

THORACIC OUTLET SYNDROME ASSESSMENT & TREATMENT

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**WHAT IS THORACIC OUTLET
SYNDROME (TOS)?**

FACTS ABOUT TOS

- COMPRESSION OF THE NERVES, ARTERIES AND OR VEINS IN THE NECK IN THE REGION ABOVE AND/OR BELOW THE CLAVICLE.
- THE MOST COMMON TYPE OF TOS IS NEUROGENIC (NERVE COMPRESSION)
- IT IS MORE COMMON IN FEMALES
- LIKELY DUE TO WEARING BRA STRAPS, HEAVY PURSES, AND LARGE BREAST TISSUE
- VERY COMMON IN THOSE WHO PLAY OVERHEAD SPORTS (THROWING, RAQUET SPORTS ETC)
- COMMON IN THOSE WITH KYPHOSIS (FLEXED THORACIC SPINE)

TOS SYMPTOMS

Types of thoracic outlet syndrome disorders and related symptoms

- Symptoms of neurogenic TOS include weakness or numbness of the hand, tingling, prickling, numbness and weakness of the neck, chest, and arms.
- Venous thoracic outlet syndrome: This condition is caused by damage to the major veins in the lower neck and upper chest. The condition develops suddenly, often after unusual and tiring exercise of the arms. Symptoms include swelling of the hands, fingers and arms, as well as heaviness and weakness of the neck and arms. The veins in the anterior (front) chest wall veins also may appear dilated (swollen).
- Arterial thoracic outlet syndrome: The least common, but most serious, type of TOS is caused by congenital (present at birth) bony abnormalities in the lower neck and upper chest. Symptoms include cold sensitivity in the hands and fingers; numbness, pain or sores of the fingers; and poor blood circulation to the arms, hands and fingers.

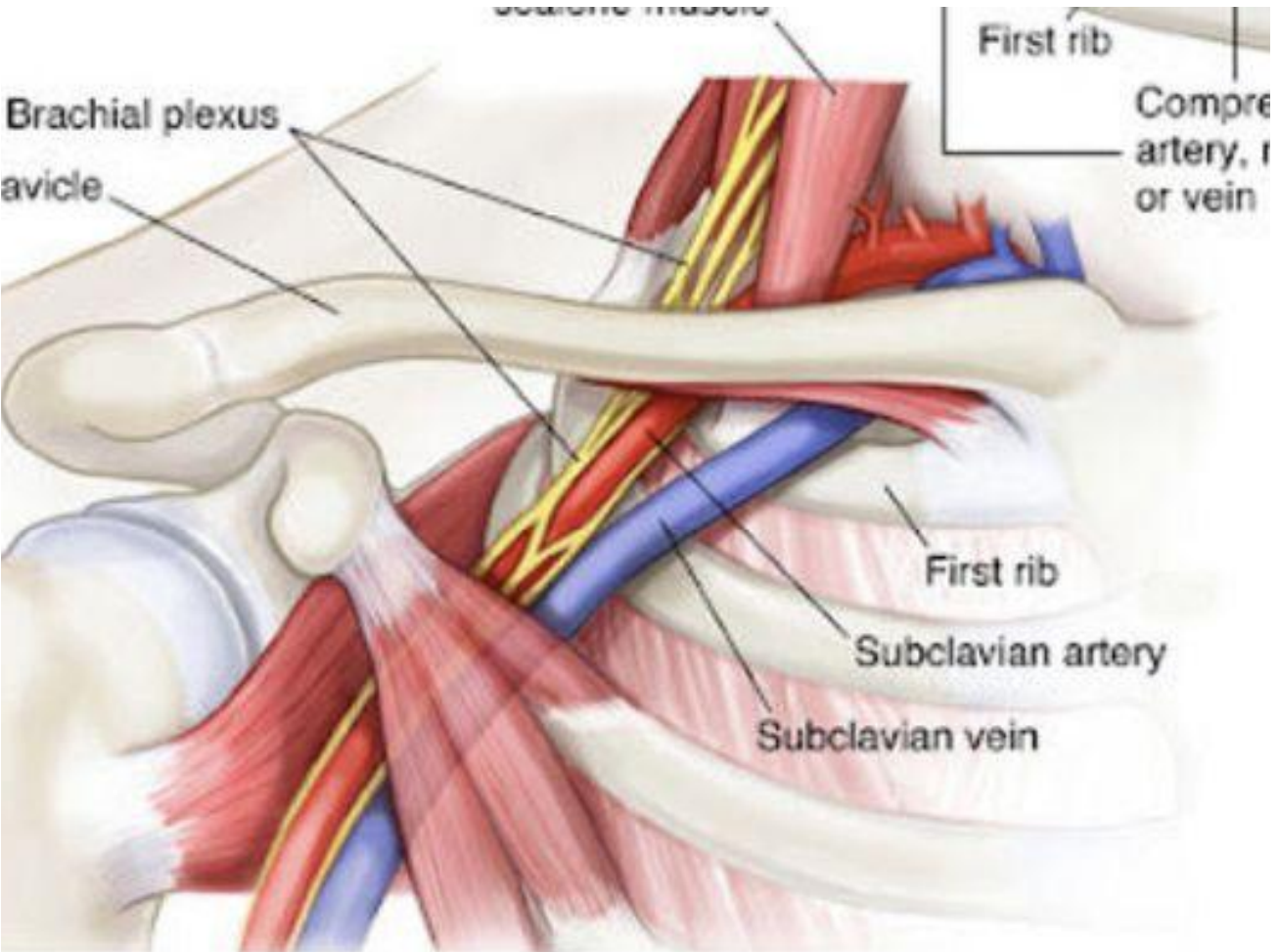
TOS VS ANGINA

- The signs and symptoms of TOS include neck, shoulder, and arm pain, numbness or impaired circulation to the affected areas.
- TOS is sometimes confused with the pain of angina (chest pain due to an inadequate supply of oxygen to the heart muscle), but the two conditions can be distinguished because the pain of
- TOS does not occur or increase when walking, while the pain of angina usually does.
- TOS typically increases when raising the affected arm, which does not occur with angina.

