

# CERVICAL DECOMPRESSION TREATMENT

Study results confirm positive results from the use of an inflatable device to decompress cervical vertebrae and relieve cervical pain due to postural abnormalities.

By C. Norman Shealy, MD, PhD.

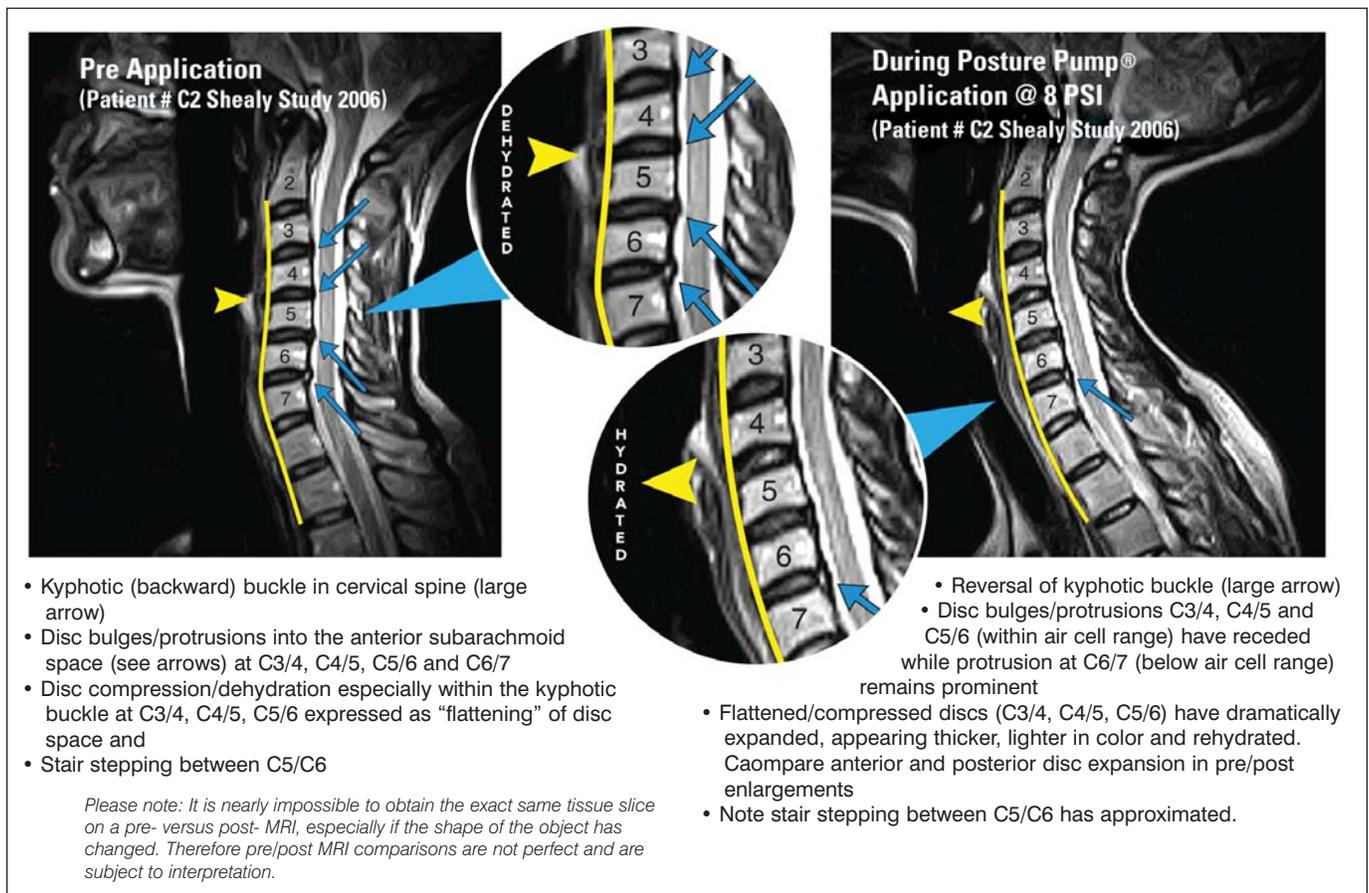


FIGURE 1. MRIs before and after decompression treatment at 8 psi.

