

## **Cervical Traction vs. Cervical Decompression**

*Can mechanical Cervical Decompression be achieved or is it just Cervical Traction?*

Several factors exist that lead me to question whether effective axial decompression of the cervical spine can truly be achieved. It is my opinion that proper isolation of a particular vertebral disc for the purpose of decompression is impossible, additionally; the risk of severe injury to the patient is possible.

It is difficult to imagine a scenario in which one could successfully isolate one intervertebral disc by focusing the vectors of force generated into the proper plane that does not drastically affect the whole cervical spine as one unit of motion.

Due to the complexity of the cervical spine with 6 distinct planes of motion, and a propensity for increased motion at the expense of stability, successful mobilization of a desired segment in isolation is an unrealistic expectation. Were it possible to create the tractional force required to achieve potential cervical decompression there would likely be coinciding ligament damage to the facet capsules which would cause facets to imbricate causing overlapping wing fractures.

Additional, safety concerns include the soft tissues of the neck that must be addressed in an assessment of the possibility of cervical decompression. Several structures and systems within the neck don't respond well to stretching, strains, or other insults to the body. The esophagus and trachea are two crucial examples of anatomy that do not respond well to twisting and or stretching. Both are subject to many pathological processes as the result of trauma or swelling. A simple illustration of this could be rupture or tearing of esophageal varicosities associated with several causes such as alcoholism, bulimia, or GERD, which could cause substantial blood loss and swelling causing constriction of other vital anatomy.

In addition to these soft tissues, there is also a high correlation to cervical injuries and hypertonic muscle groups of the neck, shoulders, and occiput. For example, the likelihood of having spastic trapezius, levator scapulae, or sternocleidomastoid muscles is increased in the prospective patient population who would benefit from cervical decompression. This spasticity and rigidity of these muscles, already irritated and inflamed, would lead to further aggravation and agitation with the cervical decompression procedures. The rigidity of the cervical spine also contributes to the difficulty in successful isolation of a particular interspace. Also, the potential for reduced or reversed sagittal curvature, further complicate the process of applying successful cervical decompression.

There exist several possible mechanisms that could be very detrimental to the patient's health if distractive forces are applied to the cervical spine improperly or without the full knowledge of the possible risks involved. First, I believe cannot be overstated, is the possibility of a vasovagal response due to stretching of the carotid artery either directly or indirectly.

The carotid sinus within the carotid artery very directly controls the blood pressure within the cranium, which holds the organ within our bodies that requires the most constant supply of oxygen. By directly applying a distraction force to the cervical spine there is the risk of the carotid sinus causing a systemic decrease in blood pressure. As the brain perceives that there is a stretching within the carotid artery, the brain assumes a corresponding increase in blood pressure to be the cause of the stretching, and therefore initiates a cascade of events to lower the systemic blood pressure. By decreasing the blood pressure to the brain, the symptoms that could follow range from a simplistic syncope scenario with no permanent resulting problems, to a life threatening serious ischemic event or cerebral vascular accident such as a stroke.

Secondly, another very serious concern would be the left recurrent laryngeal nerve, and the incredibly tortuous path it takes in route to its final destination. The nerve travels inferiorly from its point of origination down and around the arch of the aorta where it begins again a superior pathway toward the larynx and trachea. Any irritation or stretching of left recurrent laryngeal around the arch of the aorta can cause circulatory changes, which again could pose serious potential risk to the patient.

The preceding examples are just a few of the potential problems of attempting mechanical cervical spine decompression. In my opinion, having had the opportunity to work through the case progression of lumbar axial decompression with a large number of patients, with many different conditions and etiologies, I don't believe it is physically, nor physiologically possible to achieve cervical spine decompression.

I think there are entirely too many variables that must be contended with from a biomechanical aspect to give the proper specificity required to successfully relieve the symptomatology one would hope to achieve. The cervical spine is a part of the body, which contains many different structures, with many different functions, and as such, there are many aspects of patient safety to be considered. The contraindications of such a procedure would not only be a lengthy list, but quite common among most populations, with severe potential consequences if improperly screened for.

A more practical approach to this form of therapy is examining the process of cervical traction. There are several generally accepted protocols used in most offices. Traction is generally applied to the tolerance of the patient, for a time period 8 – 10 minutes generally, although some recent studies suggest longer times to be better, with up to 4 hours used in some studies (although I not only think that this is unnecessary, but contraindicated as well.)

For the purpose of billing and coding, a treatment must be in 15-minute increments. Some of the time requirements to be met can include setting the patient up for therapy as well as removal when finished. This can account for an additional 7 minutes of the therapists or doctors time.

There are obviously a large number of factors to consider when setting up a treatment plan for a patient, but some general rules are for a range of about 5-20 lbs. for females and 10-30 pounds for males. There are some patients who will have sub occipital pain, or other soreness, which may require changing patient position, angle, or protocol. As stated before there are many contraindications, and although this is less aggressive, caution must be taken.

When looking into the concept of cervical decompression a first thought was to quickly see what research or studies were available. There was no such information. However, I did find a library full of information on decompression of the cervical spine. Unfortunately, this research pertained to many different procedures, all of which were surgical.

The methods of cervical decompression varied from standard discectomies, to incredibly complicated procedures where the whole vertebral body was removed from several consecutive vertebrae and replaced with metal implants to attempt to retain some semblance of function.

As a result, of the foregoing, it is my opinion that cervical spine decompression only involves surgical intervention.

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