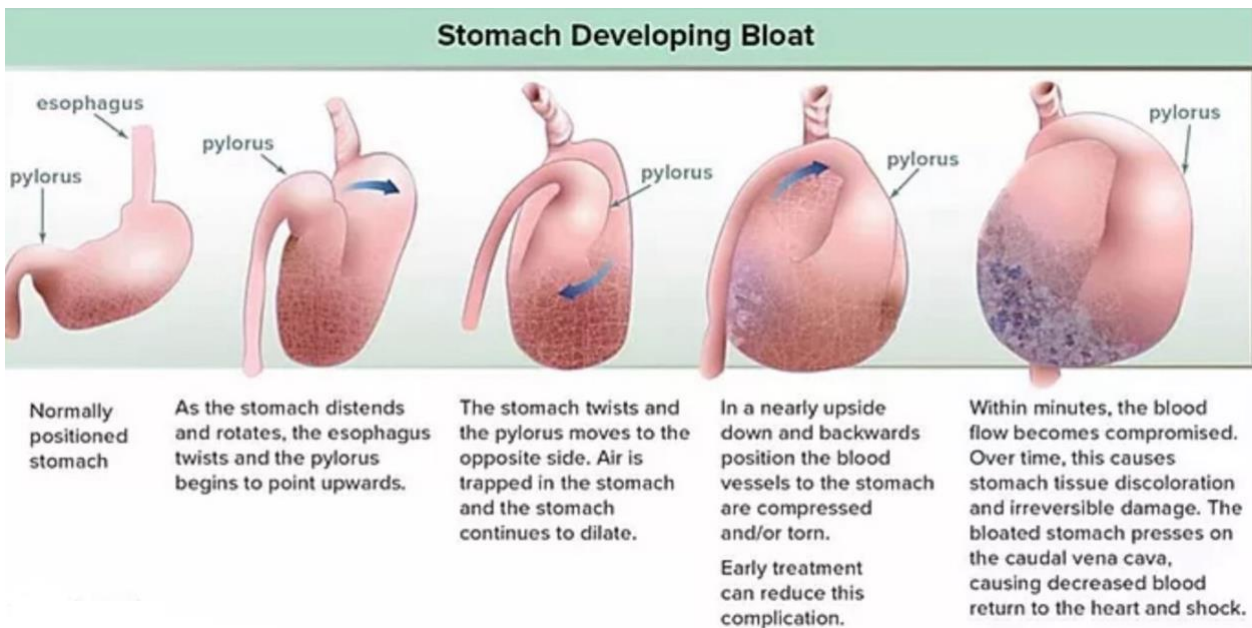


Gastric Dilatation Volvulus (GDV) & GastroPEXY

Associated Terms:

Bloat, GastroPEXY, Gastric Torsion, Stomach Torsion, Twisted Stomach (small animal), GDV



OVERVIEW

Gastric Dilatation-Volvulus (GDV) is a **rapidly progressive life-threatening condition of dogs that requires immediate medical attention**. The condition is multifactorial but is commonly associated with rapid ingestion of large meals. The presence of food & gas causes the stomach to significantly dilate & expand, which may have several severe consequences, including:

- loss of blood flow to the lining of the stomach
- rupture of the stomach wall
- pressure on the diaphragm preventing the lungs from adequately expanding leading to decreased ability to maintain normal breathing
- prevention of adequate blood return to the heart from the abdomen

Additionally, the stomach can become dilated enough to rotate on itself, which is termed **gastric volvulus**. The rotation can lead to blockage in the blood supply to the spleen & the stomach. As gastric dilatation worsens, & full body effects become prolonged, secondary complications may occur.

- Diminished respiration & cardiac output throughout the course of the disease leads to poor oxygen delivery to many tissues (hypoxia). This leads to cell death in the liver, kidneys, & other vital organs.
- Cardiac arrhythmias (abnormal heart beats) are commonly seen because of the hypoxia.
- The lining of the entire gastrointestinal tract is at risk of cell death & sloughing.
- Devitalization of the gastrointestinal tract can allow bacteria to access to the bloodstream & lead to bacteremia (bacteria in the blood) & sepsis.

Several studies have been published that have evaluated risk factors & causes for gastric dilatation & volvulus in dogs. This syndrome is not completely understood; however, it is known that there is an association in dogs that:

- have a deep chest (increased thoracic height to width ratio)
- are fed a single large meal once daily
- are older
- are related to other dogs that have had the condition

It has also been suggested that elevated feeding, dogs that have previously had a spleen removed, large or giant breed dogs & stress may result in an increased incidence of this condition. A 2006 study also determined that dogs fed dry dog foods that list oils (e.g. sunflower oil, animal fat) among the first four label ingredients predispose a high-risk dog to GDV.

