

The background of the slide is a close-up of red theater curtains. The curtains are draped in a classic, ornate style with deep folds and a scalloped top edge. The lighting is dramatic, with the center of the curtains being brighter and the edges fading into shadow. The overall color palette is a rich, vibrant red.

And Now...

...

Top Veterinary Emergencies

A lateral radiograph of a horse's thorax and abdomen. The image shows the ribcage, spine, and internal organs. A large, dark, rounded mass is visible in the abdominal region, consistent with gastric dilatation. A white 'R' marker is located in the bottom right corner.

Gastric Dilatation Volvulus
“Bloat”

R

Gastric Dilatation Volvulus

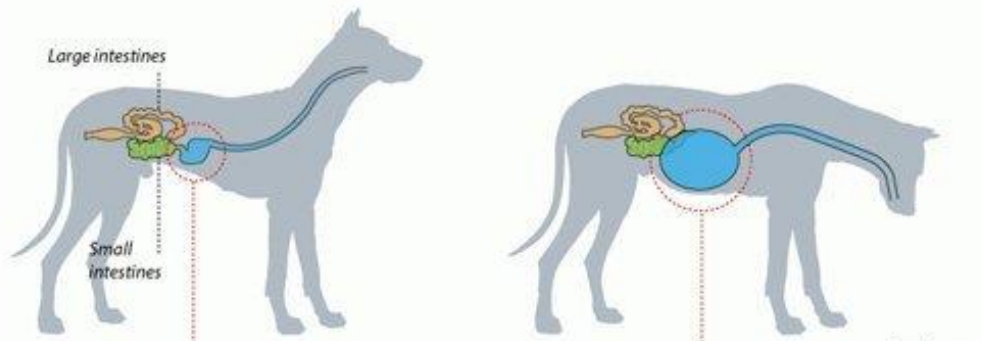
What is it?

Gastric - involving the stomach

Dilatation - a dilated organ or vessel

Volvulus - obstruction caused by a twisted stomach or intestines

- GI tract is just a long tube
 - “Candy wrapper” analogy
 - Prevents gas release in both directions
- Production of gas from metabolism and normal gastric juice build up
- Stomach becomes taut/distended
 - Presses on diaphragm, impacts breathing
 - Presses on abdominal blood vessels, obstructing blood flow → systemic shock
 - Stomach tissue necrosis and death from a
_____ lack of perfusion
- Splenic involvement/compromise
- Fatal without treatment

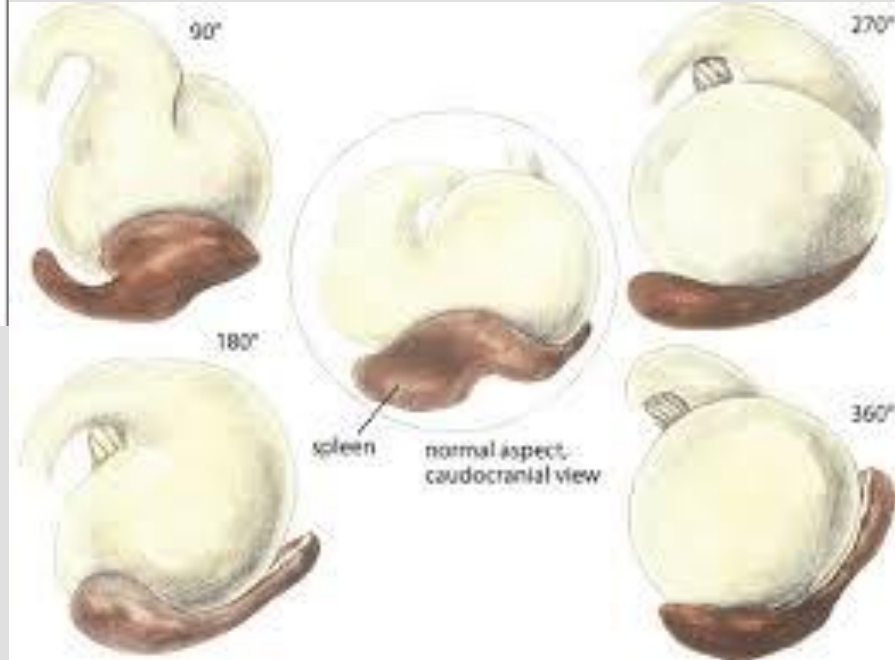


Eating fast, stress and having one large meal each day can cause bloat.

