



**OMM for the Family
Physician
OMED 2014
Seattle Washington**

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Objectives



At the end of the session the attendee will be able to:

- 1. Apply a thorough history and physical for an upper extremity musculoskeletal complaint**
- 2. Perform the appropriate tests in the examination of the patient and know how to interpret them**
- 3. Integrate structural evaluation into the examination**
- 4. Integrate OMM into the management plan.**



Case # 1

Upper Extremity

Case #1

A 34 year old auto worker presents with insidious onset of right shoulder pain. He notes the pain is increased when he has his arm above his head and the extremity gets heavy and cool at times. He admits to tingling into the extremity but denies numbness. He has only noticed loss of strength due to the pain in the noted position. No new traumas to the shoulder have occurred however, he uses an impact wrench all day on the assembly line.. He rates the pain as a 7/10 at its worst.



Case #1

Examination reveals a well developed adult male with normal affect and good eye contact during the encounter. Vital signs are stable. Adson's test is weakly positive on the right and Wright's abduction test is positive on the right. Abduction at the right shoulder is limited to 150 degrees. Negative impingement sign, Tinnel's, Phalen's, Yeargason's, Speed's, arm drop, and empty can tests are noted. Deep tendon reflexes are +2/4 bilaterally and strengths are 5/5 in the upper and lower extremities. Sensory is intact



Case #1



There are TART findings at the upper thoracic and cervical spine (T1-5RRSL and C3-5 FRRSR). Tender points are noted for the supraspinatus, infraspinatus, scalene, subscapularis, long head of the biceps, levator scapula, and serratus posterior muscles. Marked tension is noted in the scalene and pectoral minor muscles. Right first rib is superior. Right glenohumeral joint is anterior/inferior.

Case #1



Impression

Thoracic Outlet Syndrome

Arthralgia

Somatic Dysfunction

**Cervical, Thoracic, Rib, Upper
Extremity**

What is Thoracic Outlet Syndrome?

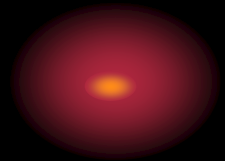


- **Pain**
- **Paresthesias**
- **Weakness, coolness, heaviness in upper extremity**
- **Symptoms aggravated by:**
 - **elevation of arms**
 - **exaggerated movement of the head and neck**



What is Thoracic Outlet Syndrome?

- **Three sites of compression**
 - **Scalene muscles**
 - **Infraclavicular space**
 - **Pectoralis minor muscle**



What is Thoracic Outlet Syndrome?

- **Classification**

- **Neurological**

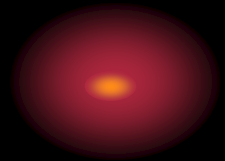
- True neurological TOS

- Symptomatic TOS

- **Vascular**

- Arterial TOS

- Venous TOS



A vibrant firework exploding in a dark night sky. The firework has a bright yellow and orange core that radiates outwards into numerous long, thin, curved trails of light. The trails are primarily orange and red, with some yellow and white highlights. The overall shape is a large, fan-like burst. The word "ETIOLOGIES" is overlaid in white, bold, sans-serif capital letters across the middle of the firework.

ETIOLOGIES

Etiology



- **Osseous vs. Soft tissue**
 - **Vascular vs. Neurogenic**

Etiology: Soft Tissue



- **Scalene and/or pectoral muscle restriction**
 - **associated postural and structural change**
- **C-spine hyperflexion/hyperextension**
 - **Whiplash**
- **Apical tumor of Lung**
 - **Pancoast's tumor**

Etiology: Soft Tissue

- **Pre-existing postural/structural changes**
 - **Changes in shoulder position**
 - **Alters costoclavicular space**
- **Aggravated by stress or trauma**
 - **progressive decompensation in homeostatic mechanisms**



