Evidence Based Examination

THE SHOULDER JOINT
OVERVIEW OF SHOULDER EXAMINATION

• DEFINE WHAT WE MEAN BY “THE SHOULDER”

• RELATIONSHIP BETWEEN EXAMINATION OF THE SHOULDER AND INTERVENTION FOR A SHOULDER CONDITION
SHOULDER EXAM - HISTORY

• There is a paucity of evidence in this area
• Raynor, et al, J Shoulder Elbow Surg, 2016 (systematic review)
  – RCT more likely if
    • History of hypercholesteremia
    • Relative with RC disease
    • Excessive lifting
    • Above shoulder work
    • Hand held vibration
    • Age >60
ROLE OF CLINIMETRICS

• WHAT ARE CLINIMETRICS?

• WHY USE THEM
  – BASELINE
  – ASSESSMENT OF CHANGE

• IS THERE ONE BEST CLINIMETRIC?
  – Smith, Calfee, Baumgarten et al, JBJS, 2012
BASIC COMPONENTS OF THE SHOULDER EXAMINATION

• RULE IN/RULE OUT THE SHOULDER AS THE SOURCE
• POSTURE ASSESSMENT (STATIC AND DYNAMIC)
• OBSERVATION FOR ATROPHY/ABNORMALITY
• PALPATION
• RANGE OF MOTION ASSESSMENT
• NEUROLOGIC EXAMINATION
• MUSCLE LENGTH ASSESSMENT
• JOINT MOBILITY ASSESSMENT
• SPECIAL TESTING
RULE IN/OUT SHOULDER AS SOURCE

• CRITICAL FIRST STEP
  — HISTORY CAN BE CRUCIAL
    • CLEARING THE CERVICAL SPINE
    • CLEARING THE PULMONARY SYSTEM
    • CLEARING THE CARDIAC SYSTEM
    • CLEARING FOR NEOPLASM
  — THE ABSENCE OF POSITIVE FINDINGS IN THE HANDS ON PORTION OF THE EXAM IS ANOTHER FLAG THAT THE SHOULDER IS NOT THE SOURCE
POSTURE ASSESSMENT

• STATIC ASSESSMENT — can be sitting and/or standing
  — TRUNK/HEAD/NECK POSITION
  — SCAPULAR POSITION — arms at the side
  — HUMERAL POSITION — arms at the side

• DYNAMIC ASSESSMENT
  — WHAT HAPPENS WITH MODIFYING TRUNK/HEAD/NECK POSITION
  — SCAPULAR POSITION — PARTICULARLY THE INFERIOR ANGLE
  — HUMERAL MOVEMENT
OBSERVATION - ATROPHY

• SIGNIFICANT ATROPHY THAT IS NOT ACCOUNTED FOR RE: HAND DOMINANCE OR PRIOR INJURY CAN PROVIDE IMPORTANT CLUES
PALPATION

• TRY TO BE AS SPECIFIC AS POSSIBLE
  – LINKED TO ANATOMY

• FORCE APPLICATION WORKS BEST IF DONE FROM LIGHT TO HEAVY
RANGE OF MOTION ASSESSMENT

• DOES MODIFYING POSTURE AFFECT ROM AND/OR PAIN?

• COMPARE STANDING AND SUPINE
  – ANY DIFFERENCES IN PAIN
  – ANY DIFFERENCES IN AMOUNT OF MOVEMENT

• IS THERE A PAINFUL ARC?

• DOES OVERPRESSURE/END-FEEL ASSESSMENT GIVE US ANY ADDITIONAL INFORMATION?
NEUROLOGICAL EXAMINATION

• ESTABLISH A BASELINE — SENSATION, MUSCLE STRENGTH, REFLEXES
  — QUICK AND SIMPLE ASSESSMENT

• MORE INVOLVED IF PATIENT INDICATES N/T DURING HISTORY
  — DIFFERENTIATE BETWEEN PERIPHERAL NERVE VS CENTRAL PROBLEM
    • CTS — RETROGRADE PAIN VS CERVICAL RADICULOPATHY

• ALSO MORE INVOLVED IF PATIENT INDICATES INABILITY TO MOVE THE EXTREMITY
  — DIFFERENTIATE BETWEEN NERVE VS TENDON/MUSCLE VS PAIN
MUSCLE LENGTH ASSESSMENT

• CHANGES IN MUSCLE LENGTH CAN IMPACT SHOULDER FUNCTION
  – PROLONGED IMMOBILIZATION
  – NERVE INJURY
  – MUSCLE INJURY
  – PREVIOUS SURGERY

• MOST COMMON MUSCLES INVOLVED
  – MEDIAL HUMERAL ROTATORS
    • PEC MAJOR
    • SUBSCAPULARIS
    • LATISSIMUS
  – SCAPULAR POSITION
    • PEC MINOR
    • LEVATOR SCAPULAE AND UPPER TRAPEZIUS
JOINT MOBILITY ASSESSMENT

- MOST OFTEN PERFORMED SUPINE
- ASSESSMENT IS OFTEN LINKED TO FINDINGS IN HISTORY, ROM AND MUSCLE ACTIVATION
- IMPORTANT TO COMPARE TO OPPOSITE SIDE
SPECIAL TESTING

• IS THE MOST COMPLICATED PORTION OF THE EXAMINATION
  – LINK HISTORY AND HANDS-ON EXAMINATION TO DETERMINE WHICH SPECIAL TEST TO PERFORM
    • SOME SHOULDER PROBLEMS HAVE 10-15 DIFFERENT SPECIAL TESTS THAT HAVE BEEN LINKED TO A SHOULDER PROBLEM – MAKING IT DIFFICULT TO DECIDE WHICH TEST TO DO.

