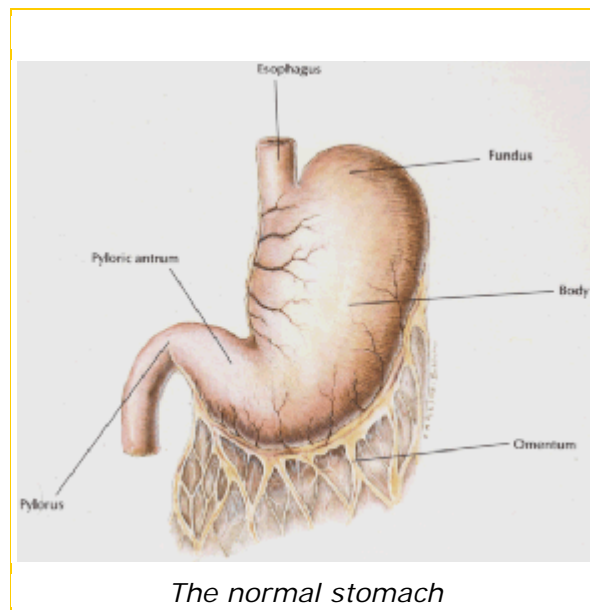


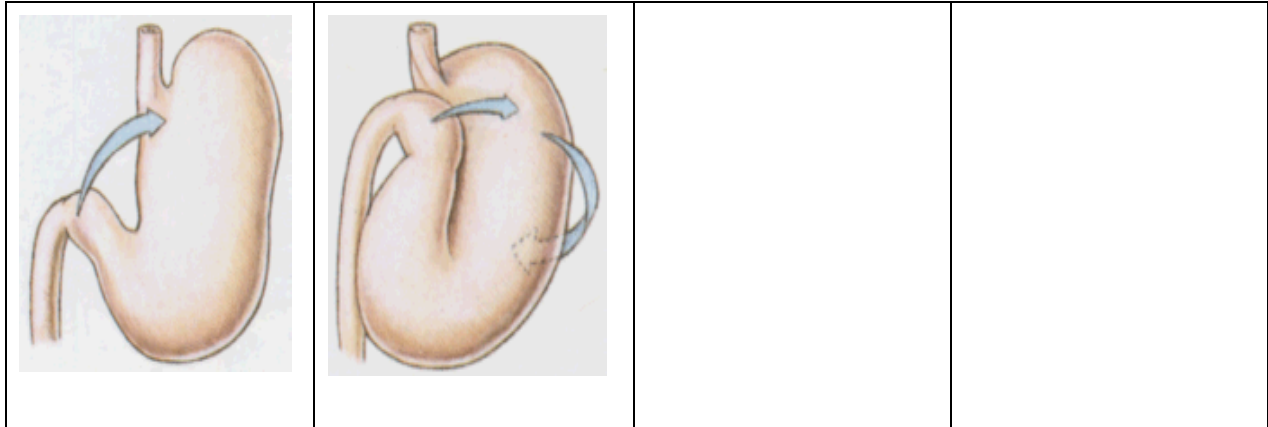
Bloat - The Mother of All Emergencies

There are many injuries and physical disorders that represent life-threatening emergencies. There is only one condition so drastic that it overshadows them all in terms of rapidity of consequences and effort in emergency treatment. This is the gastric dilatation and volvulus – the bloat.

What is it and Why is it so Serious?



The normal stomach sits high in the abdomen and contains a small amount of gas, some mucus, and any food being digested. It undergoes a normal rhythm of contraction, receiving food from the esophagus above, grinding the food, and meting the ground food out to the small intestine at its other end. Normally this proceeds uneventfully except for the occasional burp.



In the bloated stomach, gas and/or food stretches the stomach many times its normal size, causing tremendous abdominal pain. For reasons we do not fully understand, this grossly distended stomach has a tendency to rotate, thus twisting off not only its own blood supply but the only exit routes for the gas inside. Not only is this condition extremely painful but it is also rapidly life-threatening. A dog with a bloated, twisted stomach (more scientifically called gastric dilatation and volvulus) will die in pain in a matter of hours unless drastic steps are taken.

What are the Risk Factors for Developing Bloat?

Classically, this condition affects dog breeds that are said to be deep chested, meaning the length of their chest from backbone to sternum is relatively long while the chest width from right to left is narrow. Examples of deep chested breeds would be the Great Dane, Greyhound, and the setter breeds. Still, any dog can bloat, even dachshunds and Chihuahuas.

Dogs weighing more than 99 pounds have an approximate 20% risk of bloat.

