

ACVIM Consensus Panel on Canine Acute Thoracolumbar Intervertebral Disc Extrusion (TL IVDE)

Summary of Recommendations

For the purposes of this document, strength of evidence was classified by the consensus panel as follows:

| Low -level evidence | Moderate-level evidence | High-level evidence |
|---|--|---|
| Isolated or small retrospective studies, single non-controlled trials. The evidence implies there might be a relationship there. | Multiple retrospective studies that find the exact same thing; controlled trials but not blinded; single, small placebo-controlled trials that might provide good evidence for a very specific defined population, but not the wider population. The evidence implies there likely to be a real relationship. | Multiple randomized controlled trials that find the same thing. The evidence implies the assessed clinical question must be right. |

Medical vs surgical management; What should medical management entail

1. It is not possible to make a firm recommendation in terms of duration of restricted activity necessary in conservative management of thoracolumbar IVDE. However, at least 4 weeks of restricted activity is recommended, putatively to promote healing of the annulus fibrosus. Exercise restriction should include confinement to a restricted area (crate ideally, or a small room without furniture) except for when performing rehabilitation exercises or taken outside for toileting purposes. There should be no off-leash walking, no jumping on or off furniture and no access to stairs during this time-period.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

2. Taken in context of increased risks of gastrointestinal side effects in dogs after surgery, the absence of evidence of benefit, and low-level evidence for increased recurrence, corticosteroids are not recommended for routine use in conservative management of the acute phase of thoracolumbar IVDE. In the chronic phase, there are a subset of dogs for which a short course of anti-inflammatory doses corticosteroids might be of benefit.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

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3. The use of NSAIDs for at least 5-7 days is recommended as an analgesic with anti-inflammatory properties in dogs managed conservatively for thoracolumbar intervertebral disc extrusion, provided there is no contraindication for that specific animal. Requirement for analgesia beyond this time-period, due to ongoing signs of pain despite appropriate activity restriction, should be considered as an indication for further investigation and potentially surgical management. It is also strongly recommended to avoid the use of concurrent corticosteroids or multiple NSAID formulations in combination.

The consensus panel feels that this recommendation is supported by an existing low to moderate level of evidence in the veterinary literature.

4. The question of pain relief has been examined in more detail in the context of dogs undergoing surgical decompression, for which there is a greater body of literature. Appropriate options for management of pain in dogs with TL IVDE managed conservatively include an NSAID, gabapentin or pregabalin for neuropathic pain and potentially muscle relaxants such as diazepam or methocarbamol. Alternative approaches to analgesia are discussed in more detail in the section regarding post-operative management. For dogs with severe enough pain to merit treatment with opiates, hospitalization should be recommended until that pain is under adequate control.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

5. Whilst there is evidence to support the use of acupuncture in conservative management of thoracolumbar IVDE, this treatment option is currently not recommended as an alternative to surgical management. Despite limited evidence to support the use of physical rehabilitation in conservatively treated dogs, the authors recommend this additional treatment (e.g. passive range of motion exercises and massage), with an emphasis on restricted activity for at least 4 weeks, followed by increased levels of physical activity. The components of a basic physical rehabilitation regimen are outlined in the recommendations for post-operative management and these principles can be applied similarly to conservatively managed dogs.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

6. Ambulatory dogs with thoracolumbar intervertebral disc extrusion can be managed conservatively successfully – however, consideration should be given to dogs with recurrences and the risk of recurrence if fenestration is not undertaken. Thus, surgical management might be given more consideration in a young, active dog with multiple calcified discs, particularly if recurrent events occur. Further, surgical decompression can be considered for dogs with less severe injuries for whom neurologic signs are progressive, unimproved or who are persistently painful in the face of appropriate medical management. The latter might be especially true for dogs that extrude disc material laterally into or through the intervertebral foramen onto their nerve roots, as these dogs might need surgical

Consensus statements vote and comments-- Summary

treatment to manage their extreme pain. Future studies might focus on prospectively evaluating the influence of surgical decompression on long-term outcome of dogs with mild injuries (pain only or ambulatory paraparesis).

