Superior Labrum Anterior to Posterior (SLAP) Lesions

Normal Anatomy
- The shoulder is particularly unstable as the humeral head is considerably larger than glenoid fossa
- The labrum is a fibrocartilaginous ring around the glenoid cavity
- It acts to deepen the glenoid fossa in an attempt to increase static stability
- The superior aspect is a more loose and mobile than the inferior aspect
- The long head of biceps attaches into the superior labrum

Pathology
- A SLAP lesion is a labral tear due to excessive stress and strain from the biceps attachment

Mechanism of injury

Traumatic
- Traction injury
- Compression such as falling on outstretched arm or bracing in a road traffic accident

Overuse
- Repeated overhead throwing
- There are 2 contributing factors to injury
  1. There is high eccentric activity of the biceps brachii during the deceleration and follow through phases of throwing. This causes the long head of biceps tendon to pull away at the labrum
  2. A ‘Peel Back’ mechanism occurs during maximal external rotation at 90° of abduction. This causes the base of the biceps tendon to twist and peel off the labrum off the glenoid.

Co-Existing Pathologies

Anterior Instability
- Normal glenohumeral stability is reliant on the labrum and biceps anchor. If these are no longer intact excessive anterior migration of the humeral head can occur leading to anterior instability.

Internal Impingement
- Should anterior migration of the humeral head continue it can lead to continuous fraying of the posterior rotator cuff on the posterosuperior glenoid rim (Internal Impingement).
Classification

- The classification system describes the structures at fault and is not a progressive classification i.e. 1 is no worse or better than 4
- Most common classification system is Type 1 – 4.
- There are other systems using Type 1 – 7 and Type 1 - 12

**Type 1**
- Degeneration of the labrum with the biceps tendon attachment intact

**Type 2**
- Most common Type of classification
- Detachment of the superior labrum and biceps tendon from the glenoid
- Traumatic lesions usually have more anterior detachment
- Throwers and overuse lesions usually have a more posterior detachment due to the ‘Peel Back’ mechanism

**Type 3**
- A bucket handle tear of the labrum with the attachments of the biceps tendon on the glenoid intact

**Type 4**
- Detachment of the superior labrum and biceps tendon from the glenoid, with a bucket handle tear of the labrum.

Examination

**Subjective**
- SLAP lesions are often difficult to diagnose due to co-existence with other pathologies
- As stated above the mechanism of injury can be traumatic due to a fall on an outstretched arm or traction
- Mechanism of injury can be overuse due to repeated overhead movements
- Decrease in throwing or serving velocity
- Symptoms are often vague
- Intermittent pain associated with overhead activity
- *Painful* clicking and catching – usually with external rotation in abduction
- Mechanical pain which is pain with specific movements or positions

**Objective**
- Pain with overpressure into external rotation at 90° abduction
- Pain with active arm elevation

**Special Tests**
- Lots of special tests have been described within the literature
- In order to make a diagnosis a battery of tests are *MORE* useful
- Further investigation is more accurate than physical examination
Tests
1. Active compression test
2. Compression rotation or grind test
3. Speeds Test
4. Clunk test
5. Crank test
6. Anterior slide
7. Biceps load
8. Biceps load II
9. Pain provocation test
10. Resisted supination external rotation
11. Pronated load test

Further Investigation
- MRI with arthrogram
- Arthroscopic surgery

Management

Conservative
- Very rare and usually not successful
- Treatment principles are as follows
  1. Restore normal mobility
     - Decrease inflammation if present with massage, ice, NSAID’s
     - Reduce tone of any muscles in spasm with massage and joint mobilisations
     - Reduce risk of inferior capsule tightness with joint mobilisations
  2. Restore Dynamic Stability
     - Restore normal motor control and strength first, then progress onto exercises that challenged stability
     - Posterior Rotator Cuff
     - Scapular stabilisation
  3. Precautions
     - Avoid excessive external rotation
     - Avoid biceps loading during the early to middle stages
     - Take care with closed chain exercises when the mechanism of injury was traumatic compression

Surgical
- Depends on the type of SLAP, Mechanism of injury and Location of lesion
- Type 1 and 3 are generally debrided
- Type 2 and 4 are generally stabilised with a suture anchor
Post-Operative Rehabilitation

- Rehabilitation is complex and dependent on the surgery performed
- For in depth examples of how rehabilitation programmes vary see the following articles (Manske & Prohaska, 2010; Wilk et al., 2005)

References

(Abrams & Safran, 2010; Dodson & Altchek, 2009; Manske & Prohaska, 2010; Walton & Sadi, 2008; Wilk et al., 2005)


