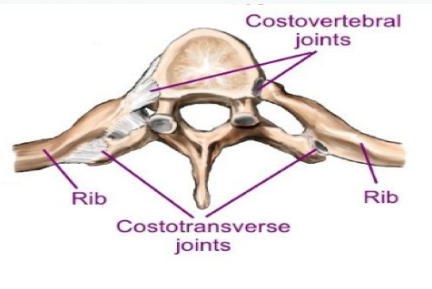
Costovertebral Joint dysfunction

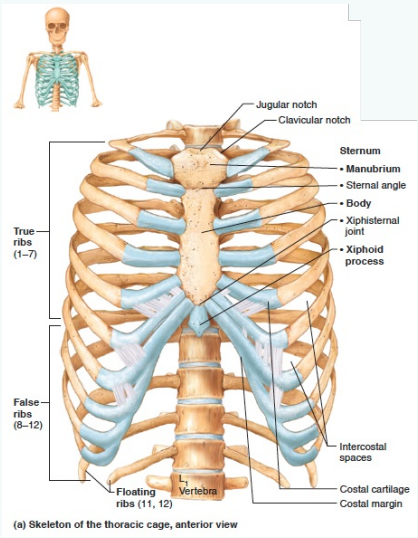
- Abnormal motion between rib and its vertebral connection
- Common cause of abdominal/chest pain
- Can be at the costovertebral or costotransverse joint (see below)s

Costotransverse/Costovertebral joints



- Costovertebral joints have rich innervation - branches of intercostal nerve from the ventral rami
- For rotation

Rib anatomy



- Upper ribs move in a pump handle elevation
- Lower ribs move in more anterior to posterior "bucket handle"

Causes

- Trauma
- Arthropathy
- Postural strain
- Repetitive injury (compression/axial rotation)
- Athletes - football, wrestling, rugby, golf, butterfly stroke swimming
- Restrictions on upper ribs occur due to heavy weight on shoulders/whiplash

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Causes (cont)

- Forward head posture, Upper crossed, hyperkyphosis, scoliosis, dysfunctional respiration
- Pregnancy

Presentation

- Occurs after sudden, unguarded, explosive movement (coughing/sneezing, reaching, pulling, pushing)
- Usually localised pain 3-4cm lateral to the spine - can radiate along the rib
- Hyperalgesia/paresthesia can occur
- Burning, sharp, stabbing, radiating as if they were "shot by an arrow"
- Pain and stiffness common after activity or lying down
- Provoked by breathing, coughing, sneezing, twisting or bending
- Reaching, pushing,pulling actives scapula musculature
- If upper ribs affected, pump handle motions are affected (reaching/carrying loads on shoulder)
- Mid and lower ribs affected, bucket handle affected (bending, lateral flexion and rotation)
- Palpation reveals paraspinal spasm/hypertonicity
- ROM limited on Tx
- Limited MP on Rib joint - costovertebral spring test (T8-T10 most common)
- Chest expansion to rule out AS
- **CONSIDER OTHER CAUSES OF RIB PAIN (CV, GI,F#) ESPECIALLY IF THE CLINICIAN CANNOT REPRODUCE THE PAIN DURING TESTING**
- Vitals, GI, Chest, CV exam, observation for herpes zoster should be considered

Imaging

- Only necessary if:
- Significant trauma, suspicion of f#
- Instability
- >50 years old
- Lack of improvement with conservative care
- Neuromotor deficits
- **Red flags:** unexplained weight loss, Hx of cancer, corticosteroid use/osteoporosis, fever, drug/alcohol abuse

DDx

- Angina
- Myocardial infarction
- Mitral valve prolapse
- Aortic Aneurysm
- Pneumonia

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DDx (cont)

- Carcinoma
- Pneumothorax
- Pleurisy
- Embolus
- Oesophagitis
- Neoplasm
- Hepatitis
- Pancreatitis
- Polynephritis
- Herpes Zoster
- Disc
- Stenosis
- Neoplasm
- Costochondritis
- Tietze's syndrome
- Intercostal strain
- F#
- Intercostal neuralgia
- DISH
- T4 syndrome
- AS
- Myofascial pain syndrome

Management

- Avoid pushing/pulling
- Women should wear sports bras
- Myofascial stretching/release of intercostals, paraspinal, scapular stabilisation muscles
- Correction of postural faults (upper crossed, scapula dyskinesis, breathing exercises)
- NSAIDs
- SMT of affected joints in the ribs
- Foam roller
- Unresponsive/repetitive restrictions may indicate other pathology

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