OMT for Cervicogenic Headache

A Primary Care Physician Approach

Lab Section

Presented at AOMA Fall Seminar, Nov. 7-8, 2015
Tucson, Arizona
Learning Objectives

1. Perform regional screening examination of the cervical spine.

2. Diagnose somatic dysfunction in the cervical and upper thoracic regions.

3. Discuss and perform soft tissue, myofascial release, muscle energy, high-velocity low-amplitude, and lymphatic techniques for a cervicogenic headache patient.
REGIONAL SCREENING
Seated Cervical Exam – Active ROM

Rotation – Sidebending - Flexion / Extension

• Ask the patient to actively move in the directions described above noting abnormal ranges of motion.
• Keep your hands on the patients shoulders to prevent thoracic spine movement.
• **NOTE:** As the patient moves his/her head (active ROM) watch to see if the arc of motion is smooth rather than halting.
• Positive findings include limitation in the range of motion and/or a disruption in the normal, smooth arc.
Seated Cervical Exam- Passive

- Place hands on either side of the patient's head.
- Nod and bend pt. head forward
- A normal range of flexion allows the chin to bend toward the chest. (Less flexion if occipito-atlantal junction is not flexed)
- Then lift the patient's head and tilt it backward.
- Normal range of extension if pt. is able to see the ceiling directly
- (Note that the head cannot normally extend to touch the spinous processes of the cervical vertebrae)
Seated Cervical Exam-Passive Rotation

• The head is in a neutral position and is moved from side to side in a "NO" motion.
• The head should turn far enough so that the chin is nearly in line with the shoulder, almost touching it.
• The degree of rotation achieved on each side should be compared.
• Torticollis is one frequent cause of limited neck motion.
Seated Cervical Exam
- Passive Sidebending

• In neutral position, bend the head toward the shoulder.
• The head can sidebend approximately 30-40° toward the shoulder.
• Compare both sides
THORACIC INLET TREATMENT AND CERVICAL SOFT TISSUE TREATMENT
Upper Thoracic /Scapulothoracic/Rib1 Combination Technique

1. Patient supine, introduce hands along spine at bed-side, at T1-4. Use anterior/lateral pressure, kneading paraspinal muscles.

2. Introduce tight fist medial to scapula (or rolled up towel), at T1-3 paraspinal.

3. With other hand, push scapula (via glenohumeral) posteriorly, to loosen tension at scapulothoracic articulation.

4. Pull Rib 1 laterally, and use vector through humerus, and combined technique (Still), to reduce Rib1 superior dysfunction.
Thoracic Inlet Diaphragm Release

Patient supine, physician at head of table

Hands over thoracic inlet, fingers anterior, thumbs posterior

Rotate left or right into direction of ease, to point of balanced tension.

Add side bending and flexion or extension to points of balanced tension in all 3 planes.

Patient holds breath as long as possible, in phase of greatest balance
Scalene Manual Stretch

Translate head posteriorly – patient pulls head anterior against resistance
Sidebending useful as well.
ST – Supine cervical – stretching (unilateral)

KIM 41D 4911.21D

Dx: Paraspinal muscle dysfunction
1. Pt supine – doc stands at head of table
2. Doc places left hand on the pt’s left shoulder and reaches right hand over the head to grasp the occiput
3. Doc lifts the head and carries it to the right until the muscular restrictive barrier is reached. The other hand provides counterforce
4. Enough force is applied to feel the muscles relax but not enough to cause discomfort or to cause the muscles to tighten further
5. The force is slowly relaxed
6. Stretching is repeated until maximal response is obtained. This technique can be applied to the muscles on the other side
7. Recheck
Supine cervical – kneading and stretching

