How to Use a Thoracic Support Apparatus for Horses Placed in the Trendelenburg Position

Jorge F. Cruz, MV

The Trendelenburg position may be used to facilitate manipulation of the foal during dystocias, surgical fixation of caudal uterine tears and cervical tears, and pelvic radiographs. This paper describes a thoracic support apparatus that enables the forelimbs of a horse to be safely secured, and eliminates the need for additional personnel in procedures requiring the Trendelenburg position. Author’s address: Hagyard Equine Medical Institute, 4250 Iron Works Pike, Lexington, Kentucky; 40511 e-mail: jorgecruzdvm@hotmail.com. © 2010 AAEP.

1. Introduction

Many dystocias that are referred to a clinical facility require controlled vaginal delivery under general anesthesia to facilitate manipulation of the foal for delivery. In many cases, the mare is placed in dorsal recumbency on the floor of an induction/recovery stall, with the hindlimbs lifted by an overlying hoist system (Trendelenburg position). For this positioning, two additional people are often required to support the thorax and forelimbs laterally to maintain the mare in dorsal recumbency as the hindlimbs are hoisted. After the foal is in proper orientation for delivery, the hindlimbs are lowered, the mare is placed in lateral recumbency, and the foal is delivered. This procedure takes from 5 to 30 min in most cases.

Other cases where the Trendelenburg position may be used include surgical fixation of caudal uterine tears, vaginal tears, and cervical tears.1,2 A surgical table for dorsal recumbency cannot be used in these cases, because it places the surgical site too high for the surgeon to operate after the hindlimbs are hoisted.

This paper describes a thoracic support apparatus that was built at Hagyard Equine Medical Institute, which has been used in all of the aforementioned procedures. In addition, the device has been used to facilitate radiographs of the pelvis. The device enables the forelimbs to be safely secured and eliminates the need for additional personnel for stabilization of the thorax in procedures requiring the Trendelenburg position.

2. Materials and Methods

The apparatus consists of a stainless-steel framework with overlying removable support padding for the shoulders and withers, four handles for carrying the device, and the capability to secure the forelimbs at the level of the pasterns. The thoracic support apparatus weighs approximately 98 lb and consists of six pieces—the main steel framework with permanently fixed lateral support pads (75 lb), the long dorsal mat (9 lb), two lever bars to elevate the lateral supports (13 lb), and two straps used to secure the forelimbs to the apparatus (1 lb). This device was built out of recycled stainless-steel material and is designed to flatten to a length of 45.5 in, a width of 27 in, and a height of 4 in...
(Fig. 1) after the lever bars are removed. The device is easily disinfected and may be altered laterally for different sizes of horses. When not in use, the apparatus can be stored flat on the floor or hung on the wall by the handles. Two people are often required to lift the device. A hoist may be used to lift and lower the device into the correct position in the induction/recovery stall (Fig. 2).

The thoracic support apparatus has been used primarily in cases requiring controlled vaginal delivery. In these cases, the mares were sedated using xylazine hydrochloride (1.1 mg/kg, IV) and induced into general anesthesia with ketamine hydrochloride (2.2 mg/kg, IV) and diazepam (0.05 mg/kg, IV). Isoflurane and oxygen were used for maintenance of general anesthesia.

The thoracic support device requires that the mare be induced into general anesthesia before placing the thoracic support apparatus on the floor of the induction/recovery room. After the horse is induced into general anesthesia, the apparatus is placed on the floor of the induction/recovery room (by hoist or manually) where the mare will eventually lie and is aligned with the overlying hoist. Consideration must be made to allow enough space for the anesthesia machine and the surgeon to work. The mare is hoisted by all four limbs, and the thorax is lowered onto the thoracic support apparatus, aligning the shoulders with the support arms for the apparatus. The forelimbs are removed from the hoist and secured to the apparatus at the level of the pasterns using leather straps. The lateral supports of the apparatus are lifted up and inward to secure the horse into place (Fig. 3). The hindlimbs are lifted into Trendelenburg position by the hoist. It is the experience of the author that mares placed into Trendelenburg position for controlled vaginal delivery in the thoracic support apparatus.
delivery typically have decreased respiratory rates. For procedures longer than 15 min, a ventilator is used.

After adequate manipulation of the foal is achieved, the hindlimbs are lowered, and the mare is placed into lateral recumbency for controlled vaginal delivery. After delivery of the foal, the mare is hoisted off of the thoracic support device by all four limbs and lowered onto a mat into a lateral position for recovery. All recoveries are carried out with the support of one to two people in the room.

3. Results

The thoracic support device has been used at the Davidson Surgery Center of Hagyard Equine Medical Institute to facilitate controlled vaginal deliveries (30 cases), various reproductive surgeries of the mare (10 cases), and pelvic radiographs (1 case). Any pressure to the withers is minimized, because the device has a flat base with no sharp points. It is the experience of the author that the device is practical, easy to use, and enables various procedures to be carried out with minimal personnel. In addition, it provides a safer working environment for all of those involved, because the forelimbs can be secured.

4. Discussion

The thoracic support apparatus allows sufficient stabilization of the horse, eliminating the need for additional hospital personnel. This, in turn, may lower clinic labor associated with these procedures as well as minimize those exposed to a potentially dangerous situation. Use of the system has proven to be practical, with minimal training required to operate, and its innovative design features meet a wide array of needs.

As the author has accumulated experience with the device, a number of modifications have been made. Initially, the lateral support padding was not permanently fixed to the main frame of the apparatus. Permanent fixation of the padding to the frame was later carried out to keep the padding in the correct position. A chain was later added to the device to facilitate hanging it by the hoist. Lastly, a stronger and heavier metal was later used for the lateral supports to more effectively hold them in place.

Acknowledgments

Design and building was guided by the author, with the valuable help of Mr. Michael Lane and Mr. Maximiliano Sarmiento.

References