Key Points

- The technique was effective at improving neurological function and managing neck pain and thoracic limb lameness in the majority of dogs in the short-term.
- Acute implant-bone failure occurred in 15% of dogs within three months of surgery.
- Additional disc protrusions developed in 17% of dogs between four and 33 months postoperatively.

The large number of reported techniques for cervical spondylopathy-associated disc protrusion reflects the difficulty of managing this condition. A previous report described the use of an intervertebral cement plug retained with endplate anchor holes in 22 dogs. Nineteen of 21 dogs for which success/failure could be determined were considered to have a successful outcome. This lecture reports the results of an alternative technique using a bespoke vertebral distractor (placed in fenestrated adjacent disc spaces) and vertebral body retention screws in conjunction with intervertebral cement in 52 Dobermanns. In all cases the affected vertebrae were foraged and grafted with cancellous bone and in some dogs these procedures were performed on adjacent vertebrae.

Forty-four dogs were tetra/paraparetic and 8 were non-ambulatory tetraparetic. Neck pain was a feature in 35 dogs and 11 exhibited thoracic limb lameness. Duration of clinical signs ranged from 3 days to 20 months (mean 2 months, median 4 months). Spinal cord compression was associated with C6-C7 protrusion in 47 dogs, C5-C6 protrusion in 4 dogs, and C5-C6-C7 protrusions in one dog. One dog was euthanised and two dogs had a revision procedure within four weeks of surgery. Follow-up on the remaining dogs ranged from 0.1 to 74 months (mean 17.7 months, median 10.5 months). An improvement in neurological status was evident in 45 dogs (87%). Four were considered to be neurologically normal. Neck pain resolved in 30 of 35 dogs and thoracic limb lameness resolved in eight of 11 dogs. A variable degree of cement plug subsidence with loss of vertebral distraction was evident radiographically in 40 of 40 dogs six to 12 weeks postoperatively. In no case was there evidence of vertebral body fusion (Fig 1). Eight dogs (15%) had an acute deterioration in neurological function 3 days to 12 weeks following surgery. Radiographs revealed cement plug displacement +/- fracture and/or vertebral endplate fracture. Seven were euthanised. Nine dogs (17%) deteriorated four to 33 months (mean 16, median 13) postoperatively due to additional cervical disc protrusion(s), and three dogs (6%) deteriorated four to 16 months following surgery and were euthanised without investigations.

The modified intervertebral cement plug technique was effective at improving neurological function and managing neck pain and thoracic limb lameness in the majority of Dobermanns in the short-term. However, it failed to maintain vertebral distraction or achieve vertebral body fusion, and was associated with acute implant complications and additional cervical disc protrusions. The material and structural properties of the cement plug, excessive vertebral distraction, and fenestration of adjacent discs may have been contributing factors. Foraging and bone grafting adjacent discs is not effective at preventing protrusion. Routinely placing interbody spacers at both C5-C6 and C6-C7 may be advantageous to reduce the likelihood of additional cervical disc protrusions.

**Figure 1:** Immediate postoperative and three month postoperative radiographs of a six-year-old Dobermann with cervical spondylopathy-associated C6-C7 intervertebral disc protrusion managed by a modified cement plug technique. Note the plug subsidence, loss of vertebral distraction and absence of vertebral fusion.