Neck and Headache Pain

ICD-9-CM code: 723.2 cervicocranial syndrome

ICF codes: Activities and Participation Domain code: **d4158** Maintaining a body position, other specified - specified as: maintaining the head in a flexed position, such as when reading a book; or, maintaining the head in an extended position, such as when looking up at a computer screen or video monitor

Body Structure codes: **s7103** Joints of head and neck region

Body Functions code: **b28010** Pain in head and neck

Common Historical Findings:

Unilateral neck pain with referral to occipital, temporal, parietal, frontal or orbital areas

Headache precipitated or aggravated by neck movements or sustained positions

Noncontinuous headaches (usually < 1 episode/day; < 2 episodes/week)

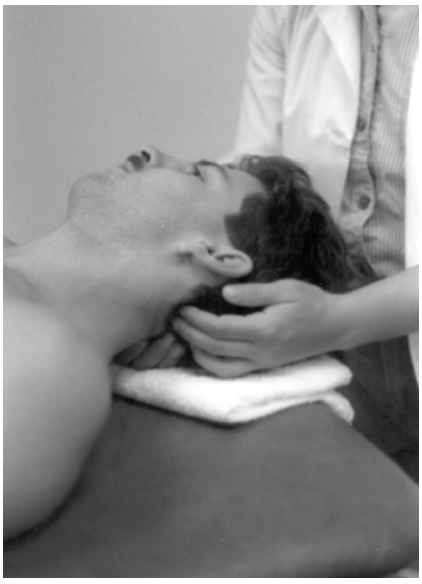
Common Impairment Findings - Related to the Reported Activity Limitation or Participation Restrictions:

Observable postural asymmetry of the head on neck (sidebent or extended)

Headache reproduced with provocation of the involved segmental myofascia and/or joints

O/C1, C1/C2, or C2/C3 restricted accessory motions with associated myofascial trigger points

Physical Examination Procedures:



Palpation/Provocation of Suboccipital Myofascia

O/C1, C1/C2, or C2/C3 accessory motion testing
using posterior-to-anterior pressures

0/C1 accessory motion testing
using C1 lateral translatoty pressures

C1 – C2 Rotation ROM testing
with the C2 – C7 segments in flexion

Neck and Headache Pain: Description, Etiology, Stages, and Intervention Strategies

The below description is consistent with descriptions of clinical patterns associated with the term "Cervicogenic Headache."

Description: Cervicogenic headache is a headache where the source of the ache is from a structure in the cervical spine, such as a cervical facet, muscle, ligament, or dura. The pain is referred to the occipital, temporal, parietal, frontal, and orbital areas. The characteristics of cervicogenic headache are unilateral dominant side-consistent headache associated with neck pain and aggravated by neck postures or movement, limited range of motion in the cervical spine and joint tenderness in at least one of the upper three cervical joints as detected by manual palpation. The aching is moderate-severe, without throbbing or lancinating pain, usually starting in the neck. The episodes can be of varying duration (few hours to a few weeks). The initial phase of cervicogenic headache is usually frequent and episodic. The occurrence among females is twice that of males.

Etiology: The headache is due to a musculoskeletal disorder in the upper cervical spine. Thus, movement stresses of the upper cervical spine are associated with the headache complaint (e.g., headache is worse at the end of a days work at a computer screen or talking on the phone).

Acute Stage / Severe Condition: Physical Examinations Findings (Key Impairments)

ICF Body Functions code: **b28010.3** SEVERE pain in head and neck joints

- Abnormal head on neck posture is commonly observed (e.g., the head is held in an excessively extended position or an excessive sidebent position relative to the upper cervical segments)
- Limited O-C1 and/or C1-C2 and/or C2-C3 segmental mobility
- Headache aggravated with certain head positions or sustained movements
- Headaches reproduced with provocation of the involved segment at O/C1, C1/C2, C2/C3 or with provocation of trigger points in the suboccipital myofascial or during slump testing of the dural elements
- Deep cervical flexor muscle control deficits (i.e., rectus capitus anterior and longus colli)

Sub Acute Stage / Moderate Condition: Physical Examinations Findings (Key Impairments)

ICF Body Functions code: **b2801.2** MODERAT pain in head and neck joints

- As above – the ability to reproduce the patient's headache via palpatory provocation of the involved joints or myofascial lessens as the mobility of the involved upper cervical segments

Settled / Moderate Condition: Physical Examinations Findings (Key Impairments)

ICF Body Functions code: **b2801.1** MILD pain in head and neck joints

Now when the patient is less acute examine for ergonomic factors, postural habits, muscle flexibility and strength deficits that may be predisposing factors for upper cervical somatic disorders. For example:

