

Cervical Spine Collars

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ervical spine immobilization is required for many different pathologic or traumatic problems. There are multiple different versions of cervical collars that provide immobilization, but most function in a similar fashion. Patients require a good understanding of fitting techniques to optimize treatment time and facilitate the rehabilitation process. Landmarks and proper positioning are discussed, while also identifying common positioning errors.

Treatment of spinal injuries dates back to Hippocrates in the 5th century B.C. (Khan, Srinivasan, & Jea, 2016), whereas spine bracing evidence appears as early as the year 900 A.D. (Fisk, Lonstein, & Malas, 2017). Since those early beginnings, spinal bracing has evolved into a vast market, with multiple brands, styles, and materials available to practitioners. Cervical spine collars fall under this category of orthopaedic bracing and are just as varied. However, when objectively analyzing the orthopaedic neck brace landscape, the standard forms are soft collars and rigid collars.

Cervical collars are most notably used in acute trauma situations, predominantly before hospital arrival (Sundstrom, Asbjornsen, Habiba, Sunde, & Wester, 2014). In the orthopaedic setting, a variety of symptoms or injuries are cited for cervical collar usage, including postoperative cervical stability, muscle spasm support, and to limit range of motion in the neck (Magee, Zachazewski, Quillen, & Manske, 2016), with the rigid collar limiting motion more than the soft collar (Barati, Arazpour, Vameghi, Abdoli, & Farmani, 2017). Both historically and today, the debate continues regarding the usage of cervical collars and their efficacy (Overley, Merrill, & Baird, 2018), but they are prevalent enough in the orthopaedic setting such that orthopaedic nurses maintain a good knowledge of proper fitting techniques as well as the ability to educate patients on daily usage and home care. As previously stated, the variety of cervical collars is numerous. The discussion centers around general fitting principles and landmarks for both soft and rigid collars in orthopaedics, regardless of brand or style. More complex cervical bracing and acute spine trauma bracing require additional education and training.

Although the soft collar has only one Velcro strap, a few common issues arise during initial fitting or through daily usage. As mentioned, one main function of the cervical collar is neck immobilization. Inherently, the patient may feel uncomfortable or awkward, as the collar is positioned directly over the throat, causing a choking sensation. Adjustments to avoid this sensation may lead to a neck brace that is too loose to provide benefit in both the anterior/posterior plane and laterally (see Figures 1 and 2). To properly fit the soft collar, center the collar underneath the chin and align the collar curvature with the lower jaw (see Figures 3). Finally, pull both sides of the collar equally around the neck and secure the brace posteriorly, uniformly distributing pressure while also allowing the patient to breathe normally (see Figure 4). This will also help alleviate the choking sensation. Figure 5 shows the very avoidable, but common, occurrence of fitting the cervical collar backward.

Many variations of the rigid collar exist, so presented are general guidelines to follow for successful patient outcomes. The rigid cervical collar is routinely used postoperatively or for more serious cervical spine injuries. For this reason, presurgical fitting is ideal or, at the very least, attempt to make as many prior adjustments as possible before patient application. Only minimal and minor adjustments should be done while the rigid collar is on the patient. Fitting the anterior portion of the rigid collar is similar to the soft collar. First, align the chin in the middle of the brace and then ensure the jaw and neck are supported. In general, the first landmark for the posterior portion of the collar is to align the top section (occipital pad) with the middle of the patient's ear (see Figure 6). The second landmark, and targeted surface area for the bottom section, is the upper trapezius muscle. This will allow for better weight distribution of the collar across the patient's upper back and offer more stability (see Figure 7). Figures 8 and 9 show the issues of an improperly aligned rigid brace.

Because of the anatomical location of the brace, cleaning instructions are an important piece of patient education. Most of today's rigid braces have removable padding, similar in material to the soft collar. Manufacturer's guidelines generally suggest hand washing the material (soft collar or rigid padding) in cold water with mild detergent, rinse thoroughly, and air dry. This not only is beneficial in cleansing the collars but also takes a long time to dry, and many times it leaves a soapy residue, leaving open the possibility of skin irritation over time. A second suggestion is the use of baby

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FIGURE 1. Anterior view of soft cervical collar positioned loosely around the neck and not centered with the chin.



FIGURE 2. Lateral view of soft cervical collar not secured properly in limiting neck range of motion and chin support.



FIGURE 4. Soft collar pulled evenly with the contour of the neck to provide support of the head and surrounding musculature.



FIGURE 5. Soft cervical collar improperly positioned backward, with Velcro closure in front.



FIGURE 6. Lateral view of the rigid cervical collar properly aligned both anteriorly and posteriorly.



FIGURE 3. Centered soft collar underneath the chin and lower jaw.

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FIGURE 7. Posterior view of full, even contact with the upper back/trapezius to allow for proper weight distribution from top to bottom of the collar.



FIGURE 8. Posterolateral view of the rigid collar superior on head. Notice the elevation above the top of the ear, as well as the space between the inferior section and the trapezius.



FIGURE 9. Lateral view of rigid collar too inferior with improper anterior alignment. Notice the space between the collar and the chin. Posterior inferior portion of brace misshapen from pushing into the trapezius muscle.

shampoo and washcloth. These are hypoallergenic products that are much easier on the skin. Instead of fully rinsing the collar, use the shampoo on the cloth to "wipe down" the collar, allowing for a much quicker drying time and reducing potential skin irritants.

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