

Head Cervical Orthoses

Head cervical orthoses (HCOs) include the occiput and chin in order to decrease range of motion (ROM). A supported chin area is a common place for skin breakdown and, for men, the development of ingrown hair. The clavicle is another area where HCOs can cause skin breakdown and discomfort. HCOs generally are used in stable spine conditions. As in the case of cervical orthotics, the long-term use of HCOs has been associated with decreased muscle function and dependency.

Philadelphia collar

The Philadelphia collar (see image below) is a semirigid HCO with a 2-piece system of Plastizote foam. Plastic struts on the anterior and posterior sides are used for support. The upper portion of the orthosis supports the lower jaw and occiput, while the lower portion covers the upper thoracic region. The Philadelphia collar comes in various sizes and is comfortable to wear, improving patient compliance. Velcro straps are used for easy donning and doffing. The Philadelphia collar is difficult to clean and becomes soiled very easily. An anterior hole for a tracheostomy is available. A thoracic extension can be added to increase motion restriction and treat C6-T2 injuries. The average cost of a Philadelphia collar is \$125.



Philadelphia collar with a thoracic extension.

Motion restrictions provided by the Philadelphia collar include the following:

- Flexion and extension are limited by 65-70%
- Rotation is limited by 60-65%.
- Lateral bending is limited by 30-35%.

The goal of the Philadelphia collar is to provide immobilization; its use is indicated in relation to certain injuries or after various procedures, as follows:

- Anterior cervical fusion
- Halo removal
- Dens type I cervical fractures of C2
- Anterior diskectomy
- Suspected cervical trauma in unconscious patients
- Teardrop fracture of the vertebral body (Note: Some teardrop fractures require anterior decompression and fusion.)
- Cervical strain

Miami J collar

A semi-rigid HCO, the Miami J collar, shown below, is another commonly used orthosis. The device consists of a 2-piece system made of polyethylene, with a soft, washable lining. The anterior piece has a tracheostomy opening similar to that in the Philadelphia collar. Velcro straps are used for easy donning and doffing. A thoracic extension can be added to increase support and treat C6-T2 injuries. Available in various sizes, the Miami J collar can be heated and molded to a contoured fit. The average cost of the collar is \$150.



Miami J collar.

Motion restrictions associated the Miami J collar include the following:

- Flexion and extension are limited by 55-75%.
- Rotation is limited by 70%.
- Lateral bending is limited by 60%.

Indications for the use of a Miami J collar are the same as those for the Philadelphia collar.

Malibu collar

The Malibu collar, shown below, is another semi-rigid, 2-piece orthosis with an anterior opening for a tracheostomy. The device comes in only 1 size, but it is adjustable in multiple planes to ensure proper fit. Anterior chin support height is also adjustable. Straps around the chin, occiput, and lower cervical area provide for tightening. Padding around the chin can be trimmed to ensure proper fit. A thoracic extension can be added to increase support and treat C6-T2 injuries. The average cost of a Malibu collar is \$160-\$200.



Malibu collar.

Motion restrictions associated with the Malibu collar include the following:

- Flexion and extension are limited by 55-60%.
- Rotation is limited by 60%.
- Lateral bending is limited by 60%.

Indications for the use of a Malibu collar are similar to those for the Miami J and Philadelphia collars.

Aspen collar

The Aspen collar is a semi-rigid, 2-piece HCO made of polyethylene, with a soft foam liner, an anterior opening for a tracheostomy, and Velcro straps for easy donning and doffing. The orthosis costs approximately \$160.

Motion restrictions associated with the Aspen collar, which mirror those provided by the Malibu orthosis, are as follows:

- Flexion and extension are limited by 55-60%.
- Rotation is limited by 60%.
- Lateral bending is limited by 60%.

Indications for the use of an Aspen collar include the same ones for the above-listed HCOs.

Jobst Vertebrace

The Jobst Vertebrace is made of high-density polyethylene, with a soft polyethylene foam liner. A semi-rigid HCO, it is designed for use in emergent transport situations. The Jobst Vertebrace provides full contact along its costal ends to the sternum and cradles the mandible for stability. The orthosis costs approximately \$150.

Motion restrictions associated with the Jobst Vertebrace include the following:

- Flexion and extension are limited by 55-60%.
- Rotation is limited by 60%
- Lateral bending is limited by 60%

Indications for the use of a Jobst Vertebrace are similar to those for the Miami J and Philadelphia collars.

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