

## Veterinary Involvement in the Breeding Process

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Veterinary involvement in the breeding process is often overlooked, or considered to be an unnecessary expense. While this may be the case in normal pregnancies and parturition (whelping), two cases this past month brought the necessity of timely veterinary involvement into sharp focus.

Case 1: Three-year-old coonhound bitch delivered one apparently normal puppy 14 hours ago. Bitch has been uncomfortable, with some abdominal straining. She has an elevated temperature, and green-brown vulvar discharge. Digital vaginal exam is unremarkable (cannot feel a puppy).

Case 2: Ten-year-old beagle bitch has a progressively enlarging right rear mammary gland. Mass is firm and irregular in shape. Exact date of breeding is unknown. Owner estimates due date to be in about 10 days.

For the sake of argument, we will assume that both bitches in question have received timely and adequate vaccination, worming and genetic screening.

In my practice, the minimal essential database to be assembled on a bitch prior to and during pregnancy is as follows:

1. Pre-breeding exam to determine fitness for breeding
2. Monitoring of plasma progesterone prior to breeding
3. Abdominal radiographs after 40 days of pregnancy for fetal count (if ultrasound was available this would be a viable alternative)

These three pieces of information allow us to identify physical abnormalities that need to be addressed prior to breeding, determine the exact date of ovulation, and determine number and location of fetuses (and their viability if using ultrasound). We can be confident of fetal age prior to a planned C-section, if one becomes necessary, and schedule our staffing (and volunteer) needs to assist with puppies. If a puppy is non-viable (dead), sometimes changes will occur that we can see on radiographs that allow us to predict problems in advance or start advance treatment of the bitch. In the case of dystocia (difficulty with whelping) we can move more quickly to determine the cause of the problem and more easily advise the owner in a phone consultation. As an owner, you will know when all puppies have been delivered - you don't need to wonder if she is straining due to uterine cramping or because there is another puppy that she can't deliver - you will know which one it is. You will be more confident when deciding if you need an emergency trip to your vet or to the emergency clinic, and you don't have to wonder if waiting will mean a non-viable puppy or a bitch too sick to care for puppies.

Back to the trenches: in both cases, two abdominal radiographs were taken.

The three-year old bitch did not have any more puppies to deliver and was normal post-whelping. However, the owner experienced a sleepless, worried night and the bitch and puppy were exposed to the stress of transport and the environment of a veterinary clinic shortly after whelping. An emergency exam fee also applied. The owner probably paid the same amount as fulfilling the three-step process above.

The ten-year-old bitch had 6 fetuses visible inside her abdomen, and one puppy outside the body wall. She had an inguinal hernia (a hole in her body wall between her inside thigh and her abdomen). The fetus slipped through the hole during an early stage of pregnancy and continued to develop under the skin, inside the uterus. The owner was given an estimate for a multi-step surgery: 1) Remove and attempt to revive the herniated puppy. 2) Close the uterine incision and replace in abdomen. 3) Repair the inguinal hernia. 4) Perform a regular C-section. Complications with scheduling the surgery: there is about a one-week window of variation when predicting pup maturity/whelping date using breeding date, whereas using the progesterone surge, the whelping date can be predicted within approximately 48 hours. Performing the c-section on actual whelping date vastly increases pup survival. Unfortunately, we only have a breeding date for this bitch, not the date of her progesterone surge. We do at least know the number of pups, and can schedule appropriate staffing to care for the pups during delivery.

Unfortunately, the owner did not schedule surgery or advise the clinic of the outcome of any procedure performed at another clinic. If the herniated puppy had been detected sooner, another possible surgical option would have been to reduce (replace the uterus and pup in the abdomen through the hernia opening) the hernia, and repair the hernia - then allowing the pregnancy to progress to term and the puppies whelp normally. However, by the time I saw the bitch this was no longer an option. Also, during a pre-breeding exam, the age of bitch would have been addressed, and the owner would have been discouraged from breeding a bitch of her advanced age. In a large breed dog such as an Anatolian, the advanced age would be an even greater issue than in a beagle, but in either case it is not recommended to breed a ten-year-old bitch.

In addition, if a breeder desires to know if a bitch is pregnant without the use of radiology (x-rays) or ultrasound, there is a blood test for the hormone relaxin called ReproCHEK which is available from the company Synbiotics. ReproCHEK detects relaxin produced by the developing placenta(s) as early as day 20 after the luteinizing hormone (LH) surge. It is suspected that factors such as breed, size of the bitch, and litter size may have some influence on the level of serum relaxin. Although approximately 80% of pregnant bitches are detected between 20 and 28 days post-LH surge, some may not be detected as positive until day 31. In general, if the bitch was bred at the appropriate time in her estrous cycle, pregnancy may first be determined between 20 and 31 post-LH surge, or, 14 and 33 days post-breeding. I have used this test very little, but it may be of use in certain situations and is worth mentioning. This test is somewhat limited because it does not provide information about fetal age, number, or maturity, just that the bitch is or is not pregnant.

In conclusion, a minimal database of a pre-breeding physical exam, monitoring plasma progesterone during estrus prior to breeding, and abdominal imaging (radiographs or ultrasound) prior to whelping can save the breeder sleep, time and heartache and sometimes even money. It may also save the life of the bitch or her puppies. The majority of bitches will whelp uneventfully, and knowing the puppy count and ovulation date is mostly convenient. However, having the right information in hand is priceless when faced with a difficult decision during late pregnancy, and unfortunately there is no way to go back in time and retrieve the information once you know that you need it.

#### References

*Canine Pregnancy: Predicting Parturition and Timing Events of Gestation.* In: Recent Advances in Small Animal Reproduction, Concannon P.W., England G., Verstegen III J. and Linde-Forsberg C. (Eds.) From: International Veterinary Information Service, Ithaca NY (www.ivis.org), 2000; A1202.0500

*Determination of the Optimal Breeding Time in the Bitch: Basic Considerations.* In: Recent Advances in Small Animal Reproduction, Concannon P.W., England G., Verstegen III J. and Linde-Forsberg C. (Eds.) International Veterinary Information Service, Ithaca NY (www.ivis.org), 2002; A1231.0602

*Ultrasound Imaging of the Reproductive Tract of the Bitch.* In: Recent Advances in Small Animal Reproduction, Concannon P.W., England G., Verstegen III J. and Linde-Forsberg C. (Eds.) International Veterinary Information Service, Ithaca NY (www.ivis.org), 2003; A1203.0703

*Direction insert.* Synbiotics' ReproCHECK Canine Pregnancy Test Kit.