Saunders®

Cervical Traction

Distinguishing Features and Benefits

The Saunders Cervical Traction device is different from any other home cervical traction device on the market. It is not appropriate to substitute a different cervical traction device when the clinician specifies the Saunders Cervical Traction device. Here are the reasons why:

The Saunders device delivers a therapeutic force of up to 50 lbs.

Most home cervical traction devices are limited to 20 lbs force, which may not be a sufficient therapeutic force for many patients, especially those with diagnoses requiring separation of the intervertebral spaces for therapeutic effect (e.g., herniated disc, degenerative disc disease, foraminal stenosis, and other diagnoses causing radiculopathy).

The Saunders device allows traction in the supine position.

Traditional over-the-door traction is applied in the seated position. Research shows that supine cervical traction overall is best.[2,6,10]

The Saunders device ensures continuity between home and clinical treatments.

Many clinicians prescribe home traction after showing benefit with clinical treatments. The most common method of administering clinical traction is with the Saunders Clinical Traction device. The Saunders Cervical Traction device replicates the clinical device's force, position, and mechanism of pull (from the occiput). Therefore, we recommend continuity of treatment for clinic and home.

The Saunders device ensures accurate force delivery.

The Saunders device features a gauge that tells the home user exactly how much force is being applied. Patients can follow their clinicians' prescription precisely, ensuring the safest, most effective treatment possible at home.

The Saunders device will not aggravate or cause a TMJ disorder.

Cervical traction devices with chinstraps have been shown to cause or aggravate TMJ disorders. The Saunders device doesn't contact the chin at all—it imparts force through the occiput, ensuring a TMJ-safe treatment.

Please see discussion in the Evidence section beginning on page 5 for more information about the importance of these features.

Cervical Traction Frequently Asked Questions

What are the Indications for Cervical Traction?

Some of the most common indications are: A) Herniated disc; B) Radiculopathy; C) Any condition in which mobilization and stretching of soft tissue is desired; and D) Any condition in which opening the neural foramen is desired. Cervical traction has also been shown to relieve headaches and pain due to general soft tissue stiffness.

What Is The Optimum Angle For Cervical Traction?

Traditionally, cervical traction has been done with the head and neck in some degree of flexion. We often encounter clinicians who believe the greater the angle of flexion, the greater the intervertebral separation in the lower cervical spine. Thus, it is a common belief that an angle of 20° to 30° of flexion is optimal, if one is treating a lower cervical problem. The reference most often cited for the rational is a 1965 study by Colachis and Strohm.[4]

While this study does indeed state in the abstract and conclusion that, "the amount of separation increases with flexion of the cervical spine", the clinical relevance of this fact should be questioned when one takes a closer look at the data presented. The authors showed, while posterior separation did increase with more flexion, anterior separation decreased with flexion, and anterior compression actually occurred

at 20° and 24° of flexion. Therefore, the commonly held opinion that separation is greater with increased angles of flexion is only true if one is referring to what is happening at the posterior cervical spine.

Clinicians must first address exactly what it is they want to separate (stretch) when determining the optimal angle of cervical traction. In most cases, clinicians are actually trying to achieve a combination of a posterior and anterior stretch. If one accepts that the most common postural problem related to the cervical spine is the "forward head" posture, it becomes apparent that the treatment will need to increase upper/mid cervical spine flexion and lower cervical/upper thoracic spine extension. In other words, the goal of treatment is to straighten the curves of the cervical and upper thoracic spine, not increase them.

This goal is best accomplished by a traction device that flexes the head and neck while at the same time pulls at a relatively flat angle. We have found that a slight (15°) angle of pull accomplishes this by the fact that the posterior aspect of the head is slightly in front of the posterior aspect of the trunk in a normal, desired standing posture. Think of it like this - traction should be designed to "pull" the patient into a position of optimum posture.

If the clinician's goal is to increase the space in the intervertebral foramen, it might be tempting to increase the flexion angle beyond 15°. However, caution should be used when increasing the flexion angle for this purpose, since the space available for the spinal nerve in the intervertebral foramen may decrease with flexion beyond the neutral or straight position of the spine.

To summarize, we recommend starting with a 15° angle of pull for nearly every clinical indication. If the patient cannot tolerate the 15° position, or if the clinician has another reason to vary the angle, the Saunders Cervical Traction device angle is adjustable up to a 25° angle of pull.

How Much Force Should Be Used For Cervical Traction?

Please refer to the evidence summary beginning on page 5.

