

HOW EFFECTIVE IS THE NEWPORT/ASPEN COLLAR? A PROSPECTIVE RADIOGRAPHIC EVALUATION IN HEALTHY ADULT VOLUNTEERS.

Hughes SJ
1998 Aug; 45(2): 374-8

BACKGROUND: Cervical extrication collars are used in the evacuation of the injured to minimize secondary injury. These collars were designed for extrication and evacuation, not for long-term use, and complications have been reported when they have been used in the rehabilitation phase. The Newport/Aspen collar was designed specifically for long-term use. **METHODS:** Using a radiographic method, the effectiveness of the collar in restricting motion was evaluated for the cervical spine as a whole and for constituent segments, occiput to C7, in 15 normal volunteers. **RESULTS:** Combined flexion-extension was reduced from mean 98.8 to 31.1 degrees (31.5% of normal; $p = 0.000000002$), lateral bending was reduced from mean 31.1 to 15.9 degrees (51.1% of normal; $p = 0.0000001$), and overhead rotation was reduced from mean 64.6 to 26.8 degrees (41% of normal; $p = 0.000000002$). The cervical spine, however, does not move as one unit; paradoxical motion, the phenomenon of "snaking," occurs. Goniometric techniques do not demonstrate this effect. Data are provided for motion by segmental level. **CONCLUSION:** Full cervical immobilization is a myth. It would seem logical to match the level-specific efficacy of the device to the level of injury. Data are provided for the Aspen collar.

SELECTED QUOTATIONS

Background

"The Newport Rehabilitation Collar [Aspen collar] was developed for use in the rehabilitation phase of management of cervical spine injuries." (Pg. 374)

"It [the Aspen collar] was intended to achieve satisfactory neck immobilization, but with more even pressure and superior patient comfort when used for a prolonged period." (Pg. 374)

Results

"The total range of combined flexion-extension neck movement was a mean of 31.1 degrees... compared with a mean normal range of 98.8 degrees... This translated to a reduction to 31.5% of normal movement... the Philadelphia collar permitted 28.9%." (Pg. 376)

"Essentially, lateral bending was reduced from a mean of 31.1 degrees to a mean of 15.9 degrees... a mean reduction to 47.5% of normal range of movement... (data for the Philadelphia collar from Johnson et al.: 66.4%)" (Pg. 376)

"Overhead rotation was reduced from a mean of 64.6 degrees to a mean of 26.8 degrees... This represented a mean reduction of 40.7% of normal range of movement... (data for the Philadelphia collar from Johnson et al.: 43.7%)." (Pg. 376)

Conclusion

"It [the Aspen collar] seems... to work at least as well as the Philadelphia collar in achieving overall neck immobilization, and at some levels it appears to be superior. This is most apparent at the upper segments of the cervical spine." (Pg. 377)

"The more favorable pressure characteristics of the Aspen collar have already been shown by Plaisier et al.,⁷ and at least one center has incorporated the Aspen collar as part of its action plan to eradicate collar-related skin breakdown." (Pgs. 377-378)

"The Aspen collar would thus appear to be superior in both the critical care and rehabilitation settings." (Pg. 378)