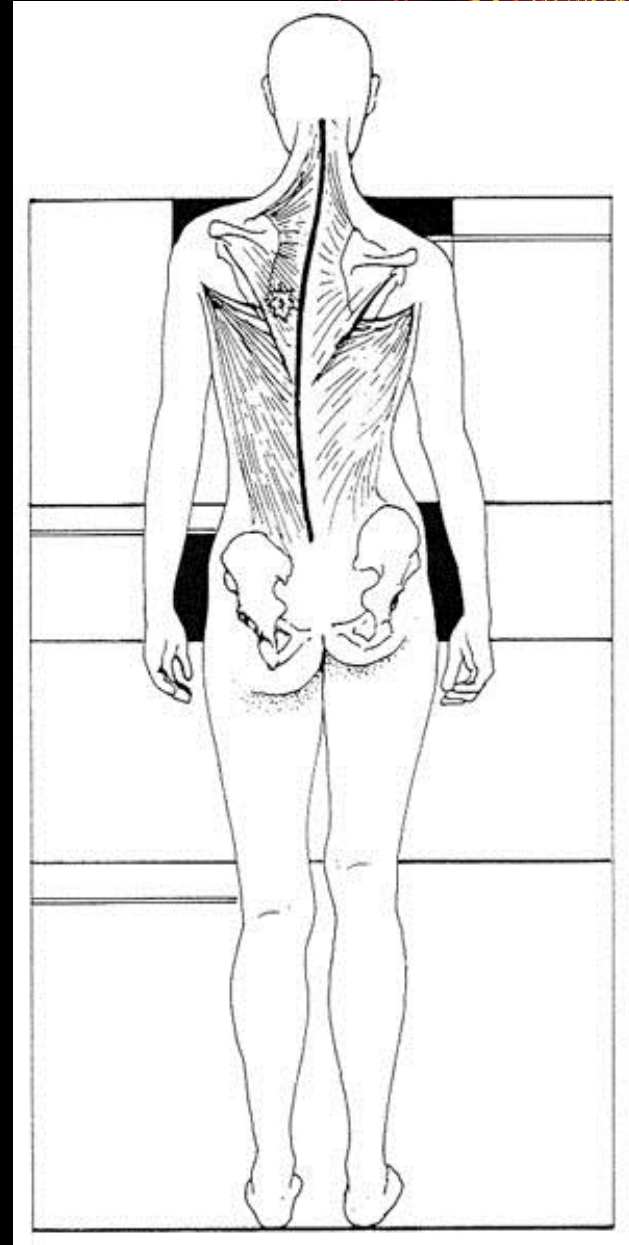
Etiology: Soft Tissue- Postural



- **System wide somatic dysfunction**
 - **Influences thoracic outlet syndrome development**
 - **Influenced by thoracic outlet syndrome**

Etiology: Soft Tissue- Postural

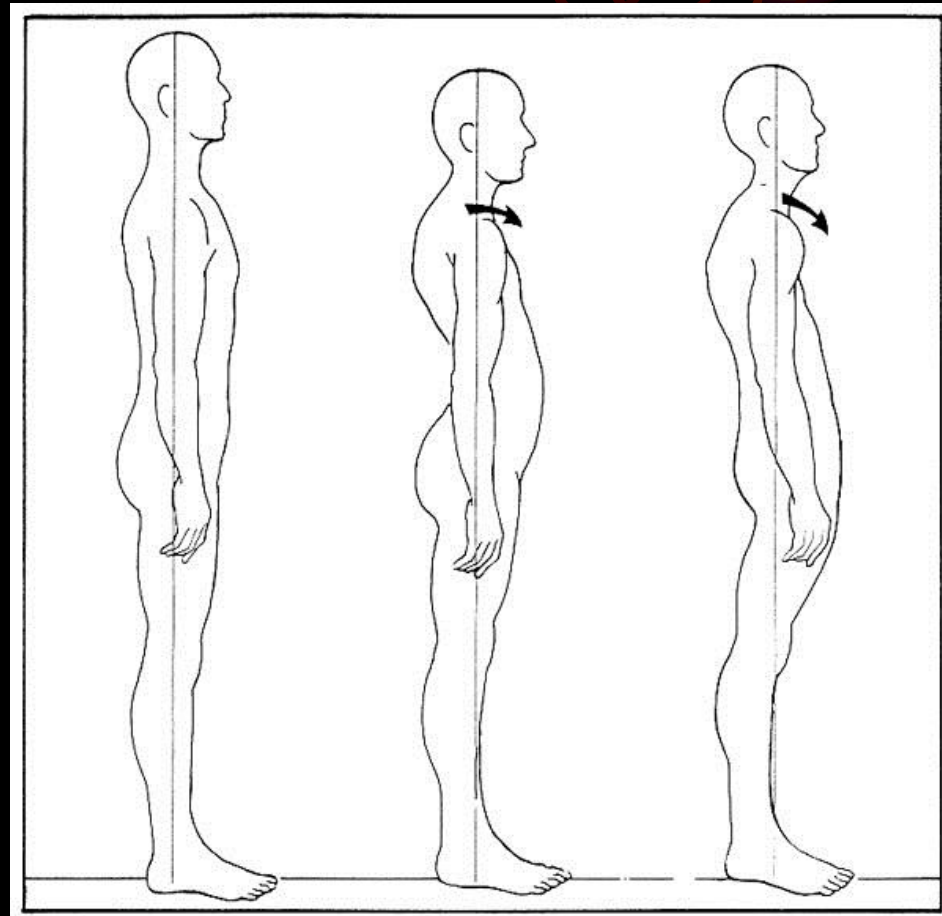
- **Coronal plane**
 - e.g. Short leg syndrome
 - **Asymmetrical tension in muscles and fascia**



Etiology: Soft Tissue- Postural



- **Sagittal plane**
 - **Increased anterior tilt (hyperlordosis - lumbar)**
 - **Compensatory change - protracts shoulder girdle**
 - **Increased posterior tilt (hypolordosis - lumbar)**
 - **compensatory change - protracts shoulder girdle**



