

# **Preparing the Mastiff Bitch and Dog for Breeding**

## **By Robin M. Smith, DVM**

Many of us have our Mastiffs as our pets and are not interested in breeding. I do believe that is the majority of us. But for those of you who do breed (or who want to in the future), I think that there are some fundamental basics that need to be addressed. I think that most of you are familiar with most of the topics I am going to discuss and, as you know, I believe a strong relationship with your veterinarian is a must. So some of the topics I will address are not anything new to you. I get calls every day on the breeding management of the Mastiff, so I thought I would tell you how I approach a breeding problem.

Inappropriate management of the bitch used for breeding is the most common cause of infertility. There is an abundance of literature advising breeding on certain days ... or when the color of the vulvar discharge changes ... or there is perhaps a "new moon" in the sky. Although these recommendations may result in pregnancy for the average bitch, many normal bitches are poorly served by these guidelines.

I get many people who will tell me that if one must interfere in the breeding of the Mastiff, then that particular animal should not be bred -- the thought being that we are "creating" problems in the breed if we have to go to artificial means in order to produce a litter. I must disagree with this. As in humans, there are many reasons why a female may not become pregnant. I think that with good testing and trying to rid the breed of genetic defects as much as possible, we are limiting the animals that can be bred. So, why not do a little interference to try to improve the breed? Again, I am not here to argue, but to just give some advice on how to better manage your breeding Mastiffs.

A brief discussion of the canine estrous cycle is helpful in understanding the importance of management. Proestrus begins with vulvar swelling and a serious discharge. Male dogs are attracted to the bitch. This is a time of rising estrogen levels while progesterone stays low. This stage lasts about three to 17 days. When estrogen levels drop and progesterone levels rise, this signals the onset of estrus, or standing heat. The bitch flags, stands for the male and often seeks breeding. The average duration of estrus is nine days, with a range of three to 21 days. Diestrus begins with a continual rise in progesterone. Anestrus is the period of time between the end of diestrus and the beginning of the next proestrus -- the time of endometrial (lining of the uterus) repair. Many breeders believe a bitch should be bred on day nine and 11 of her cycle. Obviously, a bitch with a 14 day proestrus would be unlikely to conceive on day 11.

These hormonal changes can be monitored by the changing of the cellular structure in the vagina. For many years, vaginal cytology was the only way to determine where in the cycle a bitch was. In recent years, there has been the development of easy-to-use test kits that can measure the level of progesterone and LH (leutinizing hormone). When progesterone rises to a certain point, we know that ovulation has occurred; by measuring LH, we can determine the exact day of ovulation and can accurately determine when breeding should take place. This has been fantastic, especially with the increased use of chilled and frozen semen being sent across the country. We can pinpoint the exact day to breed. I have found that through the use of these tests, I rarely use

vaginal cytology. I tried to correlate the vaginal cytology with these tests when I first began doing this testing and found that the vaginal cytology really was a very "crude" method to determine breeding, as it did not correspond regularly with the actual hormonal changes in many bitches, especially the hard-to-breed bitches. I start to take blood samples from bitches on about day three to five, and do the progesterone testing every day until I see a rise in progesterone. Then I start the LH testing, and do this testing twice a day until I get the LH surge.

There are a lot of inherent problems with this test if not done this way. For one, many bitches have a very short (less than 12 hour) LH surge. So if the LH testing is done just once a day, you may miss the positive result ... and thereby miss the actual day of ovulation. Using the test twice a day, I have never missed a day of ovulation. Also, the test says you will get one line darker than the other one on the day of LH surge. I have only seen this happen one time in all the tests I have done. Again, due to the short surge in some bitches, you can get a rise and fall of LH within a short amount of time, and while the second line will be seen on the test, you may never catch it being actually darker than the control line (you must also realize that I am usually dealing with bitches that have had trouble being bred previously and never follow the "book"). You must just continue testing and if the line disappears the next day, you know that the previous day was the LH surge. Then you also should check progesterone on day four to five post what you thought was LH surge to confirm that it was not a false surge. You should have a rise in progesterone. If not, then you had a false LH surge and must continue the daily or twice-daily testing. I know this sounds confusing and if anyone or your veterinarians need some help, please feel free to call me (my number is listed at the end of this article). After determining the day of ovulation, I then breed on days two, four and six post-surge. Or, if I am doing an implant, I do it on day five post LH surge.

