

Advances in Neurosurgery

Atlantoaxial subluxation is a congenital malformation of the C1-C2 vertebral articulation which causes cervical pain and varying degrees of paraparesis. The condition occurs most commonly in juvenile Toy breeds and is diagnosed by the presence of an increased distance between the lamina of C1 and the dorsal spinous process of C2. Vertebral body fusion can be achieved by securing the vertebrae with pins or screws and cement after removal of articular cartilage and placement of a cancellous bone graft. The long term results with this technique are favourable. This condition is being diagnosed more and more frequently as clinicians raise their index of suspicion based on patient signalment and history.

Caudal cervical spondylomyelopathy or Wobbler syndrome is a relatively common degenerative condition which can be caused by "static" compressions which are best treated by ventral slot decompression or "dynamic" lesions which resolve during cervical distraction. A range of techniques have been described including vertebral body plating, application of a distracting screw with or without a washer and placement of an interbody spacer such as a cortical autograft or cement plug. My preference is placement of divergent vertebral pins and application of a cement column to the exposed pins ends to maintain interspace distraction. Fusion is encouraged by discectomy and placement of a cancellous autograft. Dorsal compressions and multiple level lesions can be managed with a surgery called a continuous dorsal laminectomy. This procedure involves considerable soft tissue dissection especially in larger breeds however it offers a way of achieving multiple level decompression without compromising spinal stability.

Acute thoracolumbar disc herniation often results in complete paraplegia without deep pain perception. Recent retrospective case series have demonstrated that surgery may be worthwhile in many cases. 50% of dogs who underwent emergency surgery and a significant quantity of herniated nuclear material was removed within 48 hours of the loss of deep pain perception recovered ambulatory status. This statistic used to be 10%. The prognosis in patients with pain, paresis or paraplegia who have intact pain perception preoperatively remains above 90% after laminectomy.

The prognosis for spinal fracture or luxation cases is good if pain perception remains intact provided the vertebrae can be adequately reduced and stabilized. The most versatile and mechanically dependable technique which has gained acceptance is called *composite* fixation which is a combination of metallic implants and cement. Threaded pins or screws are placed into the vertebral bodies in a divergent fashion and the exposed portion of these implants are connected with sterile, medical grade bone cement. This technique can be used in the cervical, thoracic and lumbar areas. This technique is mechanically comparable to the use of bone plates and screws. Infection can be treated if antibiotic impregnated cement is used.

Degenerative lumbosacral disease or cauda equina syndrome results from chronic compression of nerve roots at the level of the L7-S1 articulation and most often results from bulging of the annulus fibrosis into the vertebral canal causing stenosis and compression. Adult large breed dogs, often misdiagnosed with joint pain, present with reluctance to jump and stiffness when rising and after exercise. Definitive diagnosis is difficult in many cases often involving contrast studies such as discography, myelography and epidurography. Dorsal laminectomy has been reported to offer a favourable outcome in most dogs. Fusion techniques using transarticular pins are indicated for patients with excessive instability.