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

7. Whilst non-ambulatory paraparetic or paraplegic dogs with intact deep pain perception can be managed medically successfully, success rates, rate of recovery and chance of recurrence are likely to be improved with surgical management. As a consequence, surgical management of this population of dogs is recommended.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

8. In paraplegic dogs with absent deep pain perception, success rates with medical management are largely poor with a possible dramatic increase in the frequency of progressive myelomalacia. Where possible, surgical management is recommended for these dogs.

The consensus panel feels that this recommendation is supported by an existing moderate to high level of evidence in the veterinary literature.

9. Short-term hospitalization for 1-2 days can be considered in dogs managed conservatively with progressive clinical signs, to monitor for deterioration in neurological status to the point that surgical management would be indicated.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

10. When dogs cannot be treated surgically for various reasons (comorbidities, financial restrictions), an attempt at conservative treatment can be considered for all grades of injury severity. This approach might be inappropriate when there are clear signs of progressive myelomalacia.

The consensus panel feels that this recommendation is supported by an existing low to moderate level of evidence in the veterinary literature.

Diagnostic approaches

12. Magnetic resonance imaging (MRI), computed tomography (CT), CT-myelography or myelography are reasonable modalities for achieving a diagnosis of TL IVDE. When extruded material is mineralized, especially in young to middle-aged adult, chondrodystrophic dogs, CT is sensitive in the diagnosis and treatment planning of TL IVDE. It can therefore be recommended as a first-line advanced imaging modality where acute TL IVDE is suspected with low likelihood of missing a compressive surgical lesion and has the added benefit of shorter scan time (compared to myelography or MRI) and lower cost (compared to MRI). MRI, however, provides definition of intramedullary lesions which can inform surgical approach and prognostication for dogs with severe injuries and has superior ability to make diagnoses beyond IVDE. Across all cases, MRI, myelography or CT-myelography can be considered with evidence to support the highest diagnostic sensitivity for high field MRI and higher risk of adverse events associated with myelography or CT-myelography.

MRI, CT and CT-myelography are similarly accurate and superior to myelography with regard to identifying the correct lateralization of the extrusion and differentiating an acute lesion from a prior chronic herniation. There is insufficient evidence to make recommendations regarding the role of imaging in dictating the type of decompressive surgery that should be performed (i.e. hemilaminectomy vs other) and if one imaging modality should be pursued over another for dogs with an inappropriate recovery shortly after decompressive surgery is performed; however, MRI might be useful in guiding some treatment decisions (e.g. how long should the decompression be extended, when/whether to perform durotomy in deep pain negative dogs).

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

13. With regard to MRI-based diagnosis and surgical planning for TL-IVDE, a minimum of T2W sagittal and transverse images should be acquired. HASTE and STIR, T1W and T1W post contrast sequences might provide additional useful information but do not serve as replacements for standard T2W imaging sequences.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

14. MRI (over CT or myelography) can provide information that, when coupled with clinical assessment, might assist in prognostication in paraplegic dogs, especially paraplegic deep pain negative dogs. Standard sequences, notably T2 sagittal and transverse, have some capability to predict neurological recovery. The inclusion of the rapid single shot turbo spin echo/HASTE can also provide prognostic information.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

15. Specialized advanced imaging techniques such as diffusion tensor imaging (DTI) and magnetization transfer (MT) do not currently offer prognostic information substantially beyond what is obtained by neurologic exam (i.e., assessment of pain perception status) or conventional MRI (i.e., assessment of T2W hyperintensity, HASTE attenuation) to support their routine incorporation into clinical imaging protocols for TL IVDE.

The consensus panel feels that this recommendation is supported by an existing low to moderate level of evidence in the veterinary literature.

Not discussed during the webinar

Neuroprotective strategies

16. The available evidence does not support routine post-operative use of pulsed electromagnetic field therapy (PEMF) to produce a locomotor benefit but does suggest it is a safe modality. While the clinical significance remains unclear, PEMF might have positive effects on wound healing and pain control.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

17. While not recommended as an alternative to decompressive surgery, available evidence supports electroacupuncture (EA) as a safe component of a multi-modal treatment regimen; however, results regarding efficacy to improve locomotor outcome are controversial and many questions remain regarding when, how and in which animals to initiate such therapy. Another factor that must be considered is availability of qualified personnel to perform this modality.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