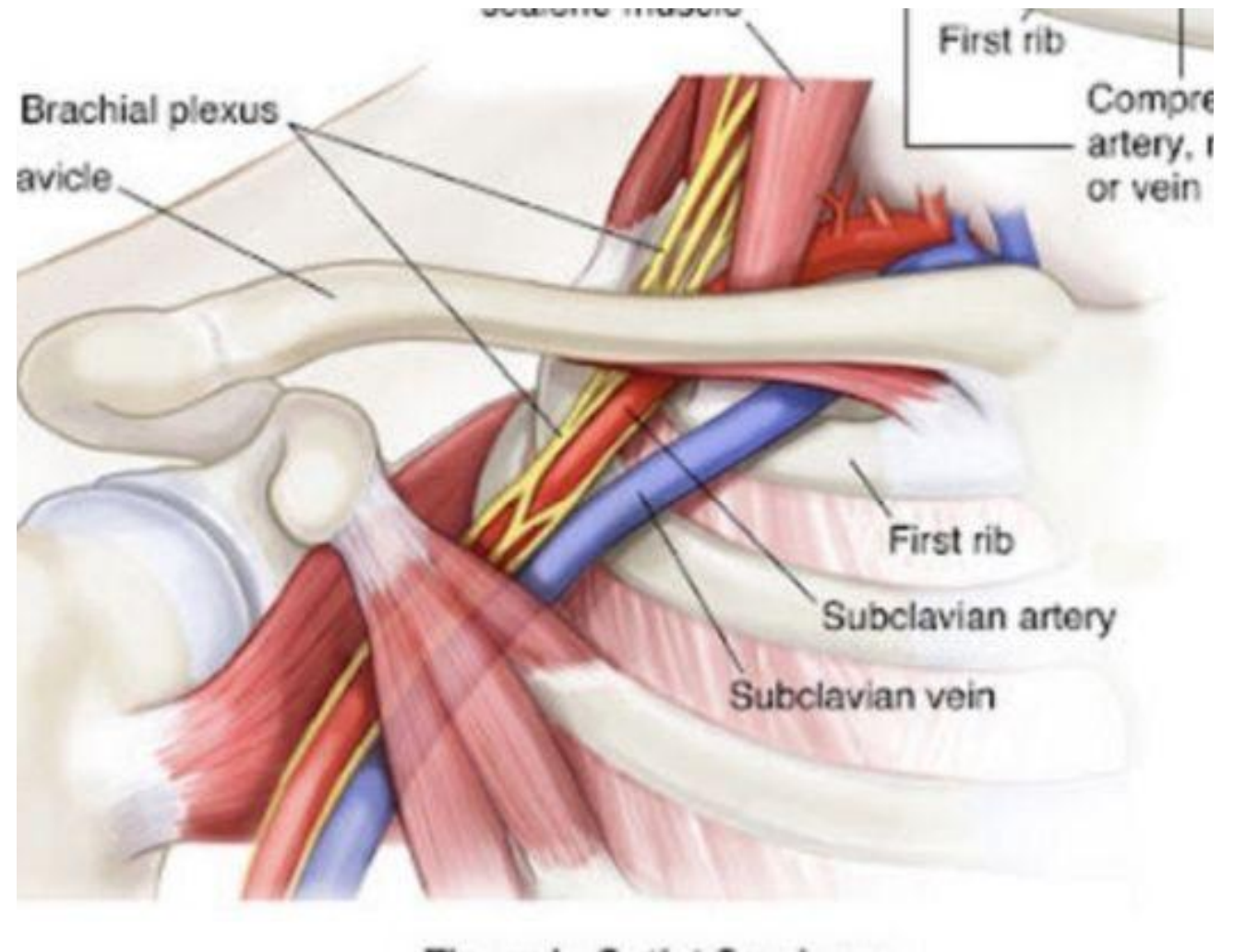
SITES OF TOS COMPRESSION

1. SCALENE ANTERIOR
2. COSTOCLAVICULAR SPACE
3. PECTORALIS MINOR COMPRESSION

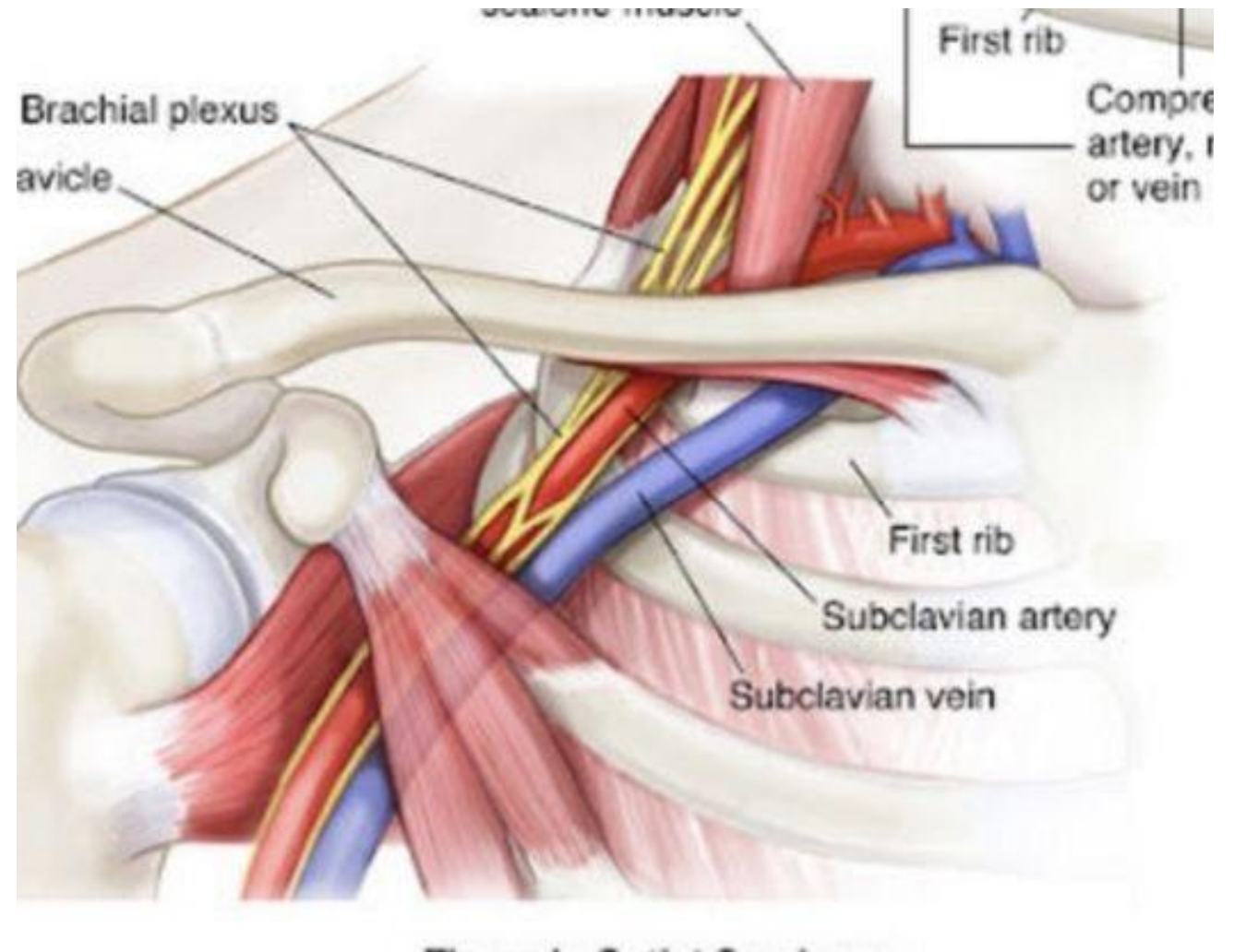
SUPRACLAVICULAR COMPRESSION



INFRACLAVICULAR COMPRESSION