Gas and fluid cause the stomach to expand and twist.

The distended stomach presses against vital organs compromising blood flow.

GDV Diagram, Splenic Involvement



Gastric Dilatation Volvulus

At-Risk Pets?

The following are predisposing factors, but not guarantees of GDV.

- Large and giant breed dogs
- Deep-chested dogs
- Older dogs
- Genetic predisposition (bloat in a related dog)
- +/- sex (male > female)
- Eating rapidly
- Eating only one daily meal
- Elevated food bowls
- Temperament/behavioral (stressed, fearful, or hyperactive animals)
- Illness affecting GI motility

Gastric Dilatation Volvulus

Signs and Symptoms

Owners will report or you will see these symptoms on triage:

- Swollen, taut, & painful abdomen
- Unproductive retching
- Drooling
- Postural changes/stretching
- Anxiety/distress/restlessness
- Breathing changes
- Weakness or collapse

- **Vitals**
 - **MAY be fairly normal, but often see:**
 - Increased HR, RR, CRT
 - Decreased Temp
 - Pale MM

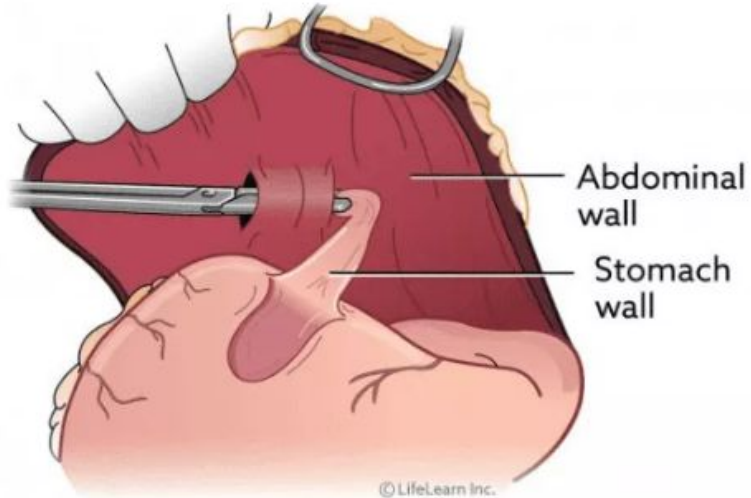
Gastric Dilatation Volvulus

Treatment

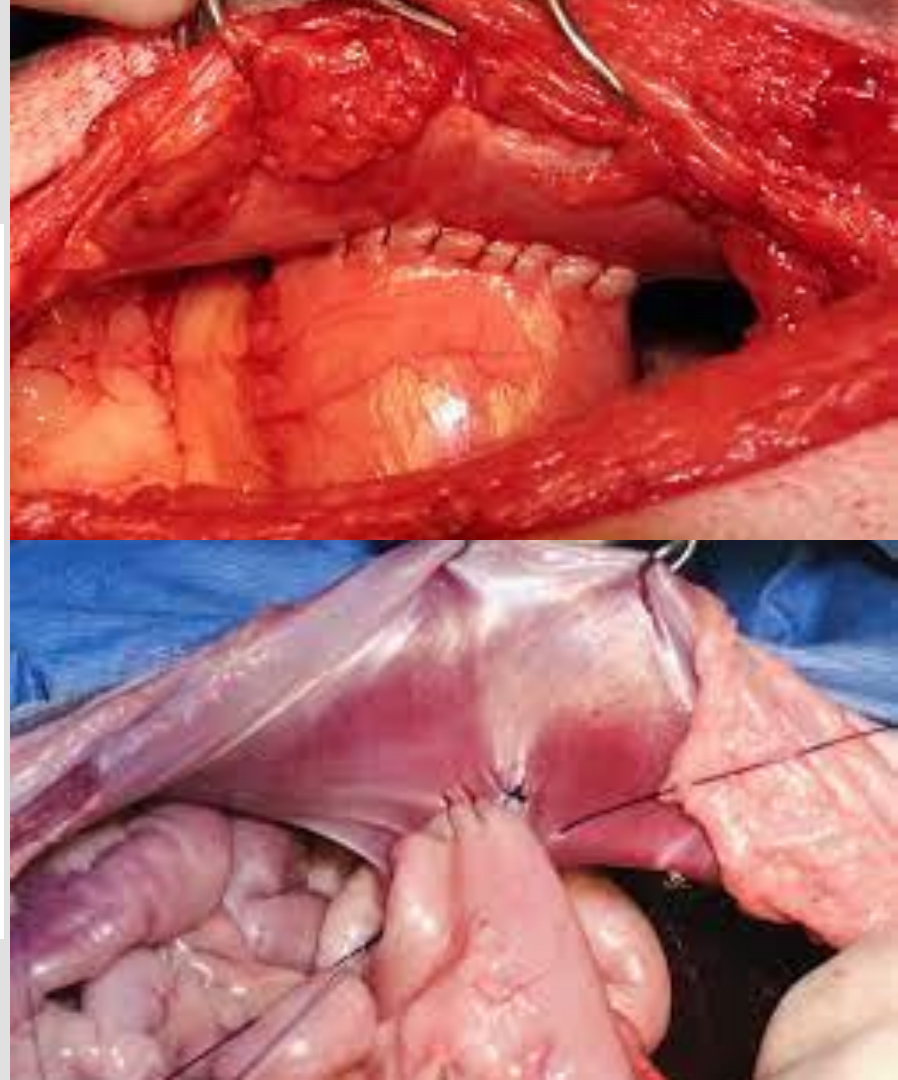
Typically requires surgical intervention, symptoms can be temporarily alleviated

