Cervical Manual Evaluation and Mobilizations

Upper Cervical Stability Testing ➔ Alar Ligament

Upper Cervical Stability Testing ➔ Transverse Ligament
Upper Cervical Stability Testing → Transverse Plane

Cardinal Symptoms:
- Symptoms caused by compromise of the spinal cord, brainstem or brain via direct trauma or indirectly 2nd to altered blood flow
- Laxity or crepitation
- Nystagmus -- nonvolitional rhythmic motions of the eyes
- Lip parasthesia
- Drop attacks -- sudden collapse without loss of consciousness
- Bilateral/quadrilateral parasthesias
- Diplopia, Dysphagia, Dysarthria
- Fainting

Cervical Myelopathy– Upper Motor Neuron Testing

Spinal cord compression in the spinal canal caused by osteophytes or disc degeneration
- Sensory disturbance of the hands
- Muscle wasting of hand intrinsic muscles
- Unsteady gait
- Positive Hoffman’s and/or Babinski
- Hyperreflexia
- Bowel and bladder disturbances
- Bilateral or quadrilateral limb paresthesiae and/or weakness
VBI Testing ➞ Evidence is Equivocal

- Provocative positional testing often used in practice
- Sustained Extension/Rotation Test
- Intended to provide vascular challenge to the brain
- Signs and symptoms of craniovertebral ischemia during or immediately post testing considered positive
- Research studies examining reduction on blood flow have found equivocal results
- Sensitivity and Specificity approximate 0°

- Full range cervical rotation
- Pre-manipulative hold at C1-2
- Doppler studies (Arnold 2004) have shown these two tests stress the VA sufficiently enough to demonstrate a reduction in blood flow
- Disagreement on what constitutes a clinically meaningful change in blood flow on cervical movement
- No known method testing the intrinsic anatomy of the vertebral artery

VBI Testing

- Test procedures have risks
- Current research does not support the contention that provocative positional testing can accurately identify patients at risk for vertebral artery damage or identify patients at risk for suffering a reaction to cervical manipulation

Risk Factors Associated with Cervical Arterial Dysfunction

- History of trauma
- History of migraine type headache
- Hypertension
- High cholesterol levels
- Cardiac or vascular disease
- Previous CVA or TIA
- Diabetes
- Blood clotting disorders
- Anticoagulant Therapy
- Long term use of Corticosteroids
- History of Smoking
- Recent Infection
- Immediately post partum
- Trivial Neck Trauma
- Absence of plausible explanation for symptoms
VBI Testing

- Performed when stability tests are () and there are no upper motor neuron signs or...
- Minimal testing recommended includes the following:
  - Sustained end range cervical rotation to the L and the R. Maintain each position with overpressure for 10 seconds (or less if sx are provoked) and on release, a...
  - The position or movement that provokes symptoms as described by the patient.
  - Sustained mobilization position

- Specific questioning re: production of symptoms suggestive of VBI is essential and should be done:
  - Immediately before and after a cervical manipulation
  - During and immediately after a technique involving end range rotation

Segmental Mobility Testing ➔ What’s the evidence say?

- Traditionally when OMPT is utilized, the PT uses segmental mobility testing results as part of the clinical decision making
- Limited supporting research as to the reliability and validity of joint specific testing
- Much stronger evidence in c-spine and LP region for use as provocation tests

- Manning et al (2012) displayed clinically acceptable levels of reliability in determining joint hypomobility and pain provocation with a WB cervical side bending test

Segmental Mobility

- C0-C1
- C1-2
- C2-7
- CT Junction
Joint Mobilizations

• C0-C1
• C1-2
• C2-7
• CT Junction
Exercise for Correction of Muscle Imbalance → Deep Neck Flexors

Deep Neck Flexor Progression

Supine  Prone  Standing

Lower Trapezius
Evidence for Joint Mobilization and Specific Exercise for Cervicalgia

- Evidence that a multi-modal approach is effective for cervical pain, cervicogenic HA, radiculopathy.
- Controls vary with receiving general strengthening, active, or stretching exercises, relaxation techniques, 'traditional PT'
- Some evidence showing manipulation more effective than mobilization (Dunning et al 2016)
- Deep cervical flexor muscles
- Scapular stabilization
- Thoracic manipulation and mobilization
- Cervical manipulation and mobilization