

Demystifying Anesthesia

By William E. Feeman III, DVM

ABSTRACT: The purpose of this article is to introduce readers to a brief overview of the process of anesthesia and the various options available. A general understanding of these should help comfort owners the next time their Greyhound requires anesthesia.

Anesthesia, a state of unconsciousness and lack of sensation, is a regular and necessary part of veterinary medicine. Everything from neuters to dental cleanings to some radiographs (x-rays) may require anesthesia. There are almost as many anesthetics and sedatives available to veterinarians as there are procedures for which they are used. This can make anesthesia discussions for owners very confusing. The key to discussing anesthesia with your veterinarian is to understand the basics of anesthesia and that there is not “one right way” to do things. There are actually many anesthetics that are safe for Greyhounds. Your pet’s medical history and your veterinarian’s familiarity with the various anesthetics will determine which is the safest.

Pre-anesthetic bloodwork should be done prior to any anesthesia. This will allow the doctor to evaluate kidney and liver function and other parameters which may affect how the body processes anesthetics. If it is an elective procedure and abnormalities are noted on the bloodwork, the procedure may be postponed. Even if your pet has had normal bloodwork in the past, it is always wise to have it rechecked prior to surgery if it has been longer than two to three weeks. Food should be withheld for at least 8 hours prior to surgery as some anesthetics may cause nausea. Vomiting in a sedated or anesthetized patient can be dangerous because it increases the risk of aspiration

(inhalation of the vomitus). In emergency situations, surgery may be performed despite a recent feeding because the risk of not performing surgery outweighs the risk of aspiration.

The placement of an intravenous catheter should be performed prior to induction of anesthesia. This gives the veterinarian instant access to a vein should an animal require treatment during anesthesia or recovery. An intravenous catheter will also allow for fluids to be given during the anesthetic procedure which help to support the kidneys and replace any fluids that may be lost. The placement of the catheter typically takes only a couple of minutes and can be done the morning of anesthesia. The catheter will be removed prior to discharge from the hospital.

Greyhounds should have their temperatures checked prior to an anesthetic procedure, during the anesthetic procedure and several times in recovery. Greyhounds have been reported to experience a rare condition called malignant hyperthermia which is a type of allergic reaction to some anesthetics. It results in temperatures reaching greater than 106 degrees Fahrenheit and can be fatal if not immediately treated. Some Greyhounds may also “shiver or shake” in recovery which can result in significant temperature elevations due to their large muscle mass. This “shivering hyperthermia” phenomenon is more frequently seen in Greyhounds than in other breeds. Monitoring the temperature will alert the veterinarian to the elevations in temperature earlier so treatment can be started as quickly as possible. A diagnosis of malignant hyperthermia can only be made through a muscle biopsy and must be treated with an injection of a drug called *Dantrolene*. True malignant hyperthermia is very rare and often other reactions resulting in elevated body temperatures are falsely labeled as “malignant hyperthermia.” Should your veterinarian suspect your Greyhound has had an episode of malignant hyperthermia, I would advise consulting with the closest veterinary anesthesiologist to prevent problems

with future anesthetic use. Your veterinarian may contact the anesthesiologist or you could ask your veterinarian for a referral if you would prefer to speak to one personally.

Unconsciousness is normally induced with an injectable medication. An endotracheal tube is then inserted into the dog's windpipe. The tube carries gas anesthesia and oxygen to the patient to maintain an appropriate depth of anesthesia. At the end of the procedure the gas anesthetic is turned off and the dog begins to wake up. The most commonly used and safest gas anesthetics are Isoflurane and Sevoflurane. I have not appreciated any significant clinical difference between these two anesthetics, both working equally well in the Greyhound.

There are a number of injectable premedications that can be given to Greyhounds. These medications are given 20 to 30 minutes prior to surgery and are used to sedate the Greyhound so a lesser total amount of injectable and gas anesthetics can be used. These medications also allow for a smoother recovery. The most commonly used premedications include: sedatives (Acepromazine and Medetomidine), various opioids (Butorphanol, Hydromorphone, Oxymorphone, Buprenorphine, etc.), and anti-cholinergics (Atropine and Glycopyrrolate). Greyhounds are more sensitive to the cardiovascular effects of Medetomidine (Domitor), so a relatively lower dose should typically be used. A combination of two or more of these drugs may be used for premedication. Sedatives will make your Greyhound sleepy and relaxed prior to surgery. Medetomidine also has some analgesic (pain relieving) properties as well. The opioid drugs are good analgesics and also have some sedative properties. The anti-cholinergics are used to provide cardiovascular support (e.g. increased heart rate) to anesthetized patients. The length of the procedure, the type of pain associated with the procedure and the medical history of your pet will dictate which premedications are given.

There are a number of safe injectable anesthetics that can also be used in Greyhounds. Telazol, Ketamine/Valium and Propofol are all suitable for use. Thiobarbiturate anesthetics (Thiopental) should not be used in Greyhounds. Thiobarbiturate anesthetics are processed more slowly in the liver by Greyhounds than other breeds which results in a prolonged recovery from anesthesia. Some anesthesiologists also believe that Greyhounds' lack of body fat plays a roll in their prolonged recovery from thiobarbiturate anesthetics. While some anesthesiologists believe that Greyhounds can tolerate a single intravenous dose of Thiopental, the other injectable anesthetics simply are better options in most cases.

Recovery following anesthesia in most cases is unremarkable. The dog is laid down on a blanket or cushion on their side. Once they are conscious and able to swallow, the endotracheal tube is removed from their windpipe. Most dogs will rest quietly after surgery and will be sleepy. It is very important to monitor a Greyhound's temperature in recovery to be certain it does not elevate above normal. Most dogs are able to go home the night of surgery for routine procedures although some veterinarians prefer to keep dogs hospitalized overnight (canine equivalent of bed rest). If surgery was performed in the morning, a small meal may be given that evening. Leash-only exercise should be done until sutures or staples are removed. You will also need to watch very closely to be certain your Greyhound does not lick or chew at any sutures or staples. Some dogs may cough for a day or two following surgery due to irritation from the endotracheal tube. Coughing longer than two days should be evaluated by a veterinarian.

Clearly as you can see there are many appropriate anesthetic options for your Greyhound. The familiarity your veterinarian has with the various anesthetics should play a very large roll in which anesthetics are selected. Veterinarians are better able to

detect adverse reactions to anesthetics they have used commonly. They are used to their effects and what reactions are to be expected with them. It is more difficult for the veterinarian to detect adverse reactions with unfamiliar anesthetics because he or she is not familiar with normal reactions to that particular drug.

With a good general knowledge of anesthesia and what options are available, you should now feel comfortable discussing anesthetic options with your veterinarian.

Questions to ask your veterinarian when discussing anesthesia

1. When do you prefer to have presurgical bloodwork drawn (the morning of surgery, the night before surgery or the week of surgery)?
2. Do you like to hospitalize your patients after surgery? If so is there someone there overnight to check on them? If not, have you had any problems in the past?
3. What is your anesthetic protocol with Greyhounds? (If you have any handouts, pamphlets or articles outlining anesthesia in the Greyhound, having it with you at this point may be helpful in your discussion).
4. Do you expect this procedure to be painful? What pain medications will be used?
5. Will you be able to take my Greyhounds temperature after the premedications are given (ideally when they are brought out for the injectable anesthetic), during surgery and in recovery?

References

Anesthesia of the Sighthound

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Induction of anesthesia with diazepam-ketamine and midazolam-ketamine in greyhounds. Vet Surg 20[2]:143-7 1991 Mar-Apr

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