We have found that 25-40 lbs of force for the mid and lower cervical spine is often clinically effective in conditions where a separation of the intervertebral space is desirable. Examples of these conditions include radiculopathy caused by herniated cervical disc, interforaminal nerve root encroachment, degenerative disc or joint disease or facet joint impingement. In other conditions where the muscles are primarily affected, less force may be effective. Examples include suboccipital or upper trapezius muscle tension or shortening.

How much is too much? The Saunders Traction device does not allow traction forces of over 50 lbs, and we have successfully used up to 50 lbs without any adverse results when working up to this level gradually, and no adverse results with high force cervical traction have been reported in the literature. However, we have found that 50 lbs is rarely needed for good clinical results, and our experience and clinician feedback confirms that 25-40 lbs is typically an adequate and effective force.[2,6,10]

Why Should I Avoid Head Halters That Contact The Chin?

Please refer to the evidence summary beginning on page 5.

Conventional cervical traction methods use head halters that fit under the chin anteriorly and on the occipital bone posteriorly. During a cervical traction treatment using one of the standard head halters, force is transmitted through the chin strap to the teeth and the temporomandibular joints become weight bearing structures. A common problem from administering cervical traction is aggravation of the temporomandibular joints because of the force applied at the chin. The exact amount of force on the chin depends upon the design and adjustment of the head halter, the direction (flexion or extension) of the traction force, and the amount of the traction force. Some head halters are better than others. Nevertheless, even when the utmost care is taken to minimize the force on the chin, there often exists enough force to cause an undesirable effect on the temporomandibular joints.

Another undesirable effect of the head halter is that the force that is applied to the chin/jaw tends to move the head and neck into extension. Since many patients with cervical problems have a forward head posture it is almost always undesirable to increase upper/mid cervical extension. Thus, a traction force that is directed through the occipital bone is more therapeutically correct.

The Saunders Cervical Traction device does not contact the chin or place any force on the temporomandibular joints. It meets all the general requirements for applying cervical traction. It can be used in the optimal range of head and neck positions with any amount of force and duration (intermittent or sustained). The most favorable patient position (supine) is used and the chin and temporomandibular joints are not encroached upon.

Why Should I Insist Upon the Supine Position For Cervical Traction?

Unlike with the Saunders Cervical Traction, most over-the-door cervical traction devices require a seated treatment position. A review of the literature confirms that the supine position is superior, and provides consistent positioning which seated cervical traction treatment does not provide. All recent clinical investigations are being performed in the supine position. Why is this so?[2,6,10,11]

First, it is difficult to relax in the seated position, particularly with an awkward

contraption around the face and jaw. Some researchers have actually found compression or narrowing of the joint space with application of seated cervical traction.[6] This narrowing is often attributed to muscle guarding and the patient's inability to relax during traction.

Second, it is difficult to prescribe the correct amount of force when traction is applied in the seated position. For example, the average head weighs 10-12 lbs. Since the seated position will require that the traction force must first lift the weight of the head, should the clinician add 10-12 lbs to the recommended treatment force? If the patient is co-contracting the cervical muscles during treatment, how much force is actually being applied to the structures of the spine? What is the proper balance of adequate therapeutic force vs. excessive force that causes muscle guarding or inability to relax? If cervical traction was applied in the supine position during clinical treatments (most common), how does this translate to a seated home unit? What is the result of this confusion? Guesswork and poor patient compliance.

What Are Some Common Treatment Guidelines for Using the Saunders Cervical Traction device

While every patient will need individualized consideration, there are some very safe and effective general guidelines for using the Saunders Cervical Traction device for treatment. These guidelines are not meant to be a substitute for good clinical judgment and experience. For more detailed information, refer to the Saunders' textbook, Evaluation, Treatment and Prevention of Musculoskeletal Disorders, Part I - The Spine.

1. Treatment Forces: See discussion above. Generally, 25-40 lbs of force is both safe and effective for most clinical conditions. However, if this is your patient's first trial with traction, or if the patient's condition is irritable, we suggest you start at a lower level and gradually increase the force over several sessions. The patient's symptoms should always be the guide. A little post-treatment muscle soreness in the neck is common, but too much soreness or an increase in peripheral symptoms is a sign that the force may have been increased too quickly.

2. Treatment Times: For treatment of herniated disc, we recommend keeping the treatment times relatively short - in most cases 5-10 minutes. Onel speculates that the herniated disc treatment mechanism is partially due to a suction force caused by decreased intradiscal pressure. The theory is that this suction force is temporary, and a lengthy treatment period is not necessary and may actually reverse the beneficial effects. For other conditions, 10-20 minute treatment times are generally prescribed. The general rule is: the higher the force, the lower the treatment time. We rarely recommend using for more than 20 minutes.