Etiology: Soft Tissue- Postural



injury

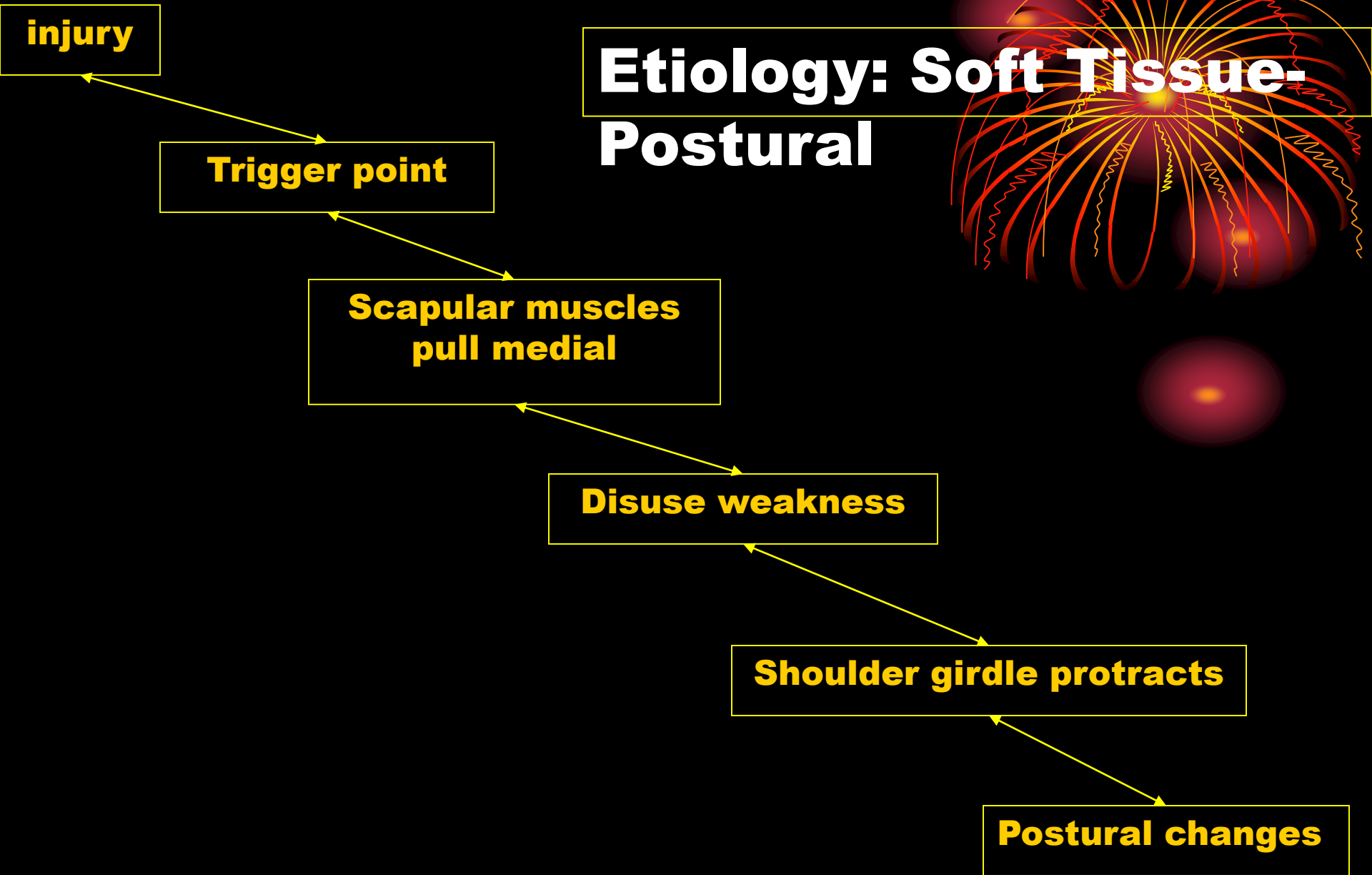
Trigger point

**Scapular muscles
pull medial**

Disuse weakness

Shoulder girdle protracts

Postural changes

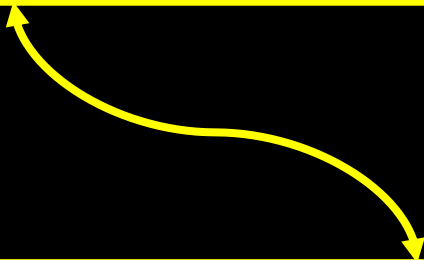
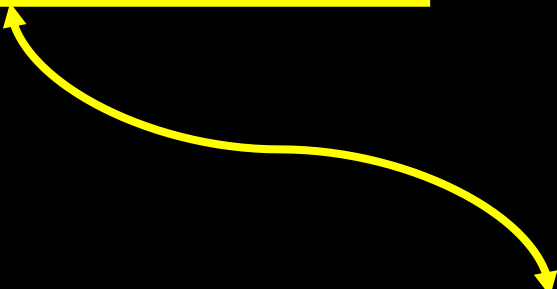


