Overview

Bloat, Torsion, Gastric dilatation – volvulus (GDV). The mention strikes terror in the hearts of dogs owners, especially those who own large, deep-chested breeds like the Great Pyrenees. The information provided in this article is the Veterinarian community’s “Best Guess” based upon currently available research.

Call it what you will, this is a serious, life-threatening condition of large breed dogs. While the diagnosis is simple, the pathological changes in the dog’s body make treatment complicated, expensive, and not always successful. Some references quote this as the second leading killer of dogs after cancer. Breeds affected are Akita, Great Dane, German Shepherd, St. Bernard, Irish Wolfhound, Irish Setter, Great Pyrenees and other similar deep-chested breeds.

A typical scenario starts with a large, deep-chested dog, usually fed once daily. Then, factor in body type and the habit of bolting food, gulping air and drinking large amounts of water immediately after eating to this feeding schedule. Then add vigorous exercise after a full meal, stress, and you have the recipe for bloat. Of course, the fact that not all bloats happen in just the same way and the thought that some bloodlines are more at risk than others further complicates the issue.

Simple gastric distension can occur in any breed or age of dog and is common in young puppies that overeat. Belching of gas or vomiting usually relieves the problem. If this condition occurs more than once in a predisposed breed, the veterinarian might discuss methods to prevent bloat, such as feeding smaller meals or giving Reglan (metoclopramide) to encourage stomach emptying. Some veterinarians recommend, and some owners request, prophylactic surgery to anchor the stomach in place before torsion occurs in dogs who have experienced one or more bouts of distension or in dogs whose close relatives have had GDV.

Physiology

Torsion and volvulus are terms used to describe the twisting of the stomach after gastric distension occurs. The different terms are used to define the twisting, often are used interchangeably, and the type of twist has no bearing on the prognosis or treatment. When torsion occurs, the esophagus is closed off, limiting the ability to relieve distension by vomiting or belching. Often the spleen becomes entrapped as well, and its blood supply is cut off. Veterinarians are not sure which comes first: the rotation or expansion of the stomach, but once the stomach is rotated, it will continue to expand.

Now a complex chain of physiologic events begins. The blood return to the heart decreases, cardiac output decreases, and cardiac arrhythmias may follow. Toxins build up in the dying
stomach lining. The liver, pancreas, and upper small bowel may also be compromised. Shock from low blood pressure and endotoxins rapidly develop. Sometimes the stomach ruptures, leading to peritonitis.

**Signs and Symptoms**

Typical symptoms often include some, but not necessarily all, of the following:
- Attempts to vomit, usually unsuccessful, may occur every 5-30 minutes (often referred to as a hallmark symptom)
- Doesn’t act like usual self (behavior change; e.g., asking to go out at odd times)
- Significant anxiety and restlessness
- Hunched-up or roached-up appearance
- Lack of normal gurgling and digestive sounds in stomach
-Bloated abdomen that may feel tight (like a drum)
- Unproductive gagging
- Heavy salivating or drooling
- Unproductive attempts to defecate
- Whining
- Pacing
- May refuse to lie down or even sit down
- Drinking excessively
- Heavy or rapid panting
- Cold mouth membranes
- Accelerated heart rate

**Diagnosis and Treatment**

Bloat is a TRUE emergency. If you know or even suspect your dog has bloat, immediately call your veterinarian or emergency service. DO NOT attempt home treatment. DO take time to call ahead, while you are transporting the dog; the hospital staff can prepare for your arrival.

Initial diagnosis includes x-ray, an electrocardiogram (EKG), and blood tests, but treatment will probably be started before the test results are in. The first step is to treat shock with IV fluids, steroids, and possibly antibiotics or antiarrythmics. The veterinarian will attempt to decompress the stomach by a needle through the abdomen if unable to pass a stomach tube. If the latter is successful, he will then wash out (lavage) accumulated food, gastric juices, or other stomach contents.

In some cases this therapy is sufficient. However, in many cases, surgery is required to save the dog. Once the dog is stabilized, surgery is performed to correct the stomach twist, remove any unhealthy tissue, and anchor the stomach in place.

The surgery is called a gastroplexy; it is an important procedure to prevent recurrence and many variations exist. Recovery is prolonged, sometimes requiring hospital stays of a week or more. Post-operative care depends on the severity of the disease and treatment methods employed. Overall, fatality rates approach 30%; appropriate medical and surgical intervention can reduce the fatality rate post-operatively to around 20%. Costs can run as high as $3,000 to $5,000, depending upon the course of treatment provided. Recurrence rates after surgery are typically less than 10%.