- Ergonomic or postural paterns that involve excessive thoracic kyphosis and associated excessive cervical lordosis predisposes the head to be excessively extended on the neck – placing the upper cervical extensors on a chronically shortened position – thus, precipitating the above listed impairments.
- Upper quarter muscle imbalances such as tightness of the scapular elevators (i.e., levator scapulae and upper trapezius) muscles and weakness of the scapular adductors/stabilizing (i.e., lower and middle trapezius) muscles

Intervention Approaches / Strategies

Acute stage / Severe Condition

Goals: Reduce the frequency and severity of the headaches
Reduce the medication required to manage the symptoms

- Re-injury Prevention Instruction
  Avoid positions that reproduce or aggravate the headaches

- Manual Therapy
  Soft tissue mobilization to the involved suboccipital myofascial restrictions (performed at an intensity that does not aggravating the patient's condition)
  Joint mobilization/manipulation to the involved upper cervical facet restrictions (performed at an intensity or velocity that does not aggravating the patient's condition)

  Note: Performing upper cervical joint mobilization/manipulations with the patients upper cervical spine at end ranges of extension or the end ranges of combined of extension/rotation movements is contraindicated due the potential disaterous effects that these manipulative procedures have been reported to have some individual's vertebral artery. Thus, all upper cervical manipulations are performed with the head and neck in the neutral or flexed position

- Therapeutic Exercise:
  Instruct in exercise and functional movements to maintain the improvements in mobility gained with the soft tissue and joint manipulations (Head nodding and retraction/protraction for O-C1 and rotation for C1-C2)

- Ergnomics Instructions
  Postural re-education to limit excessive extended head postitions during occupational tasks, recreational activities and other daily activities

Sub Acute Stage / Moderate Condition

Goals: As above
Normalize upper cervical segmental mobility

- Approaches / Strategies listed above – focusing on restoring normal, pain free occipital and cervical spine mobility.

- Therapeutic Exercise
  Low load endurance exercises to train muscle control of the cervical and scapular region, consists of exercises targeting deep neck flexor muscles and longus capitus and colli, trapezius, and serratus anterior. For example, cervical flexion exercises using a pressure biofeedback unit and isometric exercises using rotatory resistance to train the cocontraction of the neck flexors and extensors

Settled Stage / Mild Condition

Goals: As above
Normalize cervical and upper thoracic flexibility and strength deficits
Increase activity tolerance

- Approaches / Strategies listed above

- Therapeutic Exercises
  Stretching exercises to address the patient's specific muscle flexibility deficits
  Strengthening exercises to address the patient's specific muscle strength deficits
  Dural mobiliy exercises to address the patient's specific dural mobility deficits

Intervention for High Performance/High Demand Functioning in Workers or Athletes

Goal: Return to desired occupational or leisure time activities

- Approaches / Strategies listed above

- Therapeutic Exercises
  Maximize muscle performance of the neck, scapulae, shoulder girdle muscles perform the desired occupational or recreational activities.

Selected References

Bansevicius D, Sjaastad O. Cervicogenic headache: The influence of mental load on pain level and EMG of shoulder-neck and facial muscles. *Headache*. 1996;36:372-8.

Bovim G, Berg R, Dale LG. Cervicogenic headache: Anesthetic blockades of cervical nerves (C2-C5) and facet joint (C2-C3). *Pain.* 1992;49:315-20.

Jull G, Trott P, Potter H, Zito G, Niere K, Shirley D, Emberson J, Marschner I, Richardson C. A randomized controlled trial of exercises and manipulative therapy for cervicogenic headache. *Spine*. 2002;27:1835-43.

Mulligan BR. *Manuel Therapy 'Nags', 'Snags', 'MWMs' etc. 4th ed*. Wellington: Plane View Press, 1995

Nilsson N. The prevalence of cervicogenic headache in a random population same of 29-to 59-year-olds. *Spine*. 1995;20:1884-8

Petersen S. Articular and Muscular Impairments in Cervicogenic Headache: A Case Report. *Journal of Orthopedic Sports Physical Therapy.* 2003;33:21-32.

Sjaastad O, Fredriksen TA, Pfaffenrath V. Cervicogenic headache: Diagnostic criteria. *Headache* 1998;38:442-5.

