Key Points

- The current technique using a threaded kerf cut cylinder is an improvement over the modified Cloward technique
- The use of a locking compression plate is an alternative means for ventral stabilization of the cervical spine

The etiology of a compressive spinal cord injury can occur secondary to developmental or acquired causes. In horses neurologic gait deficits have been recognized since 1860. In 1938 the term Wobblers syndrome was used to describe these gait abnormalities. There are many terms used to describe this syndrome such as cervical vertebral malformation, cervical vertebral instability, and cervical vertebral stenotic myelopathy.

Surgical management in the form of a ventral stabilization procedure is an option in cases that have been diagnosed with cervical spinal cord compression. Interbody fusion is a term that is used to describe the surgical procedure as well. The original technique used for interbody fusion in people was developed by Dr. Ralph Cloward. The Cloward technique used sections of bone that were driven into a prepared opening in the intervertebral space of adjacent vertebrae to be fused. Dr. Cloward reported on this technique in 1943. In 1953 he modified the technique to use bone dowels that were driven in between adjacent vertebrae. In the late 1970’s, Drs. Wagner, Bagby, Grant et al. reported on stabilization of the equine cervical spine using bone dowels. Dr. George Bagby and colleagues modified the Cloward procedure by using a smooth stainless steel cage (Bagby basket) that was driven in between adjacent vertebrae in horses that had spinal cord compression in the early 1980’s. This implant had multiple fenestrations to allow for incorporation of bone for osseous fusion. Dr. Bagby and Dr. Kuslich modified the smooth cage so that it was threaded and was no longer driven into place. This implant was first used in 1992 for the stabilization of lumbar vertebrae in people. In equine surgery the threaded basket (Seattle Slew implant or kerf cut cylinder) was developed and first used in 2000. Since 2000, changes have been made to the original Seattle Slew implant. The implant can be made of stainless steel or titanium and they can be fully threaded or half threaded.

The development of locking compression plates has given the surgeon an alternative means for cervical stabilization in people. This fixation system has been used clinically in horses for ventral stabilization of fracture of the cervical vertebra and cervical vertebral malformation. Reardon, et al. compared the locking compression plate with the kerf cut cylinder for ventral stabilization of the 4th and 5th cervical vertebrae in an in vitro model. Biomechanically the locking compression plate had superior properties compared to the kerf cut cylinder in their model. This model was single cycle to failure. Cyclic testing was not performed.

Localization of a compressive spinal cord lesion is not always straightforward. Prange, et al. recently described an endoscopic technique to evaluate the equine cervical vertebral canal. This was an in vitro study but this technique has the potential to aid in localizing compressive spinal cord lesions or other pathology in the cervical spinal cord.
References