- Radiographs to confirm GDV
 - Lateral abdominal
 - “Double bubble”
- Bloodwork to assess organ function
- Pain management
- Trocharize stomach
 - Decompress and relieve pressure by releasing gas via catheter
- Stabilize and treat shock symptoms
 - IVC, bolus IVF
 - Oxygen support if needed
- Pass orogastric (OG) tube, +/- lavage
 - Remove stomach contents (pre-/intra-op)
- Surgical correction
 - De-rotate stomach, examine organ viability, gastropexy

Gastropexy



Surgically "tacking" the stomach to the right side of the body wall prevents it from twisting and causing GDV.



Gastric Dilatation Volvulus

Recovery and Aftercare

Post-op care can vary based on several factors

- Risk of general anesthesia
- De-rotation of stomach releases built-up toxins
- Degree organs were compromised
 - Partial gastrectomy
 - Splenectomy
- Cardiac arrhythmias and pulse deficit monitoring
- Small, regular frequent meals during recovery
- Antibiotics - bacterial translocation
- Gastroprotectants
- Prokinetics - aid motility/gastric atony



Urinary Obstruction

Urinary Obstruction

What is it?

FLUTD - Feline Lower Urinary Tract
Disease

- **Feline Idiopathic Cystitis (55%-63%)**
 - Idiopathic = unknown cause
 - Common, diagnosis by exclusion
- **Urinary Crystals / Plugs (10%-21%)**
 - Variations in urine pH can allow formation
 - Plug composed of mineral crystals, blood cells, proteins/mucus, epithelial cells
- **Bladder / Urinary Stones (15%-22%)**
 - Excess of minerals naturally present accumulate to form crystals, then stones
- **Urinary Tract Infection (1%-8%)**
 - Usually caused by ascending bacteria
- **Neoplasia (1%-2%)**
 - Cancer, relatively rare in cats but seen more in older cats (>10y)

Urinary Obstruction

At-Risk Pets?

UO

- Male cats (narrow urethra)
- Young - middle age cats
- +/- Obesity
- +/- Exclusive dry food diet
- Breed (some studies indicate)
 - Russian Blue, Persian, Himalayan
- Stressful environment, multi-cat home

UTI

- Concurrent metabolic disease
 - Renal disease, DM, hyperthyroidism
- Urinary stones
- Female cats
- Incontinence
- Recent urinary/urogenital procedure

Urinary Obstruction

Signs and Symptoms

Owners will report or you will see these symptoms on triage:

- Frequent trips to the litter box
- Straining with little-to-no urine
- Blood in urine
- Vomiting
- Bladder palpates large and firm
- Abdominal discomfort
- Red or purple penis
- Excessive licking of prepuce/vulva
- Thickened bladder wall (palpated or via u/s)

- **Vitals**

- **MAY be fairly normal, but often see:**
- Decreased HR, Temp
- +/- arrhythmia
- Attitude = painful or dull/recumbent

