



Case Report: POST-SURGICAL NECK PAIN WITH RADICULOPATHY RELIEVED

by

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CHIEF COMPLAINT

Ms. D, a 78 year old female, presents with a chief complaint of neck pain that is intermittent and rated a 5/10 on a 1 (no pain) - 10 (worst pain) pain scale. Not moving her neck aggravates the pain and she states that it becomes annoying and very stiff with spasms. She feels like she has to move her neck all the time. It also feels very tired. However it does not affect her sleeping. She experiences discomfort upon movement of her upper extremities and lifting does aggravate the pain.

HISTORY OF COMPLAINT

The neck pain started in 2004 with pain radiating into the right upper extremity. She had an MRI which showed multiple herniations. Her neurosurgeon performed cervical fusion from C4-6 with hardware. Following surgery she felt good for 9 years when in 2013 she experienced pain again in the neck radiating into the right shoulder area. She went to a chiropractor who took x-rays and didn't feel he could help her. She spends the summers in Michigan and went to a chiropractor there who recommended that she follow-up with me. She states that the treatment she had in the summer did not really provide any relief. She does go for regular massages which provide temporary relief.

EXAMINATION

- *Past History:*
 - Tachycardia
- *Medications:*
 - Atenolol, vitamins
- *Objective:* 5'3" Weight 118, BP 158/90
- *Cervical (neck) ROM (range of motion) normal values:*
 - Forward flexion / 45 degrees
 - Extension / 45 degrees
 - Left Lateral Flexion / 45 degrees
 - Right Lateral Flexion / 45 degrees
 - Left Lateral Rotation / 80 degrees
 - Right Lateral Rotation / 80 degrees
 - Limitations noted in her active range of motion: Rotation 30 bilaterally with pain to the right. Extension and lateral flexion 10 with pain on extension.
- VBI Test, VAS or vertebral artery screening test (George's Test) was normal and is a positioning test of the neck to screen for risk of dissecting (tearing) of the vertebral artery during a neck adjustment, and/or to screen for those who may be at risk of

having a stroke due to a neck adjustment. The test was normal with no increased risk identified today.

- There were no increased symptoms in her cervical or cranial region with Valsava's maneuver today.
- Shoulder Depression Test was normal bilaterally.
- Jackson's Compression Test, which is usually indicative of cervical nerve root compression, was normal or negative.
- Spurling's or Formanial Compression Test was positive on both her left and right cervical spine indicating a stimulation of existing nerve root irritation or other problems related to disc disease and cervical spondylosis bilaterally.
- Bakody Sign was negative suggesting the absence of cervical foraminal nerve root compression.
- Cervical Distraction Test was normal today with nerve root compression less likely.
- Soto-Hall Test was normal bilaterally with no pain produced in the cervical spine.
- Muscle strength was normal in the upper extremities at 5/5 bilaterally, the upper deep tendon reflexes were normal at +2 bilaterally in her biceps, brachioradialis and triceps and her superficial sensation was normal when tested with a pinwheel in the upper extremities over her C5, C6, C7, C8 and T1 dermatomes.
- Palpation of the soft tissue structures were normal in her upper body with the exception of spasm, tenderness, inflammation , trigger point activity left cervical paraspinal muscles and right cervical paraspinal muscles and upper thoracic Interspinous ligaments.

DIAGNOSIS

M99.01 cervical subluxations

007 M50.11 Cervical disc disorder with radiculopathy, high cervical

M62.838 Muscle Spasm

IMAGING

Patient was referred for an MRI of the cervical spine on 2/9/16 (See Figure 1.) which demonstrates:

- C2-3- no significant change since 1/28/14.
- She had prior Anterior Cervical Disc Fusion C4-6.
- C3-4 No central canal or foraminal encroachment
- C4-5 Relatively slight right foraminal encroachment produced by osteophytic protrusion.
- C5-6 No foraminal or central canal stenosis.
- C6-7 No central canal or foraminal stenosis. Mild hypertrophy of the facet joints at C6-7.