Not discussed during the webinar

18. Photobiomodulation appears to be a safe modality. While laser therapy is widely utilized in the setting of medical and surgical management of IVDE, evidence for efficacy in improving locomotor outcome after TL IVDE is lacking and questions regarding delivery method have been highlighted.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

Consensus statements vote and comments-- Summary

19. When used in combination with decompressive surgery for dogs with acute TL IVDE that are deep pain negative at the time of presentation, there is evidence that, while safe, intravenous administration of polyethylene glycol (PEG) does not provide an overt locomotor benefit. While there is continued interest in PEG, from an experimental perspective using different routes of administration, presently, routine administration of PEG is not recommended for adjunctive neuroprotective therapy in the treatment of acute TL IVDE.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

20. When used in combination with decompressive surgery for dogs with acute TL IVDE that are deep pain negative at the time of presentation, DMSO might improve locomotor outcome; however, understanding the degree of treatment effect is hindered by an unusually low recovery rate in the control group of the randomized controlled trial that demonstrates this. Routine administration of DMSO, while not currently recommended as standard adjunctive neuroprotective therapy in the treatment of acute TL IVDE, might deserve further evaluation in a larger cohort.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

21. While both experimental and veterinary clinical literature provide a plausible rationale for inhibition of matrix metalloproteinases (MMPs) in acute spinal cord injury as a neuroprotective approach, current studies do not support routine use. When used in combination with decompressive surgery for dogs with acute TL IVDE that are deep pain negative at the time of presentation, there is evidence that the MMP-inhibitor GM6001 does not improve locomotor recovery; however, administration was associated with improved bladder compliance compared to placebo, a parameter linked to reduced incidence of UTI in people living with SCI. The relevance of this finding to dogs with SCI is unclear, particularly given the intervention showed no significant impact on urine retention over the course of the short-term study which evaluated this.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

Consensus statements vote and comments-- Summary

22. In experimental studies and retrospectively evaluated in naturally occurring IVDE in combination with decompressive surgery, there are various levels of evidence that dexamethasone administration does not provide improve locomotor function. Additionally, harmful side effects such as urinary tract infection and gastrointestinal complications can occur. Therefore, routine administration of dexamethasone is currently not recommended for adjunctive therapy in the treatment of acute TL IVDE.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

23. When used in combination with decompressive surgery for dogs with acute TL IVDE that are deep pain negative at the time of presentation, there is evidence that high-dose methylprednisolone sodium succinate (MPSS) does not provide an overt benefit to locomotor recovery. Therefore, routine administration of high-dose MPSS is currently not recommended for adjunctive neuroprotective therapy in the treatment of acute TL IVDE.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Not discussed during the webinar

24. In retrospectively evaluated naturally occurring IVDE treated conservatively or with decompressive surgery, there is evidence that corticosteroid administration (such as prednisone) at various doses, does not provide improvement of locomotor function. While some publications cite potential benefits from steroid treatment, comparative aspects are missing, making it difficult to draw firm conclusions. Therefore, routine administration of prednisone is currently not recommended for neuroprotective therapy in the treatment of acute TL IVDE; however, use at anti-inflammatory doses might be considered.

The consensus panel feels that this recommendation is supported by an existing low moderate level of evidence in the veterinary literature.

Not discussed during the webinar

Surgical approaches

25. Each disc extrusion is different and therefore requires unique consideration for what constitutes the best surgical approach. Hemilaminectomy or mini-hemilaminectomy (with or without concurrent fenestration) are typically considered the approaches of choice in the surgical treatment of routine ventrolateral acute TL-IVDE due to increased ability to access and remove compressive disc material. Addition of durotomy for dogs with severe neurologic signs might improve outcome and lessen risk of development of progressive myelomalacia (PMM), although this is based on a small number of studies and requires further evaluation in a large cohort of dogs. Lateral corpectomy has utility for more chronic

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or very ventrally located disc extrusions. Fenestration alone, without decompression, is not recommended for dogs with severe (nonambulatory paraparesis or worse) IVDE. Minimally invasive approaches appear safe and feasible but require further evaluation in larger veterinary populations before they can be routinely adopted.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Timing of surgical decompression