Neck pain is one of the most common pain complaints, with over 34% of individuals reporting neck pain in the past year.<sup>1</sup> Interestingly, the incidence in the general population is the same as the prevalence of persisting pain after whiplash injuries. Furthermore, almost all patients with frequent headache—either migraine or tension—also have neck pain along with postural abnormalities.<sup>2</sup>

While neck and shoulder pain increases with age and occupational physical exertion,<sup>3</sup> there appears to be no correlation between the severity of postural abnormality and the severity or frequency of pain—with the exception that more severe postural abnormalities are associated with increased incidence of pain.<sup>4</sup> Treatment of cervicogenic pain varies widely: NSAIDs, chiropractic, osteopathic manipulation, cervical traction, cervical collars, physiotherapy, and even surgery. Even in cervical brachial pain, however, surgical intervention is no more successful than a cervical collar or physiotherapy.<sup>5</sup> In another study, there was no difference in outcome between intensive cervical musculature training, physiotherapy, and chiropractic manipulation.<sup>6</sup> While the number of degenerated intervertebral discs is significantly related to chronic neck pain,<sup>7</sup> abnormal MRI degenerative abnormalities are equally common in symptomatic and non-symptomatic patients.<sup>8</sup>

**Cervical Decompression Device Therapy**

Considering the frequency of cervical pain, an inexpensive, yet effective, therapy seems particularly valuable. This paper reports on 36 patients with cervicogenic pain treated with an inflatable, cervical device which provided ellipsoidal decompression

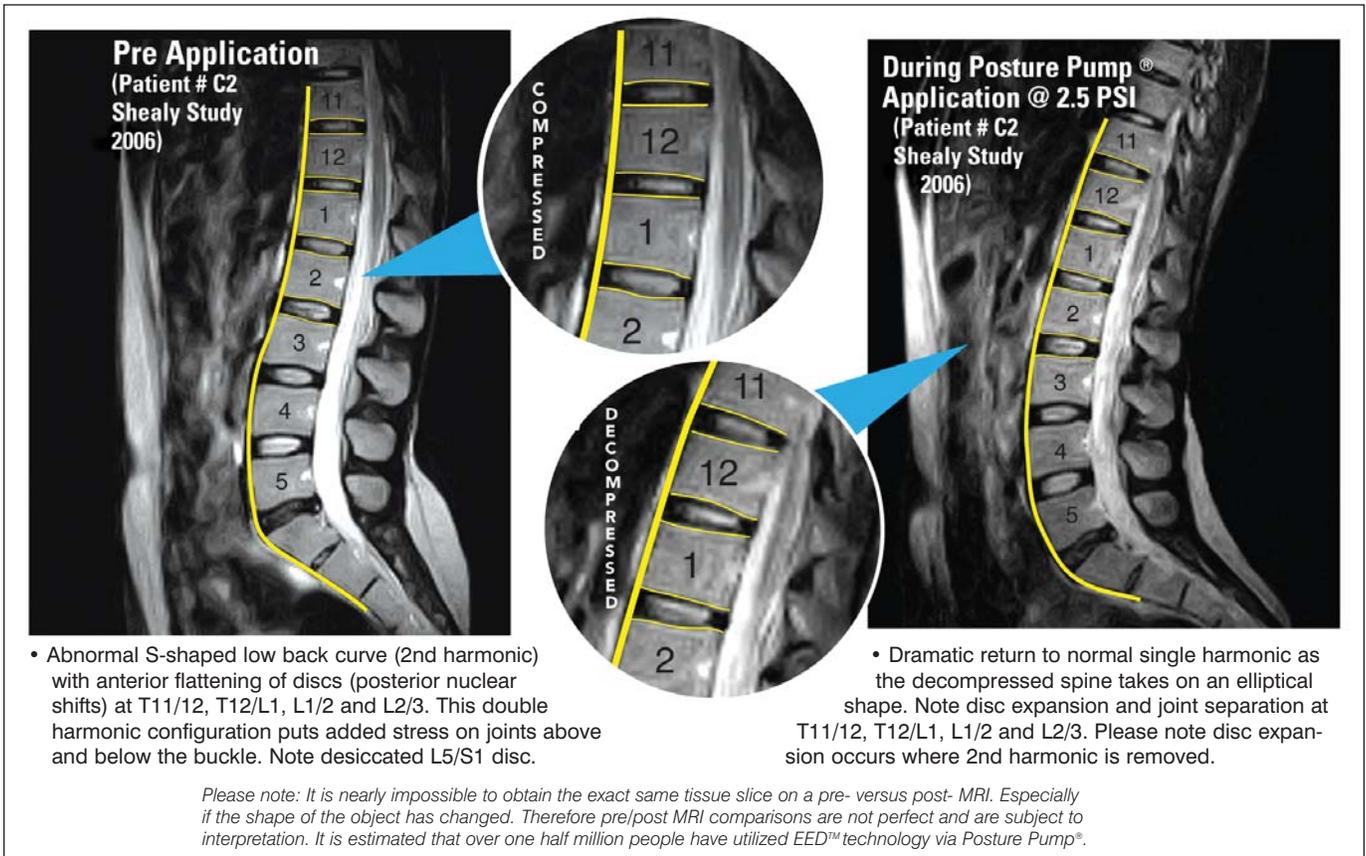
of cervical vertebrae (the unit utilized in this study was the Posture Pump® with Expanding Ellipsoidal Decompression (EED™) manufactured by Posture Pro Inc, Huntington Beach, CA; www.posturepump.com).

