

Routine Camelid Procedures

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Abstract

To help the relative novice and perhaps even some veteran camelid veterinarians, the most common procedures that you are asked to perform will be discussed. Included will be venapuncture procedures, some dental considerations, male breeding soundness evaluation, anesthesia/castration technique, micro-chipping, intrauterine infusion discussion, TB testing, intramuscular injection options, tapeworm treatment, epidural procedure, refractory abscess therapy, pregnant animal sedation and rectal exams.

Any hints on drawing blood samples from camelids? As with any species, restraint is extremely important. Minimally, animals should be haltered even for manual restraint. Ideally, a restraining chute should be available, especially for adult llamas. Do not over flex the neck as this tends to constrict the jugular vein. Holding your left thumb over the right jugular at the level of the 5th or 6th ventral vertebral process, pulsate over the upper vein with your right fingers to create a pulse above your thumb. Having located the vein, make your puncture using a 1.5 inch 20 gauge needle. The vein is really quite shallow beneath the skin and is readily passed through if you are not looking for the “flash” in your syringe. Always **aspirate** and always **watch!**

Are there any hints to avoid camelid jugular injection complications, including perivascular delivery hematomas and intracarotid injection? By using a 1.5 inch 18 gauge needle and possibly an IV extension, you can more readily observe blood flow. Small injection volumes should be diluted to provide additional margin of error. If using a syringe directly, always watch the plunger for evidence of intracarotid pressure. After removing the needle, apply manual pressure over the puncture site.

How do you remove fighting teeth of an 18-month male camelid? Firstly, I always ask questions pertinent to my answer. Will this animal also be castrated? Are all six of the fighting teeth erupted? Assuming that only dental work is requested, I will administer 3-5 mg butorphanol IV or up to 10 mg IM. Then I will cross-tie the animal in a chute, have a gloved assistant

open the mouth for removal of the points using obstetrical wire at the gum line, but being careful not to snap off the teeth. Options include use of a Dremel tool or toe nail clipper, both of which in my opinion have some potential problems.

How do you perform a breeding soundness exam in male camelids? After a routine physical, I will emphasize the reproductive system, including evaluation of testicular size by palpation as well as physical condition of the sheath. With ultrasound I will also evaluate the testicles, bulbourethral glands and prostate. If possible, I want to evaluate the breeding performance, emphasizing success of intromission and duration of copulation. Having tried various options for collecting semen, I have found the use of a vaginoscope as a “vaginascop” following breeding to be the most reliable means of collection. Evaluation of the semen is comparable in technique, but requires knowledge of what is uniquely normal in camelids. The ejaculum is extremely viscous and characterized by very slow motility, thus needing dilution for any reasonable evaluation of motility. With staining or use of a phase contrast microscope, at least 50% of the sperm should be morphologically normal. Be aware that using any vaginal retrieval technique results in blood contamination which may be confusing since camelid red cells are morphologically similar to separated sperm cell heads. Other options include general anesthesia, penile extension and electro-ejaculation when a more normal effort fails. As a last resort for males that appear to fail a BSE, I will recommend doing a testicular biopsy.

What are your anesthesia/castration procedures for male camelids? Ideally, you should have an accurate weight. Failing to have access to a scale, one needs to become proficient at “guesstimating” weights. The average 2-3 year old alpaca would weigh from 120-150 lb while an average llama for the same age would be 250-300 lb. Many anesthesia protocols that can be used, however after trying several I rely on the use of KXB (10 ml ketamine + 1 ml of 100 mg xylazine + 1 ml butorphanol) injected IM in the triceps at 1 ml/40 lb in alpacas, and 1 ml/50 lb in llamas. If the animal in question is very excited at the time of injection, I add 1 additional ml of the KXB. Generally sternal recumbency is achieved in 3-5 minutes. On the rare occasion that an

animal fails to be totally recumbent after 10 minutes I give one-half the original dose IM. Once the animal is recumbent, give it another minute before manipulating to left lateral positioning. I tie the right rear leg forward over the neck. Using duct tape, I paste the perineal wool away from the scrotum. After a surgical scrub, I push the testicles forward to determine the forward extent of the proposed incision. Thereafter, I proceed as if I were castrating a horse, initially removing the left (lower) testicle after either ligating and/or emasculating, followed by removing the right testicle in the same manner. If the animal is well conditioned, a bit of fat may protrude from the incisions. I bluntly remove it by traction and shredding with a 4 x 4 gauze sponge. Incisions are left open to drain and healing occurs quickly. I put the animal in sternal position for recovery, which is usually rapid and uneventful. Routine tetanus prophylaxis is advised prior to the procedure.