26. Surgical decompression ought to be performed as soon as possible for dogs with significant neurologic deficits caused by TL-IVDE. However, recent literature does not support the use of a specific time line for urgent surgical decompression in order to improve the likelihood of regaining independent ambulation for dogs of all injury severities, even for dogs who are DPN at the time of presentation. There is evidence to suggest that delayed decompression might result in a longer time to achieve post-operative ambulatory status, although it is derived from single retrospective studies and requires further investigation. Of note, the influence of surgical timing on locomotor outcome should be considered independently of its influence on development of progressive myelomalacia (PMM), which is discussed in-depth elsewhere in the recommendations.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

27. Surgical treatment in dogs with TL IVDE should not be declined simply because the animal has been paralyzed for an extended period, as the literature documents that recovery of ambulation might occur for dogs that present with absent deep pain perception and have been paralyzed for a week or more prior to surgery. The specific relationship between probability of regaining ambulation and the duration of paralysis in dogs with absent deep pain perception prior to surgery is currently unknown and represents an important area for future study.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

Fenestration

28. Fenestration of the herniated disc space at the time of surgical decompression is recommended to reduce the risk of recurrence at the site of extrusion.

Consensus statements vote and comments-- Summary

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

29. Fenestration of adjacent, mineralized but non-ruptured disc spaces, should be considered. In breeds predisposed to extrusion such as dachshunds and French bulldogs, fenestration is recommended even if the disc is not mineralized. The decision to fenestrate must take into account overall animal status, surgical time, and other relevant factors. In situations where decompression is not performed, prophylactic fenestration could be considered.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

30. The current literature supports that multi-site fenestration is associated with an overall very low complication rate, rarely leading to significant morbidity when performed by experienced surgeons. Reported complications associated with fenestration cranial to the L4-5 disc are generally limited and non-life/mobility-threatening. Caudal to L3-4, fenestration carries increased risk; therefore, routine fenestration of L4-5 or caudal is not recommended. However, it can be considered for an individual dog if disc extrusion occurs at one of these caudal locations. Fenestration at T10-11 and above is usually not recommended due to the low rate of disc extrusion at these sites.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

31. There is not sufficient evidence in the literature to support one surgical approach to fenestration over another. Given the current practice of fenestrating at the time of decompression via hemilaminectomy or mini-hemilaminectomy, the surgical approach should be dictated by the decompressive procedure and surgeon experience.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

32. Creating a fenestration without subsequently curetting nucleus pulposus (NP) from the disc space does not lead to removal of disc material via an inflammatory response. Though power fenestration has been shown to improve yield over manual blade fenestration, complete fenestration is not achieved with any technique reported in the literature and the relationship between increased NP removal and recurrence after fenestration has not been explored. Surgeon-comfort and knowledge of anatomy likely also influence this.

The consensus panel feels that this recommendation is supported by an existing low to moderate level of evidence in the veterinary literature.

33. Percutaneous laser disc ablation (PLDA) appears to be safe. Based on a low-level of evidence in a large number of animals, it might reduce recurrent disc extrusion. Further studies confirming recurrence are required before routine recommendation of this therapy can be made.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

Not discussed during the webinar

Post-operative pain management

34. Veterinarians should be aware that dogs can experience surgical site discomfort for up to 6 weeks after thoracolumbar hemilaminectomy and that a small percentage of these dogs might develop chronic neuropathic pain. The need for prolonged treatment of pain is unclear, but veterinarians should check dogs for pain at time of suture removal and they should advise owners to check for signs of pain (e.g: vocalizing, reluctance to do certain activities, flinching when touched) for up to 6 weeks postoperatively.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

35. Given the large number of options of both drug class (opioids and NSAIDs) and, within those classes, the individual drugs that can be used, and adding to that, differences in pain assessment protocols and duration, it is difficult to compare different studies and make specific evidence-based recommendations. However, summarizing all reports the following postsurgical medical analgesic protocol is proposed:

- Intravenous or subcutaneous opioids for 24 to 48 hours post op (longer if needed),
- Fentanyl patch for 3 to 5 days post op,
- NSAIDs, where not contraindicated, for 7 days post operatively in addition to or instead of the fentanyl patch.
- Pregabalin at a dosing interval of three times daily might be added to the suggested protocol to improve postoperative pain control.

