW TO DO IT
  Open
  Arthroscopic

ADDRESS THE PATHOANATOMY
ANTERIOR DISLOCATION

NATURAL HISTORY

• Age related
  < 22 years – 60-90%
  30-40 years – 50-65%
  > 50 years – RC Tears
  60+ years about 40%

• Pathology related
  < 25 years up to 85% with Bankart labral tear

  JBJS 88A; 2006
  JBJS 89A; 2007
SO WHAT ??

DOES RECURRENCE CAUSE DAMAGE
HABERMeyer

76 patients with anterior dislocations evaluated with arthroscopy

- 9 with 1 dislocation → Labrum
- 12 with 1-2 dislocations → Ligament
- 23 with 3-5 dislocations → Double ligament
- 32 with 6+ dislocations → Articular cartilage

JSES 8; 1999
CARTILAGE BREAKDOWN

FIRST TIME DISLOCATION
ARTHROSCOPIC ADVANCES

- Rapid evolution in techniques
- Early techniques secure labrum to bone
- Address capsular laxity
  - Capsular shift
  - Capsular split
  - Capsular plication
  - Thermal ‘shrinkage’
ARTHROSCOPIC TECHNIQUES

• PRO
   Visualize all pathology
   Less stiffness
   Easier to revise

• CON
   Less reliable/technically demanding
   Higher failure rates (some authors)
   Portal scars
SURGICAL TECHNIQUE
SURGICAL TECHNIQUE
SURGICAL TECHNIQUE
SURGICAL TECHNIQUE
ARTHROSCOPIC TECHNIQUES

CONTRAINDICATIONS

• Capsular deficiency
• Glenoid bone loss
• Humeral head defect
• Collision athlete?
• Surgeon’s skill level
CAPSULAR PLICATION
THERMAL

• Addresses residual laxity
• Repair labrum first
• Avoid suture line
• Paint in grid fashion
SUMMARY

• Complex interaction between stability and mobility.

• Neuromuscular training and strengthening program for the shoulder girdle is paramount esp in MDI.

• Surgical emphasis is to restore anatomy and capsular tension.

• Arthroscopic challenge today is reproducibility of quantifying amount of capsular redundancy during repair.