3. Number of Sessions: A major benefit of prescribing home cervical traction is the fact that multiple treatments can be done in a single day. A major benefit of prescribing home cervical traction is the fact that multiple treatments can be done in a single day – this is particularly beneficial for acute and subacute conditions. For chronic conditions where the patient is working, before and after work treatments are desirable. Once the patient's symptoms are under control, many choose to use it only as needed after a hard day's work, to control headaches or ease radiculopathy or muscle tension.

4. Static vs. Intermittent Mode: Although most recent studies have used intermittent protocols, clinically we have found that static cervical traction is more convenient and effective to administer when a family member or friend can provide assistance. We recommend that the clinician use the mode that is most effective for each individual. Saunders Cervical Traction can be used in either static or intermittent mode.

Evidence for Saunders Cervical Traction Protocols in Peer-Reviewed Literature

Recent Emphasis on Studying Cervical Traction to Treat Cervical Radiculopathy

In recent years, there has been a surge of interest in exploring the use of cervical traction to treat radiculopathy. Multiple studies have published clinical prediction rules and have examined a proposed treatment-based classification system for patients with cervical pain. The current consensus is that cervical traction should be combined with specific manual therapy and exercise techniques to treat patients with neck pain and radiculopathy. Fritz and Brennan[10] found that subjects classified with "centralization" syndrome (i.e., radicular symptoms) responded significantly better to a proposed treatment of cervical traction, manual therapy and exercise than other treatments. Cleland, et al[2] were able to predict successful outcomes of patients with radiculopathy based on four criteria, one of which was the use of a multimodal intervention approach that included cervical traction. These recent studies support the earlier work of Saal et al[19] who had reported subjects receiving cervical traction for herniated disc/ radiculopathy had outcomes equivalent to those receiving surgical intervention.

Clinical Studies Showing Positive Results Use More than 20 lbs Force

In one of the few controlled trials studying cervical traction, Zylbergold and Piper showed that patients receiving 25 lbs of traction had significantly better outcomes than a control group.[23] Several recent studies have documented good results using traction to treat cervical radiculopathy.[2,3,10,12,14,18,21] Traction forces used in these studies ranged from 20 to 55 lbs. Olson reported success with two difficult cases of headache due to chronic whiplash, using 25-30 lbs of home traction with the Saunders Cervical Traction device and cervical exercise.[15, 16] Both subjects had previously tried physical therapy modalities, exercise, and over-the-door cervical traction, with poor results.

More than 20 lbs Force is Required to Separate Intervertebral Spaces—Modern Studies Use at Least 20 lbs Force in Study Protocols

Judovich[13] found that 25-45 lb forces were necessary to demonstrate a measurable change in the posterior cervical spine structures. Colachis and Strohm[4] demonstrated that a traction force of 30 lbs produces separation of the cervical spine, and that 50 lbs of force produces more separation than 30 lbs.[5] A literature review by Harris concludes by recommending at least 25-30 lbs to produce an effective mechanical elongation of the cervical spine.[11] Ellenberg's[7] review article also concludes that more than 20 lbs force should be used for cervical radiculopathy. Honet and Puri[12] classified subjects according to severity of radicular symptoms and recommended higher force for those with more severe symptoms. A recent study by Wong, Leong and Chen[22] used 30 lbs of traction force when studying the optimal angle of cervical traction delivery. There is no evidence that mid and lower cervical spine separation occurs at forces less than 20 lbs, and no modern studies use less than 20 lbs of force in their protocols.[9,10] In other words, *it is generally accepted in the peer-reviewed literature that good cervical traction technique requires a minimum force of 20 lbs.*

TMJ Aggravation Can Occur With Head Halters Contacting the Chin

A common problem from administering cervical traction when using a head halter is aggravation of the temporomandibular joints because of the force applied at the chin.[8,9,20] With advancing age, the tissues become more susceptible to disruption and joint trauma, which, in some cases, may be irreversible.[20] Franks suggests that cervical traction should be carried out with caution.[3,8,9,21] He reports, in the older patient particularly, excessive pressure on the jaw can lead to intracapsular bleeding and hematoma in the temporomandibular joint.[9]

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Evidence for Saunders Cervical Traction Protocols in Medical Textbooks and Professional Literature

Each of the following textbook chapters or guides recommends forces higher than 20 lbs to treat cervical spine conditions when the goal is to separate the intervertebral spaces or relieve radicular symptoms. As of November 2007, we were unable to find a textbook that recommended using less than 20 lbs force to treat cervical radiculopathy or similar conditions.

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