

Resorption

By Tracy Powell, DVM

Resorption is incredibly frustrating for breeders. We get excited when the ultrasound on our bitch shows 8 puppies, but then we are disappointed when only 6 puppies are born. Where did they go? They were there 4 weeks ago. What happened? We start questioning ourselves. Is it what I am feeding? Did I do something wrong? Did I bring something home on my clothes from a dog show? The dog that was out with a handler just came home. Could he have given her something? I was watching a bitch for my friend. Could she have given something to her? The questions go on and on. Unfortunately, in most cases we will never know why a bitch resorbs. There are many reasons why it occurs, but the exact reason is often difficult to determine.

Resorption is defined as early embryonic or fetal death within the first 45 days of pregnancy. When a resorption occurs in a bitch, you do not usually see anything externally. There are no contractions and we do not see a fetus pass. The bitch essentially dissolves the fetus inside of her. Most scientific studies say about 10-15% of fetuses are resorbed. That means at least 1 in 10 fetuses are resorbed.

Resorptions occur because of infectious and noninfectious causes. Infectious causes include bacteria, parasites and viruses. Some bacterial organisms that cause resorption include *Brucella canis*, *Campylobacter*, *Salmonella*, *E.coli*, and B-hemolytic streptococci. Some parasites include *Toxoplasma gondii* and *Neospora caninum*. Some viral causes include Canine Herpesvirus, Canine Parvovirus Type 1, Canine Distemper Virus, *Mycoplasma* and *Ureaplasma*.

The noninfectious causes of resorption include endocrine abnormalities, drugs given to the bitch during pregnancy, genetic factors, environmental factors and nutritional factors. An endocrine abnormality that can cause resorption is hypoluteoidism. Hypoluteoidism is when the bitch does not maintain adequate progesterone levels (greater than 2 ng/ml). The bitch must maintain a certain level of progesterone to maintain the pregnancy. If the level drops below that, they will lose the litter. Certain drugs should not be given during pregnancy as they can cause congenital malformations or be toxic to the embryo. Examples include Enrofloxacin (Baytril), Doxycycline and Tetracycline. Some genetic factors include chromosome abnormalities, very tight inbreeding and the age of the bitch. Environmental factors include smoke, metal levels in the water, trauma, etc. There has been some discussion amongst scientists about the possibility of certain antioxidants used in pet foods causing infertility or pregnancy loss. The debate continues over whether raw diets versus commercially prepared diets have an effect on fertility and pregnancy loss. I also think that if a strong placental attachment does not occur between the fetus and the uterine wall (cysts, many fetuses in one area, etc.) a resorption can occur.

I have heard many breeders discussing that an ultrasound and/or radiographs can cause fetal loss. I have not seen any scientific backup for this theory. I am sure if you took a radiograph of a bitch every day from the day you bred until the day she whelped, there would be the possibility of some genetic defects. I routinely perform one ultrasound at 28-30 days and a radiograph 5-7 days prior to whelp. Besides the benefit of

knowing if the bitch is pregnant, the ultrasound may show a resorption site and we are able to follow that more closely. If you did not do the ultrasound, you would never know she resorbed. If we find a resorption site, there is no way to make that fetus viable again, but it alerts us to watch for further resorptions, keep track of the progesterone levels, etc. I do not start a bitch on antibiotics if I see a resorption site unless there is reason to feel the resorption was caused by a bacterial infection, which usually presents as foul smelling vaginal discharge or pyometra.

When I am asked why there were more puppies on the ultrasound than actually whelped, my answer is either one of two things. Either there was fetal loss (resorption or abortion) or the ultrasonographer didn't count the number of puppies correctly. As a vet that performs many ultrasounds for pregnancy, I can tell you that it is easier to do an ultrasound on a bitch lying on her back with her feet up. You can get a much better count that way. Many Danes won't lie that way so we have to ultrasound them standing. There is a greater likelihood of double counting or missing fetuses when the bitch is standing.

What role, if any, does the stud dog play in resorption? The stud can affect resorption if he gives the bitch an infection or if genetically he and the bitch do not "match up".

The top ultrasound picture is a normal fetus. The bottom two pictures show resorptions.

