

Gastric Dilatation Volvulus (GDV)

A PowerPage Presented By



Gastric Dilatation Volvulus (GDV) is a condition most prevalent in the dog. There is an approximate 15-30% mortality rate, and it is always considered a surgical emergency. Patients are typically in critical condition with shock at presentation requiring aggressive resuscitation and in need of immediate supportive care and monitoring. Definitive therapy involves surgical decompression and de-rotation of the stomach followed by a gastropexy to prevent recurrence. This is a topic that frequently appears on board examinations due to its recognizable clinical features and the importance of rapid action on the part of the clinician. This PowerPage reviews the key diagnostic and treatment considerations of GDV.

Key Points

- **Large breed, deep-chested** dogs. Great Dane most common breed
- Non-productive **retching/vomiting**
- Abdominal distension
- **Right lateral radiograph** is diagnostic: Gastric compartmentalization of air, or “double bubble”
- See omentum covering stomach as you enter abdomen surgically

Pathophysiology

- Exact cause unknown
- Rotation of the stomach **counter-clockwise when viewing from cranial to caudal in dorsal recumbency**
 - Also can be stated that stomach rotates clockwise when viewed caudal to cranial
- Volvulus of the stomach also results in venous compression, congestion, and local compromise of blood perfusion to the stomach resulting in necrosis
 - Can also result in tearing of short gastric vessels connecting the stomach and spleen
- Air accumulates in stomach, eventually impeding venous return to the heart via the vena cava resulting in **hypovolemic shock**
 - Can lead to global tissue ischemia and systemic inflammatory response
 - Inflammatory mediators and myocardial ischemia can lead to arrhythmias
 - Result is death if you don't decompress very quickly!

Signalment

- Usually large to giant breed dogs, esp. deep-chested dogs
- Usually middle-aged to older
- **Great Dane**, German Shepherd, Rottweiler, Irish Wolfhound etc.
 - Great Dane is **most predisposed** with a 37% life-time likelihood of developing a GDV
- Other predisposing factors
 - Related to a dog that had a GDV
 - Anxious dogs
 - Very fast eaters

Clinical Signs

- Restless/nervous pacing/painful
- **Non-productive retching/vomiting**
- **Abdominal distension**
- Increased respiratory rate
- Signs consistent with shock/cardiovascular collapse
 - Tachycardia, weak pulses, pale mucous membranes, prolonged CRT
 - Depressed to comatose mentation

Diagnostics

- ECG
 - Arrhythmias common before and especially after surgery, **VPCs** most likely
- Blood gas
 - Metabolic acidosis (lactic acidosis) +/- respiratory compensation. May have hypercapnea from gastric distention and impaired ventilation
- Radiographs
 - **Right lateral abdomen** is preferred view showing a displaced gas filled pylorus
 - Gastric gas compartmentalization results in “double bubble”, or “Popeye arm” appearance

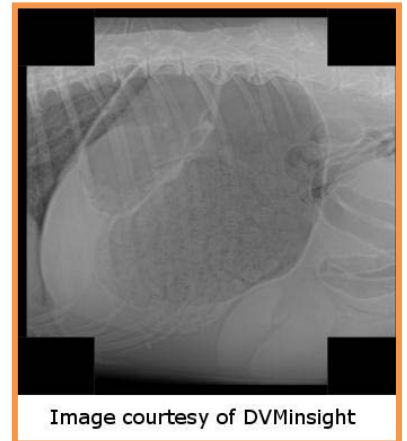


Image courtesy of DVMinsight

Treatment

Stabilize Patient:

- Place two large-bore cephalic catheters (**avoid saphenous** since caudal venous return is poor)
- Shock dose **crystalloid fluid therapy** (80-90 ml/kg in fractions until resuscitation achieved)
 - Patient's large size often requires use of pressure bags for rapid administration of fluids
- Decompress stomach
 - Orogastric tube:
 - Pros: more effective emptying
 - Cons: requires heavy sedation, tube might not pass, possible esophageal trauma/rupture
 - Trocarization:
 - Pros: more rapid intervention, does not require sedation
 - Cons: limited decompression, risk of lacerating gastric wall, puncturing spleen
 - Trocarize at point of maximum tympany, can't be sure if spleen is on the left or right
- Monitor blood pressure and ECG
- Lactate levels may provide some insight as to prognosis
 - Lactate greater than 6 mmol/L may predict gastric necrosis
 - Dogs with lactate levels less than 6 mmol/L have a good prognosis

Surgery:

- Goal is to fully decompress and reposition stomach. Evaluate viability of stomach and resect any necrotic tissue. Also assess spleen, determine if splenectomy is indicated (rarely necessary)
- **Classically, see a drape of omentum covering the stomach as you enter the abdomen**
- Perform gastropexy to prevent recurrence. Many ways to perform:
 - Incisional, circumcostal, belt-loop, incorporating, tube



Prognosis

- Prognosis reported at 75-85% with surgery and post-operative care
 - Negative prognostic indicators:
 - **Lactate > 6 mmol/L**
 - Need for gastric resection/splenectomy
 - Long onset of signs to time of presentation (5 or 6 hours)
 - Recumbency at presentation
- If gastropexy is performed, recurrence is less than 4%
 - If not, recurrence is 50%

Prevention

- Can perform a prophylactic gastropexy
 - Can do traditional procedure such as one of the ones listed above or apply minimally invasive techniques to reduce incision size and morbidity
 - Endoscopically assisted gastropexy
 - Laparoscopically assisted gastropexy

