

## Adjusting the Occiput on the Atlas

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You may never see a particular set of patients in your office - the ones who are either afraid of neck adjustments or have had a bad experience. A vast majority of those who had a bad experience did not have a life-threatening vascular event. They just got hurt; maybe it was mild or maybe it was significant. Either way, they don't want an HVLA adjustment of their neck.

What about your elderly patients with osteoporosis and arthritis? Many of my older patients tell me they used to love cervical adjusting, but as they aged, it stopped working for them. Do you see patients immediately after neck trauma, such as a motor vehicle accident? Do you have something other than HVLA adjustments to offer them?

I am not talking about massage, other soft-tissue methods, ultrasound or laser. I am talking about normalizing joint function, correcting their subluxations, adjusting them. You need to have other tools besides HVLA. Adjusting instruments all fit the bill here, but my personal favorites are manual techniques - mobilization and muscle energy adjusting. My hands can *feel* what is changing, moment by moment. When I use my hands, I get immediate feedback from the tissues.

I acknowledge there is little evidence that mobilization is better or worse than standard HVLA manipulation. That said, the best doctor has multiple tools and is flexible enough to find the ideal tool for the patient in front of them at that given moment.

### Assessing the O-A for Fixations

The occipito-atlanto (O-A) junction is one of the more challenging areas to assess, and fixations here are easy to miss. Think of patients with cervicogenic headache, vertigo or neck pain. To assess this area, you have to contact the skull and move it on the neck. I suspect most of us have some kind of distraction maneuver we do here. The occiput can get jammed onto the top of the neck. But let's get more specific about the biomechanics.

Here is the muscle energy approach to the occiput: The basic assessment is to take hold of the skull and move it to test its motion on C1. The patient is supine; the doctor sits behind them. Hold the base of their skull in your hands. They should feel well-supported so they can "let go."

First, test the occiput's motion into flexion and extension on the atlas. I prefer to think of the motions as posterior glide (flexion) and anterior glide (extension). This gives me a better image of the convex or concave quality of the motion. Provide slight compression and gently push into these curved glides along the facets. As you might expect, the more common sagittal plane fixation is a lack of posterior glide, which correlates with a forward head position.

Once you have established a relative lack of motion into either posterior glide or anterior glide, hold that positioning at the soft barrier and add side-bending. Don't jam the head all the way to the hard end of the flexion / extension barrier; if you do, you will lose the ability to assess any further motions. Typically, one of the side-bending motions will be much more stuck than the other.

Where is the tender spot? I have always taught that finding tenderness, provoking the pain, is

important. That belief has been reinforced by a recent review paper by [Triano, et al.](#)<sup>1</sup> Their conclusion: The most evidence-based way to determine where to adjust is to find something that provokes pain - ideally the patient's actual pain. You will be more accurate if you include assessment of tenderness.

The tender spot for O-A restriction is going to be somewhere along the base of the skull. The confounding factor here is that it could be on either side. If the O-A resists posterior glide and left side bending, the tender spot could be on the left occiput (the side where the fascia is being stretched) or the right occiput (the side where the joint is jammed).

#### Correct the O-A: Muscle Energy

Muscle energy consists of using the principles of contract-relax applied to the joints. Here is the concept for this adjustment. The patient cannot easily move their head toward one "corner." In the contract phase, they move their eyes toward the opposite corner. In the relax phase, you glide them toward the corner they could not go toward with ease.

In our example, the occiput resists posterior glide and left side-bending. How do we correct this? This particular technique uses eye motion as the way to activate the muscles.

Think about it this way: The patient cannot nod their head forward and cannot side bend to the left. They cannot move toward the left anterior corner. The patient is supine, and you are cradling their occiput and skull with a broad contact with both of your hands. Take your contact, move the occiput first into the posterior glide (flexion) barrier, and then add the left side-bending motion to the barrier.

Once you have reached the combined soft barrier, hold the head at that barrier, and ask the patient to look up and to the right. The eye motion requires more muscle activity than just the eye muscles; you will feel the patient gently pushing against your hands. They should hold their eye motion / contraction for 3-5 seconds; then ask them to look down and left. As they look down and left, follow this motion, moving the occiput farther through the barrier.

Their muscle actions help you unlock the joint with minimal trauma, no sudden motions and minimal risk. Yes, they still may be sore later in the day or the next day, as they will need to re-adapt to a new position and new receptor tone.

This particular use of muscle energy - having the patient look in a direction to activate the muscles - is a bit unique. I suppose it could be used elsewhere, but I have only seen it written up for the occiput on the atlas. It keeps the patient from overfiring the muscles; keeps the muscle action in the 10-30 percent of maximum you want.<sup>2</sup>

I want to make a case for the way adjusting enhances rehab. From a rehab perspective, the patient's head is stuck forward, so you have to change their daily activities, their pattern of motion, their tendency to lead with the chin. I agree completely. But I would add that if their occiput is stuck and can't glide posteriorly, they will have trouble changing their motion patterns.

It's a bit of a chicken-or-egg question. It really does not matter which came first - you need to address both the joint fixation and the movement pattern. Manipulation, soft tissue and rehab all play a role in changing the old pattern.