Ellipsoidal decompression provided by the device is a process in which joints of the lordotic spinal regions (cervical and lumbar) are decompressed and simultaneously aligned in a curved or lordotic configuration. Ellipsoidal air cells expand and contract from within the lordotic spinal concavity. This unique action separates the joints at the anterior and posterior aspect of the vertebral bodies and discs in a ratio coinciding with their natural wedged spacing. Continuous expansion and contraction of the air cells can be employed to create alternating hydration and milking of the intervertebral discs. Holding the air pressure constant over a period of 15 to 20 minutes has the effect of shaping or molding the spine into a curved or ellipsoidal shape. This ellipsoidal decompression does not remove the normal curved shape from the spine as in linear traction and is therefore not harmful to the natural spinal curves.

While this device has been widely used to date with many anecdotal reports of clinical improvement, until now there have been no previous reports of MRI's on patients using this device.

**Protocol**

Under an Institutional Review Board (IRB) protocol, 66 individuals were screened. All reported neck pain with or without headaches or arm pain. Thirty of the screened individuals were dropped from the study because they had either no significant cervical x-ray abnormalities or such advanced spondylosis that



**FIGURE 2.** MRIs before and after decompression treatment at 2.5 psi.

they were virtually fused. Of the 36 chosen, there were 26 females and 10 males, ranging in age from 18 to 65 years.

**Exclusion Criteria**

- Previous cervical surgery
- Spinal injury within the previous six months
- Individuals with pacemakers or implanted electronic devices
- Individuals with major medical illnesses
- Pregnancy

After initial history, physical, and neurologic exam, all individuals had lateral flexion and extension x-rays of the cervical spine. The 36 selected for the study all had significant postural and/or degenerative disc changes.

Patients subsequently underwent:

- Measurements of flexion and extension range of motion
- Pain intensity (0-10 scale)
- Lateral MRI of the cervical spine
- One 20 minute treatment of the ellipsoidal decompression device at 8 PSI
- Another lateral MRI immediately after the treatment
- Post Range of Motion Measurements

**Results**

On the initial pre/post MRI's and single 20 minute treatment, the following changes were noted in 34 patients. (Two patients had technically inadequate MRIs because of movement).

- 1 or more decreased disc bulges— 20 patients
- Disc lightening (possibly due to increased disc hydration)— 16 patients
- Decreased disc bulges with spinal cord indentation— 7 patients
- Increased lordotic curve— 6 patients
- Stress vertebrae alignment changes— 3 patients
- Changes in stair-stepping of vertebrae— 2 patients
- No visible MRI change— 2 patients

All but 2 patients showed immediate improvement in some postural or vertebral/disc abnormality after undergoing one 20 minute treatment with the device and all patients exhibited cervical range of motion improvement. Incidentally, two patients with acute migraine improved dramatically during that 20

minute treatment.

All 36 subjects were given a Posture Pump® device to use at home and advised to use it 3 to 5 times per week. After one month, all individuals were contacted by phone for follow-up evaluation of pain intensity, frequency of usage and comments. Seven individuals also returned for follow-up MRIs.

At follow-up of 4 to 5 weeks after initial MRI, only 33 individuals could be contacted. Of those contacted, 6 had not used the Posture Pump device for various reasons—mainly “too busy.” Of the 27 who had used it, only 3 found it of no benefit. Of the 24 individuals who reported benefit:

- Average pain decreased from 5 to 2.2 out of 10 — a 56% decrease in pain.
- Initial flexion increased an average of 6 degrees and extension an average of 10 degrees.

Seven of the patients had one-month follow-up MRIs and these showed:

- 1mm spinal widening of the canal in 4 individuals
- Disc resorption at C 5/6 as well as decreased spinal cord pressure at C5/6 in one individual.
- Improvement in lordotic curve in 6 of the 7 individuals

One individual had initial MRIs on both the lumbar and cervical spine done both before and during application. This patient showed excellent improvement in both lumbar and cervical lordosis, as well as joint expansion at both the anterior and posterior joint space during inflation. Overall, this study suggests that protruding disc material can be drawn into the disc proper as the disc expands and supports the concept of reduced interdiscal pressure with disc expansion.

As the disc expands and protruding material is drawn in, discs have a distinctly lighter color on MRI suggesting increased fluid or hydration. As kyphotic buckles are reduced, stair stepping is lessened and discs within the kyphosis expand (see Figure 1). Curve shaping and disc hydration may occur simultaneously during ellipsoidal decompression of the vertebrae.

**Conclusion**

Ellipsoidal decompression of cervical vertebrae utilizing the Posture Pump device provided clinical and radiographic improvement in most individuals with no

adverse effects. Considering the cost, effectiveness, and ease of therapy, this treatment modality may qualify as the first line of treatment for cervicogenic pain and cervicogenic headache. ■

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