MANUAL EXAMINATION AND TREATMENT OF THE UPPER CERVICAL SPINE

Symptoms/Signs of Cerebral Anoxia:

Apprehension, anxiety, or panic with cervical movements
Vertigo and dizziness
Blurred vision
Nystagmus
Nausea
Slowness of Response

Manual Examination:

If hypermobility is suspected, examine for instability:
Sharp-Purser Test
Odontoid-Alar Ligament Test
Hypermobile accessory movements
Central tenderness or pain with central posterior-to-anterior pressures

If vascular insufficiency is suspected:
Watch for signs of cerebral anoxia
Perform vertebral artery tests – continually assessment of symptoms/signs of cerebral anoxia

Passive Movements:
Physiological Movement Testing:

Occiput-C1:	Occiput FB/BB
	Occiput SB
	Occiput Lateral Translatory Movements in FB and BB
C1-C2:	A/A Rotation in cervical flexion

Accessory Movement Testing:

Occiput-C1:	C1 Anterior Glide
	C1 Lateral Glide

Palpation:
Sub-occipital myofascia

Manual Treatment

Soft Tissue Mobilization:
Sub-occipital myofascia STM

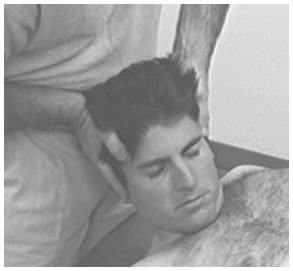
Contract-Relax
Occiput-C1
C1-C2

Passive Joint Mobilization:
Occipital Distraction
C1 Anterior Glide
C1 Lateral Glide
C1-C2 Rotation (sitting)

Re-Education:
Neutral Head/Neck Cueing
Neck Flexor Therapeutic Exercises

Always remember: While performing all examination and treatment procedures, be alert for signs of cerebral anoxia

Impairment: Limited C1/C2 Right Rotation



C1/C2 Contract/Relax

Cues: Fully flex C2 through C7

Adding flexion at the occiput/C1/C2 areas assists in preventing rotation past C2 (i.e., it helps create a "firm" C1/C2 rotation barrier)

Rotate occiput and C1 to the right until the first "barrier" - be sure to 1) maintain the cervical flexion, and 2) prevent cervical sidebending

"Look with your eyes to the left" – Relax – Take up the now available right rotation slack passively (or "gently look to the right") - relax - repeat contract/relax procedures 3 to 5 times

The following references provides additional information regarding this procedure:

John Bourdillon FRCS, EA Day MD, and Mark Bookhout MS, PT: Spinal Manipulation, p. 263-264, 1992

Philip Greenman DO, FAAO: Principles on Manual Medicine, p. 192, 1996

Impairment: Limited C1/C2 Right Rotation

C1/C2 Rotation

Cues: Stabilize the right lamina of C2 with your left thumb
Comfortably hug the patient's head and rotate it (with C1) to the right
Tilt the head to the left to allow some slack in the left alar ligament
Apply a passive stretch (or, a contract/relax stretch)
Be especially tuned into the patient with regards to VBI symptoms or signs while performing this technique

The following reference provides additional information regarding a similar procedure:
Freddy Kaltenborn PT: The Spine: Basic Evaluation and Mobilization Techniques, p. 279, 1995

Impairment: Limited Occiput/C1 flexion
Limited Occipital Posterior Glide (or C1 Anterior Glide) on the Left

Occipital Posterior Glide

Cues: Rest the right middle finger on the left thenar eminence
Position the patient (and your hands) so that the left lateral mass of C1 is contacted by the "dummy" middle finger
Apply a posterior glide to the left occipital condyle via a posterior force on the patients left forehead (using flexion of your thorax – with your left anterior deltoid/clavipectoral area contacting the patient's left forehead)

C1 Anterior Glide

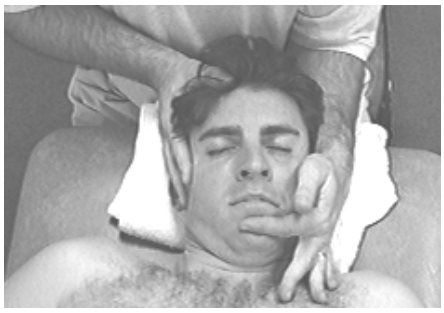
Impairment: Limited Upper Cervical Right Sidebending
Limited C1 Right Lateral Translation

C1 Lateral Translation

Cue: Contact the left C1 lateral mass with 1) your left index or middle finger, or 2) the radial side of your left index finger MCP area
Stabilize the skull with your right hand
Apply right lateral translatory oscillations or stretching forces to C1
Be kind and gentle - but effective
Don't be in a hurry

The following reference provides additional information regarding similar procedures:
Freddy Kaltenborn PT: The Spine: Basic Evaluation and Mobilization Techniques, p. 243, 277, 1993

