

Breeding the Difficult Mastiff

By Robin M. Smith, DVM

Over the years, I have worked with a lot of breeders and their mastiffs. While having reproductive problems is not the norm, it does occur and can cause much frustration to all those involved. And over the years I have developed a diagnostic routine to help determine if there truly is a problem. I hope to be able to help you and your veterinarians by discussing how I approach a Mastiff that is having difficulty being bred.

I know a lot of you are not breeders but hope that you will read this anyway because it will discuss some general health problems of the Mastiff breed that concerns all of us. I in no way want to tell anyone how to run their breeding programs, as I know there are many of you that are more knowledgeable than I when it comes to breeding the Mastiff. I just hope to be able to give you some guidelines to follow if you do encounter a problem in your kennel.

There is a lot of discussion about whether we should even be interfering with the breeding of our dogs. Some say that we should not be artificially inseminating and nature should take its course. My opinion is that with the increasing testing we are doing to eliminate the problems in our breed, i.e. hip and elbow dysplasia, and PRA to name a few, we are decreasing our available gene pool. Therefore, I believe to continue to produce good animals, we need to be able to breed dogs that are geographically distant and this requires artificial means. I am not here to debate this issue as there are always differences of opinion.

Why do we have any problems at all in reproduction? One reason is that the canine of all domestic species has a reproductive cycle that is very difficult to control and it is highly variable. The canine reproductive cycle has the largest deviation of normal values in our domestic species. Another reason is that veterinarians tend not to see a lot of dogs with reproductive problems. By the time help is sought, it is usually because the dog is a champion or the last of the line and the people are desperate. Or breeders can be reluctant to seek help for fear that others will look at their problems and think that there is a genetic or infectious problem in that kennel. Also breeders typically select for looks and performance, not fertility. So, we as veterinarians working in the reproductive field are limited as to what we see.

Natural breeding, I believe is the most optimal way to have success. But it is not always the most feasible. Many of you already do fresh artificial inseminations (AI) and some of you do chilled and even frozen AI. I will briefly talk about these but when I am concerned with getting a difficult bitch pregnant, I find my most reliable method is to do a surgical implant of fresh or chilled semen and if necessary, then frozen.

Breeding by surgical implantation is the primary topic of this article. There are several reasons I choose surgical implantation. One is that in human medicine, it has been found that in infertile women, there can be a mucus plug on the cervix that has spermicidal qualities. This has been documented in one veterinary paper. Also, due to the inherent bacteria that inhabit the vagina, there is always an ongoing inflammatory response to some degree in the bitch. With inflammatory responses, we have certain inflammatory mediators that are released and it is a

know fact that some of these mediators are toxic to sperm. Also, I have found that when there is a poorer quality sperm count, surgical implantation is the best choice.

When a bitch is presented to me for infertility, I first get a thorough history of that bitch and others in the kennel and of the stud dog. The number one cause for infertility in my opinion is mismanagement of the bitch. Not knowing exactly when to breed. Or not having good sperm. I make sure that the stud's sperm has been checked and/or he is proven. Typically, this is an area that is not checked as often as it should be. Males tend to have a high incidence of prostatitis which can lower sperm counts. I suggest to all breeders to have their males semen and/or urine cultured routinely (every 6-12 months) to insure a good sperm count. With the bitch, I want to know how often she comes into heat, how long she stays in heat, her breeding history and whether she has every whelped a litter.

The next process is to do a thorough physical examination. I know that by the time I see a problem bitch, it has been examined by other veterinarians and perhaps has had an array of tests. But, I want to make sure nothing has been overlooked and I start at zero. Yes, it can be expensive, but the cost of not producing can also be expensive. Again, let me state that this whole process may not be necessary for every bitch, but when it is the bitches last chance or because of age or something else, I feel that the total workup is necessary. I examine the bitch from head to toe. I inspect the vulva and vagina for any abnormalities. I can pick up some underlying disease processes just from the physical exam which may lead to why there is a fertility problem.