Classically, the dog had eaten a large meal and exercised heavily shortly thereafter. Still, we usually do not know why a given dog bloats on an individual basis. No specific diet or dietary ingredient has been proven to be associated with bloat. Some factors found to increase and decrease the risk of bloat are listed below.

Factors Increasing the Risk of Bloat

- Feeding only one meal a day
- Having closely related family members with a history of bloat
- Eating rapidly
- Being thin or underweight
- Moistening dry foods (particularly if citric acid is listed as a preservative)
- Feeding from an elevated bowl
- Restricting water before and after meals
- Feeding a dry diet with animal fat listed in the first four ingredients

- Fearful or anxious temperament
- History of aggression towards people or other dogs
- Male dogs are more likely to bloat than females
- Older dogs (7 - 12 years) were the highest risk group

Factors Decreasing the Risk of Bloat

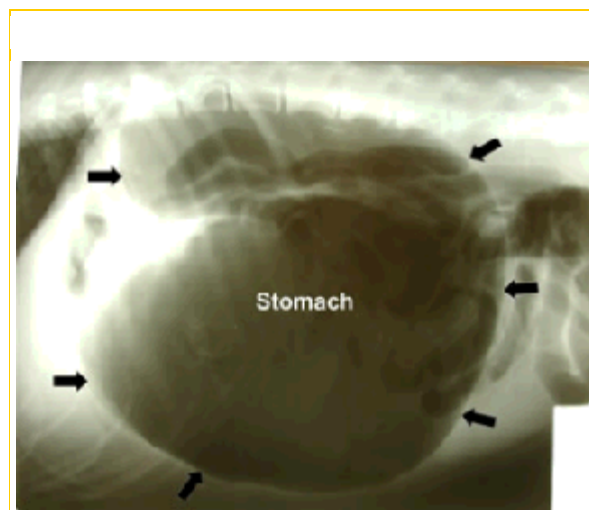
- Inclusion of canned dog food in the diet
- Inclusion of table scraps in the diet
- Happy or easy-going temperament
- Feeding a dry food containing a calcium-rich meat meal (such as meat/lamb meal, fish meal, chicken by-product meal, meat meal, or bone meal) listed in the first four ingredients of the ingredient list.
- Eating two or more meals per day

Contrary to popular belief, cereal ingredients such as soy, wheat or corn in the first four ingredients of the ingredient list does not increase the risk of bloat.

In a study done by the Purdue University Research Group, headed by Dr. Lawrence T. Glickman, ***the Great Dane was the number one breed at risk for bloat, the St. Bernard was the #2 breed at risk, and the Weimaraner was the #3 breed at risk.***

A study by Ward, Patonek, and Glickman reviewed the benefit of prophylactic surgery for bloat. Prophylactic surgery amounts to performing the gastropexy surgery (see below) in a healthy dog, usually in conjunction with spay or neuter. The lifetime risk of death from bloat was calculated, along with estimated treatment for bloat, versus cost of prophylactic gastropexy. Prophylactic gastropexy was found to make sense for at-risk breeds, especially the Great Dane, which is at highest risk for bloat.

How to tell if your Dog has Bloat



Radiograph showing typical gas distension of the stomach in a case of bloat

The dog may have an obviously distended stomach especially near the ribs but this is not always evident depending on the dog's body configuration.

The biggest clue is the vomiting: the pet appears highly nauseated and is retching but little is coming up.

If you see this, rush your dog to the veterinarian IMMEDIATELY.

What has to be Done

There are several steps to saving a bloated dog's life. Part of the problem is that all steps should be done at the same time and as quickly as possible.

First: The Stomach must be Decompressed

The huge stomach is by now pressing on the major blood vessels carrying blood back to the heart. This stops normal circulation and sends the dog into shock. Making matters worse, the stomach tissue is dying because it is stretched too tightly to allow blood circulation through it. There can be no recovery until the stomach is untwisted and the gas released. A stomach tube and stomach pump are generally used for this but sometime surgery is needed to achieve stomach decompression.

Also First: Rapid IV Fluids Must be Given to Reverse the Shock

Intravenous catheters are placed and life-giving fluid solutions are rushed in to replace the blood that cannot get past the bloated stomach to return to the heart. The intense pain associated with this disease causes the heart rate to race at such a high rate that heart failure will result. Medication to resolve the pain is needed if the patient's heart rate is to slow down. Medication for shock, antibiotics and electrolytes are all vital in stabilizing the patient.

Also First: The Heart Rhythm is Assessed and Stabilized

There is a very dangerous heart rhythm problem called a "premature ventricular contraction" or "pvc," that is associated with bloat and it must be ruled out. If the dog has it, intravenous medications are needed to stabilize the rhythm. Since the rhythm problem may not be evident until even the next day, continual EKG monitoring may be necessary. Disturbed heart rhythm already present at the beginning of treatment is associated with a 38% mortality rate.