Nearly all breeds of dogs have been reported to have had gastric dilatation with or without volvulus, but many of the commonly seen breeds are as follows:

Breed-rated 10 year ris

- Bloodhound 39% (males 55%)
- Great Dane 36.7-53% (males 61%)
- Irish Wolfhound 26% (males 36%)
- Standard Poodle 25.3% (males 33%)
- Akita 25%
- Irish Setter 24.9%
- Collie 21%
- Weimaraner 19.1%-21%
- German Shepherd 17%
- Newfoundland 10%
- Rottweiler 3.9%

SIGNS & SYMPTOMS

Initial signs are often associated with abdominal pain. These can include but are not limited to:

- anxious look or looking at the abdomen
 - drooling
 - distending abdomen
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- standing & stretching
 - retching without producing anything

As the disease progresses, your pet may begin to pant, have abdominal distention (bloated belly), or be weak & collapse & be recumbent. On physical examination, pets often have elevated heart & respiratory rates, have poor pulse quality & have poor capillary refill times. Abdominal distention is commonly noted.

If your pet has exhibited any of the above clinical signs, they should be evaluated by your primary care veterinarian immediately. Surgery is indicated if the diagnosis of gastric dilatation volvulus has been established. **Stabilization & surgery are best when performed early in the course of the disease** since death (mortality) rates increase with the severity of disease. Your pet may be referred to a veterinary surgeon for treatment if this condition is diagnosed.

DIAGNOSTICS

Most veterinarians will recommend initial blood work that includes a complete blood count (CBC), serum chemistry, blood electrolytes & a urinalysis. These allow for the determination of the nature of the metabolic disturbances that may be concurrently happening. It also allows your veterinarian to rule out certain diseases which may mimic the clinical signs of gastric dilatation. Additionally, **abdominal x-rays are used to confirm a diagnosis & an electrocardiogram (ECG) is used to evaluate the presence of cardiac arrhythmias** which are commonly seen later in the disease course. Blood gas analysis is also commonly performed to evaluate the nature & severity of the respiratory compromise. Additional tests may be recommended by your veterinary surgeon.



TREATMENT

Due to the hemodynamic instability that is encountered with these cases, **most pets will require pre-operative stabilization such as IV fluids & oxygen therapy prior to general anesthesia.**

In cases where the gastric volvulus is suspected to have stretched & damaged splenic blood vessels, a blood transfusion may be indicated to address ongoing abdominal bleeding (hemorrhage). Gastric decompression often follows, which includes the passing of a tube down the esophagus into to stomach to release the air & fluid accumulation & can be frequently followed with lavage (flushing of water) into & out of the stomach to remove remaining food particles. In some cases, a needle or catheter may be placed into the stomach from outside the body to release air & aid in the passing of the tube. The time for general anesthesia & surgical stabilization will be determined by the stability of your pet & at the discretion of the veterinary surgeon.

Surgery involves full exploration of the abdomen & de-rotation of the stomach. Additionally, the viability of the stomach wall, the spleen, & all other organs will be determined. Removal of part of the stomach wall (partial gastrectomy) or the spleen (splenectomy) is performed if necessary. Once the stomach is returned to the normal position in the abdomen, it is permanently affixed to the abdominal wall



(GastroPEXY). The purpose of this procedure is to prevent volvulus (rotation) if subsequent gastric dilatation occurs again.

AFTERCARE & OUTCOME

Intra-operative & post-operative complications can include low blood pressure (hypotension), hemorrhage, surgical site infection, breakdown of suture (dehiscence), cardiac arrhythmia, shock & death. Most pets will be hospitalized & given supportive medication for several days after surgery. Vital parameters including cardiac electrical activity will be monitored. While many pets may develop a transient cardiac arrhythmia, most do not require additional treatment & should resolve with time. Severe postoperative complications can be associated with the effects of reperfusion injury or shock. Reperfusion injury is a sudden release of toxic metabolites from the stomach after de-rotation of the stomach & can lead to cardiac arrhythmias, acute kidney failure & liver failure. Prolonged shock can result in organ dysfunction, coagulopathies or death. Increased severity & time since the onset of the GDV is associated with increased complication & mortality rates. Mortality rates associated with gastric dilatation & volvulus have been reported to be ~15%. Factors that have been shown to increase mortality rate include patients:

- with clinical signs for more than 6 hours
- with cardiac arrhythmias prior to surgery
- requiring removal of a portion of the stomach due to loss of blood supply
- requiring removal of the spleen

Immediate post-operative care will include exercise restriction for a few weeks to allow the incisions to heal. Long term, **dietary management will likely include multiple small meals (2-3) per day** rather than a single large meal & continued monitoring for recurrence of clinical signs.

After this procedure, some pets may experience some degree of gastric dilatation without volvulus. This is typically encountered after a pet has ingested a very large meal. While the GastroPEXY will not prevent the stomach from expanding, it should serve to prevent the life-threatening gastric volvulus from occurring.

As a preventative measure, prophylactic GastroPEXY is currently being recommended by many veterinary surgeons for breeds at risk for development of the condition or in dogs that have relatives that have been related to others that have had this condition.

Prophylactic gastropexy can often be done at the same time as sterilization surgeries (spay/neuter). Minimally invasive techniques such as laparoscopic-assisted GastroPEXY, endoscopically assisted gastropexy & grid (limited approach) GastroPEXY are possible for prophylactic GastroPEXY.

If you have any questions, please do not hesitate to contact your primary veterinarian &/or team including your veterinary surgeon.

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