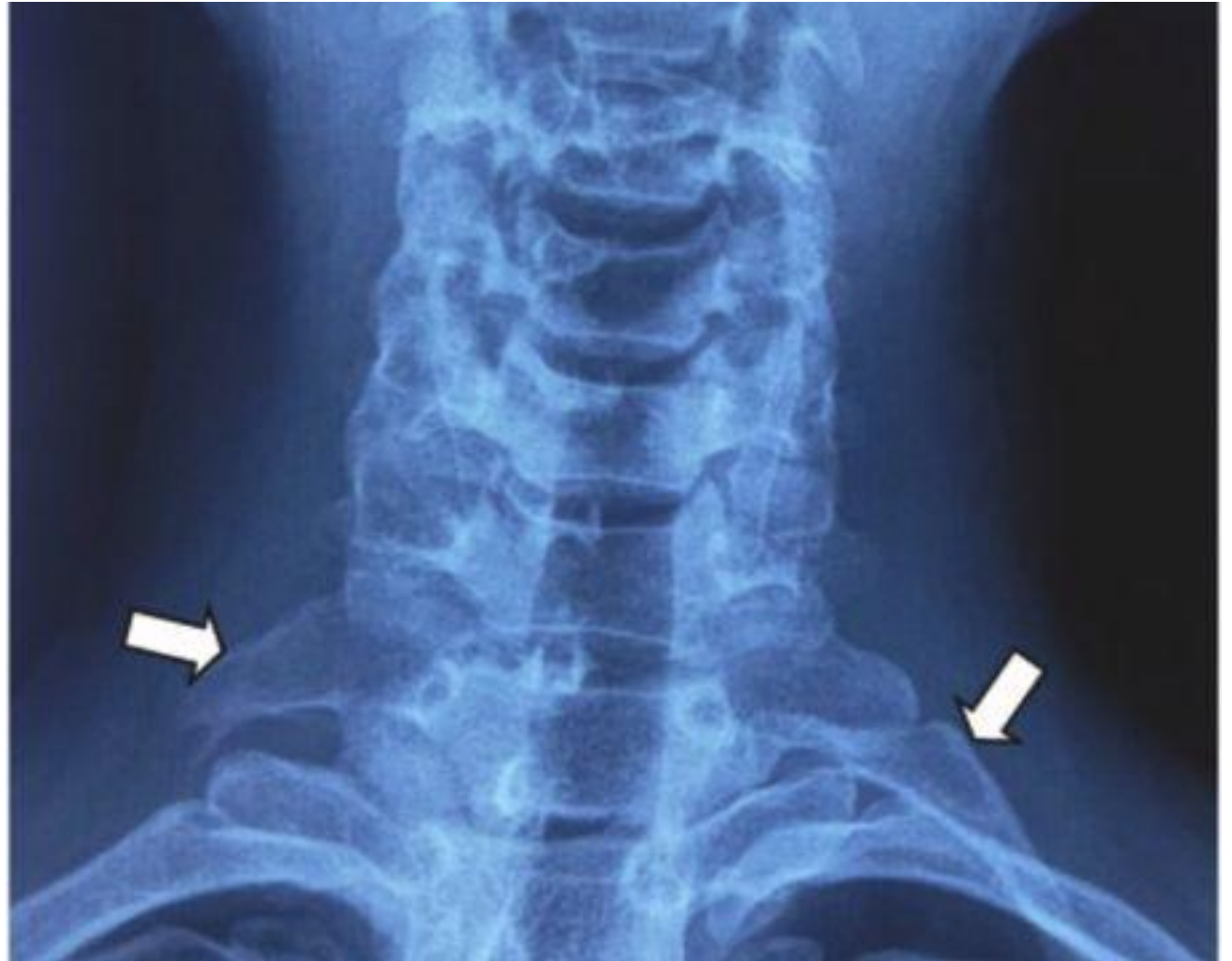


INFRACORACOID COMPRESSION



CERVICAL RIB

- CONGENITAL ANOMALY 1 IN 100 PEOPLE
- 1 IN 10 OF THOSE PEOPLE GET THORACIC OUTLET SYNDROME
- ATTACHES FROM THE 7TH CERVICAL VERTEBRAE
- CREATES COMPRESSION OF BRACHIAL PLEXUS



WHAT CAUSES TOS?

