

This is for Buddy

by Patte Titus

Bloat, gastric bloat, torsion or gastric dilatation-volvulus (GDV) is referred to by many names and is potentially deadly in dogs if not recognized and treated immediately. As the old saying goes "timing is everything" but even with the best of circumstance and treatment a dog still may not survive. In 2005, it was estimated that 25 to 40 percent of dogs with gastric dilatation-volvulus would die for lack of emergency vet care within six to twelve hours after onset. According to Dr. Goldstein, DVM at Cornell, "Once the attack occurs the dog's condition will deteriorate very quickly."

For those individuals whose dogs have experienced bloat and torsion or in some cases, torsion first then bloat, understand the heartbreak of dealing with this condition. Bloat is a severe expansion of the stomach and may also be referred to as "gastric bloat" or "gastric dilatation". It is a combination of food, liquid, air and gastric juices that cause gas to form. When the amount of gas produced is more than the stomach area can hold the stomach distends and causes pressure within the abdominal cavity. If the pressure can't be released the continued distension can then cause the stomach to twist on itself shutting off the opening to the esophagus and to the small intestine. If this occurs, there is no escape for the building gases and the stomach will continue to expand displacing other organs in the abdominal cavity. This continued dilatation of the stomach will then begin to compromise blood vessels within the stomach wall in addition to those of the other organs. Digestion ceases and food in the stomach begins to ferment while bacteria increases. When the blood supply is compromised tissue begins to die and bacteria enters the bloodstream. If any of the big blood vessels in the abdomen are compressed this in turn can slow down or affect blood flow to the heart causing the dog to experience shock and/or arrhythmia. The compromised blood flow also affects the oxygen supply to the dif-

ferent organs including the spleen that is attached to the stomach by ligaments and a series of blood vessels.

Volvulus is an abnormal twisting of the stomach or intestines. Think of a piece of candy with both ends of the wrapper twisted to keep the candy inside and you have a pretty good picture of gastric volvulus. When volvulus occurs in the intestine, it creates a dam that doesn't allow anything past a specific point. The small intestine is where digested food is absorbed and its peristaltic action moves the undigested portions onto the large intestine where absorption continues until nothing is left but waste products. The area of the intestine affected by volvulus will lose the peristaltic action that moves food, removes gas and keeps potential bacteria colonies from forming. Just as with the stomach, volvulus in the intestine can result in tissue necrosis and bacteria entering in the blood stream. Another type of volvulus than might affect the intestines is mesenteric which is the suspension system for the intestine and also contains the major blood vessels. If the intestines twist around this base, it will cut off the blood flow to the intestines subsequently causing abdominal pain and rapid onset of shock. Unlike gastric volvulus, it is difficult to feel or see on x-ray and presents a problem to diagnose because there are other conditions that can cause the same symptoms.

According to Dr. Jerold Bell, bloat or GDV is the number one cause of death for several large and giant dog breeds and if not treated within one to two hours of onset is life threatening. This is why "timing is everything" if the symptoms are recognized quick enough. Unfortunately, some of the earliest symptoms aren't very dramatic: general anxiety and restlessness, pacing, and possibly whining or whimpering. Or the dog may show no interest in food or water. Unless these symptoms were really out of character for your dog I'm not sure most of us would consider them cause for concern much less life

threatening. Yet within a few minutes these can change to the dog trying to throw up without success, heavy drooling and an abdominal area that appears the dog has swallowed a watermelon or basketball. Labored breathing, pale gums, and rapid heartbeat soon follow. All of this can occur within thirty minutes if the stomach has already twisted on itself. The dog needs to be taken to an emergency clinic as one's personal vet may not have the surgery unit for this type of extensive surgery and care the dog may require afterward. My own personal experience with this occurred in 1998 while living at Shaw AFB in South Carolina when one of our dogs had gastric torsion and appeared as if she had swallowed a watermelon. Our local vet in Sumter did not have an extensive surgical unit or the staff for this type of surgery. As a result of driving ten miles in one direction, we now had to drive fifty miles in the opposite direction to an emergency clinic in Columbia, SC. Because of the distance and time lost, I insisted the Sumter vet use a large bore needle into her abdomen to release some of the pressure from her over extended stomach. A technique learned from my father when cattle were put to graze on young winter wheat and as he would say, "blow up with gas". It is very important to understand this is not something that should be done by an untrained individual as it can cause more harm than good. In our case it allowed us the small window of opportunity we needed to make up for the time lost getting her to the emergency clinic. Another method used to release the gas from the stomach is with the use of a tube inserted down the esophagus. The only problem is if the twisting prevents the tube from being passed into the stomach.

