



Wilsonville
Veterinary
Clinic
Phone: (503) 682-3737
Fax: (503) 682-3540



REPRODUCTIVE
REVOLUTIONS
Phone: (503) 982-5701
Fax: (503) 982-5718

Vaginal and Preputial Bacterial Flora and their Role in Reproductive Disease

There are numerous bacteria that normally reside in the vaginal canal in the bitch and the preputial cavity in the dog. These bacteria are normal inhabitants and their presence in low to moderate numbers ensures a healthy mucosal environment. When these bacteria invade the higher reproductive tract (i.e. uterus, prostate, testicles), if the animal's immune system does not function properly and remove them in a timely manner, they can proliferate and cause disease (i.e. inflammation of the lining of uterus called endometritis which can turn into a full blown uterine infected called pyometra; infection of the prostate called prostatitis; or inflammation of the testicles and tubular sperm storage system called orchitis/epididymiditis). If the body's innate defense systems work properly, these bacteria are quickly cleared and do not cause disease.

An example of this innate immunity would be when a bitch is bred naturally and all of the bacteria from the dog's penis and the bitch's vagina are forced up into the uterus along with the ejaculate. In a normal bitch, these bacteria are cleared from the uterus within 24 hours of breeding, resulting in a sterile environment in the uterus when the cervix closes at the end of the fertile period. If uterine defenses are inadequate, bacteria remain become trapped within the uterus during the high progesterone phase of the cycle (diestrus) and they proliferate in this environment, first causing endometritis and then eventually progressing to the production of pus in the uterus or pyometra.

Because bacteria are normal inhabitants of the lower reproductive tract it is very difficult to determine if they are potentially pathologic or not, simply based on their presence. Common bacteria include Staphylococci, Streptococci (particularly group G), Proteus, Pasteurella (now called Hemophilus), E. coli, Pseudomonas, Klebsiella, Bacillus and Mycoplasma species. They enter through the body orifices (vulva and prepuce) and are in highest numbers closest to the external opening and lesser numbers as one moves up the reproductive tract due to immune clearance mechanisms. Cultures of the vaginal canal or preputial cavity will almost always result in growth of bacteria and interpretation of this growth is very difficult in terms of determining the need for treatment. In fact, a negative culture would be reason to suspect inadequate sampling and not actually a true negative culture (except during anestrus when vaginal bacterial numbers are usually very low).

Therefore, when diagnosing reproductive disorders it is critical to culture fluid from the higher reproductive tract because it is very difficult to distinguish between normal and pathologic bacteria in the lower tract because those bacteria are supposed to be present. This means culturing the uterus, the third fraction of the ejaculate for prostate disease, or the second fraction of the ejaculate for testicular disease.

Jennifer Anderson, DVM Kristen Hardinge, DVM Cheryl Lopate, MS, DVM, DACT
Raymond Calkins, DVM Kristin Beckley, DVM

9275 SW Barber St Wilsonville, OR 97070

www.wilsonvilleveterinaryclinic.com

www.reproductiverevolutions.com

The request or requirement to perform vaginal cultures that is made by some breeders, while common, is not diagnostic for any pathologic condition and the results of these cultures should never be used to determine if antibiotic therapy is indicated. Treatment with antibiotics in an animal without inflammatory disease will kill or reduce the population of bacteria in the lower tract which is protective of mucosal health and may actually predispose growth of pathologic bacteria higher up in the tract and thereby increase the risk of those patients developing significant reproductive disease in the future. Furthermore, the use of antibiotics as a preventative or prophylactic treatment without valid cultures of the higher reproductive tract should not be used for the same reason.

It is very important to remember that there is only one venereally transmitted bacterial disease in the dog: brucellosis. All of the other bacteria already live in the normal reproductive tract of all dogs and normal immune defense mechanisms will quickly clear any contamination that occurs during breeding for both the dog and the bitch. Brucellosis testing is performed using blood tests prior to breeding and is recommended on every breeding cycle for both the dog and the bitch regardless of type of breeding performed or whether the dog or bitch have ever been bred before because the bacteria is transmitted both by aerosol contact (60% of the time) as well as venereal contact (40% of the time).

References:

- 1) Bjurström L, Linde-Forsberg CL. Long-term study of aerobic bacteria of the genital tract in breeding bitches. *Am J Vet Res* 1992; 53:5:665-669.
- 2) Bjurström L. Aerobic bacteria occurring in the vagina of bitches with reproductive disorders. *Acta Vet Scand* 1993; 34: 29-34.
- 3) Doig PA, Rhunke HL, Bosu WTK. The genital mycoplasma and ureaplasma flora of healthy and diseased dogs. *Can J Comp Med* 1981; 45:233-238.
- 4) van Duijkeren E. Significance of the vaginal bacterial flora in the bitch: A review. *Vet Record* 1992; 131: 367-369.
- 5) Hirsh DC, Wiger N. The bacterial flora of the normal canine vagina compared with that of vaginal exudates. *J Small Anim Pract* 1977; 18:25-30.
- 6) Olson PNS, Mather EC. Canine vaginal and uterine bacterial flora. *J Am Vet Med Assoc* 1978; 172 (6): 708-711
- 7) Schultheiss PC, Jones RL, Kesel L, Olson PN. Normal bacterial flora in canine and feline uteri. *J Vet Diagn Invest* 1999; 11: 560-562.
- 8) Watts JR, Wright PJ, Whithear KC. Uterine, cervical and vaginal microflora of the normal bitch throughout the reproductive cycle. *J Small Anim Pract*. 1996;37: 54-60.