

Thoracolumbar intervertebral disc herniation (IVDH) is a common disorder of the vertebral column mainly seen in chondrodystrophic dogs. The goal of the study reported here was to evaluate a long-term clinical outcome, precise diagnostic evaluation methods and surgical procedures for Thoracolumbar IVDH.

## **2. Long-term neurologic outcome of hemilaminectomy and disk fenestration for treatment of dogs with thoracolumbar intervertebral disk herniation.**

**Objective**—To determine the proportion of dogs with thoracolumbar intervertebral disk herniation (IVDH) that successfully recovered following hemilaminectomy and fenestration, the time to ambulation (TTA) in affected dogs after surgery, and the frequency of urinary and fecal incontinence in recovered dogs and to document long-term complications.

**Conclusions and Clinical Relevance**—Prognosis for dogs with thoracolumbar IVDH that retain deep nociception in at least 1 of the pelvic limbs or tail before surgery was good.

## **3. Effectiveness of Prophylactic Fenestration with Hemilaminectomy for Thoraco-lumbar Intervertebral Disc Extrusion.**

**Objectives**- To determine the incidence and the location of recurrent thoraco-lumbar intervertebral disc extrusion (T-L IVDE) in chondrodystrophic dogs after hemilaminectomy with prophylactic fenestration (PF) and to document PF related complications.

**Conclusion and clinical relevance**- Performing PF at spaces predisposed to disc extrusion significantly decreases the incidence of T-L IVDE recurrences. PF is a safe and effective treatment to prevent SDE in chondrodystrophic dogs.

## **4. Diagnostic Techniques and Surgical treatment for Thoracolumbar Intervertebral Disc Associated Dynamic Compression.**

**Objective**: To describe the diagnostic findings, surgical technique and outcome in dogs with thoracolumbar intervertebral disc-associated dynamic compression.

**Conclusions and clinical Relevance**: Thoracolumbar intervertebral disc degeneration may result in disc-associated dynamic compression. Stress myelography was an effective means of diagnosing this condition and hemilaminectomy with vertebral stabilisation was an effective treatment resulting in long term neurological improvement in all dogs.

## **5. Diagnostic Techniques and Surgical treatment for Spinal Canal Stenosis and Vertebral Instability caused by Congenital Thoracic Vertebral Anomalies.**

**Objective-** To describe diagnostic findings, surgical technique and outcome in dogs with thoracic spinal canal stenosis and vertebral instability secondary to congenital vertebral anomalies.

**Conclusions:** Spinal cord injury secondary to congenital vertebral anomaly may have a good outcome when treated by vertebral stabilization with or without laminectomy. Adequate stabilization of the vertebrae and improved neurologic outcome was achieved in most dogs.

**Clinical Relevance:** Vertebral stabilization using positively threaded profile pins and polymethylmethacrylate with or without laminectomy is an effective treatment for spinal canal stenosis and vertebral instability secondary to congenital thoracic vertebral anomalies.

## **6. A Comparison of Thoracolumbar Intervertebral Disc Extrusion in French Bulldogs and Dachshunds and Association with Congenital Vertebral Anomalies.**

**Objectives-** To compare data for French Bulldogs and Dachshunds that had hemilaminectomy for thoracolumbar intervertebral disc extrusion (T-L IVDE) by 1 surgeon and to evaluate the association between IVDE and congenital vertebral anomalies.

**Conclusion -** The distribution of IVDE site in French Bulldogs within the thoracolumbar and lumbar spine was different from Dachshunds. IVDE sites were not located at the sites of vertebral anomaly. French Bulldogs appeared to have T-L IVDE at younger ages, with higher male predisposition and higher risk of developing progressive hemorrhagic myelomalacia from grade 5 compared with Dachshunds.

## **7. A comparison of molecular mechanism of intervertebral disc degeneration between French Bulldogs and Dachshunds.**

**Objectives-** Intervertebral disc degeneration (IVDD) has a significant impact on the quality of life. The nucleus pulposus (NP) in chondrodystrophic dog breeds (CDBs) is similar to that in humans, because the cells disappear with age and are replaced with fibrochondrocyte-like cells. IVDD develops within the first year of life in CDBs. We previously reported that French Bulldogs (FB) appeared to have thoracolumbar intervertebral disc extrusion (T-L IVDE) at

younger ages with higher male predisposition and higher risk of developing progressive hemorrhagic myelomalacia from grade 5 as compared to Dachshunds. However, the molecular mechanism underlying age-related IVDD is yet to be ascertained. The aim of this study is to investigate the molecular differences in IVDD between FB and Dachshunds.

**Conclusion-** These results suggest that a decrease in the degradation of extracellular matrix and an increase in production of fibrocartilage lead to total NP tissue volume increase in FB as compared with Dachshunds. This was considered to be the cause of early IVDH onset in FB.