In addition, perioperative interventions such as epidural morphine or pulsed electromagnetic field therapy (PEMF) administered postoperatively reduce intra- and postsurgical pain and therefore might be considered in planning a comprehensive multimodality pain control protocol. Emerging evidence suggests that Erector Spinae block could also be an effective approach.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

36. Clinicians should be aware of a high incidence of gastrointestinal mucosal lesions in dogs with intervertebral disc disease (14-100%), though a significant number of those might be subclinical. It is not

Consensus statements vote and comments-- Summary

known if those are caused by the disease itself, the medication used or the combination of both. Life-threatening gastrointestinal lesions have been reported in dogs treated with dexamethasone or combinations of NSAIDs and glucocorticoids. If gastrointestinal signs are present, the use of NSAIDs or glucocorticoids should be discontinued. The use of opioids should be considered as a potential contributing factor to regurgitation. Treatment of disc associated and post-operative inflammation should ideally be addressed with an NSAID in dogs for whom no contraindication exists; however, in dogs already treated with glucocorticoids at time of presentation, this medication may be continued at a tapering anti-inflammatory dose.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

Bladder management

37. Regarding expectations of recovery of urination: Veterinarians can anticipate that dogs with motor function and pain perception are expected to be able to urinate voluntarily but should recognize a period of time in the weeks post injury where voiding is incomplete resulting in urine retention; during this period leakage is more likely. This places dogs at greater risk than usual for development of urinary tract infections. Dogs with severe injuries, even if they recover pain perception and motor function, can be expected to have less than perfect continence.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

38. Bladder expression technique should be tailored to the animal, the clinician and the technicians caring for the animal. Placement of an indwelling urinary catheter is an effective and low risk management method in the short term; however, duration of placement should be minimized whenever possible due to increased risk of urinary tract infection. As voluntary urination appears, the bladder should be palpated or an ultrasound performed to ensure adequate emptying has been achieved.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

39. While there is a lack of evidence for or against the use of medications to relax the urethral sphincters in dogs with TL IVDE, paraplegic dogs cannot urinate and even when they do start to urinate, voiding is incomplete. Use of an alpha-adrenergic antagonist is recommended to relax the internal urethral sphincter and a centrally acting muscle relaxant such as diazepam to relax the external urethral sphincter in dogs that cannot be manually expressed with ease. These drugs should be continued until voluntary urination has been established. Long-term use of these medications is not usually necessary in chronically paralyzed dogs.

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The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

40. It is important to establish a specific diagnosis of urinary tract infection (UTI) versus clinically insignificant bacteriuria. Prophylactic treatment with antibiotics should not be used to decrease the frequency of UTIs in dogs with IVDE. The risk of UTI can be reduced by limiting duration of indwelling catheterization. Additionally, because risk of UTI is associated with urine retention, methods to reduce the duration and degree of urine retention are advisable (e.g. monitoring voiding efficiency and checking residual urine volume via ultrasound or other methods)

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

Physical rehabilitation and post-operative activity restriction

41. In dogs with incomplete injuries, rehabilitation performed post-operatively is safe but fails to demonstrate an overt benefit on the rate or extent of recovery of walking compared to dogs only receiving basic exercises (e.g. PROM, assisted walking). While this suggests that more intensive, tailored rehabilitation protocols are not needed for all dogs with incomplete injuries to achieve a successful outcome (i.e. independent, coordinated ambulation), RCTs evaluating rehabilitation incorporate basic exercises for all participants and support inclusion of such exercises as standard components of routine post-operative care. The potential efficacy of intensive, tailored rehabilitation should be more clearly elucidated among severely affected (i.e. clinically complete) dogs that might be most likely to benefit from additional targeted therapy.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

42. Taken together, the currently available evidence supports reasonable timing for post-operative rehabilitation in dogs with TL IVDE consisting of initiation within a 48-hour to 14-day window post-operatively and continuing for at least 2 to 6 weeks. However, it is possible that optimal timing might fall outside of this timeframe or might vary between subsets of animals (e.g. based on severity of neurologic status). The relative utility for inpatient, outpatient or home-based rehabilitation regimens cannot be determined from the available evidence but is worthy of further evaluation.

The consensus panel feels that this recommendation is supported by an existing low to moderate level of evidence in the veterinary literature.