Urinary Obstruction

Treatment

Urinary catheter, diet change, +/- surgery

- Urinalysis, +/- urine culture
 - Identify crystals (struvite, CaOx, other)
 - See other abnormalities (bacteria, blood)
- Bloodwork
 - To evaluate whole body but particularly kidney function (azotemia) and electrolyte status
- Abdominal radiographs
 - Determine presence of stones/calculi
- Pain management
- Stabilize, treat electrolyte abnormalities*
 - IVC, fluids
 - Hyperkalemia - CaGlu, Insulin, Dextrose
- Unblocking procedure
 - Pass and place urinary catheter
- Perineal urethrostomy (PU)
 - For repeat occurrences of UO
- Cystotomy
 - To remove bladder stones

P.U. Surgery

<https://vetgirlontherun.com/videos/how-to-perform-a-perineal-urethrostomy-in-cats-vetgirl-veterinary-continuing-education-videos/>

Urinary Obstruction

Recovery and Aftercare

Post-procedure or post-op care vary

- Risk of anesthesia
- IV fluids
- Indwelling urinary catheter maintenance*
- Care of PU surgical site
- Urinary closed collection system
 - Measure INs and OUTs
- E-collar
- Pain medications
- Prazosin - urethral relaxant
- Antibiotics - for UTI
- Urinary diet
- Pull U-cath after 24-48 hours and

monitor urination or straining



Seizures

Seizures

What is it?

Seizure - involuntary actions resulting from excessive electrical activity in the brain - can last a few seconds to minutes

Epilepsy - having at least two unprovoked (nontoxic, nonmetabolic) seizures, at least 24 hours apart

Cluster Seizures - having two or more seizures within 24 hours and regaining consciousness between them

Status Epilepticus - when an animal experiences:

- A single seizure lasting > 5min
- Multiple/cluster seizures without regaining consciousness in between (≥ 2 seizures)
- **This is a serious emergency

Seizures

Types of Seizures

- **Grand mal / Generalized**
 - Affects entire brain
 - Muscle spasms/contractions (tonic/clonic)
 - Loss of consciousness
 - Urination/defecation
 - Drooling, foaming at mouth, chomping
 - May appear as collapse without spasms
- **Focal / Partial motor**
 - Only affects part of brain
 - +/- loss of consciousness (*simple vs. complex*)
 - Twitching, localized spasms
 - Flybiting, licking or swallowing
 - Odd behavior (**Psychomotor / behavioral**)
 - Involuntary movements
 - Balance issues
 - Dilated pupils
 - Fur standing on end (=piloerection)
 - Hallucinations
 - Aggression
 - Spacing out
- **Petit mal / “Absence” seizure**
 - Needs EEG diagnosis, seen in humans





Seizures

Some Causes of Seizures

- Structural
 - **Brain cancer, tumor**
 - Encephalitis
 - Vascular disease or embolism
 - **Head trauma**
- Metabolic
 - **Hypoglycemia, hyperglycemia**
 - Electrolyte imbalance
 - **Poisoning, toxins**
 - Infection or inflammation
 - Anemia
 - Kidney disease
 - Liver disease
- Idiopathic
 - No known cause
 - Some breed/genetic tendencies

Bold = seen more commonly at AAVEC

Seizures

At risk pets?

Some additional risk factors for idiopathic epilepsy include:

- Breed - higher incidence in:
 - Australian Shepherds
 - Beagles
 - Belgian Tervuren
 - Border Collies
 - German Shepherds
 - Labradors
 - Age - higher incidence of onset between 6mo - 6y
-

Seizures

Signs and Symptoms

Owners will report or you will see these symptoms on triage:

- Active seizure(s)
 - Abnormal behavior
 - Collapse

 - **Vitals**
 - **MAY be fairly normal if not actively seizing, but often see:**
 - Increased Temp
 - Abnormal mentation
-

Seizures

Immediate Care in Hospital

Dependent on if patient presents with active seizure activity.

- Stop active seizure
 - Place IVC
 - Check BG - is that the cause?
 - Give anticonvulsant
 - Diazepam
 - Midazolam
 - Manage temperature if needed
- If not active seizure, but **post-ictal**, give anticonvulsant medication
- Determine cause of seizure

Post-ictal phase = the state of altered consciousness after a seizure (variable duration and severity)

Seizures

Diagnosis and Treatment

Treatment depends on cause of seizures.