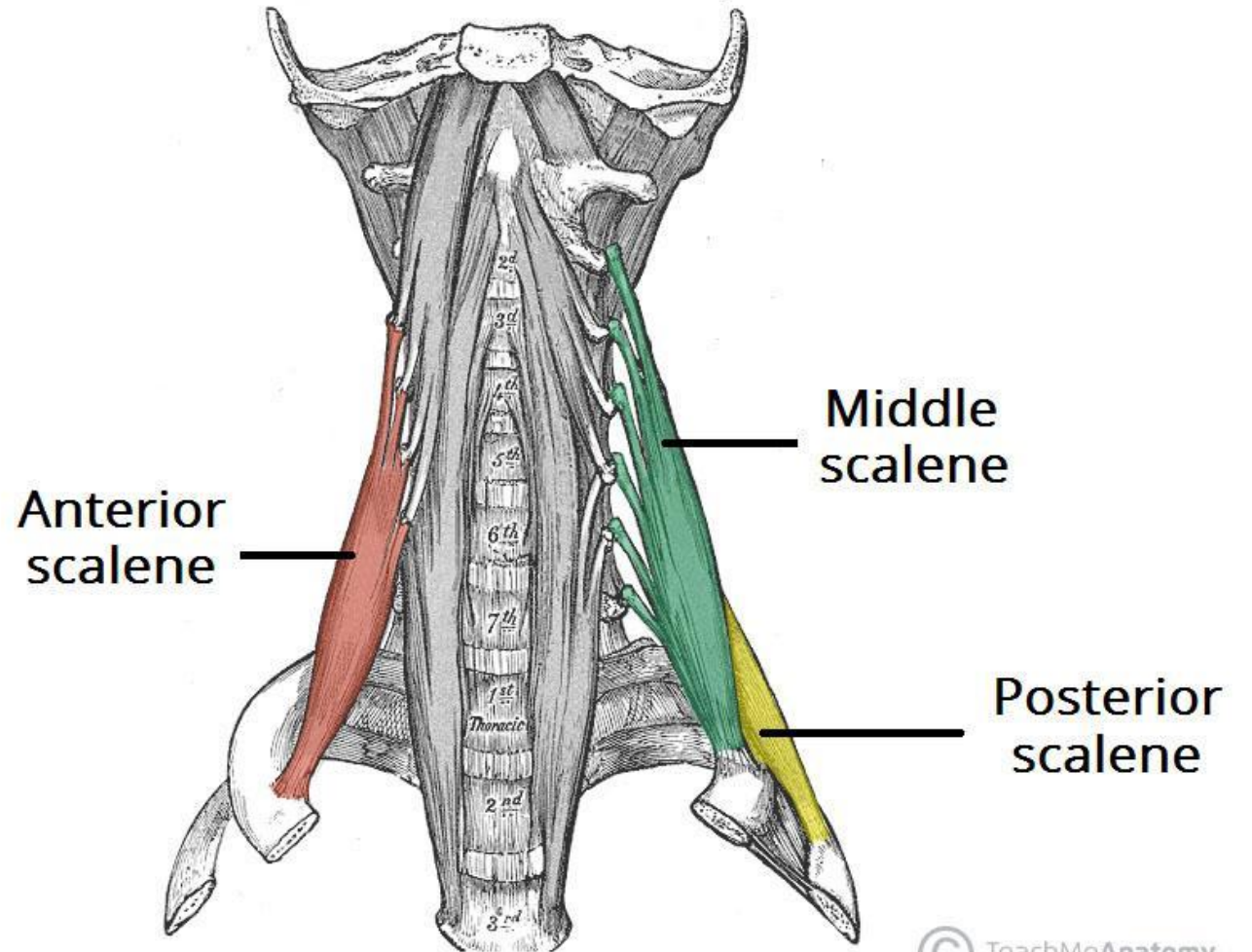
CAUSES OF TOS

- Sleep disorders
- Tumours or large lymph nodes in the upper chest or underarm area
- Stress or depression
- Participating in sports that involve repetitive arm or shoulder movement, such as baseball, swimming, golfing,
- Repetitive injuries from carrying heavy shoulder loads
- Injury to the neck or back (whiplash injury)
- Poor posture
- Weightlifting

KEY ANATOMY

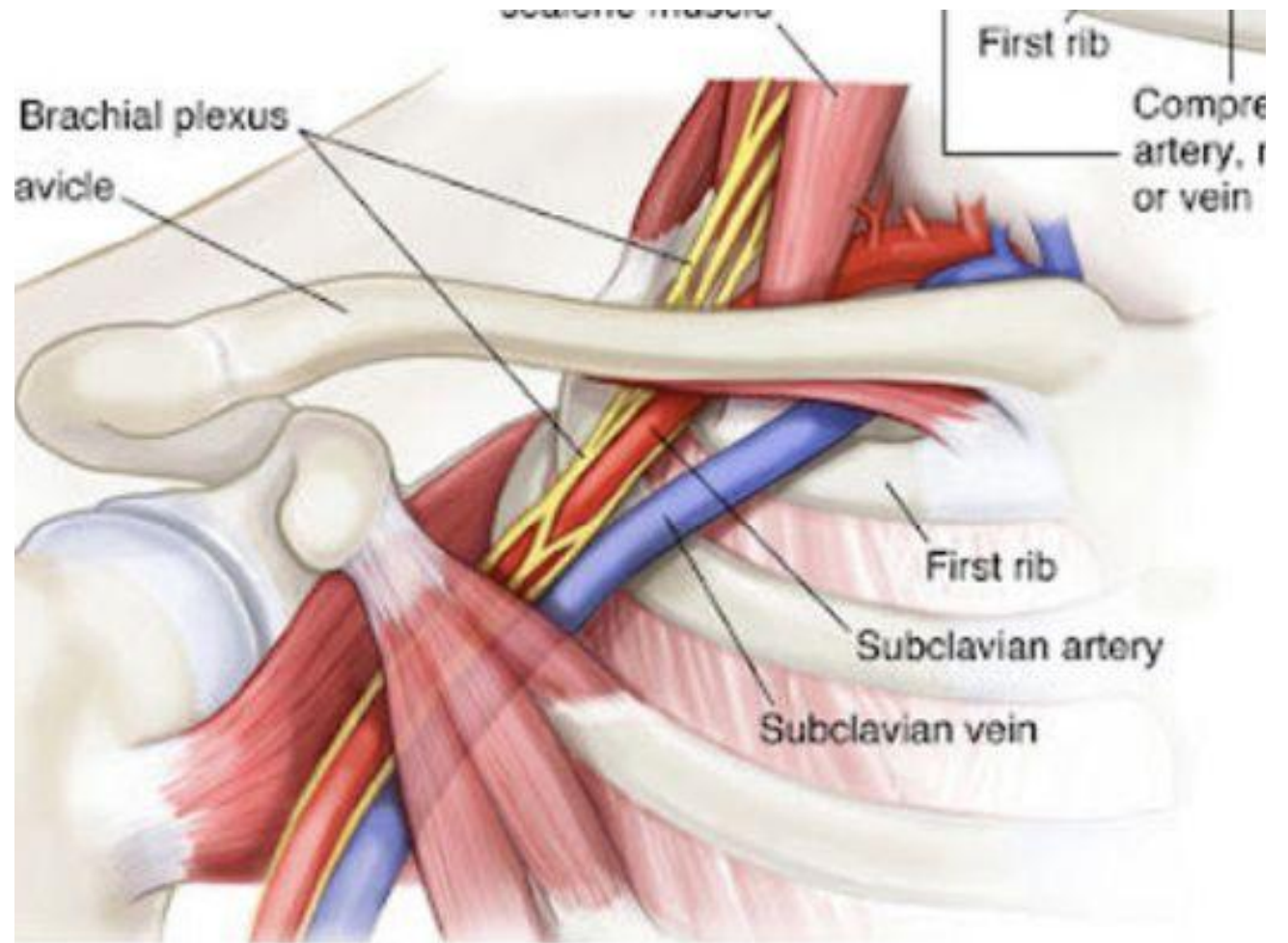
SCALENES

- ANTERIOR: Originates from the anterior tubercles of the transverse processes of C3-C6 and attaches onto the scalene tubercle (on the inner border of the first rib).
- MIDDLE: Originates from the posterior tubercles of the transverse processes of C2-C7 and attaches to the scalene tubercle of the first rib.