I start with a complete blood count, chemistry profile and electrolytes. I pay special attention to the white cell count, which when elevated can indicate bacterial infection or if low can indicate a viral infection. I make sure there is no significant anemia. I say significant, because I have found that the mastiffs' red blood cell count is normally on the low side to even being slightly anemic by the standards. I have found this to be true in the majority of the mastiffs I have checked and now believe this to be a normal deviation. The anemia should not be pronounced or I would tend to think there is a problem. The chemistry evaluates the liver, kidneys, pancreas and the general health of the animal as do the electrolytes. There are many disease processes that can be recognized by their distinctive bloodwork changes. I also do a heartworm test and a fecal at this time. A urinalysis is warranted to again measure kidney function and to see if there is an underlying bladder infection.

I also do a thyroid test. I submit it to Michigan State University as I believe this is one of the best laboratories I have worked with and they are the official lab for the certification process. I know there are many theories about the thyroid and reproduction. I will give you my opinion and how I treat thyroid testing and supplementation.

The only thyroid hormones I am interested in are the Total T4, Free T4 (by dialysis) and the autoantibodies and the TSH. The autoantibodies when elevated over the normal means that the thyroid has an autoimmune process occurring that is destroying the tissue and this is inheritable and therefore the bitch or dog should not be used in a breeding program. If those are normal, I look at the other tests. I have done enough testing on mastiffs prior to, during and after pregnancy to come to some conclusions regarding the Mastiff and the thyroid. I have found that

during pregnancy, a Mastiff that tested in the normal to low normal range, will have a significant drop in the thyroid, presumably due to the increased metabolic load of pregnancy. It has also been demonstrated in pregnant women and it has been documented that this is a cause of early abortion and resorption in women. I believe it plays an important part in our mastiffs also. If the Mastiff is below the 50% normal level, I supplement with thyroid even if it is just for the duration of the pregnancy. I give .1 mg/10 lbs. and divide the dose daily. This supplementation needs to begin at least 30 days prior to breeding. One must use the brand name Soloxine, and not the generics. I find the generics are not reliable. I know there are some good ones out there, but there are also bad ones.

Because I do supplement during pregnancy with thyroid hormone, one of the important tests I do in my workup is a cardiac exam. I auscultate the heart and if I feel it is necessary, I perform an EKG or a cardiac ultrasound. Cardiomyopathy can be a problem in our breed and thyroid supplementation can worsen this condition if it is present.

I will ultrasound the uterus and the ovaries. I am looking for an enlarged uterus or one with fluid in it or perhaps a thickened uterine wall which would all indicate some pathology taking place. I try to see the ovaries and most of the time unless they are enlarged or have follicles on them, they cannot be easily found by ultrasound. One can definitely see an ovarian tumor. While I am ultrasounding the reproductive tract, I will take a look at the liver, spleen, kidneys and the abdominal cavity in general.

Another topic of controversy is culturing the vagina and vaginal vault. I do cultures and I feel they are very important. There are normal bacteria in the vagina. But when that growth is heavy or there are bacterial organisms there that should not be there, then fertility can be affected. When culturing the vagina, one must use a long guarded cotton swab to obtain a culture from high up in the vagina and not one of the lower vagina. I utilize equine culture tubes as they work well. I will send the culture to the laboratory and when the results come back I will place the bitch on appropriate antibiotics. The most common antibiotics I use are Cephalexin at 10 mg/lb and Baytril. Baytril is a great antibiotic but expensive and to treat a Pseudomonas infection, one must use 3-5 times the bottle dose. I know many veterinarians utilize the sulfa drugs, like Tribissen and while they are good antibiotics, they can decrease the thyroid hormones resulting in even lower thyroid levels. So, I do not use them. If the bitch has chronic vaginal infections or has a heavy growth of an organism, surgical implantation is the best route for insemination. I also make sure that I schedule a C-section so the puppies never have contact with the vagina.