Before breeding, though, I require all bitches to have a vaginal culture and sensitivity. This will let me know if there is any ongoing infection. There is going to be bacteria in this area just by the nature of the area, but there should not be any heavy growth of bacteria. I prefer to culture approximately two weeks before breeding is going to take place. This is usually just an educated guess as far as time. If you wait until the bitch is in season, you may not be able to breed, because certain antibiotics that may be needed may not allow the breeding to occur.

The way that I culture under ideal situations is to pass a cannula (small tube) up into the vaginal vault, then pass the sterile culture swab through it, so as not to get any of the bugs that are just lurking around the outside of the vulva. Some veterinarians are actually using an endoscope and getting up to the cervix, but I have not done this, and I think personally (even as a veterinarian) unless reasons dictate, the costs would probably be too much, as cultures are expensive already.

There have been studies (Am. J. Vet Res 1992, May), that suggest that culturing the vagina from bitches without signs of genital disease is of little value. In my opinion, I think it IS of value. We are finding more puppies that are born naturally dying as neonates due to strep and Pseudomonas infections (usually of the lungs) and then going septicemic. These are ones that are confirmed at necropsy. I think a lot of these infections are picked up by the puppies passing through the vaginal vault and picking up these organisms. So, I do suggest doing the culturing, and will continue to support this practice.

If you get a culture and it comes back with *Pseudomonas*, it usually is mixed with a strep or something else. A sensitivity is also given, which suggests which antibiotics will work. So far, Baytril, gentocin, amikacin and the human drug, ciprofloxin, are able to get this bug. Baytril needs to be used at three times the bottle dose in order to kill *Pseudomonas*. It is also very expensive for the Mastiff dose. So I use gentocin (which is an injectable) and penicillin for five days.

Now, gentocin is a very potent drug and has toxicities. It can cause kidney damage. The kidney and liver function should ALWAYS be checked prior to using the drug. It is also safer to use the drug at six mg/kg ONCE a day instead of the lower dose two to three times a day. It has been found that the pulsing (or the up and down amount of the drug in the bloodstream) when given two to three times a day is actually more harmful on the kidney than the larger dose just once a day. I have yet to have a healthy animal have problems with gentocin. I would also suggest a baseline urinalysis prior to using. I give gentocin subcutaneously. As I said, I combine it with penicillin at a dose of 10,000 U/lb. twice a day. After treating for five days, I re-culture. Amikacin is very good, but very expensive for the Mastiff.

Chronic vaginitis in bitches older than a year of age is most often associated with identifiable abnormalities of the genitalia (i.e. the vulva not sloping down enough, or an inverted type of vulva), or it is identified with urinary infections. Therefore, if you are culturing and find your bitch is having recurrent infections, you should have her examined for possible problems, perhaps with an endoscope. I would also check the ears; *Pseudomonas* ear infections are very, very common, and the scenario of one dog licking another, etc., can cause spread of the infection, which can get into the genital tract. This could be our most common way that *Pseudomonas* gets around.

While on the subject of culturing, I believe that all males should be cultured, also. I find that more than 50 percent of the dogs I see have a low grade prostatitis and can benefit from antibiotics. You must remember that there are three fractions to a dog's ejaculate: a thin watery solution (the seminal fluid), then the sperm fraction, and lastly, the prostatic fluid. This last fluid is what you actually want to test. There are ways to collect just the prostatic portion of the fluid by a prostatic wash, but I just use an ejaculated sample. Prostatitis is the number one cause of low sperm counts and low libido in our male dogs. It is EASY to fix, but you must look for it.

I just got through looking at some sperm for a veterinarian friend of mine that she had gotten in from another state to inseminate into her own bitch (NOT a Mastiff). It had tons of white blood cells, so we cultured it and got back a heavy growth of *Pseudomonas*. Even though this came from one of the top dogs in that breed, I am glad we did not inseminate. Just think of the infection we could have caused! Instead, we notified the breeder, who took the dog in and got the testing done and put him on antibiotics. MORAL of the story: CHECK THE MALES, also.