PECTORALIS MINOR

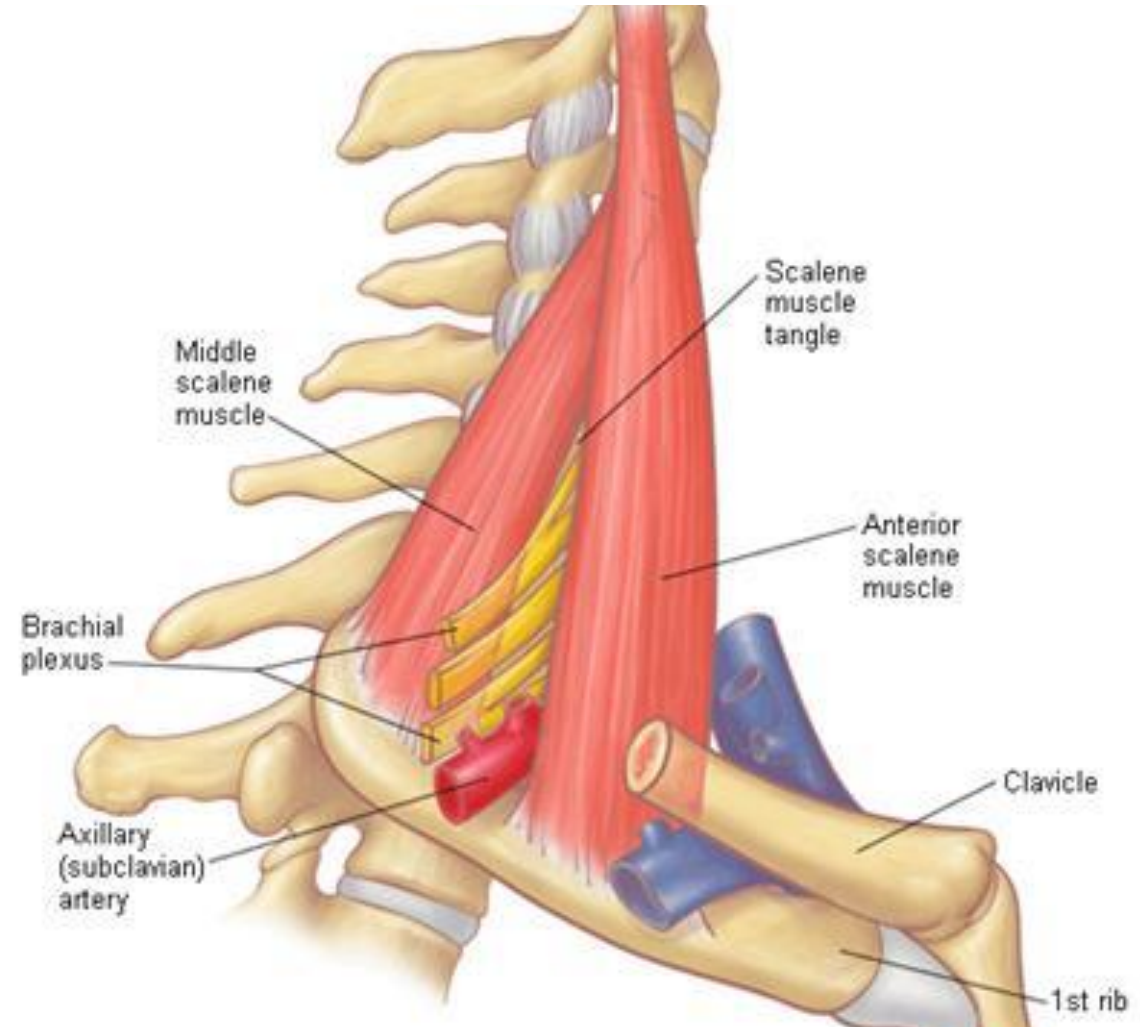
- FROM COSTAL BORDERS OF RIBS 3-5 ATTACHING TO THE CORACOID PROCESS



ORTHOPEDIC EXAMINATION

ADSON'S

- The patient to rotate the neck ipsilaterally
- flex it laterally to the opposite side, and extend the head and neck while the practitioner palpates the strength of the radial pulse
- Compresses the neurovascular bundles
- Creates tingling, numbness, pain.