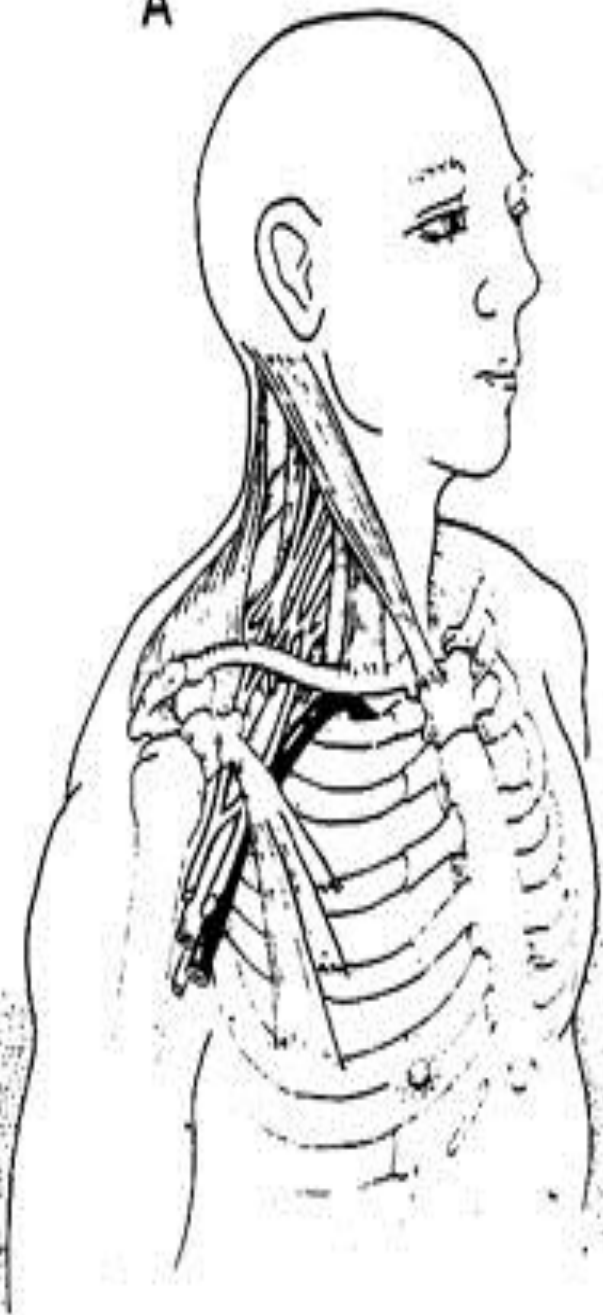
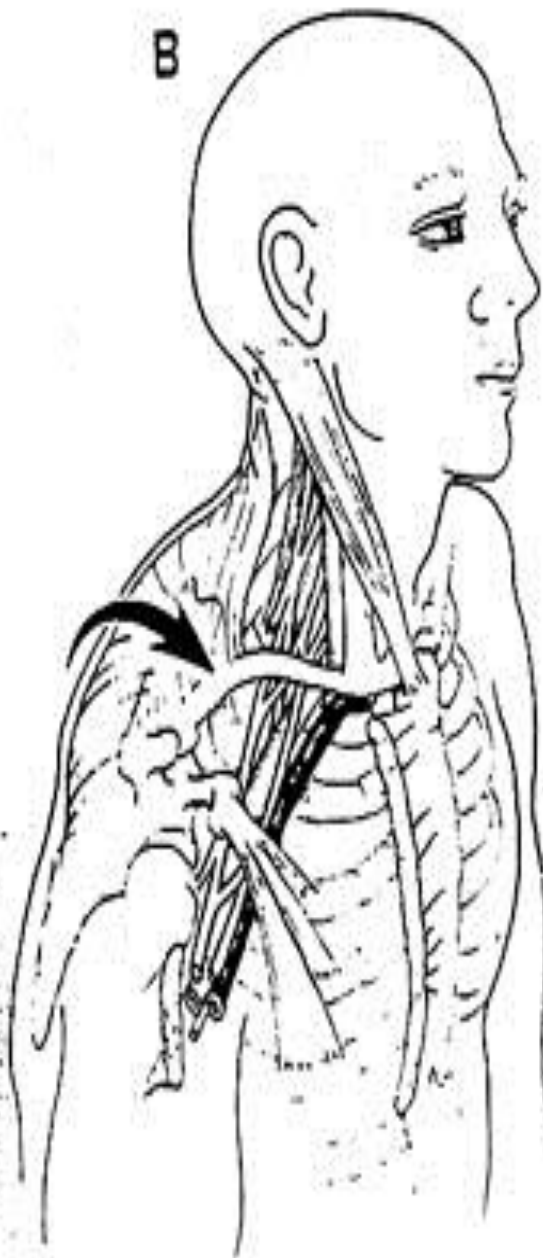
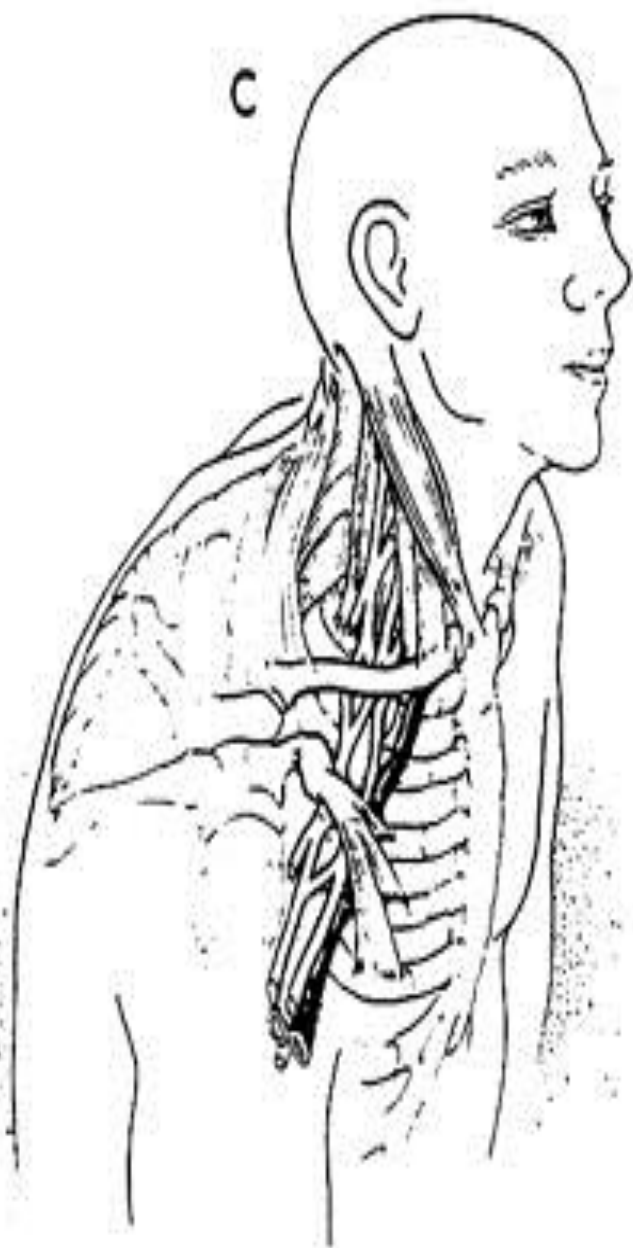
ACCOMODATION



