Anatomic Considerations

- Static Stabilizers
  - Osseous
  - Capsuloligamentous
  - Negative intra-articular pressure

- Dynamic Stabilizers
  - Rotator cuff
  - Periscapular musculature

Osseous Anatomy

- Humeral Head
  - 45mm diameter
  - 30 degrees retroversion
  - 130-140 neck shaft angle

- Glenoid
  - 35 mm cephalad/caudal
  - 25 mm anterior/posterior
  - +5/-20 degrees version

Glenoid Labrum

- Labrum
  - Fibrocartilage “ring” attached peripherally to glenoid
  - Deepens socket by 50%
  - Provides attachment site for glenohumeral ligaments
  - Commonly injured with traumatic glenohumeral dislocation (Bankart Lesion)
Capsuloligamentous Complex
- Identifiable “thickenings” of the glenohumeral joint capsule
  - Superior Glenohumeral Ligament
  - Middle Glenohumeral Ligament
  - Inferior Glenohumeral Ligament Complex (Ant/Post)
- Help provide stability to joint at end range of motion
- Injury to complex leads to predictable patterns of glenohumeral instability

Negative Intra-Articular pressure
- High osmotic pressure of interstitial tissues
- Water and synovial fluid are “drawn” out of joint
- Leading to vacuum type effect
- Adhesion/cohesion at articular interface

Rotator Cuff
- Four muscles
- Originate from body of scapula
- Provide dynamic stability to glenohumeral joint through “concavity-compression”
- Are responsible for stability through midrange of motion (along with long head of biceps)
- Rehabilitation following instability largely focused on rotator cuff strengthening

Periscapular Musculature
- Position glenoid relative to humeral head to provide stable “platform”
- Postural
- Scapular dyskinesia
- Scapular winging
- Neuromuscular

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Laxity vs. Instability

Laxity
- Physiologic spectrum
- Objective, increased glenohumeral joint motion

Instability
- Pathologic
  - Traumatic vs. Atraumatic
  - Acquired
  - Congenital
  - Neuromuscular
- Subjective
  - Voluntary or involuntary

TUBS vs. AMBRI
- Traumatic Unidirectional Bankart Surgery
- Atraumatic Multidirectional Bilateral Rehabilitation

Evaluation

- History
  - Mechanism of injury
  - Contact vs. non-contact
  - Position of extremity
  - Abduction/external rotation
  - Adduction/internal rotation
  - Subsequent episodes
  - Pattern of pain referral
- Locking/catching/“popping” sensation
  - May indicate articular fracture or loose body

Physical Examination

- Inspection/Palpation
- Range of Motion
  - Passive
  - Active
- Muscle Strength Testing
- Neurologic assessment
- Instability testing
  - Anterior
  - Posterior
  - Multidirectional

Anterior Glenohumeral Instability

- Most common
- Forced abduction and external rotation
- Injury to:
  a. Anterior inferior labrum and inferior glenohumeral ligament (Bankart Lesion)
  b. Anterior inferior glenoid articular surface
  c. Perthes lesion
  d. Superior glenohumeral ligament (SAGLE)
  e. Anterior labral avulsion of the glenoid (ALPSA)
  f. Glenohumeral articular disruption
  g. Humeral head (Hill-Sachs lesion)
  h. Reverse HAGL

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Posterior Glenohumeral Instability

- Less Common
- Adduction/Forward Flexion/Internal Rotation
- Offensive Lineman
- Posterior Labrum (Reverse Bankart)
- Voluntary (psychiatric??) vs. Involuntary
- Glenoid Dysplasia
  - Congenital retroversion
- Non-surgical (Rehab) vs. Surgical

Posterior Instability

Jerk Test

Multidirectional Glenohumeral Instability

- Rare
- Swimmers
- Primary Direction of Instability
- May be exacerbated by acute injury
- Thumb MCP hypertension, elbow hyperextension, genu recurvatum
- Inherent (genetic) ligamentous laxity
  - Collagen disease (Ehlers-Danlos)
- REHAB, REHAB, REHAB!!!!
- Inferior capsular shift (open vs arthroscopic)

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Elbow Hyperextension

Thumb Metacarpophalangeal Hyperextension

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Sulcus Sign

Goals of Treatment

- Restore Stability
- Restore full active/passive ROM
- Full Strength
- Eliminate pain
- Eliminate apprehension
- Return to Competition

Immobilization

- Sling immobilization
- No clear time recommendations based on literature
- 1-3 weeks depending on severity of injury
- Internal versus external rotation
  - Traditionally placed in internal rotation
  - Some evidence to suggest external rotation may better approximate anterior structures to glenoid rim (must be initiated within 24 hrs of reduction)

Physical Therapy

- Passive>>>>>Active ROM/Strengthening
- Rotator Cuff
- Scapular Stabilizers
- Therapeutic modalities
  - Electrical Stimulation

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Surgical Treatment

- Restore normal anatomy
- Arthroscopic vs. Open stabilization
- Early vs. Delayed Repair
  - Surgical repair must take into consideration:
    - Age of patient
    - Activity level
    - Concomitant pathology (Bony injury)

- Arthroscopic vs. Open procedure (Bankart lesions)
- Results of arthroscopic stabilization equivalent to traditional techniques for anterior instability
- Allows for simultaneous treatment of concomitant pathology
  - SLAP
  - Hill-Sachs (Remplissage)

- Open procedures may be necessary for more extensive injuries and instability patterns
  - Articular fracture (Bony Bankart)
  - Recurrent instability
  - Multidirectional Instability (MDI)

Recovery and Rehabilitation

- 6 weeks of immobilization
- Encourage Elbow/wrist/hand ROM
- Passive>>>Active ROM/Strengthening
- Return to Contact 5-6 months
- Use of external bracing devices (Sully strap, etc.)?
Thank You