- If structural
 - Neurologic examination
 - MRI
 - CSF analysis
 - Manage with AEDs
- If metabolic
 - Resolve cause → eliminate seizures
 - Treat glucose or electrolyte abnormalities
 - Treat poison/toxin ingestion or exposure
 - Manage other disease processes
- If idiopathic
 - +/- Manage with AEDs
 - Sometimes AEDs are not needed, but owners prefer to reduce future chance
 - Phenobarbital*
 - Levetiracetam (Keppra)
 - Zonisamide
 - Potassium Bromide (KBr)
 - Rescue drugs = Diazepam, Midazolam

A close-up photograph of a bulldog lying on a wooden surface. The dog's mouth is wide open, and its tongue is hanging out, suggesting it is panting or in distress. The dog has a white face with brown patches and a brown body. The background is blurred, showing a wooden railing and some foliage. A bright yellow rectangular box is superimposed over the dog's mouth, containing the text "Heat Stroke" in bold red letters.

Heat Stroke

Heat Stroke

What is it?

Normal temperature range = 100.0 - 102.5 °F

Hyperthermia = > 103.5°F

Hypothalamus regulates body temperature

- **Pyrogenic** - hypothalamus affected by infection/inflammation
- **Nonpyrogenic** - environmental factors, body is unable to regulate temperature

How Does Cooling Occur?*

- **Evaporation**
 - Water evaporation from tongue (panting)
 - Dogs sweat only through their paw pads
- **Conduction**
 - Transfer of heat (lying belly-down on a cool floor via surface contact)
- **Convection**
 - Movement of air over the body which disperses heat (wind, fan)
- **Radiation**
 - Body heat dissipating into environment

Heat Stroke

At-Risk Pets?

Heat stroke can occur in any animal, but these conditions increase its likelihood.

- Thick or heavy fur coats
- Obese animals
- Large breeds
- Brachycephalic dogs
- Conditions that obstruct airflow
 - Laryngeal paralysis
 - Tracheal collapse
- Heart conditions
 - Decreased cardiac output
 - Decreased cutaneous circulation
- Environment
 - Increased ambient temperature
 - Increased humidity
 - Poor ventilation
 - Decreased H₂O access
- Excessive exercise/exertion, seizures

Heat Stroke

Signs and Symptoms

Owners will report or you will see these symptoms on triage:

- Collapse
- Labored breathing
- Excessive panting, tachypnea
- Dull mentation
- V/D (often bloody)
- Bleeding or bruising
 - Petechiae of gums, pinna, or ventrum
- **Vitals**
 - Increased Temp, RR, HR
 - Normal temp if already cooled
 - Dry, sticky, or red MM, CRT <1s
 - MM can progress to pale or cyanotic
 - Dull mentation or ataxia → seizures

Petecchia - ventral abdomen, pinna



Heat Stroke

Effects on the body

Heat stroke affected numerous organ systems and can cause:

Denatured proteins & enzymes at 106°F

- Start to see major symptoms

Organ failure and death at 107°F-109°F

- **CNS**
 - Neuron death, cerebral edema & hemorrhage
- **Cardiac**
 - Initially increased output and vasodilation
 - Then decreased circulation & BP → shock
 - Decreased circulation → electrolyte derangement, acidosis, and microthrombi
 - Arrhythmias and worsening perfusion
- **Vascular**
 - Activation of coagulation cascade → DIC

Heat Stroke

Effects on the body

- **Pulmonary**
 - Pulmonary edema
 - Acute respiratory distress syndrome (ARDS)*
- **Gastrointestinal**
 - Decreased perfusion and hypoxia compromises integrity of GI tract/mucosa
 - Mucosal sloughing
 - Increased permeability → bacterial translocation
 - Bacteremia/endotoxemia → sepsis, shock, death
- **Kidneys**
 - Tubular necrosis, injury from heat, vasoconstriction, dehydration
- **Liver**
 - Liver damage from heat and hypoxia

Heat Stroke

Treatment

Cooling, stabilization, and supportive care

- Active cooling
 - Cool, wet towels (replace frequently)
 - Cool (NOT COLD) water*
 - Fan for airflow over patient, on tub sink grate for airflow under patient
 - **STOP** cooling around 103.0-103.5 (q5min)
- IVC, IV fluids
- Oxygen support (flow-by or intubated)
- +/- FFP transfusion (clotting factors)
- BP monitoring and support
- GI protectants, antiemetics, antidiarrheals
- Antibiotics - gut bacteria translocation
- +/- Seizure management
- +/- Osmotic agent for cerebral edema
- ---

Risk for organ failure & DIC up to 5-7 days after incident

A brown dog is sitting on a sandy beach. The dog's front legs are extended forward, but its hind legs are completely paralyzed and held straight out behind it. The dog's mouth is open, and its tongue is hanging out. In the background, there is a clear turquoise ocean with white waves breaking on the shore. Several wooden boats are visible in the water. A yellow banner with red text is overlaid on the middle of the image.