KIM 39A 4911.11A

1. Pt supine – doc sits at head of table
2. Doc contacts the medial aspect of the suboccipital muscles with the pads of the fingers of both hands
3. The fingers are drawn superiorly (stretching) and laterally (kneading) carrying the muscle fibers with them
4. Enough force is applied to feel the muscles relax but not enough to cause discomfort or to cause the muscles to tighten further
5. The force is slowly relaxed, the fingers are repositioned (if needed) and the kneading and stretching are repeated
6. Kneading and stretching are continued until maximal response is obtained
7. Recheck
ST – Supine cervical – stretching (bilateral) KIM 41C 4911.21C

Dx: Paraspinal muscle dysfunction
1. Pt supine – doc stands at head of the table
2. Doc’s forearms are crossed under the pt’s neck and hands are placed on anterior aspect of pt’s shoulders
3. Doc leans toward the table and lifts the pt’s head until the muscular restrictive barrier is reached
4. Additional lift is applied sufficiently to feel the muscles relax but not enough to cause discomfort or to cause the muscles to tighten further
5. The force is slowly relaxed
6. Stretching is repeated until maximal response is obtained
7. Recheck
Typical Cervical Region Assessment and Treatment

Counterstrain
Balanced Ligamentous Tension
Muscle Energy Treatment
High-Velocity, Low-Amplitude
AC2-C6 Location

**Tenderpoints:**
Anterior aspect of transverse process
(press anterior to posterior)
- AC2: Middle Scalene
- AC3-6: Anterior & Middle Scalenes,
  Longus Capitis & Longus colli
AC2-C6 & AC8 Treatment

Treatment Position is the same for each of these tenderpoints

Patient supine, *Flexed, Rotated away, Sidebent away.*
PC4-C8 midline: Location

Tender Point Location:
Inferior or infero-lateral aspect of the tip of the spinous process 1 segment above.

eg: **PC4 midline** is on the inferior or inferolateral aspect of the tip of the **C3** spinous process.

**Muscle Correlation:**
Transversospinalis muscle group:
Semispinalis
Multifidis
Rotatores
PC4-PC8 Midline: Treatment

1. Extend the cervical spine to the level of the tender point.

2. Fine-tune with slight sidebending and rotation away from the side of the tender point.
SEGMENTAL DX AND TX
The articular pillars are located 2-3cm from from the spinous processes. The pillars feel like a “string of pearls” as you palpate postero-laterally down the spine bilaterally. When there is forward bending or side-bending of the cervical spine, the pillars feel relatively “open.” When there is backward bending they feel relatively closed.
Finger Position for Segmental Diagnosis

• Use articular pillars.
Dx of Typical Cervical Spine

• Translation right-left.
ERS Dysfunctions
Typical Cervical Spine

• The segment behaves as though one facet does not open.

• There is frequently hypertonicity of the muscle overlying the segment.

• Most common at C2-3 (can occur at any level)
Diagnosis of “ERS” Dysfunction - Typical Cervical Spine

• Contact pillars of vertebra to be tested and flex to the first barrier.
Diagnosis of “ERS” Dysfunction - Typical Cervical Spine

• Translate right to left sensing for barrier.
FRS Dysfunctions
Typical Cervical Spine

• The dysfunctional segment behaves as though something interferes with the facet to close.

• There is usually deep muscle hypertonicity overlying the dysfunctional facet.

• Most common at C5-6.
Diagnosing “FRS” Dysfunction – Typical Cervical Spine

• Lift pillars anteriorly.
Dx FRS Dysfunction Typical Cervical Spine

• Translate right-left.
Cervical

- “Thumb on SP, to fix vertebra below.”
- (Fix = Hold)
Cervical Treatment

• Thumb fix spinous process below

• Rotate head from Occiput with pressure on Trans. Proc. above
1. Patient supine, physician at head
2. Use forearms to support head
3. Index fingers of each hand contact articular columns bilaterally
Supine, Indirect Treatment, Respiratory Force, 4221.11A-4, Typical Cervicals (C2-C7) (Flexed or Extended, Multiple Plane)