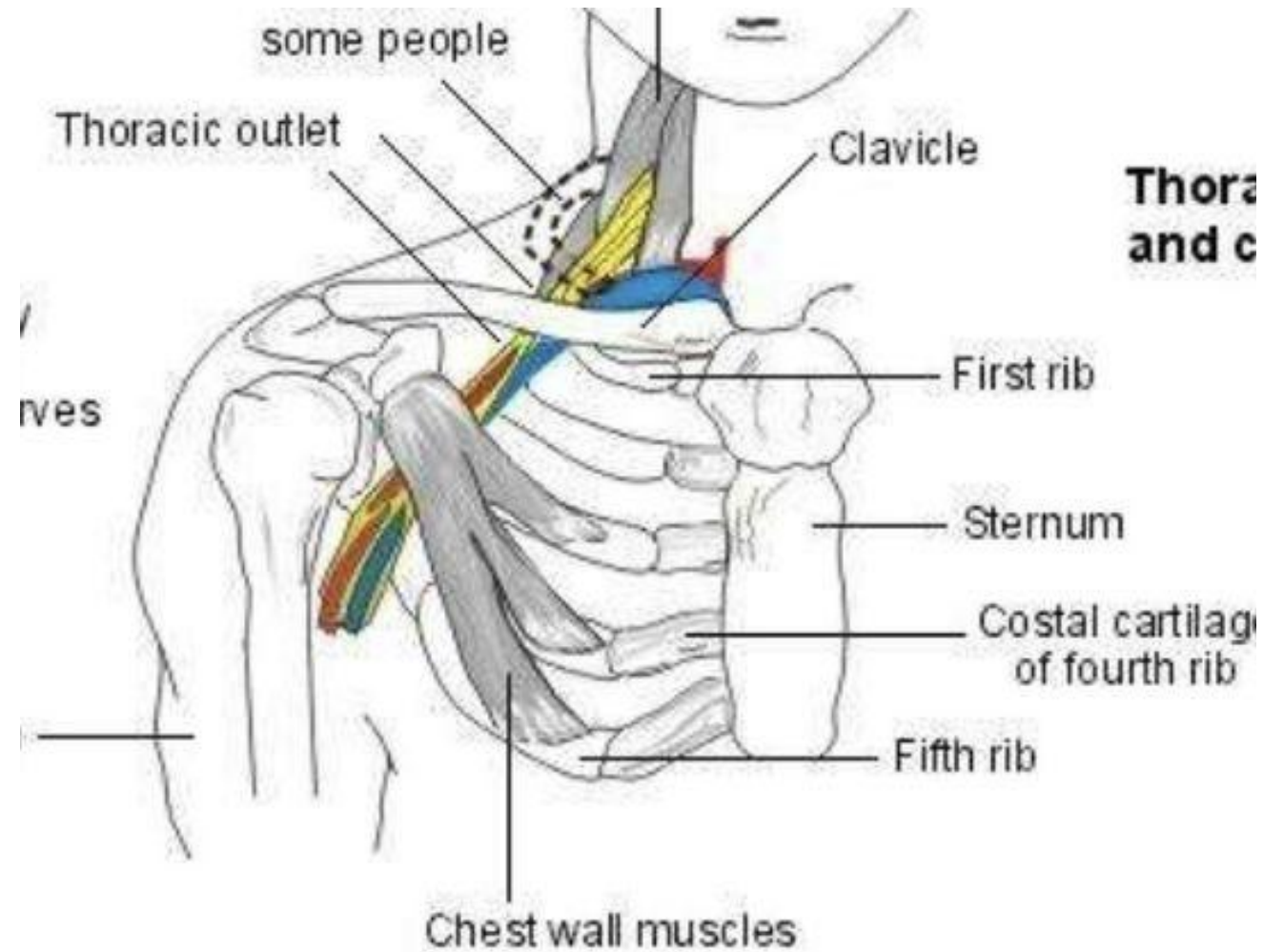


ADSON'S



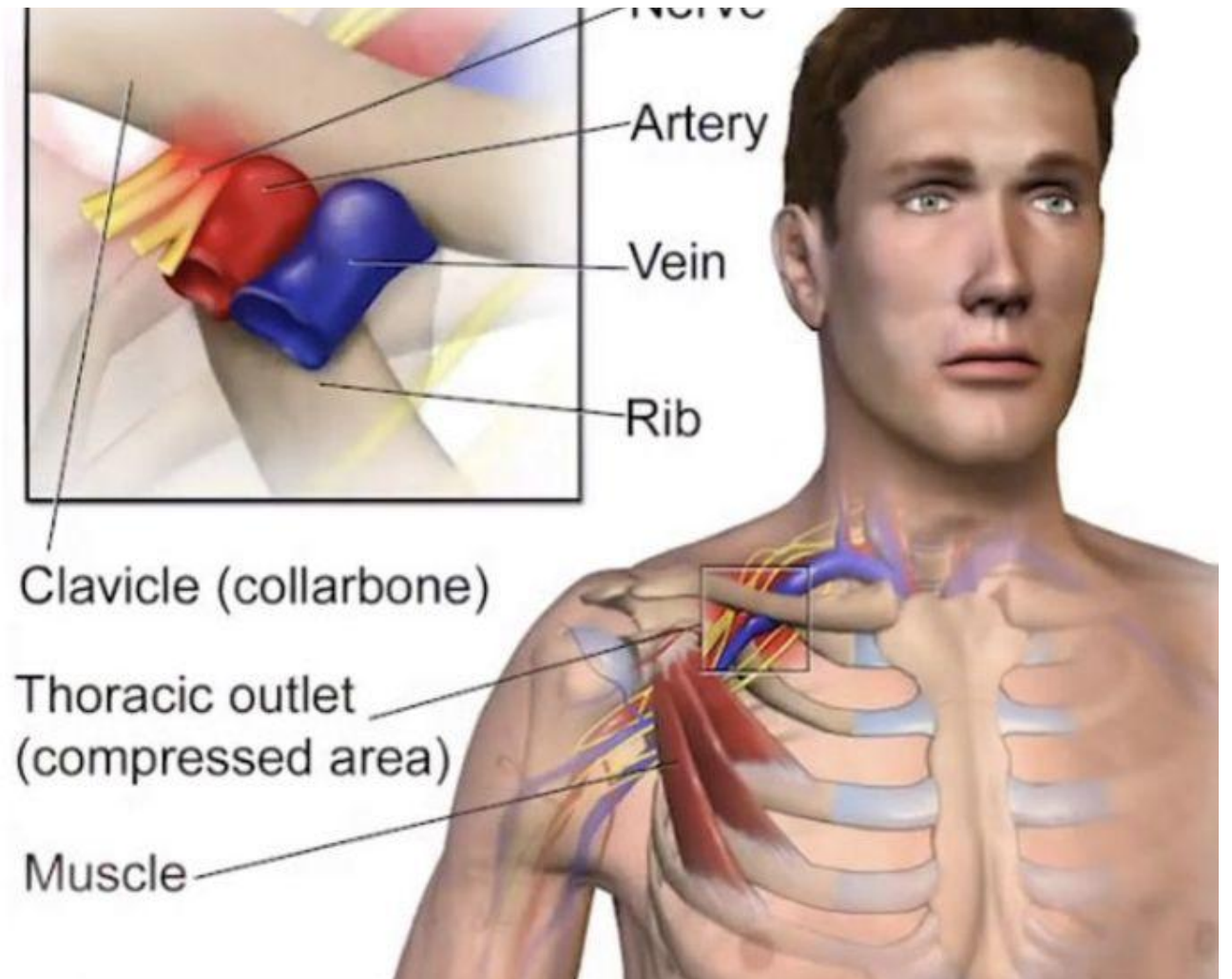
CERVICAL RIB

- THOSE WITH A CERVICAL RIB WILL HAVE A POSITIVE ADSON'S TEST



EDEN'S

- Eden's test for costoclavicular syndrome form of thoracic outlet syndrome.
- The patient pushes the chest out and pull the shoulders back
- the therapist palpates the strength of the radial pulse
- Decrease of costoclavicular space can cause tingling or numbness

