

## Bouvier Health Foundation Education Series

*In this edition of the Dirty Beard Quarterly, we bring back an excellent article written by Registered Nurse, & ABdFC member, Nick Hill, covering Gastric Dilatation/Volvulus (GVD) Complex – aka Bloat and Torsion. It's a condition that can occur when you least expect it, the article outlines potential causes, and the importance of monitoring changes in our companions. As Nick very clearly indicates, this condition is not something that can right itself without intervention by a professional...THIS CONDITION IS A TRUE VETERINARY EMERGENCY. Your quick identification & transport to a veterinary emergency center can help save the life of the one you love. It is hoped that the information presented will spark interest and increase your observations...there are many in the breed that have personal experience with this condition. And if you have further questions, Nick would be happy to share her experience at [nickhillrn@verizon.net](mailto:nickhillrn@verizon.net)*



### GASTRIC DILATATION COMPLEX IN DOGS

by: Nick Hill RN

Few afflictions kill an otherwise healthy dog as quickly as bloat and torsion. Death can happen in as little as 2 hours from the first signs and symptoms. Those who have witnessed it can attest to the horrifying and devastating nature of the experience.

This is a **TRUE** veterinary emergency! **Time is extremely important in the treatment of this potentially fatal condition.**

The diagnosis is simple. However, the pathological changes that occur in the dog's body make treatment complicated, expensive, and not always successful. There are NO home remedies for GDV.

Bloat describes a stomach that has become abnormally large or distended. Torsion and volvulus are terms to describe the abnormal positioning or twisting (from 90° to 360°) of the stomach after gastric distention occurs, usually in a clockwise fashion. The different terms refer to the axis of the twist: Longitudinal = torsion and Mesenteric = volvulus. Most people use the terms interchangeably. The type of twist has no bearing on the treatment or prognosis. Severe torsion means the displacement of the stomach and spleen (they exchange places). Bloat can occur without torsion, but torsion does not occur without bloat.

#### CAUSES:

The exact cause of GDV is unknown. It appears to occur as a combination of events. Possible contributing factors include:

- Anatomy of large/giant deep-chested breeds. These types of breeds have a 20-25% chance of developing GDV in their lifetime.
- Sex – twice as likely to occur in males, than females. Neutering does not appear to affect the risk of bloat.
- Age – more prevalent in dogs > 7 years old
- Over-eating and /or over-drinking
- Bolting food
- Swallowing of air
- Excessive exercise before or after meals
- Failure of the stomach to empty properly
- Genetic/hereditary predisposition – this closely correlated to depth/width of chest – genetic traits

- Changes in habits – hospitalization, boarding, travel, new food/exercise regimen

### **SIGNS and SYMPTOMS:**

Clinical signs of GDV include:

- Discomfort – **1<sup>st</sup> sign** – general uneasiness and enlargement of the abdomen that is tight like a drum (tympanic). This usually occurs after a large feeding.
- Restless – pacing
- Excessive panting
- Profuse salivation
- Repeated retching (non-productive attempts to vomit) – **KEY SIGN** to alert owner to seek immediate emergency veterinary attention.

**Hallmark signs** are abdominal distention, salivation, and retching!!!!

Symptoms advance to acute distress as the disease progresses rapidly:

- Signs of shock – pale gums, tachycardia (↑HR), hyperventilation, dyspnea (difficulty breathing), increased capillary refill time, cold limbs, and weakness
- Abdominal distention and pain
- Collapse

A complex chain of pathological events begins creating a medical and surgical emergency. Gastric enlargement forces the diaphragm into the chest, decreasing lung volume, and also compresses the blood return to the heart, which decreases cardiac output and cardiac dysrhythmias occur. This causes altered blood flow to the heart muscle and other vital abdominal organs, which results in death of tissues. Toxins build up within the dying gastric lining. Liver, pancreas, kidney, and bowel become compromised. A combination of septic, endotoxic, and hypovolemic shock develops from decreased blood pressure and endotoxins in the blood stream. DIC (Disseminated Intravascular Coagulation) a life-threatening bleeding disorder on the blood clotting mechanism causes multiple organ failure. The stomach may rupture leading to septic peritonitis. Death will occur if GDV is untreated as a result of irreversible shock due to metabolic disruptions and irregular heart rhythms. This cascade of events results in death within hours of the initial signs of bloat/GDV.