Once admitted the dog's vital signs will be taken in addition to an x-ray to determine if it has gastric torsion. Although in some cases, signs may be so evident that the dog is treated for shock and prepped for immediate surgery. The incision must be quite long to allow the

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vet to reverse the stomach to its normal position and to examine the stomach wall and other organs for compromise and tissue damage. The stomach must be washed out and any necrotic tissue or organs removed. Gastroplexy is an additional procedure used to anchor the stomach with sutures to the abdominal wall after it has been restored to its original place. Tacking the stomach to the abdominal wall will not prevent bloat but it will keep the stomach from twisting. Some individuals may opt to have preventative gastroplexy done when the dog is under for another procedure. If considering this when having a dog spayed or neutered first ascertain if it will be done with a laparoscopic method. Otherwise it will require an incision from just below the sternum to pelvic area and the recovery time from the surgery will take longer. One may want to consider the laparoscopic method instead.

There is nothing more heartbreaking than to make the trip to the emergency clinic only to learn the odds are not on your side or to sit through the surgery, bring the dog home only to have it succumb two days later. Survival prognosis is based on the surgery, complications, severity of organ/tissue compromise and the health and age of the animal at onset. Dr. Flanders stated in 2005, there was a seventy percent mortality rate in dogs with necrotic stomachs and thirty percent in those with healthy stomach tissue.

So what causes a dog to bloat? Unfortunately there are no easy answers. In 1994, epidemiologist Dr. Larry Glickman of Purdue University School of Veterinary Medicine began a controlled study on canine bloat. His study of 1914 dogs with no prior history of bloat represented eleven large and giant breeds. He identified several risk factors; deep narrow chest, lean versus overweight, age, family with bloat history, eating too fast, temperament, stress, diet and number of meals per day.

Dogs with the greatest risk of developing bloat were those with deep narrow

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chest. He concluded those with the higher depth to width ratio meant there was more room for stomach movement in the abdomen, behind the rib cage. The lean versus overweight was based on the hypothesis that the lean dog had less fat deposits in the abdomen and this would allow the stomach to move around more than in an overweight dog. It was found for the large breeds the risk of developing bloat goes up 20 percent each year after the age of 5 and for giant breeds it goes up 20 percent each year after the age of 3. There was a 63 percent greater risk in first generation relatives of dogs that developed bloat. Dogs that ate quickly were at 15 percent higher risk of developing bloat, possibly due to increased air being swallowed.

Dr. Glickman's study found that fearful, nervous, or aggressive dogs had a much higher incidence of bloat than dogs perceived by their owners as having happy temperaments. Also, that stress might be a factor as many dogs bloat after being recently kenneled or a long car ride. Males were found to be slightly higher in percent of developing bloat than females.

When it came to diet there were several factors associated with a higher incidence of bloat, i.e. only feeding dry food, or a single large meal a day. Dry foods with fat listed among the first four ingredients had a 170 percent higher risk for developing bloat. Dry foods containing citric acid and moistened prior to feeding had a 320 percent higher risk for developing bloat. On the other hand, dry food containing a rendered meat-and-bone meal decreased risk by 53 percent in comparison with the overall risk for the dogs in the study. Mixing table food or canned food into dry food also decreased the risk of bloat. As for feeding one large meal a day, this can weigh down the stomach and stretch the hepatogastric ligament, which usually maintains the stomach's normal position in the abdomen. Dogs that have bloated were found to have a much longer hepatogastric ligament; it is thought that this is due to chronic stretching. This could also explain why bloat risk increases with age.

Profile for a likely bloat candidate: deep and narrow chest, lean, eating too quick, single large meal a day, strictly a dry diet, close relative that had bloat, stress and a nervous, fearful or aggressive temperament, age (7+ years) and male. Also dogs that bloated once may do so again within a relatively short period of time from the first incident. One article mentioned that male dogs regardless if neutered are more than twice as likely as females to bloat while several mentioned age, stress and nervous temperament as factors.

According to a 2003 article by Jerold S. Bell, DVM, Tufts University School of Veterinary Medicine, "There is no single, major gene that controls bloat. This is because dogs do not inherit bloat; they only inherit a predisposition for the condition." It is safe to say Vets don't quite know how bloat occurs, but they do know that it seems to be the result of a combination of factors, rather than one specific factor. Information on canine bloat is only one mouse click away on most search engines. Do your dog and yourself a favor and learn more about canine bloat, its potential causes, symptoms and the best course of action should it occur. And remember, "timing is everything".