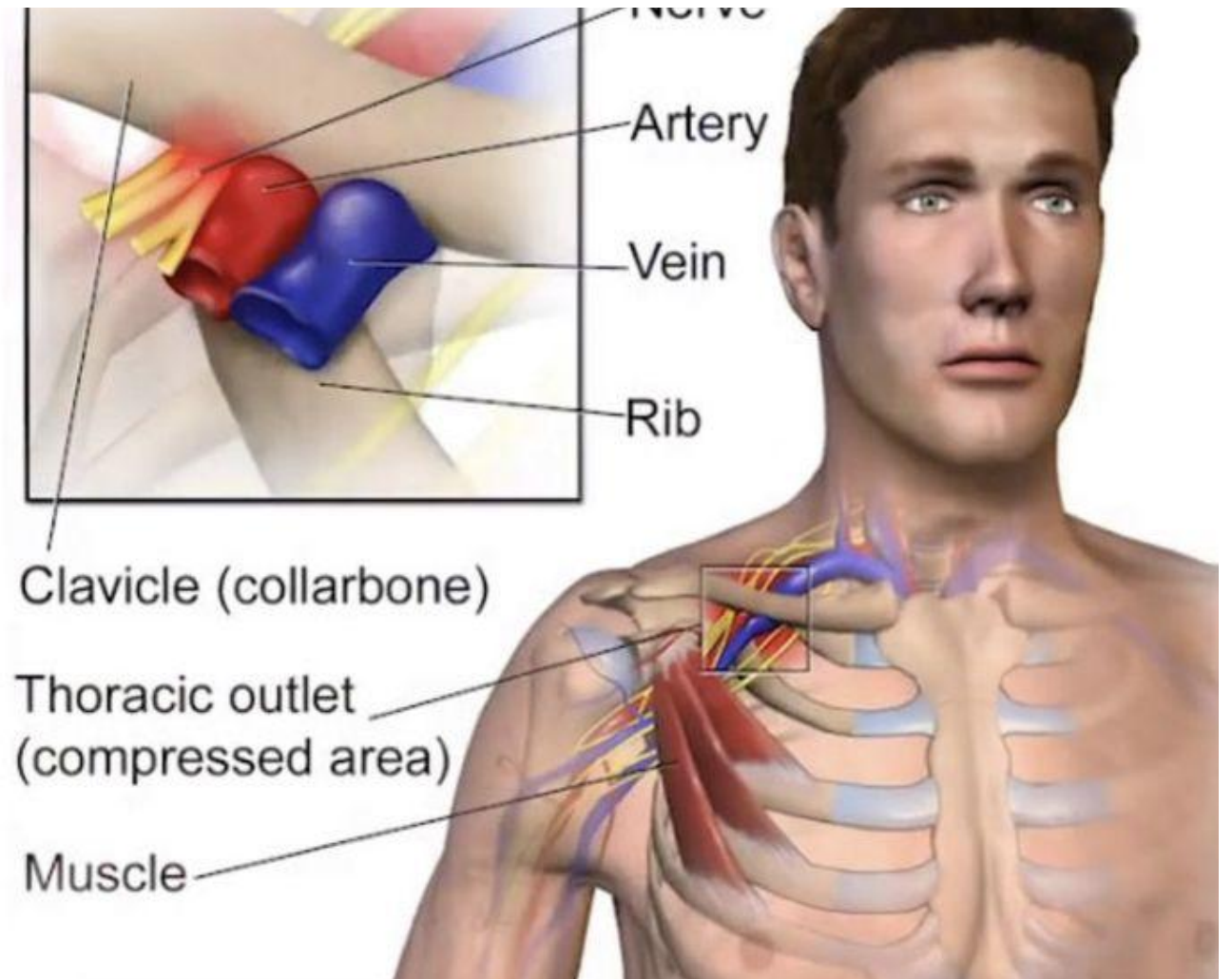


EDEN'S



WRIGHT'S

- Wright's test for pectoralis minor syndrome form of thoracic outlet syndrome.
- The client's arm is abducted and extended while the therapist palpates the strength of the radial pulse.



WRIGHT'S



TREATMENT

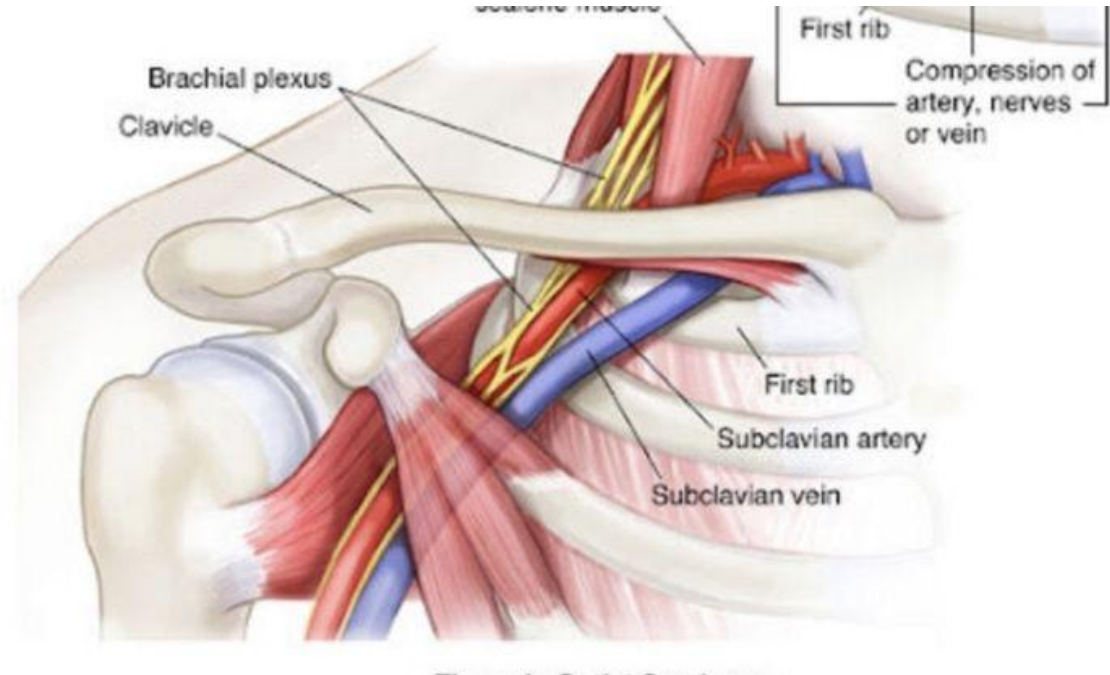
TOS PROTOCOLS

1. PECKING ANTERIOR SCALENE ONE NEEDLE WITH PP
2. SUBCLAVIUS PECKING (COSTOCLAVICULAR SPACE)
3. PECT MAJOR PP MP
4. ITO TREATMENT: CLOSED CIRCUIT TECHNIQUE
 - PECT MAJOR (COSTOCLAVICULAR)
 - PECT MINOR TENDON AT CORACOID PROCESS (PECT MIN)
5. PERFUSION TREATMENT T1-T5 LOW FREQ
6. MANUAL RELEASE OF C-SPINE