Due to these systemic changes, even if the dog is stabilized and undergoes a successful surgery, postoperative complications can result in death even days after surgery. These include cardiac arrhythmias, further gastric death, peritonitis, fatal emboli, and reperfusion injury (compromised tissues have blood flow restored, resulting in further injury and swelling).

If you know or suspect bloat or GDV, immediately get to an emergency veterinary hospital. Call ahead while you are transporting so the staff can prepare for your arrival and to give the hospital an estimated time of arrival.

### **Initial veterinary diagnosis:**

Upon arrival to the hospital a variety of tests will be performed. First and foremost is a radiograph of the abdomen. To owners and on physical exam, bloat and torsion are indistinguishable from each other. An X-ray is needed to differentiate between the two. Torsion will involve movement of the pylorus (the outflow from the stomach) from the anatomically correct position. Additional tests will include EKG and blood tests. Treatment for shock is usually initiated prior to the results being completed.

### **TREATMENT:**

GDV is a true emergency. The most important actions are to treat shock and relieve abdominal pressure.

**Shock treatment:**

- IV fluid therapy – to replace fluids and restore electrolyte and acid/base balance
- Broad spectrum antibiotics
- EKG to evaluate heart effects – if necessary administer anti-arrhythmic

**Abdominal pressure:**

Pressure is relieved by passing a tube in to the stomach to remove gas and stomach contents by means of a gastric lavage. If unsuccessful, then a surgical approach is used.

- Gastric decompression can be performed by trocharization with a large bore needle. This should ONLY be performed by a veterinarian just prior to surgical intervention, as laceration to the spleen and other internal organs may occur!

**Definitive surgery:**

A laparotomy is performed to:

- 1) Correct the twist
- 2) Assess for and remove all unhealthy (necrotic) tissue
- 3) Anchor the stomach in place (gastropexy)

Barring any signs of irreversible damage, a gastropexy is performed – even if the stomach decompression by tubing was successful at relieving pressure. If gastropexy is not performed, there is a high incidence of GDV reoccurrence.

If gastric perforation at any site has occurred, the chance for survival is extremely poor. As the severity of gastric necrosis increases, the prognosis decreases, reaching as high as 90% mortality for severe necrosis, despite the level of surgical expertise. Necrosis in the cardiac region (near the esophagus), even in lesser degrees, also carries a grave prognosis even in the hands of a boarded surgeon. This increased mortality has to do solely with the toxins absorbed, sepsis, and other complications, NOT with the actual decreased volume of the stomach. The stomach can be completely removed and have a dog live a normal life, but the complications are life-threatening. Euthanasia should be contemplated.

There is a 5% chance of reoccurrence following gastropexy. Most are a simple bloat without torsion and respond well to decompression. A full-blown reoccurrence may cause or follow gastropexy breakdown.

It is important to realize that dogs with GDV have a mortality rate of 30% even after correction and death can occur during the first 4 days after onset of symptoms. Survival of the gastric surgery to correct stomach malposition does not guarantee survival of the GDV episode due to postoperative complications. Intensive 24-hour care and monitoring are required.

**POSTOPERATIVE CARE:**

Recovery may be prolonged and depends on the severity of torsion and necrosis involved.

- IV fluid therapy to rest the GI tract
- Continuous EKG monitoring in the first 48-72 hours, then follow up EKGs in the first week.
  - Possible treatment with anti-arrhythmic drugs for pre-ventricular contractions (PVC) and ventricular tachycardia
- Food is reintroduced slowly in small frequent meals
- If anemic or hypo-proteinemic (low blood protein), blood transfusions or plasma administration may be required.
- Heparin (anticoagulant) for DIC
- Monitoring of the stomach fluids during surgery and in the first 5 days post operatively.
  - Gastric necrosis and perforation can occur up to 5 days after surgery, especially if resection was performed to remove necrotic tissues. If necrosis or perforation develops, euthanasia should be seriously considered.