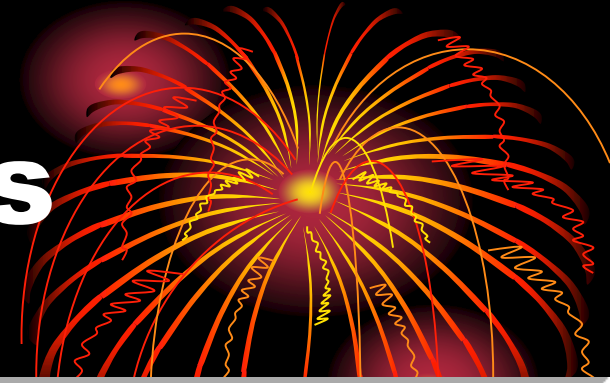
COMPENSATION

DECOMPENSATION

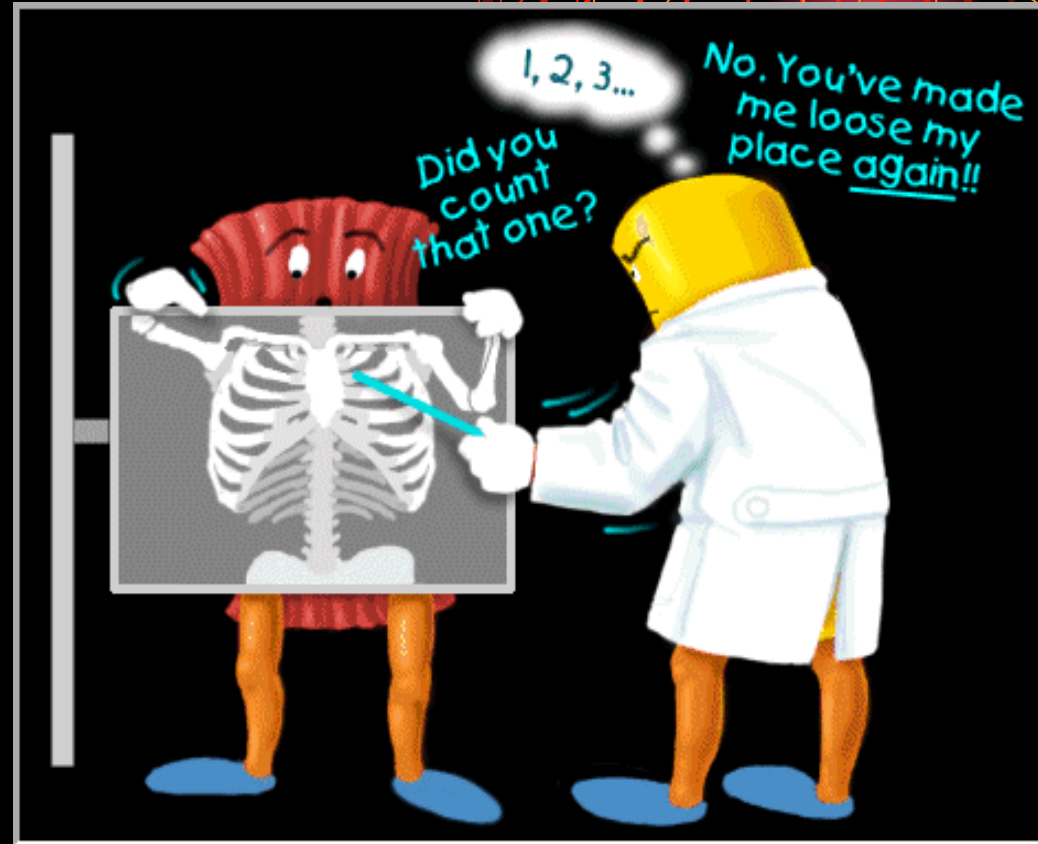


A**B****C**

Etiology - Osseous



- **Prominent C7 transverse process**
- **Cervical rib(5-9%)**
- **1st rib abnormalities**
- **Fractures of 1st rib/clavicle with callus formation**





**DIAGNOSIS
OF
THORACIC OUTLET
SYNDROME**

Physical Diagnosis



- **History**
 - **Trauma: acute, chronic (overuse injury)**
 - **Pre-existing postural stressors**
 - **Short leg syndrome**
 - **Scoliosis**
- **Neurological examination**
- **Vascular examination**

Physical Diagnosis



- **Adson's maneuver**
 - **Scalenes**
- **Wright's hyperabduction**
 - **Pectoralis minor**
- **Costoclavicular maneuver**
 - **Infraclavicular**
- **Spurling's Test**

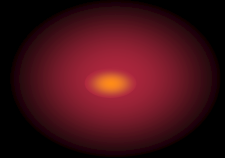
Physical Diagnosis

- **Osteopathic evaluation**
 - **Posture**
 - **C spine**
 - **Clavicle**
 - **Acromioclavicular**
 - **Sternoclavicular**



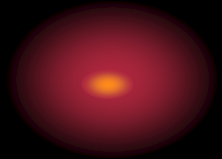
Physical Diagnosis

- **Osteopathic evaluation**
 - **T-spine**
 - **Ribs**
 - **Thoracic inlet fascial torque**
 - **Scapulothoracic motion**
 - **Subscapularis**
 - **Rhomboids**
 - **Levator scapula**
 - **Teres major and minor**
 - **Supraspinatus and infraspinatus**



Testing: Anatomic

- **X-rays**
 - **Chest X-ray if apical lung tumor suspected**
 - **C-spine films**
 - **Cervical ribs**
- **CT**
- **MRI**
 - **Radicular findings**
 - **Hard neurologic evidence**
- **Angiography**
- **Venography**