REHAB EXERCISES

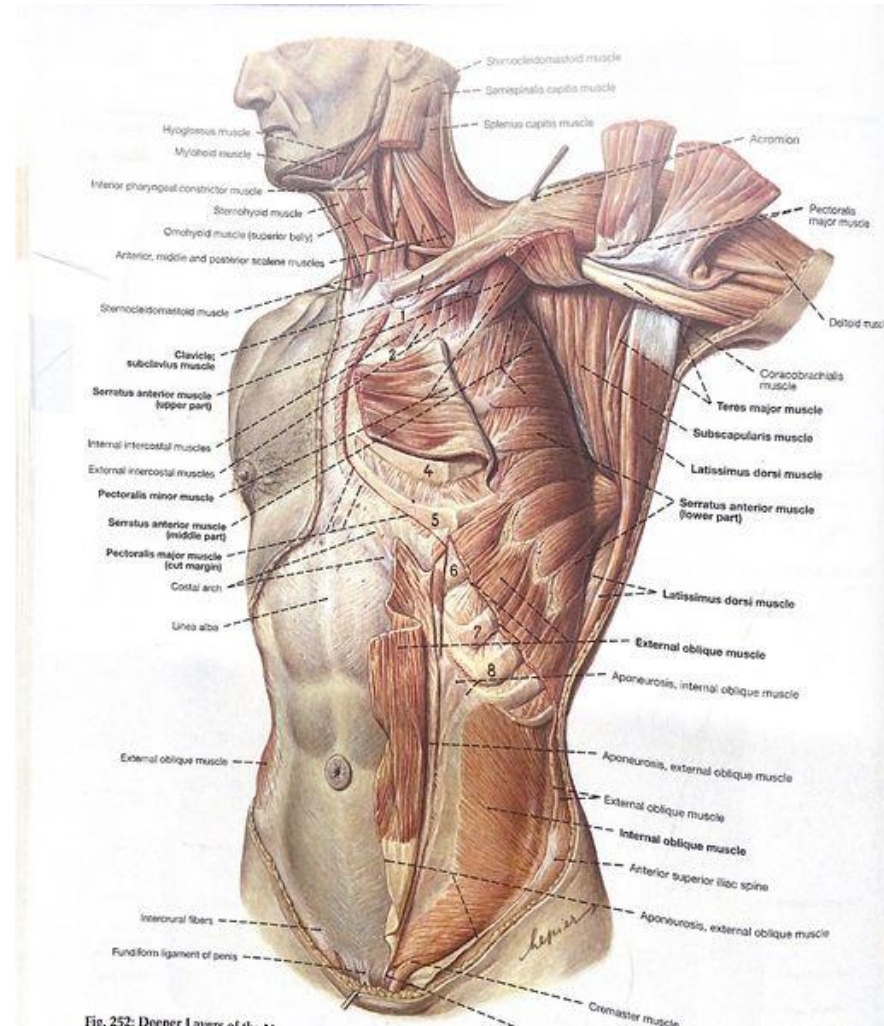
SCALENE STRETCH

- USED FOR SUPRACLAVICULAR TOS COMPRESSION



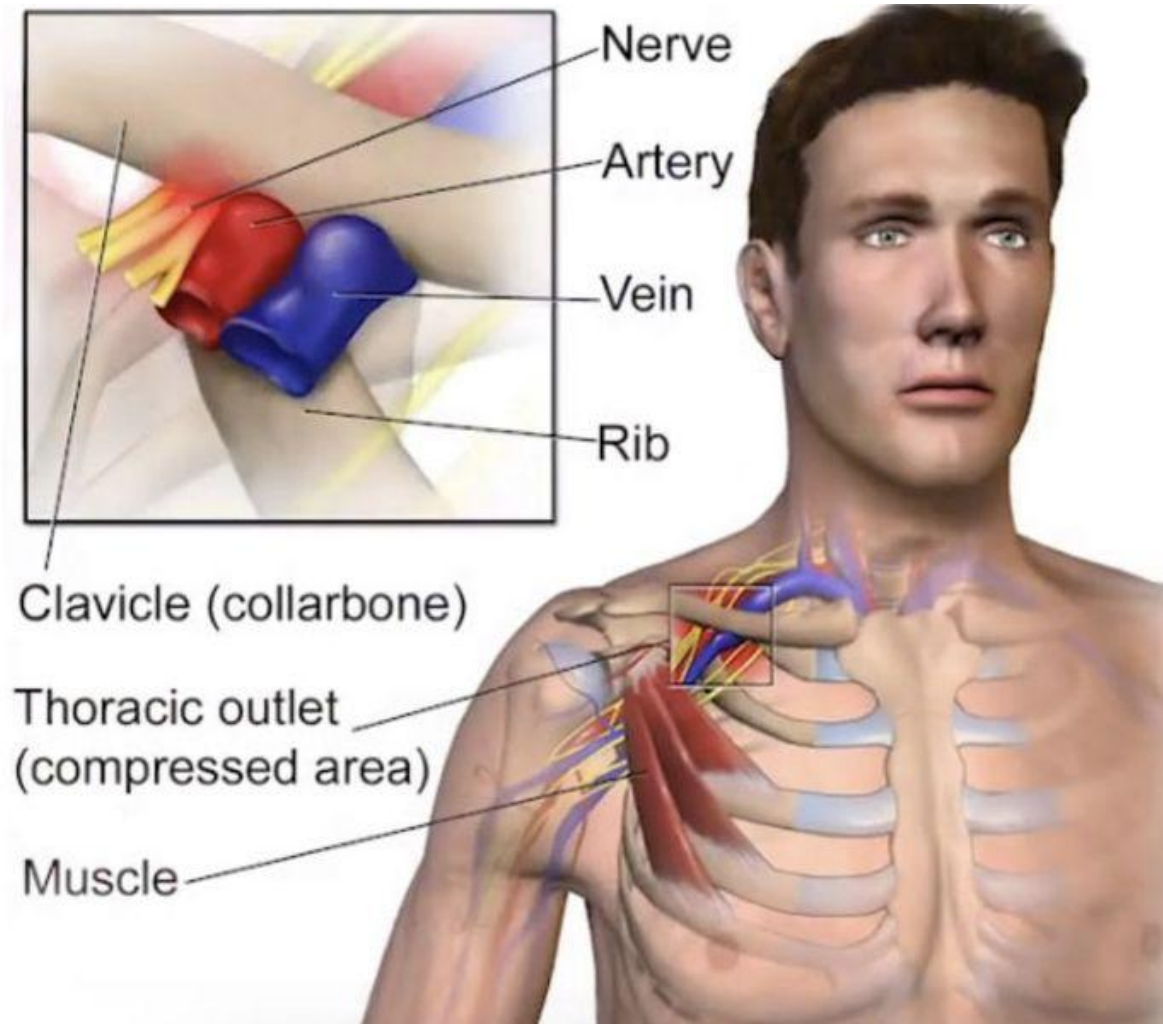
WALL SLIDE

- USED FOR COSTCLAVICULAR COMPRESSION
- ACTIVATES THE CONTRACTION OF THE SERRATUS ANTERIOR
- MAXIMIZES SCAPULAR PROTRACTION



CORNER STRETCH

- USED FOR PECT MINOR TIGHTNESS CAUSING TOS
- ISOLATES THE PECTORALIS MINOR
- MAXIMIZES SCAPULAR RETRACTION



CLINICAL DEMONSTRATION

CLINICAL DEMO

1. CLARIFY WHERE THE COMPRESSION OCCURS
2. SHOW IT ON A SKELETON
3. SHOW ORTHOPEDIC TESTS (3)
4. DO TREATMENTS
5. SHOW REHABS