Bloat (Gastric Dilatation and Volvulus) in Dogs

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What is bloat?

Gastric dilatation-volvulus (GDV) is also known as "bloat," "stomach torsion," or "twisted stomach." Bloat is an **extremely serious condition**, and should be considered a life-threatening emergency when it occurs. There are no home remedies for bloat, therefore dog owners must **contact their veterinarians immediately** if they suspect that their dog has bloat. Dogs can die of bloat within several hours. Even with treatment, as many as 25-33% of dogs with GDV die.

The gastric dilatation is one part of the condition and the volvulus or torsion is the second part. In bloat (dilatation), due to a number of different and sometimes unknown reasons, the stomach fills up with air and puts pressure on the other organs and diaphragm. The pressure on the diaphragm makes it difficult for the dog to breathe. The air-filled stomach also compresses large veins in the abdomen, thus preventing blood from returning to the heart. Filled with air, the stomach can easily rotate on itself, thus pinching off its blood supply. Once this rotation (volvulus) occurs and the blood supply is cut off, the stomach begins to die and the entire blood supply is disrupted and the animal's condition begins to deteriorate very rapidly.

Not all dogs that have a gas buildup and resultant dilatation develop the more serious and life threatening volvulus. However, almost all dogs that have a volvulus develop it as a result of a dilatation.

Bloat is a very serious and life threatening condition. Understanding the signs, prevention, and need for prompt treatment will help reduce the risk of mortality if your dog develops this problem.

What dogs are more susceptible?

Breed

There is a definite link between the likelihood of occurrence of GDV and the breed and build of the dog. GDV is much more likely to occur in large breeds with deep, narrow chests. The problem can occur in small dogs, but only rarely. The University of Purdue conducted a study of hundreds of dogs that had developed GDV, and they calculated a ratio of likelihood of a particular breed developing the problem as compared to a mixed breed dog. For example, using the GDV risk ratio, a Great Dane is 41.4 times more likely to develop GDV than a mixed breed dog.

Breed	GDV Risk Ratio	Risk Rank
Great Dane	41.4	1
Saint Bernard	21.8	2
Weimaraner	19.3	3
Irish Setter	14.2	4
Gordon Setter	12.3	5
Standard Poodle	8.8	6
Basset Hound	5.9	7
Doberman Pinscher	5.5	8
Old English Sheepdog	4.8	9
German Shorthaired Pointer	4.6	10
Newfoundland	4.4	11
German Shepherd	4.2	12

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Airedale Terrier	4.1	13
Alaskan Malamute	4.1	14
Chesapeake Bay Retriever	3.7	15
Boxer	3.7	16
Collie	2.8	17
Labrador Retriever	2	18
English Springer Spaniel	2	19
Samoyed	1.6	20
Dachshund	1.6	21
Golden Retriever	1.2	22
Rottweiler	1.1	23
Mixed	1.0	24
Miniature Poodle	0.3	25

Genetics

In addition to breed predilection, there appears to be a genetic link to this disease. The incidence is closely correlated to the depth and width of the dog's chest. Several different genes from the parents determine these traits. If both parents have particularly deep and narrow chests, then it is highly likely that their offspring will have deep and narrow chests and the resulting problems that may go with it. This is why in particular breeds we see a higher incidence in certain lines, most likely because of that line's particular chest conformation.

Age

Dogs over 7 years of age are more than twice as likely to develop gastric dilatation and volvulus as those who are 2-4 years of age.

Gender

Male dogs are twice as likely to develop gastric dilatation and volvulus as females. Neutering does not appear to have an effect on the risk of bloat.

Eating habits

Dogs fed once a day are twice as likely to develop GDV as those fed twice a day. It appears that dogs who eat rapidly or exercise soon after a meal may also be at increased risk.

Temperament

Dogs that tend to be more nervous, anxious, or fearful appear to be at an increased risk of developing bloat.

What causes gastric dilatation and volvulus?

There is no one particular activity that leads to the development of GDV. It appears that it occurs as a combination of events. Studies of the stomach gas that occurs in dilatation have shown that it is similar to the composition of normal room air suggesting that the dilatation occurs as a result of swallowing air. All dogs, and people for that matter, swallow air, but normally we eructate (burp) and release this air and it is not a problem. For some reason that scientists have not yet determined, these dogs that develop bloat do not release this swallowed gas. There are currently several studies looking into what happens physiologically in these dogs that develop GDV.