Impairment: Limited Occipital Flexion and Right Sidebending



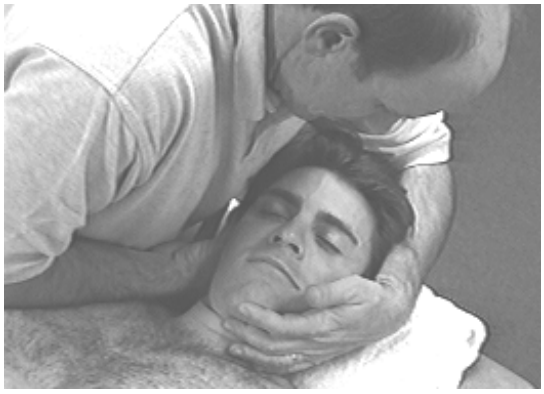
Occiput/C1 Contract/Relax
(of segmental extensors and left sidebenders)

Cue: Nod the occiput to take up the flexion barrier
Translate the nodded occiput to the left to first upper cervical barrier – not mid cervical barrier
Keep the eyebrows parallel to the transverse plane when translating the occiput (to avoid inadvertent left sidebending)
Elicited contraction of the segmental extensors ("look to the left")
Manually cue either the anterior aspect of the chin or the left zygoma (with your left forearm) when providing the verbal commands
Maintain both the flexion and the left translation barriers during the contraction
Relax
Take up available slack in both barriers
Repeat

The following references provides additional information regarding this procedure:

John Bourdillon FRCS, EA Day MD, and Mark Bookhout MS, PT: Spinal Manipulation, p. 267-268, 1992
Philip Greenman DO, FAAO: Principles of Manual Medicine, p. 194, 1996

Impairment: Limited Occipital Flexion and Right Sidebending



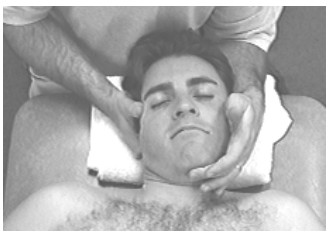
Occipital Distraction in Flexion and Sidebending

Cues: Contact the right occipital condyle with the anterior surface of the index finger metacarpal of the right hand
As best as possible, align your right forearm parallel to the distraction force direction
"Hug" the right side of patient's head with your left forearm
Position the patient at the barriers of both flexion and left translation - as he/she exhales
The distraction mobilization or manipulation force primarily comes from your index finger metacarpal – using a weight shift from your trunk
If you are not moving the patient's feet ("positive toe sign") you are probably not providing enough traction force to distract the patient's occiput from C1

The following references provides additional information regarding this procedure:

John Bourdillon FRCS, EA Day MD, and Mark Bookhout MS, PT: Spinal Manipulation, p. 268-269, 1992
Philip Greenman DO, FAAO: Principles of Manual Medicine, p. 202, 1996

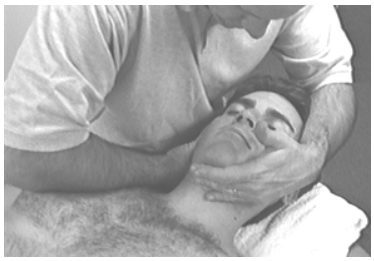
Impairment: Limited Occipital Extension and Right Sidebending



Occiput /C1 Contract/Relax
(of segmental flexors and left sidebenders)

Cues: Extend the head (not the cervical spine) to take up the extension barrier
Translate the extended head to the left to the first (upper cervical - not mid cervical) barrier
Translate left - not sidebend left
Elicit contraction of the segmental flexors ("look down toward your feet") or sidebenders ("look to the left)
Manually cue either under the chin or the left zygoma when providing the verbal commands
Maintain both barriers during the contraction
Relax - take up slack – repeat

The following references provides additional information regarding this procedure:
John Bourdillon FRCS, EA Day MD, M Bookhout MS, PT: Spinal Manipulation, p. 266, 1992
Philip Greenman DO, FAAO: Principles on Manual Medicine, p. 193-194, 1996



Occipital Distraction in Extension and Sidebending

Cues: Contacts and force application is similar to the occipital distraction in flexion
Position the patient at the barriers of occipital extension (not cervical extension) and left translation - as he/she exhales
Maintain these barriers – apply the distraction mobilizations or manipulation

The following references provides additional information regarding this procedure:
John Bourdillon FRCS, EA Day MD, M Bookhout MS, PT: Spinal Manipulation, p.268, 1992
Philip Greenman DO, FAAO: Principles of Manual Medicine, p. 201, 1996