Getting the bloated dog's stomach decompressed and reversing the shock is an adventure in itself but the work is not yet half finished.

Surgery

All bloated dogs, once stable, should have surgery. Without surgery, the damage done inside cannot be assessed or repaired, plus bloat may recur at any point - even within the next few hours- and the above adventure must be repeated. The surgery, called gastropexy, allows the stomach to be tacked into normal position so that it may never again twist. Without gastropexy, the recurrence rate of bloat may be as high as 75%.

Assessment of the internal damage is also important to recovery. If there is some dying tissue on the stomach wall, this must be discovered and removed or the dog will die despite the heroics described above. Also, the spleen, which is located adjacent to the stomach, may twist with the stomach. The spleen may need to be removed too.

If the tissue damage is so bad that part of the stomach must be removed, the mortality rate jumps to 28 - 38%.

If the tissue damage is so bad that the spleen must be removed, the mortality rate is 32 - 38%.

After the expense and effort of the stomach decompression, it is tempting to forgo the further expense of surgery. However, consider that the next time your dog bloats, you may not be there to catch it in time and, according to the study described below, without surgery there is a 24% mortality rate and a 76% chance of re-bloating at some point. The best choice is to finish the treatment that has been started and have the abdomen explored. If the stomach can be surgically tacked into place, recurrence rate drops to 6%.

Results of a Statistical Study

In 1993, a statistical study involving 134 dogs with gastric dilatation and volvulus was conducted by the School of Veterinary Medicine in Hanover, Germany.

Out of 134 dogs that came into the hospital with this condition:

- 10% died or were euthanized prior to surgery (factors involved included expense of treatment, severity/advancement of disease etc.)
- 33 dogs were treated with decompression and no surgery. Of these dogs, 8 (24%) died or were euthanized within the next 48 hours due to poor response to treatment. (Six of these 8 had re-bloated)
- Of the dogs that did not have surgical treatment but did survive to go home, 76% eventually had another episode of gastric dilatation and volvulus.
- 88 dogs were treated with both decompression and surgery. Of these dogs, 10% (9 dogs) died in surgery, 18% (16 dogs) died in the week after surgery, and 71.5% (63 dogs) went home in good condition. Of the dogs that went home in good condition, 6% (4 dogs) had a second episode of bloat later in life.
- In this study 66.4% of the bloated dogs were male and 33.6% were female. Most dogs were between ages 7 and 12 years old. The German Shepherd dog and the Boxer appeared to have a greater risk for bloating than did other breeds.

(Meyer-Lindenberg A., Harder A., Fehr M., Luerksen D., Brunberg L. Treatment of gastric dilatation-volvulus and a rapid method for prevention of relapse in dogs: 134 cases (1988-1991) Journal of the AVMA, Vol 23, No 9, Nov 1 1993, 1301-1307.)

Another study published December of 2006 looked at 166 dogs that received surgery for gastric dilatation and volvulus. The goal of the study was to identify factors that led to poor prognosis.

- A 16.2% mortality rate was observed. The mortality rate for dogs over age 10 years was 21%.
- Of the 166 going to surgery, 4.8% were euthanized during surgery, and the other 11.4% died during hospitalization (two of dogs died during surgery). All dogs that survived to go home were still alive at the time of suture removal.
- 34 out of 166 dogs had gastric necrosis (dead stomach tissue that had to be removed). Of these dogs 26% died or were euthanized.
- Post-operative complications of some sort occurred in 75.9% of patients. Approximately 50% of these dogs developed a cardiac arrhythmia.

- Risk factors significantly associated with death prior to suture removal included clinical signs of bloating for greater than 6 hours before seeing the vet, partial stomach removal combined with spleen removal, need for blood transfusion, low blood pressure at any time during hospitalization, sepsis (blood infection), and peritonitis (infection of the abdominal membranes).

(Beck, J.J., Staatz, A.J., Pelsue, D.H., Kudnig, S.T., MacPhail, C.M., Seim H.B, and Monnet, E. Risk factors associated with short-term outcome and development of perioperative complications in dogs undergoing surgery because of gastric dilatation-volvulus: 166 cases (1992-2003). Journal of the AVMA, Vol 229, No 12, December 15, 2006, p 1934-1939.)

It is crucially important that owners of big dogs be aware of this condition and are prepared for it. Know where to take your dog during overnight or Sunday hours for emergency care. Avoid exercising your dog after a large meal. Know what to watch for. Enjoy the special friendship a large dog provides but at the same time be aware of the large dog's special needs and concerns.

Date Published: 1/1/2001

Date Reviewed/Revised: 2/15/2009

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