What are the signs?

The most obvious signs are abdominal distention (swollen belly) and nonproductive vomiting (animal appears to be vomiting, but nothing comes up) and retching. Other signs include restlessness, abdominal pain, and rapid shallow breathing. Profuse salivation may indicate severe pain. If the dog's condition continues to deteriorate, especially if volvulus has occurred, the dog

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may go into shock and become pale, have a weak pulse, a rapid heart rate, and eventually collapse. A dog with gastric dilatation without volvulus can show all of these signs, but the more severe signs are likely to occur in dogs with both dilatation and volvulus.

How is gastric dilatation and volvulus treated?

When the dog is presented to the hospital his condition is assessed. Blood samples are generally taken and tested to help determine the dog's status. Usually the animal is in shock, or predisposed to it, so intravenous catheters are placed and fluids are administered. Antibiotics and pain relievers may be given.

Even with treatment, as many as 25-30% of dogs with GDV die.

The air in the stomach is removed either by passing a stomach tube or inserting a large needle into the stomach and releasing the gas. After the animal is stabilized, x-rays are taken to help determine whether or not a volvulus is present.

Some dogs with GDV develop a bleeding disorder called disseminated intravascular coagulation (DIC), in which small clots start to develop within the dog's blood vessels. To prevent or treat this condition, heparin, an anticoagulant, may be given.

The heart rate and rhythm are closely monitored. Some dogs with GDV develop heart arrhythmias, and this is a common cause of death in dogs with GDV. Dogs that already have a heart disease or are prone to heart arrythmias are generally treated with appropriate medications.

Once the dog is stabilized, abdominal surgery is usually indicated to accomplish three things:

- Assess the health of the stomach and surrounding organs. If areas of the stomach or spleen have been irreversibly damaged, they are removed. In such a case, the chances for recovery are very poor, and euthanasia may be an alternative.
- Properly reposition the stomach
- Suture the stomach in a way to prevent it from twisting again (a procedure called gastropexy). If gastropexy is **not** performed, 75-80% of dogs will develop GDV again.

After surgery, the dog is closely monitored for several days for signs of infection, heart abnormalities, DIC, stomach ulceration or perforation, and damage to the pancreas or liver. Antibiotics and additional medications may need to be given.

How is gastric dilatation and volvulus prevented?

Despite adopting all of the recommendations listed below, a dog may still develop GDV. Because of the genetic link involved with this disease, prospective pet owners should question if there is a history of GDV in the lineage of any puppy that is from a breed listed as high risk. In addition, the following recommendations should be followed:

- Owners of susceptible breeds should be aware of the early signs of bloat and contact their veteriarian as soon as possible if GDV is suspected.
- Owners of susceptible breeds should develop a good working relationship with a local veterinarian in case emergency care is needed.
- Large dogs should be fed two or three times daily, rather than once a day.
- Water should be available at all times, but should be limited immediately after feeding.
- Vigorous exercise, excitement, and stress should be avoided one hour before and two hours after meals.
- Diet changes should be made gradually over a period of three to five days.
- Susceptible dogs should be fed individually and, if possible in a quiet location.
- Some studies suggest that dogs who are susceptible to bloat should not be fed with elevated feeders; other studies have not found this to be true. It is recommended, however, that dogs at increased risk be fed at floor level.
- Some studies have associated food particle size, fat content, moistening of foods containing citric acid, and other factors with bloat. At this time, no cause-and-result relationships between these factors and bloat have been verified.
- Dogs that have survived bloat are at an increased risk for future episodes; therefore prevention in the form of preventive surgery or medical management should be discussed with the veterinarian.

Summary

Bloat is a life threatening condition that most commonly affects large-breed, deep-chested dogs over two years of age. Owners of susceptible breeds should be knowledgeable about the signs of the disease, since early and prompt treatment can greatly improve the outcome. By following the preventive measures recommended, pet owners can further reduce the

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likelihood of their pet developing this devastating condition.

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