Suspected Causes / Contributing Factors

- stress – dog shows, breeding, whelping, boarding, change in routine, new dog in household
- activities that result in gulping air
- eating habits – rapid eating; elevated food bowls (half of the dogs with GDV used these)
- eating dry foods that contain citric acid as a preservative (the risk is higher if moistened)
- eating dry foods that contain fat among the first four ingredients (associated with a 2.4-fold increase of GDV)
- Insufficient Pancreatic Enzymes (EIP) or Small Intestinal Bacterial Overgrowth (SIBO) tend to produce more gas and thus are at greater risk
- too much water before or after eating (dilutes gastric juices necessary for complete digestion)
- eating gas-producing foods (soybean products, brewers yeast, and alfalfa)
- drinking too much water too quickly (can cause gulping of air)
- exercise, before and ESPECIALLY after eating
- heredity – especially having a first-degree relative who has bloated
- build & physical characteristics – having a deep and narrow chest compared to other dogs of the same breed; older dogs (ligaments holding the stomach stretches with age increasing risk); big dogs; males (risk appears higher than in females); being underweight (unknown why, one theory is the fat takes up space in the abdomen allowing less space for the stomach to twist)
- disposition – fearful or anxious temperament; prone to stress; history of aggression toward other dogs or people
- most cases of bloat occur after 6 P.M. (might this be because we tend to feed in the evening?)

Prevention (?)

In susceptible breeds, feed two or three meals daily and discourage rapid eating. Do not allow exercise for two hours after a meal. As previously mentioned, some bloodlines may be at higher risk and you may choose to have gastroplexy performed as a preventative measure.

BE PREPARED! KNOW IN ADVANCE WHAT YOU WOULD DO IF YOUR DOG BLOATED.

- If your regular vet does not have 24 hour emergency service, know which nearby vet you would use and keep the phone number handy
- Always keep a product with simethicone on hand (e.g., Mylanta Gas, Phazyme, Gas-X, etc.) to treat gas symptoms
- Do not use an elevated food bowl
- Do not exercise for at least an hour before and especially after eating
- Do not give water 1 hour before or after a meal
- Feed 2 to 3 meals daily rather than just one
- When switching dog food, do so gradually (allow several weeks of mixing foods)
- Do not feed dry food exclusively; include some canned dog food in the diet
- Feed a high-protein (> 30%) diet
- If feeding dry foods, avoid foods that contain fat as one of the first 4 ingredients
- If you must use a dry food that contains citric acid, DO NOT pre-moisten food
- Promote “friendly” bacteria in the intestine from yogurt or supplemental acidophilus

The risk of developing bloat goes up 20% each year after the age of 5 in large breed dogs and it goes up 20% each year after the age of 3 in giant breed dogs. There is no recommended home
therapy for GVD. “There is no way to prevent GDV, but knowledge of the disease and clinical signs allow early recognition.” With prompt diagnosis and treatment the prognosis can be good.

**Grants and Studies**

Purdue University School of Veterinary Medicine (2006) - Mahathi Raghavan, DVM, PhD, author of study “Dispels Nutritional myth of Canine Bloat” – funded by CHF, Morris Animal Foundation & 11 Breed Clubs - The study was published in the Jan/Feb 2006 issue of JAAHA; Not funded or supported by the GPCA

Dr. Larry Glickman, Epidemiologist, Purdue University School of Medicine - conducted a study on canine bloat, where he followed over 1,900 dogs to help identify risk factors.

A study by Ward, Patonek, & Glickman reviewed the benefits of prophylactic surgery (gastroplexy) for bloat and was found to make sense for those dogs at risk – when compared to the lifetime risk of death from bloat, the estimated treatment cost for bloat versus the preventive surgery.

The Great Dane and German Shepherd clubs are funding and supporting a study at Scripps Florida in Juniper, FL, which is trying to determine whether there is a genetic basis for GDV and potentially to identify the genetic mutation.

**GPCA Health Committee**

Results of Health Surveys reviewed from 1999 through 2008 show 36 incidents of bloat. We suspect the incidence to be much higher than reported. While researching this article, large volumes of conflicting information were available. We have attempted to present only the most recent findings / conclusions / recommendations to share with you. As with all medical situations, if your pet is showing any signs of distress or you suspect your pet is seriously ill, contact your veterinarian immediately.

Please complete a health survey if you have had a dog diagnosed with bloat. Surveys can be found on our website at [www.gpcahealth.org](http://www.gpcahealth.org)

**Resources:**

The following references are extensively quoted throughout this article:

Bloat in Dogs; GlobalSpan.net
Dietary risk Factors for GVD – a nested case-control Study (latest findings from Purdue)
Healthcommunities.com (2008)
Kim Marie Labak, IS, University of Illinois, College of Veterinary Medicine (2006)
Petplace.com; Dr. Debra Primovic
Gastric Dilatation - Volvulus: P. Long (updated 1/08)