

Relationship between degree of focal kyphosis correction and neurological outcomes for patients undergoing cervical deformity correction surgery

Journal of Neurosurgery: Spine

April 5, 2013 [epub]

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These authors performed a retrospective review of 36 patients with myelopathic symptoms who underwent cervical deformity correction surgery. Preoperative and postoperative radiographic findings of the degree of kyphosis were compared with functional outcome with minimum follow-up of 2 years. Functional outcomes were assessed with the modified Japanese Orthopaedic Association (mJOA).

KEY POINTS FROM THIS STUDY:

- 1) "The reversal of normal cervical curvature, as seen in kyphosis, can occur through a variety of mechanisms and can lead to mechanical pain, neurological dysfunction, and functional disabilities." "Kyphosis of the cervical spine can be a debilitating condition that leads to significant neurological dysfunction."
- 2) "Surgical intervention is warranted in patients with sufficiently symptomatic deformities in an attempt to correct the deformed cervical spine."
- 3) The results of this study showed significantly improved neurological outcomes with better correction of focal kyphosis and with attainment of global lordosis.
- 4) "The authors' results suggest that the degree of correction of focal kyphosis deformity correlates with improved neurological outcomes."
- 5) "The authors also saw a positive relationship between attainment of global lordosis and improved mJOA scores."
- 6) "The normal lordotic curvature of the cervical spine is critical to maintaining sagittal alignment and spinal balance."
- 7) "It is believed that the neurological symptoms seen in cervical kyphosis are a result of deformity-induced anatomical changes that apply pressure to the spinal cord and nerve roots."
- 8) "Narrowing of the neuroforamen caused by disc degeneration may result in radiculopathy, while stretching or impingement of the spinal cord, often at the apex of the [kyphotic] deformity, can lead to myelopathic symptoms."

- 9) As kyphosis progresses, "spinal cord and nerve root stresses often increase, leading to further neurological debilitation."
- 10) It is thought that the tension created from kyphotic deformity on the anterior spinal cord "results in compression on the regional blood supply and nerves."
- 11) "Our study found that the degree of correction of focal kyphosis deformity correlates with improved neurological outcomes."
- 12) The extent of cervical kyphosis is commonly associated with progression of neurological symptoms.
- 13) These authors found that a "greater degree of focal kyphosis correction was associated with a greater degree of neurological improvement."
- 14) "In patients with focal kyphosis, a greater degree of correction may assist in achieving greater neurological improvements."
- 15) "In correction surgery for cervical kyphotic deformity, better outcomes were reported in patients who achieved lordosis than in those who maintained kyphosis."

COMMENTS FROM DAN MURPHY:

Although this is a surgical study, it has a number of chiropractic applications:

- 1) Cervical kyphosis adversely affects spinal cord function, probably by contributing to anterior spinal cord ischemia and pressure on the spinal cord and nerve roots.
- 2) Cervical kyphosis can cause:
 - A) Mechanical pain
 - B) Neurological dysfunction
 - C) Functional disabilities
- 3) Correction of cervical lordosis is desirable.
- 4) The better the correction of focal cervical kyphosis and the better the achievement of global cervical lordosis, the better the improvement of neurological outcomes.

Some chiropractic techniques, especially Chiropractic Biophysics, have proven effective (published in PubMed), nonsurgical clinical protocols to restore cervical lordosis. Chiropractic Biophysics has taught these techniques to chiropractors for more than 30 years.