Inability to Move Hind Legs

Inability to Move Hind Legs

What is it?

Typically, the cause is species-specific:

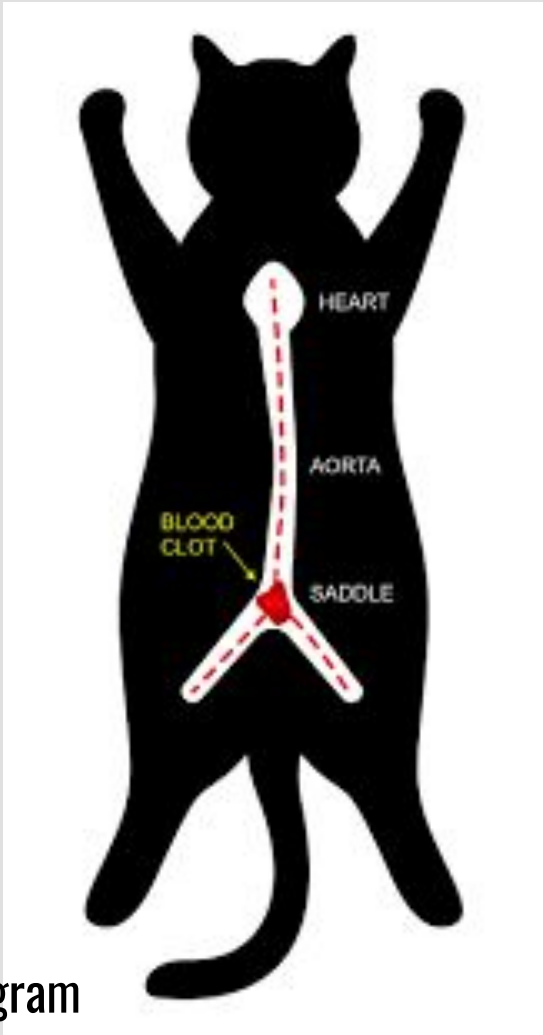
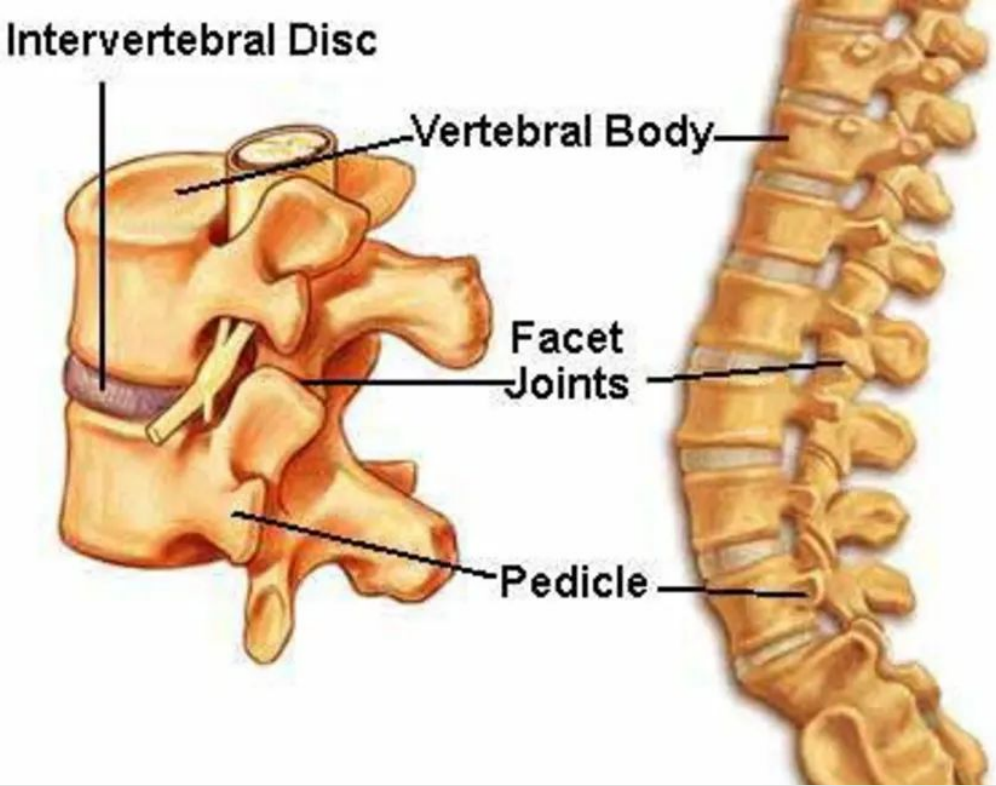
Dogs - spinal issue (IVDD, IVDH)