• MAY NOT BE Able TO PERFORM ANY SPECIAL TESTS WITH AN ACUTE PATIENT
WHAT IS THE EVIDENCE RELATED TO EXAMINATION OF THE SHOULDER?

- O’Kane and Toresdahl (Current Sports Med Reports: Sep/Oct 2014): special tests performed in isolation are often not helpful, but when certain tests are combined, their usefulness improves. In addition, certain combinations of history (such as age) and special testing (ex: rotator cuff testing) can be more useful.
WHAT IS THE EVIDENCE RELATED TO EXAMINATION OF THE SHOULDER?

  - “Based on data from our original review (2008) and this update, the use of any single shoulder physical exam test to make a pathognomonic diagnosis cannot be unequivocally endorsed due to continued quality issues in publications.”
COMPLICATIONS RELATED TO CO-MORBIDITIES AND ASSOCIATED PATHOLOGY

- Presence of cervical symptoms and shoulder symptoms that appear to be separate entities
- Patients with long standing postural abnormalities who develop shoulder pain
- Patients with bilateral shoulder symptoms
- Patients with collagen abnormalities who develop shoulder pain
- RCT and labral tear
- Instability and labral tear
- Instability and RCT
EVIDENCE – ROTATOR CUFF TEAR

  – “… most tests for rotator cuff pathology were inaccurate and cannot be recommended for clinical use.”
• “At most, suspicion of a rotator cuff tear may be heightened by a positive palpation, combined Hawkins/Painful arc/ infraspinatus test, Napoleon test, Lift-off test, belly press test, or drop-arm test and it may be reduced by a negative palpation, empty can test or Hawkins-Kennedy test.”
EVIDENCE – SUPRASPINATUS EXAM

• Hermans, Luime, Meuffeis, et al. JAMA, 2013
  – Systematic review
  – Compared test results
    • Surgery (arthroscopy)
    • Imaging
  – Best performance with the following
    • painful arc test
    • Strength tests
      – External rotation lag sign
      – Drop arm test
    • Composite test
      – ER resistance test

• Hegedus, 2012 (metanalysis)
  – Combining age >39, painful arc and clicking/popping
EVIDENCE – SUBSCAPULARIS EXAM

• Hermans, Luime, Meuffeis, et al. JAMA, 2013
  – Strength test
    • Internal rotation lag test

• Hegedus, 2012 (metanalysis)
  – Belly off test

• Myer and Hegedus, 2013
  – Modified belly press
EVIDENCE – LABRAL TEAR EXAM

• Myer, Hegedus, 2013
  – Modified dynamic labral shear test
  – SLAP lesion
    • Passive compession test
    • Passive distraction test
EVIDENCE – SHOULDER INSTABILITY EXAM

• Anterior instability
  – Hegedus, 2012 (metanalysis)
    • A combination of the apprehension and relocation tests

• Posterior instability
  – There is a paucity of high level evidence on this particular shoulder instability
  – Common clinical findings in the patient who has a posterior humeral dislocation include
    • Significant limitation of ER
    • Limited elevation (flexion and abduction) above 80 degrees
    • Associated injuries are common – fractures and RCT

• Bony instability (Bankart, Hill-Sachs)
  – Myer, Hegedus, 2013
    • Bony apprehension test
EVIDENCE – “IMPINGEMENT” EXAM

• No good evidence that any special test has adequate power to rule in/rule out impingement.

• Hegedus, 2012 states: “...a strong argument can be made that subacromial impingement is not a valuable diagnosis but rather a cluster of diagnoses”.
• Kelly, et al. JOSPT, 2009
  – “Significant loss of passive external rotation with the arm at the side, as well as loss of active and passive motion in other planes of movement, differentiate frozen shoulder from other pathologies.”
  – Note – it is very difficulty to distinguish RC pathology from AC in the early stages of AC, since there is usually minimal loss of motion.

• Myer, et al. 2013
  – Shrug sign may be helpful – but is not pathognomonic for AC (must R/O RCT, C5/6 radiculopathy)
THANK YOU VERY MUCH FOR YOUR ATTENTION
WE WILL NOW BREAK UP FOR LABORATORY DEMONSTRATION
OF THE SHOULDER EXAMINATION AND SPECIAL TESTS