Testing: Physiologic



- **EMG**
 - **2-4 weeks before pathology shows on EMG**
 - **Plexopathy(TOS) - Doppler flow studies**
- **MS Diagnostc Ultrasound**
- **Doppler flow studies**
 - **If vascular symptoms**

Treatment

- **Pharmacologic**
 - **Analgesics (Non-narcotic or Narcotic)**
 - **NSAID's/Steroids**
 - **Muscle relaxants**
- **Physical therapy modalities**
 - **Moist heat**
 - **Ultrasound**
 - **Electrical stimulation**
 - **Postural strengthening exercises**



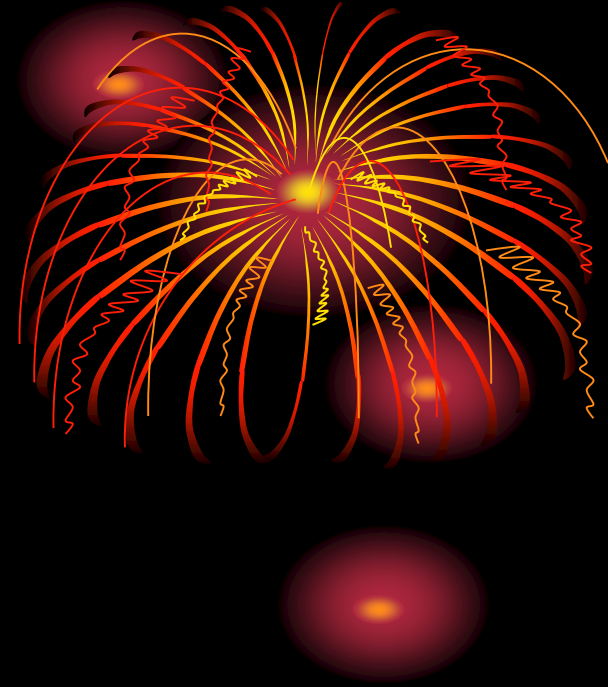
Treatment: Self-stretching



- **Self stretching**
 - **Important to success of treatment**
 - **Scalenes**
 - **Pectoral muscles**
 - **Hold 30 sec., 10 stretches BID**
 - **Will exacerbate the symptoms**
 - **Pain (deep ache) should not persist after stretch released**

Treatment: OMT

- **Myofascial release (direct/indirect)**
 - **Scalene**
 - Seated
 - Supine
 - **Pectoral muscles**
 - supine
 - side lying
- **Muscle energy**



Treatment: OMT

- **High velocity low amplitude**
- **Spray and stretch**
 - **Ethyl chloride**
- **Counterstrain**



Treatment: Postural



- **Muscle strengthening**
 - **Light weights/high repetition**
 - **Resistance exercises (elastic bands)**
 - **Avoid shoulder abduction >45 degrees**
 - **reactivates trigger point in parascapular muscles**

Treatment: Surgical

- **Failure of conservative therapy**
- **Options**
 - **Scalenectomy**
 - **First rib removal**



Case #1 Questions



- **What kind of neuropathy is TOS?**
- **Entrapment or Plexopathy**
- **What is the difference on physical exam between this and a radiculopathy?**
- **Radiculopathy has muscular weakness, decreased DTR, paresthesias in dermatome pattern, EMG may be positive**
- **Entrapment will have negative EMG normal neural examination**

Case #1 Questions



- **What diagnostic procedures need to be done in this patient and why?**
- **C-spine films, EMG, CT/MRI, US, Doppler**
- **How can OMM be used in the management of this patient**
- **Decide on modalities to be used safely**



**Hands-On Practice at
OMM**

Counterstrain Upper Extremity

Case #1



Treatment:

We will be reviewing the named tender points today. You will treat a few significant points and associated somatic dysfunctions then address the home stretches by teaching the patient how to perform them and what to expect. Included in the treatment is patient homework for them to do. Stretches to the scalenes, and pectoralis minor would be appropriate for the patient.

Counterstrain Treatment



Treatment:

If using counterstrain you must decide which tender points are most tender and start there. You can still treat other areas but realize that by treating these tender points you are treating somatic dysfunction and relieving the pain you should expect improvement in range of motion, tissue texture changes and asymmetry.

JSCS Treatment Basics



- **Treat the most tender point first**
- **Rate the patient's pain on a scale of 1-10**
- **Position the patient until the pain is less than 70% of the original pain**
- **Continuously monitor the TP**
- **Maintain the position of ease for 90 seconds**
- **Slowly and passively return the patient to neutral**
- **Recheck!**