- Degenerative changes (i.e., hardening) to intervertebral discs - can cause bulging or bursting
- Causes compression and inflammation of spinal cord and nerves
- Disc location impacts area affected*

Cats - Feline Aortic ThromboEmbolism (FATE) = “saddle thrombus”

- Blood clot forms in the heart, then a piece breaks off and circulates
- Smaller clot piece gets stuck where the aorta branches off to each hind leg
- Clot obstructs blood flow → tissue and muscle damage from hypoxia, biotoxins

IVDD - disc and vertebrae anatomy



FATE - vasculature diagram

Inability to Move Hind Legs

At-Risk Pets?

Dogs

- Chondrodystrophic breeds:
 - Dachshunds, Beagles, Shih Tzus, Pekingese, Basset Hounds, Cocker Spaniels, Corgis, Lhasa Apsos, French Bulldogs
 - Symptoms usually between 3-6y
- Other breeds - usually between 5-12y
- Obesity, particularly in predisposed
- +/- Spay/neuter, esp. Early (<1y)*
- Can result from trauma

Cats

- Underlying heart disease (i.e., HCM)
- +/- Males > females
- Mixed breed, Maine Coon, Abyssinian, Ragdoll, Birman, Norwegian Forest, Sphynx
- Older adults (8y - 12y)
- Hyperthyroidism

Inability to Move Hind Legs

Signs and Symptoms

IVDD/IVDH

- PAIN!
- Reluctance or inability to walk/jump
- Proprioception deficits
 - Knuckling limbs
 - Crossing hind legs
- Arched back
- Inability to urinate/defecate
- Urinary/fecal incontinence
- Behavioral changes (hiding)

FATE/Saddle Thrombus

- PAIN!
- Hardened muscles in hind limb(s)
- Pale-to-blue-ish hind paw pads
- Hind paws are cooler to the touch
- Dragging or not using hind limb(s)

●—Vitals

- **MAY be fairly normal, but often see:**
- Pain response (increased HR, RR, attitude)



Knuckling



Paw Pad Discoloration



Inability to Move Hind Legs

Diagnosis

Diagnosis is based on owner history, physical exam, and imaging

IVDD/IVDH

- Neurologic exam
 - Motor function of limbs
 - Reflexes - withdrawal, panniculus
 - Deep pain
 - Paresis vs. paralysis/ -plegia
- +/- CSF tap to rule out other causes
- Imaging
 - Radiography to screen
 - MRI or CT to confirm

FATE/Saddle Thrombus

- Compare BGs on all limbs
- Compare BPs on all limbs
- Chest radiographs
- Echocardiogram, abdominal u/s

Inability to Move Hind Legs

Treatment

IVDD/IVDH

- Medical management
 - Pain medication
 - Steroids or NSAIDs
 - +/- Muscle relaxants
 - Strict cage rest
 - Risk of relapse/recurrence of symptoms
- Surgery
 - MRI or CT imaging to locate disc
 - Removal of bulging or ruptured disc
 - Laminectomy surgery (hemi-, dorsal, etc.)

FATE/Saddle Thrombus

- Pain control
- Oxygen support
- Cardiac medications
- Anticoagulants, platelet inhibitors*
- ROM, PROM
- High risk of recurrence
- Euthanasia

Inability to Move Hind Legs

Recovery and Aftercare

Post-op care for IVDD

- Risk of general anesthesia
- Managing a nonambulatory patient
 - Recumbency rotation
 - PROM, standing exercises
 - Sling-assistance
 - Hygiene considerations
- Urinary care
 - Urinary catheter
 - Indwelling vs. intermittent
 - Palpation/expression
 - Medications
 - Diazepam
 - Prazosin
 - Bethanechol
- Pain medication
- —NSAIDs
- Chemotherapy drugs * (look up)