4. Physician sidebends left, rotates left
5. Flex and extend as needed
6. Test respiratory phases; add respiratory assist
7. Make minor adjustments to maintain balance
8. Recheck
Muscle Energy Treatment of “ERS” Dysfunction - Typical Cervical Spine

• Place occiput in palm of hand, grasping the zygapophyseal joints of the dysfunctional segment with the thumb and index finger.
Muscle Energy Treatment of “ERS” (Left) Dysfunction - Typical Cervical Spine

• Flex head and neck to first barrier.
Muscle Energy Treatment of “ERS” (Left) Dysfunction - Typical Cervical Spine

• With index finger translate right to left.

• Patient attempts to SB to opposite side
Muscle Energy Treatment of “FRS” (Left) Dysfunction - Typical Cervical Spine

• Contact pillar of lower segment of dysfunction.
Muscle Energy Treatment of “FRS” (Left) Dysfunction Typical Cervical Spine

• Lift pillar to introduce extension to barrier.
Muscle Energy Treatment of “FRS” (Left) Dysfunction Typical Cervical Spine

• Translate pillar from right to left. Patient attempts to SB to opposite side
HVLA for “ERS” (Left) Dysfunction
Typical Cervical Spine – **Tx-horizontal/sidebending thrust**

- Right Index MCP joint on facet joint opposite the closed facet (On Rt. Joint in an ERS-left)
  - Engage flexion barrier.
HVLA for “ERS” (Left) Dysfunction

Typical Cervical Spine - **Tx-**
horizontal/sidebending thrust

- Translate right to left to engage right **sidebending** barrier
- Horizontal thrust from right to left, with right MCP, to open closed left facet joint
HVLA for “ERS” (Left) Dysfunction
Typical Cervical Spine – Tx - Rotational

- Right index finger blocks facet joint opposite the closed facet (Rt. Joint in ERS-left)
- Flex head to flexion barrier.
HVLA for “ERS” (Left) Dysfunction
Typical Cervical Spine- Tx -rotational

- Left MCP contacts articular pillar on side of closed facet (left C4 articular pillar in C4-ERS-left dysfunction)

- Sidebend right over fulcrum created by right fingers, while maintaining flexion
HVLA for “ERS” (Left) Dysfunction

Typical Cervical Spine - **Tx -rotational**

- Left MCP Joint rotates articular pillar right to the restrictive barrier – (in ERS-left)
- Rotational “Impulse” HVLA Thrust - by carrying left elbow toward the ceiling.
HVLA for “FRS” (Left) Dysfunction Typical Cervical Spine

• Contact right pillar of upper segment of the dysfunctional spinal unit. (On Rt. Pillar of C5 in a C5 FRS-left)
HVLA for “FRS” (Left) Dysfunction
Typical Cervical Spine

• Right Index Metacarpal phalangeal (MCP) contact on right superior pillar of the dysfunctional joint

• MCP lifts pillar anterior to its extension barrier
HVLA for “FRS” (Left) Dysfunction
Typical Cervical Spine

• Engages extension barrier

• Translate left to engage right sidebending barrier
HVLA for “FRS” (Left) Dysfunction
Typical Cervical Spine

• Thrust is toward the T1.
AA Joint (Atlas on Axis)

- Counterstrain
- Balanced Ligamentous Tension
- Muscle Energy Treatment
- High-Velocity, Low-Amplitude
Anterior C1 (AC1) Location

**Tenderpoint:**
Posterior surface of ascending ramus of mandible at or below earlobe

**Muscles:**
Rectus capitus anterior
Rectus capitus lateralis
AC1 Treatment

Treatment Position(s): Patient supine. Physician hands support the head and monitor the tender point.

Mandible T.P.: Marked Rotation Away, with Minor Flexion and Sidebending Away.