There is a downside, though, and that is that being on strong antibiotics can predispose the bitch or male to yeast infections. I usually feed yogurt in heavier amounts while the dogs are on antibiotics to try to prevent this problem.

Besides culturing, the female should also be checked for any anatomical abnormalities as mentioned previously, like vaginal obstructions caused from strictures or an extremely angled vagina which would make breeding difficult.

The bitch and the sire should be thyroid-checked. Not only can hypothyroidism be an inheritable problem, but even if it is not, a low-normal thyroid can cause the bitch to resorb fetuses. The thyroid is the major organ that runs metabolism -- or the energy level -- of the body. During times of stress (i.e., estrus, pregnancy or sickness), the thyroid has to work overtime. In a breed such as ours, a low-normal everyday thyroid level, when put under stress, can drop to below normal, and therefore create some metabolic problems. I will sometimes, based on the thyroid level (and only certain thyroid hormone testing is really relevant), put a bitch on thyroid medication for the duration of pregnancy and then wean her off of it after whelping. I have done many thyroid tests on bitches not in heat, not pregnant and on bitches that ARE in heat or ARE pregnant, and found that the thyroid level does indeed drop significantly during these times of stress. As long as the bitch is under the care of a veterinarian, the thyroid supplementation cannot harm her. But, notice I do say "under the supervision of a veterinarian," because there are some conditions (such as cardiomyopathy, for instance) where thyroid supplementation can cause problems. Low thyroid levels have been correlated in humans with early resorption and miscarriages.

A brucellosis test must be required of all breeding animals.

I find that many breeders have great practices of culturing and doing all the testing prior to breeding, but fail to check one of the most important factors, the sperm. I require all dogs that are to breed to have a semen evaluation. Not only does this tell about the quality of the semen, but it also can tell if there is a prostatitis or other problem going on. This is the time to complete the culture mentioned previously.

Prior evaluation of the hips and elbows to determine they are free of dysplasia is also a recommended practice in breeding, especially in breeding our Mastiffs.

I also want the dog's vaccination status up to date prior to breeding. A heartworm check and fecal examination is also performed.

I know many of you are thinking that if you have to go through all of these steps, it will cost you a fortune. Yes, it can be expensive, but not as expensive as losing a litter due to infection or other reason, or losing the bitch because she resorbed her puppies and developed pyometra. AND the most important factor: FAILURE of breeding can be expensive in itself.

Once you have successfully bred you bitch, maintaining the pregnancy is the next step. I start to ultrasound on day 21 for confirmation of pregnancy. I usually cannot tell positively until day 28. When I am dealing with a bitch that has had fertility problems, i.e., not maintained a pregnancy or not been able to be bred (at least that they know of), I also will start checking progesterone levels weekly to make sure that progesterone is staying elevated. A common cause of resorption is the progesterone falling and not maintaining the pregnancy. This is an easy dilemma to solve. Progesterone can be given to the bitch.

I also start the bitch on a puppy food halfway through pregnancy to provide the adequate amount of protein and calcium she will need for the puppies. I do not use any other supplements.

I ultrasound weekly, especially the bitches that have had problems prior to coming to me for breeding, so I can keep a close watch on the fetuses. At day 50 or so, I will radiograph to see how many puppies there are and whether the pelvic canal is wide enough. If there are only a few puppies, I will try to let the bitch have the puppies naturally. If the bitch had a previous problem with vaginal infections, or if there are a lot of puppies, I will schedule a cesarean section. The most common cause of loss of puppies in our breed during whelping is uterine inertia, during which the uterus will get tired and give out after having only a couple of puppies, and the subsequent puppies die in the uterus because they are not delivered. I see no reason to put the bitch through this life-threatening problem when I can safely do a cesarean section. Again, I know there are varying opinions on this subject, so I will not delve into it any further at this time.

I hope that this article will help some of you with your breeding practices. If any of you have any questions at all... or concerns... or just want some advice, please contact me. I am always happy to talk with Mastiff people.

Robin M. Smith, DVM  
Westminster Veterinary Emergency/Trauma Center  
269 W. Main St., Westminster, MD 21557  
Work 410-848-3363  
(Fax) 410-848-4959  
E-mail: [RocknRob56@aol.com](mailto:RocknRob56@aol.com)