Is there an accepted site for microchip implants? Initially, the International Lama Registry (ILR) recommended and approved the site to be the upper base of the left ear. Subsequently, the Alpaca Registry Inc. (ARI) has embraced the same site but options exist on the neck, neck/shoulder junction and at the base of the tail. Once the federal government finalizes the uniform ID methods, this all could change. Using the base of the left ear, I have had extremely good success for retention and only occasionally had notable hemorrhage from the site.

What do I use for routine camelid intrauterine infusions? Firstly, I don't feel that an infusion is necessary following a perfectly normal birthing. However, following a dystocia, I would administer dilute Betadine solution in physiological saline solution (PSS) utilizing a pig insemination rod. If there is apparent metritis based on vaginal discharge, I would initially lavage with volumes of warm PSS, followed by dilute Betadine. If I have performed a uterine biopsy, because the cervix is difficult to regularly traverse, I will place an intrauterine self-retaining coil, initially flushing with PSS followed by an antibiotic of choice while awaiting results of biopsy and culture/sensitivity. I have used crystalline penicillin, gentamicin and amikacin in varying combinations with no particular preference. Once an indicated antibiotic is identified, I will precede its infusion with PSS lavage and then infuse the antibiotic diluted in PSS. Ideally, up to five days of treatment occur before the IUD is removed, and then 10 days of sexual rest is required before a follow up examination.

Where does one do the intradermal TB test in camelids? Firstly, always check with the states involved as to the actual requirement. Because camelids

essentially do not have a caudal fold, a true caudal fold test is not easy. In addition, using the "caudal fold" test in sensitized as well as TB infected animals failed to give reliable results. Subsequently, it was found that the soft skin in the relatively fibreless area of the axillary region (level of the point of the elbow) will give reliable results.

What intramuscular sites do I routinely use for injections in camelids? Most of my larger volume injections are administered SQ, but for rapid absorption and particularly for smaller volumes I will go IM. For tractable/restrained animals I commonly use the **semimembranosis/tendonosis** muscles, but have recently given particularly anesthetics in the **deltoids** for even more rapid absorption. For animals that are difficult to approach from the rear, I have utilized the **epaxials**.

What's the best treatment for tapeworms in camelids? I have yet to find a tapeworm infestation in camelids that wasn't due to *Monezia* spp where the free living *Orbatid* mite is the intermediate host. As such no matter how effective the prescribed treatment, the animals will likely be reinfested upon pasture grass consumption. Treatment options I have used include fenbendazole at 10 mg/kg or albendazole at 10 mg/kg BW, with the latter to not be given in "early" pregnancy.

Can you do epidurals in camelids?...If so, what is the procedure? Yes, and in basically the same manner as other ruminant species. Because removal of fiber in the area of the sacrococcygeal space tends to annoy camelid owners, by using a duct tape masking of the area only minimal fiber needs to be removed with curved scissors. Following scrubbing, a 1.5 inch 20 gauge needle is used to inject no more than 2 ml of 2% lidocaine in an adult llama. The optional use of 25 mg of xylazine plus one-half of the lidocaine will give prolonged effect. In contrast to the cow, I am not appreciating that the so called "hanging drop" technique is of any value in camelids so I usually just leave the syringe and needle attached. To locate the space, I elevate the tail, start the needle in the skin and then lower the tail to open the space for deeper penetration and a resistance free injection.

What do I do with a refractory sub-mandibular abscess... not a tooth? Questions to ask include the duration of the problem and nature of the previous treatment. Often I find that there was an attempt to surgically drain the lesion followed by Betadine solution flushes and some antibiotics. First, it is necessary to rule out presence of a foreign body by re-exploring. I then will flush the abscess with 2-3% hydrogen perox-

ide followed by packing with gauze soaked in 7% tincture of iodine which will cauterize the abscess lining. The gauze is then removed in 24 hours and Betadine flushes are resumed.

What is to be used for camelid sedation if the animal is pregnant? First, I've had no problems with pregnant dams using any of the following: for routine sedation, xylazine at 0.11-0.22 mg/kg SQ or IM, or butorphanol at 0.03-0.06 mg/kg IV or IM. For heavy sedation, I have routinely used KXB as previously described at 1 ml/100 lb BW.

How do you do rectal ultrasound examination on small llamas and alpacas? Adequate restraint is essential whether done manually by holders

or ideally in a restraining chute. I routinely pump 60 ml of carboxy methylcellulose from a gallon jug using a pig insemination rod. I use either a 5 or 7.5 mhz linear probe with some form of a guide. In a pinch, I have used a bovine insemination rod taped to the probe, but ideally use a custom made PVC guide. You then have to learn to find the bladder and key off of it to find the uterus and ovaries. My experience has found that alpacas in particular object less to this procedure than to transabdominal methods.

Conclusion

Hopefully this discussion provided concise and relevant answers to questions you will likely encounter.