External (Bursal Sided) Impingement

Normal Anatomy
- The supraspinatus outlet is a space formed by acromion, coracoacromial arch, humeral head and glenoid
- This is a relatively small space for a lot of soft tissue including the rotator cuff tendons

Pathology
- External impingement is the pinching of the rotator cuff tendons between the humeral head and the acromion or Coracoacromial ligament
- Often referred to ‘Bursal Sided’ Impingement
- Internal (Articular) Impingement is a different pathology and covered in a separate handout
- External impingement is normal and only pathological due to one of the following
  1. Overuse
  2. Trauma
  3. Anatomy
  4. Alignment
  5. Soft Tissue Imbalances

Impingement Stages
- External impingement was categorised into 3 stages

Stage 1
- < 25 years old
- Acute inflammation and oedema of the rotator cuff
- Reversible with conservative management

Stage 2
- 25 – 40 years old
- Tendinitis or fibrosis thickening of the rotator cuff
- Usually reversible with conservative management
- Sometimes requires injection or surgery management

Stage 3
- 40+ year old
- Mechanical disruption of rotator cuff tendons
- Osteophyte formation under acromion
- Thickening of coracoacromial arch
- More likely to require surgery
Primary and Secondary Impingement

The underlying cause of impingement can be divided into primary or secondary factors.

Primary Impingement

- Result of direct compression of rotator cuff tendons between humeral head and superior structures
- Due to the following
  1. Anatomical variation of acromion
  2. Acromioclavicular arthrosis
  3. Coracoacromial ligament hypertrophy
  4. Subacromial bursal thickening or fibrosis
  5. Trauma
  6. Repeated overhead activity

Secondary Impingement

- Secondary due to another problem that alters humeral head migration
  1. Rotator cuff weakness
  2. Neurological paralysis
  3. Glenohumeral instability
  4. Scapular Dyskinesia
  5. Posterior Capsule Tightness

Subacromial Impingement and Coracoacromial Impingement

- The superior structure that the rotator cuff tendons are pinched against should be differentiated as it will affect management
- Coracoacromial impingement is more symptomatic into horizontal adduction, Subacromial impingement is more symptomatic into flexion

Examination

Subjective

- History of instability
- History of impingement
- Sports or jobs with repeated overhead activity
- Usually insidious onset of pain although can be traumatic
- Pain anteriorly, superior and laterally in shoulder
- Pain in positions of flexion and internal rotation (Subacromial) or horizontal adduction (Coracoacromial)
Objective
• Restricted and painful flexion, internal rotation OR horizontal adduction
• Painful arc through abduction
• Pain on resisted external rotation
• Weakness on external rotation
• Reduced thoracic extension
• Scapular dyskinesis (medial border winging, inferior angle winging, reduced scapular upward rotation most common)
• Tenderness palpation Subacromial, Coracoacromial space
• Tenderness palpation supraspinatus tendon

Special Tests
• Hawkins Kennedy
• Neer’s
• Empty Can
• Lateral Rotation
• Painful Arc

Further Investigation
• Diagnostic Injection
• MRI
• Arthroscopic surgery
Management

Conservative

- Usually successful
- Based on assessment findings
  1. Restore Normal Mobility
     - Decrease inflammation if present with massage, ice, NSAID’s, rest from aggravating activities
     - Decrease tone of muscle spasm with soft tissue techniques (dry needling, MET, DSTM, Friction, MTrP release)
       - Pec Minor
       - Levator Scapulae
       - Rhomboids
       - Upper Trapezius
       - Subscapularis
       - Deltoid
     - Increase mobility of joint capsule with joint mobilisations to restrict superior migration of the humeral head
       - Inferior capsule
       - Posterior capsule
  2. Restore Normal Motor Control and Strength
     - Posterior Rotator Cuff
     - Serratus Anterior
     - Lower Trapezius
  3. Restore Dynamic Stability
     - Exercises that challenge the stability of the glenohumeral joint and humeral head migration in closed and open chain
  4. Return to sport/activity specific exercises

Plan B

Injection
- Corticosteroid injection of the area will be completed up to 3 times

Surgery
- If there is an anatomical cause for impingement a Subacromial Decompression is usually provided
References

(Bang & Deyle, 2000; Boyles et al., 2009; Bullock et al., 2005; Chang, 2004; Cools et al., 2013; Cools et al., 2003; Dickens et al., 2005; Ellenbecker & Cools, 2010; Ho et al., 2009; Hung et al., 2010; Kibler et al., 2013; Lewis et al., 2001; Ludewig & Braman, 2011; Ludewig & Cook, 2000; Ludewig & Reynolds, 2009; Muraki et al., 2010; Neer, 1983; Reinold et al., 2009; Roy et al., 2009; Schellingerhout et al., 2008; Seitz et al., 2011; Senbursa et al., 2007; Teys et al., 2008; Tyler et al., 2000; Wassinger et al., 2012)