## **PREVENTION:**

GDV is so life-threatening prevention is better than treatment. A good measure of prevention is exercising common sense. Steps to help prevent GDV include:

- Know the early signs and symptoms and get to a vet immediately if suspected.
- Feed smaller amounts more frequently – 2 to 3 times per day.
- Make diet changes gradually over 1 week.
- Discourage rapid eating (bolting of food) – use a muffin tin or place a large object in the middle of the food bowl. Make sure object is too large to be swallowed.
- Limit exercise 2 hours before and 4 hours after meals.
- Allow free access to water at all times – decreases gulping and swallowing air.
- Feed high quality foods.
- Studies show that dogs at increased risk for GDV should be fed at floor level. Contrary to popular belief, feeding in elevated bowls increases the risk of GDV.
- Prophylactic gastropexy – anchors the stomach in place before torsion occurs in high-risk breeds and those that have experienced bloat. This can be performed at the time of spay/neuter, and can also be performed less invasively by use of an endoscope to place a gastric tube, or by laparoscope.
- Genetics/Heredity is of concern in breeds with high incidences of GDV. There are other causes of GDV that are not hereditary (infectious, metabolic, etc), so closely examine pedigrees for incidence of GDV prior to eliminating a dog from the breeding pool.

## **IN CONCLUSION:**

GDV is a devastating problem. Owners need to take the necessary precautions to help prevent occurrence and learn the signs and symptoms of this condition. Emergency professional veterinary care must be obtained promptly if GDV is suspected. A successful outcome is dependent on prompt diagnosis and treatment.

Not all veterinarians are familiar with proper emergency GDV treatment or the proper surgical techniques. It is imperative that you make sure your veterinarian is knowledgeable in the proper procedures before his/her skills are needed. If your vet is not receptive to or offended by your queries, then perhaps it is time for you to find a new vet. When time is of the essence during a GDV crisis, it is not the time to find out that your vet is unprepared to care for your dog.

If you are not sure if your dog is experiencing GDV, get the dog to the vet right away just in case. It is better to be safe than sorry – happy diagnosis. Early, prompt treatment can greatly improve the outcome.

**Point to Remember:** Dogs are stoic by nature and have a high pain tolerance. Some dogs do not show distress until they are in critical condition. Be attentive to swollen bellies and non-productive retching! Some deep-chested dogs may not show much abdominal distension due to their body size, so if pacing/panting/retching are seen, this is also vital! Be a watchful owner – you must rely on subtle indicators such as change in behavior to alert you to potential problems with your dog.

## **ON A PERSONAL NOTE:**

This paper was written as a cautionary tale. Our 10½ year old male Bouvier experienced a GDV crisis in April 2010. At 8:30 p.m., he was doing his “Snoopy Dance” around the living and dining rooms in anticipation of his dinner. He ate, drank, and was in and out the dog door for about the next 2 hours. At 10:15 p.m., he wanted outside. I let him out thinking he just wanted one last drink before bed. I heard him retching repeatedly in the yard and went out to observe him. He was restless, retching, drooling everywhere, and had a huge, hard stomach. We had

him loaded in the car by 10:30. I called the emergency clinic en route to tell them we were bringing in a Bouvier with possible bloat/torsion and would be there within 30 minutes.

We arrived at the clinic by 11:00. The receptionist upon seeing our distress inquired about our situation. A tech from the back heard her and came immediately to ask if we had the Bouvier with possible bloat. He had X-ray results and shock treatment initiated within 10 minutes and was in surgery within 30 minutes of arrival.

Baron experienced full (360°) torsion. Because of our awareness of the signs/symptoms of this process and quick action, the vet was able to perform a laparotomy and gastropexy successfully. Baron spent less than 48 hours in the hospital and has been having a “remarkable recovery”.

**I would like to thank Dr. Denise Mankin DVM for reviewing this article and providing revision suggestions and her expertise of the most current protocols for GDV.**

*Below is the actual radiograph taken of Baron's abdomen immediately upon arrival at the ER.*



*Note: distended/gas-filled stomach, inlet/outlet is up near the spine, and intestines compressed to rear.*