43. Based on the available evidence, the specific exercises and adjunctive modalities that should be included in an optimal post-operative rehabilitation regimen remain to be determined. At a minimum, a

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basic rehabilitation protocol can be recommended to include cryotherapy, PROM, massage, assisted standing and walking, which can be performed with no specialized equipment or training. There is also evidence to advocate a stepwise approach with increasing intensity and incorporation of additional exercises tailored to the individual dog as neurologic status changes. While more data are needed to evaluate precisely how such treatment protocols should be adapted over time, there are notable challenges to performing appropriate randomized controlled trials including a potential lack of equipoise to randomize dogs lacking pain perception to the control (basic rehabilitation) group. Improved understanding of the underlying mechanisms of the adjunctive modalities in dogs with IVDE is also needed as well as specific indications (and possibly contraindications) for their inclusion in rehabilitation protocols.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

44. There is limited evidence to directly support the benefits or risks (e.g. early re-extrusion at the same site) and recommended duration of confinement and activity restriction post-operatively or of long-term activity modifications. Despite this, confinement and activity restriction for a period of at least 4 weeks is currently recommended as a component of standard post-operative care for dogs with TL IVDE. Note that activity restriction does not mean avoidance of rehabilitation exercises.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

Not discussed during the webinar

45. There is no evidence on the use of mobility aids. This might reflect the dearth of evidence in general on the long-term management of dogs with chronic neurologic deficits after acute TL IVDE. In general, mobility aids such as wheelchairs should be reserved for dogs where non-ambulatory status is likely to be permanent (typically, persistently absent pain perception > 4 weeks post-operatively) and should be supervised by a veterinarian or certified canine physical rehabilitation practitioner to ensure proper fit and use.

The consensus panel did not find evidence in the veterinary literature related to this item; therefore, this statement represents only the consensus sentiments of the group.

Not discussed during the webinar

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| Progressive myelomalacia |
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Consensus statements vote and comments-- Summary

46. A subset of clinical exam findings can support a high level of concern for progressive myelomalacia (PMM), and when further coupled with imaging findings and longitudinal monitoring for specific changes in the neurologic examination, can be even more highly suggestive of the condition. This area represents one of substantial need for prospective studies correlating histopathology with clinical findings and outcomes.

The consensus panel feels that this recommendation is supported by an existing moderate level of evidence in the veterinary literature.

47. While French bulldogs do appear to have a higher incidence of progressive myelomalacia (PMM), the study that reported breed-specific increased risk did not control for other factors that could contribute to higher numbers of affected French bulldogs. To better assess the relevance of breed to the development of PMM, future prospective studies, controlling for site and severity of injury are recommended. Current studies also do not support an association between age or weight and the risk for PMM once site and severity of clinical signs have been controlled for.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

48. At present, there is evidence that dogs with IVDE of the lumbar intumescence and absent deep pain perception might be at higher risk for the development of progressive myelomalacia (PMM) compared to those with lesions at other sites in the thoracic and lumbar spine.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

49. There is currently insufficient evidence to support the use of steroids as a protective strategy against the development of progressive myelomalacia (PMM); however, one retrospective study suggests that this might warrant further investigation.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

50. Presently, the literature suggests that the potential clinical benefit of prompt surgical decompression to reduced likelihood of development of progressive myelomalacia (PMM) for dogs with absent deep pain perception and TL IVDE should be further explored. This benefit is considered separately from overall improved locomotor outcome, for which the literature might provide more specific evidence.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.

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51. There is emerging evidence that focal or extensive hemilaminectomy and durotomy might reduce the risk of development of progressive myelomalacia (PMM) in dogs with absent deep pain perception secondary to TL-IVDE and might improve survival in dogs with clinical signs suggestive of PMM by halting progression of the condition. This is a separate consideration from whether the technique might improve locomotor outcome (discussed elsewhere). Focal or extensive hemilaminectomy with durotomy (EHLDD) can be considered for dogs with imaging and clinical risk or suspicion of PMM; however, specific surgical approaches, including required extent of both hemilaminectomy and durotomy require further investigation as do potential long-term morbidities associated with these procedures.

The consensus panel feels that this recommendation is supported by an existing low level of evidence in the veterinary literature.