

SWEET DREAMS

Disclaimer – I am not an anesthesiologist.

When I go to general conferences (OVMA, CVMA...) as a delegate rather than as a speaker, there is usually not too much on the program to interest me. I rely on you to deal with “The Vomiting Cat”, “The Itchy Dog” and the hundreds of other issues that general practitioners deal with. What I do attend is the lectures on anesthesia. Virtually all the work I do is done on a patient who is anesthetized. Some of these patients are considered high(er) risk by virtue of being very young, very old, very traumatized or very sick. Some have normal risk, but owner’s who perceive a much higher risk. (“Our breeder told us that [insert breed here] are very sensitive to anesthetics.”). Therefore, while I am a dental specialist, I also have to be a passable anesthetist.

In the pursuit of anesthetic excellence, I have attended many lectures in the past few years, read various authors and spent time perusing the anesthesia discussion board on VIN. This can be a very confusing endeavor, as there is a lot of contradictory information out there and the choice of anesthetic and analgesic drugs often boils down to choosing the least unattractive option for the specific circumstances.

What follows may pose more questions than it answers, but if I get you thinking, I will have done my job.

One thought to keep in mind. Reading or hearing something does not equal learning that thing. There are several things I have heard/read over the years that for whatever reason, I just did not accept as important or true. Recently, I have gone from being aware of some of these concepts to actually believing them. That is learning.

Gas Attack:

Over the years, I gradually found myself drifting into the comfortable habit of chamber-inducing almost every cat and then placing the IV catheter once they were unconscious. Using a chamber seemed such a nice way to avoid injury to everyone involved and seemed to be well tolerated by the cats. We don’t do this any more!

Gas induction should only be used as a very last resort. The dose of inhalant anesthetic required to get an animal to intubation is quite high and will cause far more cardiac depression and vasodilation (and therefore hypotension) than injectable induction agents. All these stresses happen without the benefit of a pre-induction fluid bolus or a controlled air-way.

So, for our feline patients, we use an appropriate dose of premedication (tailored to the patient). We then place the cat in a canvas “Cat-Bag”. A hind leg is exposed through the “backdoor” in the bag and an IV catheter placed in the medial saphanous vein. Now we can give our pre-induction fluid bolus, pre-oxygenate by mask and give a titrated dose of injectable induction agent with very little risk of injury to anyone. Yes it is a bit more labour-intensive than just dropping them in the chamber, but it is far better for the patient.

In a similar vein (no pun intended) we used to mask-induce pediatric patients who were having short procedures (primary tooth extractions...). They went down quickly and came up quickly. To my knowledge, this protocol never caused any problems, but we don’t do this anymore either.

Our current policy is that every patient regardless of age or size will get an appropriate premedication. If there is a vein I can hit, a catheter will be placed and fluids given. Induction will be by injection and maintenance with inhalant via a properly fitted, cuffed endotracheal tube.

Monitoring:

About 12 years ago, I got a monitor that did sPO₂, ECG and respiratory rate and another monitor for esophageal temperature. While we have always monitored our patients with these machines (and with an RVT dedicated to anesthesia maintenance and monitoring), I have come to realize that there is more to be done. After reading, listening and asking for a few months, we decided to go with a tried-and-true technology and obtained a Parks doppler blood pressure monitor.

The week the doppler arrived, we saw a number of cats and the machine worked flawlessly. I mention this because efficacy on small patients seems to be a big issue with the BP monitors. We have had the machine for about a month now and it has been reliable, consistent and easy to use. My recommendation – if you do not have one, get one.

Monitoring blood pressure allows for more accurate fluid therapy as well as encouraging us to constantly look for the lowest vaporizer setting that will ensure immobilization. In short, monitoring (and recording) blood pressure throughout the anesthesia easy to do and good medicine.

Local Anesthesia:

Few would question the value of a multi-modal approach to peri-operative and post-operative pain management. I am very pleased to see that since I graduated, our profession has gone from “dogs and cats don’t feel pain like we do” and “pain keeps them quite” to realizing that they do actually feel pain just like us and that pain can have a serious negative impact on recovery.

One part of the pain management plan is the use of local anesthetics. While they are often used as adjuncts for a variety of surgeries such as ring blocks for declaw surgery, their use in dentistry will be my focus.

There are good resources showing how and where to apply various blocks for oral surgery, so I will not repeat all that. I have a section in my text book (*Understanding Veterinary Dentistry*), there is a slide-show demonstrating the technique available on the Dental Discussion Board at www.VIN.com (put together by Dr. Allen Matson) and a great photo-essay in the *Journal of Veterinary Dentistry* (Regional Anesthesia for Dentistry and Oral Surgery, Vol 20, #3) by Dr. Gary Lantz.