Diagnostic and Treatment Approach to the Upper Extremities

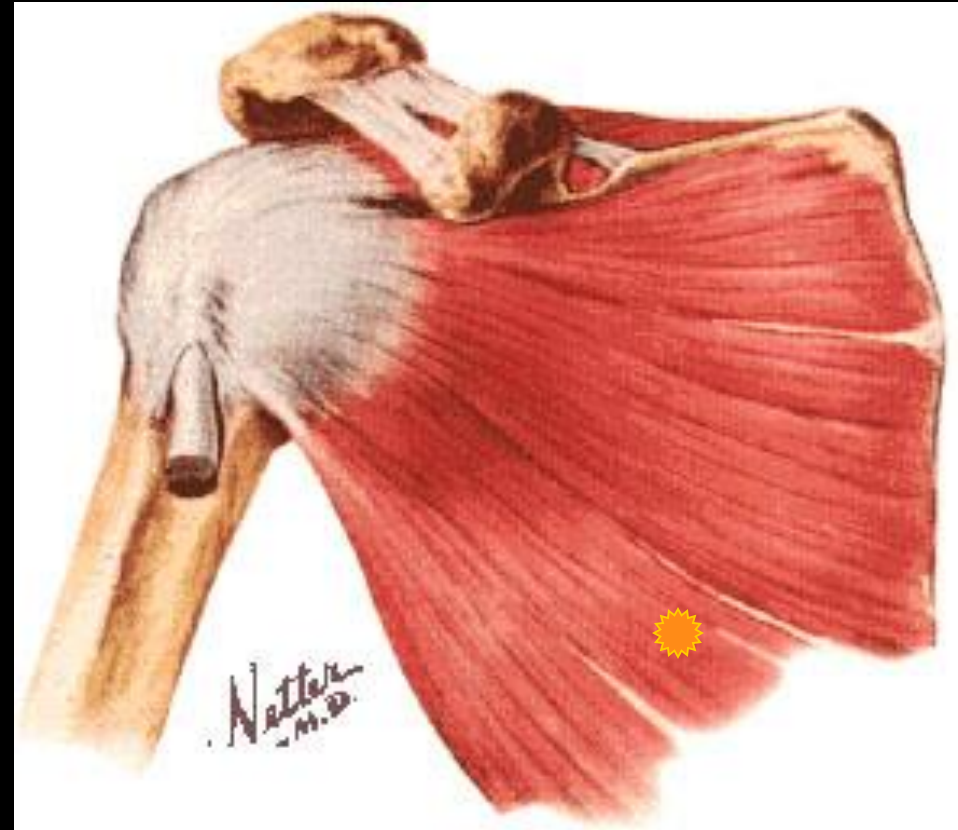


- ***Always check the joint above and below the area of chief complaint!!!***
- **Patients often present with wrist pain, decreased motion or grip strength and the problem could be originating in the elbow, radius or ulna**
- **Treat proximal before distal as a *general rule***
 - **i.e. examine and treat (if necessary) the shoulder before the elbow, or wrist before the hand.**

Subscapularis



- **On the anterior surface of the scapula, DEEP in the belly of the subscapularis muscle**



Subscapularis, Latissimus Dorsi



- **Internal rotation**
- **“8 o’clock position” if looking at patient from the lateral aspect**
 - **Extension**
 - **Abduction**
- **Use traction if beneficial**



LH Biceps

- **Tendon of the biceps muscle's long head in the bicipital groove**



LH Biceps



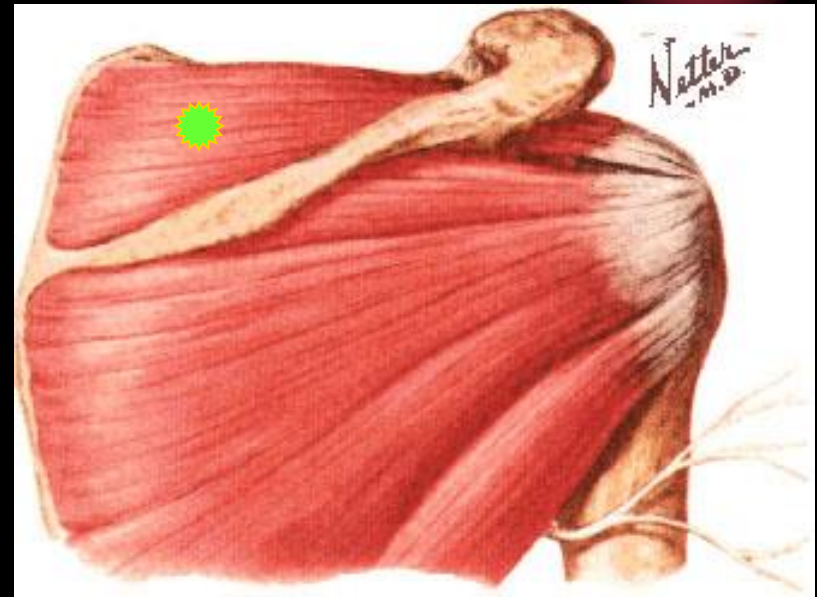
- **Flexion, internal rotation**
- **Dorsal wrist or forearm lying on forehead**
- **Scarlet O'Hara position**



Supraspinatus SUP



- **In the belly of the supraspinatus muscle, in the fossa above the spine of the scapula**