Transverse Process T.P.: Rotation away 90 degrees, with slight sidebending either way to fine tune
SEGMENTAL DX AND TX
C1-C2 Dysfunction

- Primary dysfunction is to rotation. Sidebending does not couple by any rule.
- Treatment should be within the mid-range of flexion and extension.
- Most common dysfunction is right rotated.
Diagnosis of Atlantoaxial Joint

• Grasp head and flex cervical spine to barrier restricting lower cervical segments.
Diagnosis Atlantoaxial Joint

• Rotate right & left to barrier.
Atlas Twisted on Axis

• Bring Axis in line, hold with left thumb;
• Turn head to Right.
Supine Indirect Treatment, respiratory force, (4231.11C) – AA left rotation

1. Patient supine, physician at head
2. Cradle head in palms
3. Fingertips Contact both lateral masses of atlas
Supine Indirect Treatment, respiratory force, (4231.11C) – AA left rotation

4. Rotate atlas to left to point of balance
5. Adjust sidebending and flexion or extension
6. Test respiratory phases and add assist
7. Make minor adjustments in all 3 planes
8. Repeat until best motion is obtained.
Muscle Energy Treatment - Atlanto-axial Joint (for AA-Right dysfunction)

- Operator grasps head with palms of hands
- Flex head to approx. 30-40 degrees [this provides restriction of typical cervical segment rotation through ligamentous locking]
  - (C2-C7)
Muscle Energy Treatment - Atlanto-axial Joint (for **AA-Right** dysfunction)

- Operator introduces rotation left to restrictive barrier
- (feather’s edge)
Muscle Energy Treatment - Atlanto-axial Joint (for AA-Right dysfunction)

- Patient is instructed to "gently rotate head to the right", against operator’s resisting right hand. (This creates a light isometric contraction)
Muscle Energy Treatment - Atlanto-axial Joint (for AA-Right dysfunction)

• Have patient continue effort for 3-5 seconds, then instruct to relax
• Operator ceases force simultaneously
• After a few moments of relaxation, rotate left to the new restrictive barrier
• Repeat 3 to 5 times.
• Recheck AA rotation
HVLA Treatment - Atlantoaxial Joint (Right Rotation)

• Flex head to restrict motion in lower typical cervical segments.

• C1-C2 in neutral

• Right MCP on right posterior arch C1
HVLA for Atlantoaxial Dysfunction (C1-C2 Rotated Right)

• Rotate left to barrier with balance of sidebending and flexion/extension.

• Thrust is rotary to left.
Occipitoatlantal Joint
[Occiput on the Atlas]

Counterstrain
Balanced Ligamentous Tension
Muscle Energy Treatment
High-Velocity, Low-Amplitude
PC1 & PC2 Occiput: Location

PC1
Tender Point Location:
Just below inferior nuchal line midway between the inion and the mastoid

Muscle Correlation:
Splenius capitis & Obliquus capitis superior (deep to splenius capitis & semispinalis capitis)

PC2
Tender point location:
On inferior nuchal line within semispinalis capitis muscle
Patient supine.

*Extension, with fine tuning*

1. Lift the head to flex the lower cervicals.
2. *Gently Extend* occiput on C1.
3. *Fine tune with slight sidebending and rotation away.*
SEGMENTAL DX AND TX
Diagnosis of Occipito-atlantal Joint for Flexion Dysfunction

• Finger Pads contact articular pillars – posterior aspect bilaterally

• Extend head to first barrier at the CO-C1 junction.
Diagnosis - Occipito-atlantal Joint, for Flexion Dysfunction, cont...