If all the testing is done and all things are normal, the next step is timing the insemination. Because I do primarily surgical implantation, timing is extremely important because you only have one shot at it. I utilize progesterone and Leutinizing hormone test kits. Progesterone starts to rise indicating that the bitch is getting ready to ovulate. Once the progesterone rises above 2 ng/ml then the LH spikes indicating ovulation. Once you know the day of ovulation, the surgical implant is done on day 5 or 6. The tests are simple. Serum must be used. I start progesterone testing with the Status Pro ®(1) on day 3 or 4 of the cycle and I test daily until about day 7 where I start testing for the LH surge with the LH® kit. I have found that mastiffs have an extremely short ovulation time. Where most breeds will ovulate over a 24-30 hours time period, I find mastiffs to ovulate in sometimes less than a 12 hour interval. Because of the short ovulation time,

it is difficult to see the color change on the LH test. There is a control line that is always pink and you are looking for the test line to become darker than the control to indicate ovulation. I have yet to see this happen. I find that the second line will get darker but not darker than the control and then all of a sudden, it will appear lighter. I extrapolate backwards to determine the ovulation time. That is why I do the LH test every 12 hours until I see this change. If you test daily or every other day as the kit suggests, you will miss the ovulation. I then do a progesterone test on day 4 after the day of presumed ovulation as a check. The progesterone should be rising. I then implant on day 5 after ovulation.

Many of you and the veterinarians you have, rely on vaginal smears to determine when to breed. I think that is satisfactory when you are doing natural breeding because the time window is longer. But the changes in the vaginal smears and the bitch "acting" like she is in heat, are the responses to the hormone estrogen. These occur several days prior to progesterone rising or when the LH peaks so if I have to get a more accurate timing, I make sure I test often.

Prior to breeding, I make sure the male has had a sperm culture and sperm check. Then on the day of implantation, I collect the semen and place it in a warmer. I put an IV catheter in the bitch and utilize the drug propofol for anesthesia. This is one of the safest anesthetics on the market for dogs. I will intubate and place the dog on isoflurane gas anesthesia for the procedure. The abdomen is prepared and the surgery starts. Once the uterus is exteriorized, the male makes a small ½" incision in the body of the uterus. Then I collect the semen in a sterile manner with a small 5" catheter and insert the catheter into the uterine body and inject the semen. The usual protocol calls for injecting the sperm with a needle into the uterus, but I find that I cannot tell if I am in the uterus or the wall of the uterus, so I open it up. Once placed, an assistant pinches the body of the uterus above where I made the incision to keep the sperm in the uterus while I suture the incision. Even though the bitch is in heat, there is minimal blood loss. I then inspect the ovaries and uterus and obtain biopsies of both for submission to the laboratory. I may also culture the uterus before I suture it closed. Then I close the abdomen and it is done.

I will ultrasound the bitch on day 21 and I will also start progesterone testing. There is a lot of literature in human medicine about progesterone levels dropping after day 30 and causing spontaneous abortion or resorption. There are only a couple of articles documenting this in veterinary medicine. I think it can be a problem. So, in the difficult to breed bitch, I will test progesterone weekly after day 21 and while it should gradually decrease until it gets to 2 ng/ml causing labor, it should not drop too low prior to the due date. If it drops to 5 ng/ml, I will use progesterone in oil to keep the progesterone up. Progesterone in oil will stay in the dog's body for 48 hours and can be redosed if needed. I continue to ultrasound often.

I schedule a C-section on day 62 post implantation. And Wallah!!!! It is done...

Again, this type of extensive workup and insemination isn't for everyone. I have had wonderful success utilizing this method in problem mastiffs. If and when you ever have a reproductive problem with your bitches or males, please do not hesitate to contact me. I would be happy to help if I can.

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1. Status Pro and LH kits are tests manufactured and sold through Synbiotics®.