Supraspinatus SUP

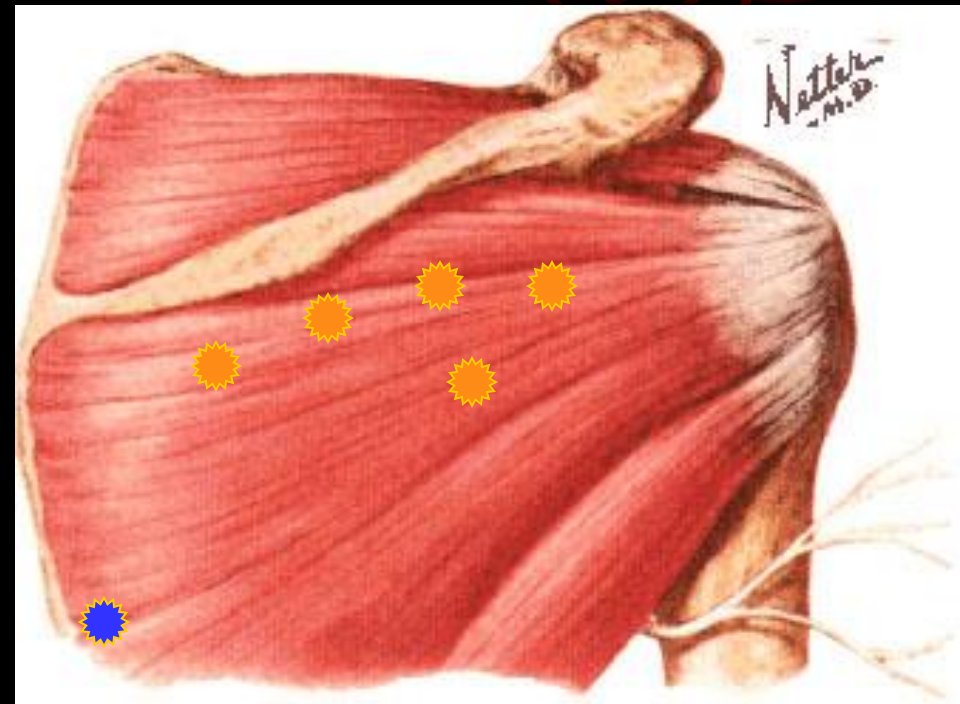
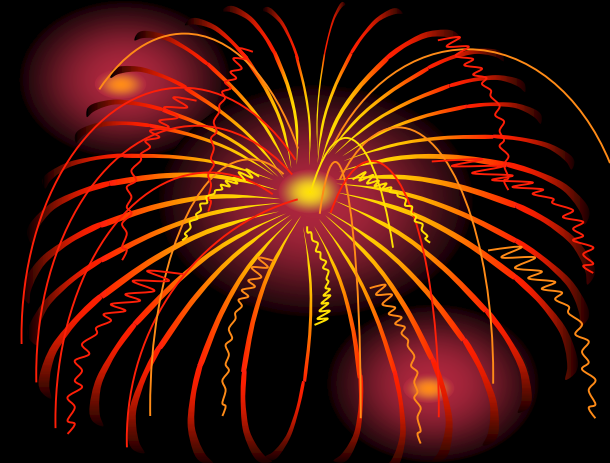


- **45° abduction**
- **45° flexion**
- **45° external rotation**



Infraspinatus

- **Low: One centimeter from the medial margin and 5 cm inferior to the spine of the scapula**
- **Upper: Two or three centimeters below the spine and three centimeters more lateral than the lower one**



Infraspinatus



Lower: Raise the arm forward until it is above the head

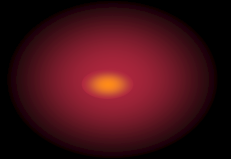
- **Upper: Statue of Liberty**



Scapulothoracic Treatments

Indirect Myofascial Release

- **Assess scapular motion**
 - **Elevation/depression**
 - **Upward tilt/downward tilt**
 - **Protraction/retraction**
- **Apply an indirect MFR treatment**



Myofascial Release to the Scalene Muscles



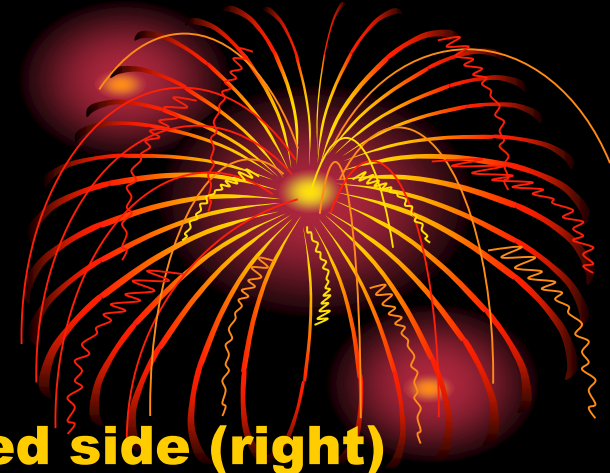
- **Patient is in supine position**
- **Doc at head of table**
- **With one hand side bend the head and neck away from the side to be stretched**
- **With the other hand provide caudad compression on shoulder girdle for opposing stretch**
 - **Other hand may also provide a perpendicular force to treat the muscles**

Myofascial Release to the Pectoral Muscles



- **Patient is supine**
- **Doctor at side of table on affected side**
- **Abduct & Internally Rotate the shoulder to induce long axis traction to muscle**
- **Use other hand to induce a perpendicular force to the muscle**

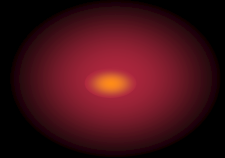
Superior First Rib Treatment (right) Still's Technique



- **Pt. supine with Dr standing at affected side (right) at pt's waist, and facing pt's head**
- **Have pt flex right elbow and place pt's right hand in pt's left shoulder region**
- **Dr's right index finger placed on head of pt's (right) first rib**
- **Dr's left hand cups the pt's right elbow (olecranon)**
- **Adduct the right shoulder so that pt's elbow is aligned with head of first rib**
- **Now with the dr's left hand, add a compressive force through olecranon towards the head of the first rib**
- **While compressing, rotate the shoulder in a counterclockwise direction so that the pt's hand passes near his/her ear**
 - **'listen' with your monitoring hand for a release**
- **Retest**

Conclusion

- **Strength of muscle spasm**
 - **Severity of injury**
 - **Degree of pain experienced**
 - **Secondary gain/anger/anxiety/expectations**
 - **Amount of sleep disturbance**
- **Physician must educate the patient**
- **Patient must be an active participant**





**THANK YOU
FOR ATTENDING
THIS SESSION**