TREATMENT PLAN

SHORT TERM TREATMENT GOALS:

Dr. Cox has a 50% improvement rule after one month of treatment. I lowered that to 25% due to her prosthesis. She was looking for any relief whatsoever.

TREATMENT

The treatment consisted of Cox cervical distraction protocol 1 and ultrasound, followed by electrical muscle stimulation to her cervical paraspinal muscles. The Cox distraction is localized to C2-3, C6-7 and upper thoracic segments since they were the only movable non-fused segments.

CLINICAL OUTCOME

It was questionable whether Ms. D experienced relief during the first 5 visits. However, she was sure that there was definite relief after 6 treatments and has progressively improved since then. She feels her cervical range of motion has increased with less pain. The pain is no longer constant, and she rates the intermittent pain a 3/10. She feels very optimistic about the treatment and states that this is the only treatment that has helped her.

DISCUSSION

A review of the literature on Cox® Distraction/Flexion-Distraction reveals that most of the studies and case studies involve the lumbar spine and those involving the cervical spine studied patients with radiculopathy; with discopathy causing either physical irritation or chemical irritation of the nerve roots. My patient had no upper extremity symptoms whatsoever. It is generally assumed that when there is nerve root irritation, there will be extremity symptoms. If this is true, then one would think that the patient's symptoms would be caused by irritation of C1, C2, C6, C7 (or a combination thereof). In looking at the innervation of the cervical musculature, we can determine which nerves are possibly affected.

- The levator scapulae is supplied by two or three branches of the fourth and fifth cervical nerves.
- Trapezius muscle is innervated by the third and fourth cervical nerves for pain and the spinal accessory for motor.
- Multifidus is innervated by the dorsal primary rami of the cervical nerves.
- Obliquus capitus superior and inferior are innervated by the primary rami of the suboccipital nerve (dorsal primary ramus of C1 nerve).
- Rectus capitus posterior major and minor are innervated by the dorsal primary ramus of C1 nerve.
- Rotators innervated by the dorsal primary rami of all cervical nerves.
- Semispinalis is innervated by the dorsal primary rami of C2 down.
- Splenius is innervated by the dorsal primary rami of C2-6.
- Splenius Capitus is innervated by C2-6.
- Splenius cervicis is innervated by the dorsal rami of C2-6.

Conceivably, all of the above muscles could be affected by dysfunction of the upper cervical nerves. I also want to add that the trapezius innervation via the spinal accessory nerve has a component from the upper cervical nerves.

We also cannot forget that the sinuvertebral nerve can easily be affected simply by degeneration of the spinal discs. The meningeal branches of the spinal nerves or the sinuvertebral nerves are a number of small nerves that branch from the spinal nerve near the origin of the anterior and posterior rami, but before the rami communicantes branch. They then re-enter the intervertebral foramen and innervate the facet joints, the annulus fibrosus of the spinal discs and the ligaments and periosteum of the spinal canal, carrying pain sensation.

The patient does not have frank herniations. She does have marked spondylosis. I believe that irritation of the sinuvertebral nerve is the most logical explanation for the patient's symptoms, either within the annular fibers or the facet joints. Since Cox[®] Distraction has most of its effects on these two structures, we can deduce that this theory is as good as any.

References:

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Editorial note:

The radiology report states fusion from C3-6 but it appears to be C3-7 with anterolisthesis of C7 on T1. Please keep in mind the research of increased intradiscal pressure with extension on C7 or T1 during protocol I or II because it can increase intradiscal pressure in the C7-T1 intervertebral disc. This would be most important if ulnar radiculopathy were present and not so important since this patient has no radicular pain. (See Gudavalli paper - M. R. Gudavalli, T. Potluri, G. Carandang, et al., ["Intradiscal Pressure Changes during Manual Cervical Distraction: A Cadaveric Study,"](#) Evidence-Based Complementary and Alternative Medicine, vol. 2013, Article ID 954134, 10 pages, 2013. doi:10.1155/2013/954134).

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