Pregnancy Diagnosis

The following interview was originally released as a podcast on November 24, 2014.

In this podcast we discuss pregnancy diagnosis with reproductive specialist Dr. Autumn Davidson. Dr. Davidson obtained her BS and MS at the University of California, Berkeley, with an emphasis in wildlife ecology and management. She is a graduate of the UC Davis School of Veterinary Medicine and is board certified in Small Animal Internal Medicine. Dr. Davidson is currently a clinical professor at the School of Veterinary Medicine, UC Davis in the department of medicine and epidemiology where she specializes in small animal theriogenology (reproduction) and teaches students during their senior year. Dr. Davidson also practices at PetCare Veterinary Hospital East Campus in Santa Rosa, CA, and Lone Oak Veterinary Hospital in Three Rivers, CA, where she receives both internal medicine and reproduction cases.

What are the reasons that a semen evaluation might be requested?

AKC Canine Health Foundation (CHF): Can we start by explaining the normal length of gestation in the bitch?

Dr. Autumn Davidson (Davidson): Normal gestation in the bitch lasts 64-66 days from the LH surge, or the initial rise in progesterone indicating the day of the LH surge. Normal gestation is 56-58 days from the first day of diestrus, if it can be determined from vaginal cytology. Normal gestation from breeding dates varies from 58-72 days!

CHF: What is the most accurate way to calculate a bitch's gestation length?

Davidson: Using ovulation timing data (progesterone levels, LH testing, vaginal cytology) is the most accurate way to determine gestational length. If that is not available, ultrasound measurements of the gestational sac (less than 40 days gestation), biparietal diameter (greater than 40 days gestation), or crown rump length offers a less precise but still helpful way to determine gestational length. There are breed variations that make this less precise (brachycephalics, giant and toy breeds). Finally, evaluating a radiograph for fetal dentition appearance offers a late gestational method of determining term.

CHF: Does gestation length vary by breed or litter size?

Davidson: Studies have shown that some breeds (e.g. German Shepherds) have a tendency for longer gestation, and there can be a tendency for very large litters to have shorter gestations and very small litters to go longer, but these are just tendencies. Clinically, monitoring bitches with a litter size small for their breed (i.e. 2-3 pups in a Labrador) for prolonged gestation is important. Fetal oversize, dystocia and primary inertia can occur.

CHF: Can you give us an overview of what occurs during gestation in the bitch?

Davidson: Canine embryos enter the uterine lumen 10-11 days after fertilization and "float around" for an additional 6-7 days before implanting at day 16-18 after fertilization. The canine placentation is endothelial-chorial with a zonary placenta resulting. Fetuses are normally distributed throughout both uterine horns unless underlying uterine pathology is present. Canine fetuses are normally positioned cephalad or caudad with the dorsum of the fetus closest to the dorsum of the dam.

CHF: When do you recommend first attempting pregnancy detection? At what point during gestation is pregnancy detection most reliable?

Davidson: Pregnancy evaluation with ultrasound can be attempted with good equipment at 20-22 days of gestation, but is most reliable after day 25.

CHF: Can you take us through the different methods for pregnancy detection and how accurate they are?

Davidson: Ultrasound is the most reliable and informative because it allows evaluation of fetal wellbeing as well as pregnancy, litter size and distribution. Its accuracy is operator dependent.

CHF: When can you detect a fetus using palpation?

Davidson: Palpation works best mid gestation, around 30 days, when the fetuses are large enough to palpate but still readily separated from one another and marked uterine enlargement is not present. I always palpate before ultrasound to maintain the skill.

CHF: Can an X-ray be done to diagnose pregnancy?

Davidson: Yes, after skeletal ossification permits differentiation from other causes of uterine enlargement (pyometra). This is best after 45+ days, optimal after 55 days of gestation.

CHF: Can measurement of progesterone levels be used to diagnose pregnancy?

Davidson: An elevated level of progesterone occurs in the bitch after ovulation, pregnant or pseudopregnant, so it cannot be used to confirm pregnancy. Pseudopregnancy is normal in the bitch and indicates a normal hypothalamic-pituitary-ovarian axis. If progesterone levels are low, indicating failure to ovulate, pregnancy can be ruled out.

CHF: What is Relaxin and is it reliable for pregnancy detection in the bitch?

Davidson: Relaxin is produced by the placenta and is a reliable indicator for the presence of the fetoplacental unit. It can be positive if placental tissue alone is present, as with an abortion or post-partum. It cannot be used to evaluate fetal health. It is not an inexpensive assay, and ultrasound gives much more information comparatively.

CHF: What should owners do to ensure adequate maternal care and pregnancy monitoring?

Davidson: I encourage owners (even experienced breeders) to read only reliable publications (not always the internet!), I give out extensive handouts regarding husbandry, and I offer Dr. Root-Kustritz' book *The Dog Breeder's Guide to Successful Breeding and Health Management* at cost. I encourage them to ask questions about anything and I give out my email and cell phone for texting.

CHF: Finally, can you tell us about any common pregnancy complications that we should know about?

Davidson: Common problems involve incorrect nutrition, unnecessary supplementation, obesity, use of problematic medications (i.e. steroids, NSAIDS, azoles), inappropriate discontinuation of parasite preventatives, antibiotics without indication, failure to avoid exposure to infectious disease during the last 3 weeks of gestation, and failure to recognize secondary uterine inertia in a timely fashion. Uncommon problems involve uterine irritability/pre-term labor, poor maternal behavior, poor lactation, small litter size and primary uterine inertia.