

Common Clinical Patterns in the Middle and Lower Cervical Spine

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I love when I get to see a familiar clinical situation with new eyes; when I can fill in the blanks and more fully understand the pattern. Let's talk about common patterns in the middle and lower cervical spine. Most of us are familiar with the head poke posture, in which the upper cervical goes too far into extension. Fewer of us are familiar with a similar pattern in the middle to lower cervical spine, which I'll call "mid-cervical extension give." This pattern can contribute to the typical symptoms that occur as a result of middle to lower cervical spine dysfunction, including referral into the shoulder, arm or upper thoracic. This pattern seems to co-exist with an anteriorly fixated lower cervical spine, which I have written about previously.¹⁻³

I have long appreciated the lower cervical spine. I appreciate what I have learned from others about the importance of this area, and feel it's important to give them credit where credit is due.

John Bandy, DC,⁴ introduced me to the concept of arm weakness associated with the lower cervical spine, which he labeled a cervical disc. I don't think this problem is necessarily a disc, but it does mimic cervical discogenic pain. Don Murphy did a series of elegant articles based on a case series, basically about cervical radiculopathy, [which I reviewed](#).⁵ He has a multifactorial treatment approach that includes manipulation from anterior to posterior in the lower cervical spine.

Mark Thomas is unpublished, but has been my teacher, peer and friend for 30 years. He emphasizes the anterior fixation of the lower cervical spine. I have a memory of calling him (he is 150 miles from me) regarding a patient who had moved to my area. Basically, I was having trouble figuring her out from a case perspective. Mark said to check her anterior lower cervicals; I did, and she finally started improving.

In the osteopathic realm, Jean Pierre Barral emphasized the fascia of the anterior cervical spine, delineating the middle and deep cervical spine layers.⁶ Barral also pointed out the connections of this fascia deep into the chest, into the pericardium and respiratory fascia. And let's not forget Vladimir Janda's contributions, pointing out how the scalenes and SCM get too tight and the deep neck flexors get weak or inhibited; and Craig Liebenson, who brought this work to our attention.

Graston technique (and my experiences with proliferant injections) contributed to me working to attempt to enhance the body's soft-tissue repair process via instrument-assisted frictional massage. Ben Benjamin, LMT, reminded me of the importance of looking for post-whiplash tenderness in the tendons and ligaments of the lower cervical spine, and then applying cross friction to these tissues.⁷ Finally, Mark Comerford brought the middle or lower cervical extension give pattern to my attention, pointed out the association of this with the anterior lower cervical fixation, and observed and differentiated this as a source of shoulder pain and weakness.

In short, I have been checking the front of the neck for a long time. What clinically occurs there? Let's look at muscle function first. If the patient either has or has had neck pain or trauma, the smaller stabilizers get inhibited and the single segment deeper muscles shut down (or more

accurately, lose their recruitment efficiency). In the neck, especially with the postural pattern of the forward head and/or chin poke, the deep neck flexors tend to get lengthened and inhibited. The longer mobilizers, the bigger muscles, respond to pain and trauma by up-regulating, remaining active even in small, low-load movements, rather than just when needed for power or higher load. These muscles, including the scalenes and SCM, and the larger posterior mobilizer muscles, pull the skull toward the lower neck, tending to create an extension force, which in this case is unopposed by the segmental deep neck flexors, especially those in the middle to lower cervical spine.

This creates an abnormal give at the affected middle to lower cervical segments. As the neck and face move forward, and as the neck bends backward, the motion is no longer smooth and multi-segmental. Excessive motion is occurring into extension at the affected mid-cervical spine levels. You can palpate this with motion; instruct the patient to extend their lower neck, and you can sometimes see a crease in the soft tissues in the posterior neck.

Just below the give, at the next spinal segment inferior, the spine will often be stuck anterior. Palpate along the transverse processes laterally and then move a little anterior to the articular pillars. These will be quite tender to the touch and will resist anterior to posterior motion. Your touch here may refer or reproduce pain into the upper trapezius region or down into the arm.

Here is my current understanding of this fixation pattern. The involved lower cervical segments are translated forward positionally, and resist translating backward. It doesn't quite fit a flexion or extension dysfunction model; this common pattern is best seen as an anterior translation. Despite the often bilateral aspect of the extension give just above it, this pattern of fixation will, in my experience, more often show up unilaterally.

This subluxation/fixation tends to create problems down into the arm or into the upper thoracic spine. This can express as pain and/or sensory changes and/or as arm weakness. I've relied on all sorts of belief systems about muscle weakness over the years.. When you manual muscle test the involved arm muscles, there will be weakness, but the test will usually be painless or minimally painful. The weakness can occur in the shoulder abductors and flexors. It can occur in other arm muscles, including those segmentally innervated by the lower cervical spine.

Historically, I have tested the deltoid, the long head of the biceps, the triceps, the wrist flexors and extensors, and the finger abductors, and seen these as representing the irritated spinal segment. Once you correct the fixation, via anterior to posterior adjustment or mobilization, the muscle strength will usually immediately return to normal.

It's useful to assess the fascia of the lower cervical spine, especially the anterior and lateral portion. The hypothesis is that at the level of the excessive give, the soft tissues have been chronically stretched. This is a little different focus than looking at the scalenes. Use whatever strategies you prefer. Personally, this is an area where cross-frictional massage has been effective for my patients.

The main rehab involves two strategies. Many of you already know to treat the scalenes as overtight, shortened muscles, creating length in the scalenes via manual therapy and specific stretching. The second strategy is less familiar; it involves retraining neck motion to control the excessive motion into extension, which tends to occur at a particular segment in the affected patient.

Here's the short version of the [exercise to control the neck hinge](#) and correct the mid-cervical extension give.⁸ Teach the patient to move their neck from a flexed position (with the head gently

nodded down) into a slightly extended position, while paying attention to the excessive motion spot they have in the mid-cervical spine. The goal is to stop the hinging that occurs as they extend their middle and lower cervical spine. The key is to have the patient touch that spot in the midline and pay attention, learning to use new muscular patterns to prevent the sudden give at their weak spot.

The basic principles to employ when addressing middle and lower cervical spine dysfunction should be becoming familiar to you: Find the direction of susceptible movement, the excessive give. Retrain this as specifically as possible. Assess the soft tissues at the level at which the excessive give has been occurring, and help the body initiate repair of these tissues. Find the areas of restriction above, below, on the opposite side of the excessive give - wherever they are occurring - and help restore normal motion via chiropractic adjusting and soft-tissue release.

References

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6. Barral J-P. *The Thorax*. Eastland Press, 1991.
7. Heller M. "[Cervical Spine Injuries: Treat the Damaged Ligaments.](#)" *Dynamic Chiropractic*, Feb. 12, 2007.
8. The handout for this exercise, called the Neck Hinge, is available on my Web site as a pdf. See www.marchellerdc.com/pro_resources/Articles/index.htm#Ex.

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