My preference is to use Marcaine E™ supplied in single-patient carpules using a dental syringe and disposable dental needles as pictured.



At bottom is a 1.8 ml carpule of 0.5% Marcaine E™ (bupivacaine 5mg/ml with 1:200 000 epinephrine). At the back end of this glass cylinder is a rubber plug.

In the centre is the dental syringe. This autoclavable, stainless steel syringe has a harpoon point on the end of the plunger that is embedded into the rubber plug at the back of the carpule. With

the thumb ring on the syringe, it is possible to alternate between aspirating and injecting with one hand to ensure that the injection is not going intra-vascularly.

At the top of the photo is a disposable needle for use with this set-up. There is a needle at the back end that is inserted into the rubber stopper at the front of the carpule as the hub is screwed on to the end of the syringe. Then there is a very fine needle sticking out the other end that goes into the patient. I typically stock 27 gauge, 1.5-inch long needles for medium and large dogs and 30 gauge, 1-inch long needles for cats and small dogs.

Advantages of this system (in my mind) include:

- Single patient use carpules and needles with no cross contamination.
- Very fine needles which are less traumatic, especially if threaded through the various bony foramina.
- One handed operation.
- Very quick and simple to assemble and reload.

As well as this physical set-up, I favour bupivacaine as my agent of choice because it has the longest duration of action. Depending on who you believe, a block with bupivacaine may last anywhere from 4 to 10 hours. I usually count on getting 6 hours.

Other opinions that you might wish to explore include the mixing of lidocaine with bupivacaine. The thinking goes that lidocaine's onset of action may be as little as 5 to 10 minutes, while bupivacaine may take 15 to 30 minutes for maximum effect. So the mixture gives rapid onset (lidocaine) and long-lasting anesthesia (bupivacaine). I am not doing this because it would mean mixing agents from bulk bottles in a regular syringe and then being limited to 25 gauge, 5/8-inch needles. There is also some confusion about the maximum allowable dose of this combination. I favour simplicity but what about the slow onset with bupivacaine? In most cases, I determine what surgeries are going to be required very early in the procedure (through oral exam and intra-oral radiographs). I then can place the necessary blocks and while waiting for them to kick in, I can go about other business such as the oral hygiene procedure that should precede the surgery (part of creating a clean if not sterile surgical field).

Some advocate adding morphine to their local anesthetic blocks. The question of efficacy arises in that opioid receptors tend to be central rather than peripheral. In an area of chronic irritation/inflammation, there may be some opioid receptor recruitment, but really, opioids are best used centrally (epidural blocks or given systemically). I am not saying a little morphine in your blocks won't work, as I have never tried it, but again, it means mixing in a regular syringe, using larger needles and adds the dimension of accounting for a controlled substance.

Twilight Recovery

Here is a little trick we picked up somewhere along the way. It is nothing fancy but it has been a help in many cases.

We want our patients to wake up and get on their way home very soon after I am done treatment, because we do one case admit-to-discharge at a time before having the next animal arrive and the owners (usually from out of town) are waiting to get going. Therefore, we tend to go a bit light on our pre-med sedation. However, every animal reacts a bit differently to the drugs we give. Some are perfectly happy to let the drugs carry them off to dreamland and others fight the sedation and induction with every fiber of their being.

If an animal has fought the premed (did not relax much) and we anticipate that they are going to wake up rapidly (possibly explosively) and are going to fight to get up before their muscles are ready to support them, we do some things to slow down and smoothe out the recovery.

One option is to give a little butorphanol or valium IV a few minutes prior to the end of surgery to add some post-op sedation (and analgesia). It may mean a slightly longer wait until the animal is ready to walk out the door, but they are usually still ready to go by the time I write up the records and go over discharge instructions with the owner.

The other thing we will do is create a non-stimulating environment for recovery so the animals can go from anesthesia into normal sleep. We place the animal on the floor on a recovery quilt, cover them with a fleecy blanket, turn the lights way down low and keep the room very quiet. We monitor breathing and CRT, but as gently as possible until we feel that the period of potential dysphoria has passed. Then we bring the lights up and allow a bit more ambient noise to ease the patient back into consciousness gently. Typically, they open their eyes, lift their heads and stand up with in a minute or two. There may still be a bit of hind-end-wobble, but they loose that within another few minutes of walking around and then are ready to head home.