What are the fascial or soft-tissue restrictions you want to assess and release? The obvious is to release the sub-occipital area. The less obvious: work your way up the skull, onto the occiput itself,

and see if that fascia is particularly tender and dense. You also want to check the whole of the neck, including the anterior cervical fascia.

### Self-Mobilization Exercises

Our patients often have recurrent patterns of fixation. When I can, I like to show them how to self-mobilize these areas. Here are two exercises to address these patterns.<sup>3</sup>

*1. Upper Cervical Side-Bending.* This is an exercise I developed for one of my patients who kept experiencing upper-cervical jamming and headaches. This is useful for a patient who lacks side-bending at the occiput or has a recurrent atlas fixation. Look at the patient. Is their head "on straight"? If not, here is a way to teach them to straighten it out.

This exercise is a bit tricky and requires decent motor control, so you will need to teach the patient how to do it a few times. We are not trying to get them to stretch or side bend their whole neck. We don't want the motion to occur in the middle or lower cervical spine. We are trying to induce side-bending motion into the upper cervical spine. The visualization is to see their face spinning or rotating around their nose. Think of a clock face with the nose in the middle.

Step one is to straighten the head in the sagittal plane by activating the deep neck flexors. You probably already know this as a stand-alone exercise. This begins to correct the chin poke and lack of posterior glide. Next, the patient should hold this chin tuck position and put their hands on their head and face. One hand is on the temporal region; the other on the opposite side, over the jaw. They are going to resist gently and move their head against the resistance of their hands. Ask the patient to move about 1-2 inches. This is not an isometric exercise; it is about inducing motion.

The usual error is to just push against the top hand, which puts the fulcrum lower in the neck. The patient needs to equally push against the opposite hand, the one on the jaw. Some patients need to start to push with the jaw first to get the right motion started. Caution may be needed if they have a TMJ issue. As always, remind them to gently resist; this is motor control, not a strength contest.

*2. Sternocleidomastoid (SCM) Stretch.* What muscle is pulling on the occiput? The primary short and tight muscle is usually the SCM. This is another exercise that may be challenging for your less-coordinated patients. It can be done either supine or sitting. Let's outline it step by step. (By the way, this same routine can be done by the doctor to the patient as a pin and stretch.)

- Start by instructing the patient to use their opposite hand to grasp the bulk of the SCM muscle. Aim at the tightest part of the SCM; it could be up high or down near the clavicle. Grasp it between the thumb and fingers. If this proves too challenging, you can have the patient place their opposite hand on the top of the medial clavicle and pull downward, stabilizing the origin of the muscle.
- Patient tucks the chin, lifts the sternum and elevates the crown toward the ceiling. This is the basic motion that activates the deep neck flexors and puts the head in the proper start position.
- Patient rotates the head about 20 degrees toward the side you want to stretch. This is counterintuitive; the SCM has an obliquely upward path, which lengthens the muscle.
- Patient tips (side bends) the head away, maintaining the chin tuck position; then pulls downward on the tight part of the SCM with the hand grasping it. (They can also lubricate with lotion and glide with compression down the muscle belly.)

Here are the common errors: They lose the chin tuck. They tend to want to rotate to the same side as they are side-bending, instead of rotating to the opposite side. Some patients have a hard time grasping the muscle; the glide way may work better for them.

*Note:* Another exercise option for any neck problem would be to focus on thoracic mobility. Think of the thoracic sphinx, foam roller and/or Bruegger's positioning.

### Other Considerations

In an ideal world, if you adjust the occiput (or whatever joints are stuck) and teach the patient the new patterns of motion, the fixation will not need adjusting over and over. When I have to do the same adjustment repeatedly, I have a set of further queries.

For starters (thanks again, Dr. McGill), what is the patient doing over and over to mess themselves up? One of my neck patients is a 55-year-old practitioner who stares at a computer screen to read and edit his chart notes. His glasses are set for reading between 12-18 inches, and his computer screen is about 27 inches away. So, he ends up pushing his chin and head forward to get closer to the screen, jamming his sub-occipital area.

Other confounding factors: 1) The patient either is not doing their exercises or is doing them wrong. 2) The place I keep finding fixated is secondary; a response to some other sequence of problems. Look further. I might look at the fascia of the skull and neck; I might look for a stiff thoracic kyphosis that keeps the whole upper body stuck in flexion.

Start checking occipital motion as part of your routine screens of the cervical spine. Your patients will appreciate it, as you are addressing a frequently missed and clinically significant problem.

### *References / Resources*

1. Triano JJ, Budgell B, Bagnulo A, et al. Review of methods used by chiropractors to determine the site for applying manipulation. *Chiro & Manual Ther*, 2013;21:36.
2. A video by Dr. Heller demonstrating the muscle energy technique is available on his YouTube channel: [www.youtube.com/user/marchellerdc/videos](http://www.youtube.com/user/marchellerdc/videos).
3. Patient handouts for the SCM and upper-cervical side-bend exercises are available at <http://sosas.us/patient-resources/exercises>.

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