- Translate right to left to barrier.
Diagnosis of Occipito-atlantal Joint Extension Dysfunction

• Finger Pads contact articular pillars – posterior aspect bilaterally

• Flex head to first barrier at the CO-C1 junction.
Diagnosis of Occipito-atlantal Joint – Extension Dysfunction

• Translate right to left to barrier.
Posterior Occiput

- Rotate Head in opposite direction against thumb on Atlas.
- OA-RISr eg.
Occiput Twisted on Atlas

- Turn head to side.
- Bring back against pressure of thumb on Atlas.
- OA-RrSl eg.
Indirect Treatment of OA F Sl Rr, and

ESIRr (Flexed or Extended, Multiple Plane)

1. Patient supine, physician at head
2. “V” with thumb and forefinger, Hand on table
3. Support posterior arch and lateral masses.
4. Place other hand on head to sidebend OA joint left and rotate right, to point of balance.

4242.12D
Indirect Treatment of OA F SL RR, and ESIRr (Flexed or Extended, Multiple Plane)

5. Flexion or extension adjustments in direction of ease.
6. Use respiratory assistance.
7. Make minor adjustments in all 3 planes.
8. Continue until best motion is obtained.
Muscle Energy Treatment of Occipito-atlantal Joint

- Control occiput, with “web of thumb and index finger” with one hand, at craniocervical junction
- Control chin with fingers, & head with other hand and arm
MET of Occipito-atlantal Joint - Extended, Sidebent Right, Rotated Left

- Flex head to sagittal plane restrictive barrier
- Introduce side-bending through operator forearm with left-to-right translation
- Note: rotation NOT actively introduced
MET of Occipito-atlantal Joint - Extended, Sidebent Right, Rotated Left

Other Options for patient effort (against resistance):
• Look up toward operator
• Push head posteriorly toward the table

• Patient is instructed to:
• Sidebend head to the right
• Physician provides counterforce for either/both efforts
• 3-5 seconds of light isometric muscle contraction
• After relaxation, engage new flexion and sidebending barriers
MET - Occipito-atlantal Joint
Flexed, Sidebent Right, Rotated Left

• Extend OA to sagittal plane barrier
• Introduce side-bending through operator forearm with left-to-right translation
• Note: rotation NOT actively introduced
MET - Occipito-atlantal Joint Flexed, Sidebent Right, Rotated Left

Other Options for patient effort (against resistance):
• Look down at the feet
• Pull the chin toward the chest

• Patient is instructed to:
• Sidebend head to the right
• Physician provides counterforce for either/both efforts
• 3-5 seconds of light isometric muscle contraction
• After relaxation, engage new extension and sidebending barriers
HVLA for Occipitoatlantal (C0-C1): General – Initial Hand Placement

- Hand contact on nuchal line of occiput.
- Hand cradles chin and forearm on side of head.
HVLA for Occipitoatlantal (C0-C1)  
Flexed, Sidebent R, Rotated L.

- Engage extension barrier by anterior translation.
- Engage left sidebending & right rotation barrier by translation to right.
HVLA for Occipitoatlantal (C0-C1) Flexed, Sidebent R, Rotated L.

- Thrust is with both hands in cephalic long axis extension.
HVLA for Occipitoatlantal (C0-C1) Extended, sidebent right, rotated left

• Hand contact on nuchal line of occiput.

• Hand cradles chin and forearm on side of head.
HVLA for Occipitoatlantal (C0-C1)
Extended, sidebent right, rotated left

• Hand cups chin and forearm on side of head.

• Flexion barrier engaged by posterior translation.
HVLA for Occipitoatlantal (C0-C1) Extended, sidebent right, rotated left

• Left sidebending and right rotation barrier engaged by left to right translation.

• Thrust is a two hand cephalic long axis extension.
Headache Tx - Barber

1. Place one hand on back of patient’s neck, close to head, fingers on one side, thumb on other
2. Place other hand on forehead, with slight backward bending of head
3. Lift head superiorly while rotating head gently from side to side
Occipital Condylar Decompression

- Support head with palms, longest finger on occipital bone as far anteriorly as possible, flex finger exerting pressure toward vertex.
Occipital Condylar Decompression

• Finger traction toward vertex and posterolaterally.  

          
Bring elbows together enhancing distraction.
Sources

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- THANK YOU -