

Whelping and Managing Healthy Puppies

Mushtaq A. Memon BVSc, PhD, DACT

Ahmed Tibary, DMV, PhD, DACT

Department of Veterinary Clinical Sciences, College of Veterinary Medicine
Washington State University, Pullman, WA 99164

Whelping

Even though exact mechanism of initiating parturition in the bitch is not well understood. But it is believed that both the fetal and maternal factors contribute in initiating whelping. The hormonal changes, including decrease in progesterone, and increase in prostaglandin F2 α , prolactin and corticosteroids play an important role in whelping.

Onset of whelping can be predicted by drop in serum progesterone and rectal temperature¹ (hypothermia), etc.

Stages of whelping

Stage I

It lasts about 6-12hrs. Synchronous uterine contractions and dilation of the cervix occurs during this stage but these contractions are not visible from outside. Bitch is usually restless, may not eat well, pant and shiver. First timer young bitches may get nervous and this stage of whelping may last longer.

Stage II

Puppy delivery occurs during this stage. The puppies are usually delivered every 30 minutes to 1-hour interval, with some exceptions of longer interval. On average it takes about 3-6 hours to complete the whelping. Up to 24 hour to complete the delivery has been reported without any complications.

During this stage, the cervix is wide open and with the help of uterine contractions and the mother's push, the puppy is delivered. In uterus, the puppy is enclosed in two placental membranes – allantochorion (outer) and allantoamnion (inner). At delivery, the outer membrane breaks and the fluid are discharged from the vulva. Most of the puppies are delivered enclosed in the inner membrane, which is usually removed by licking by the bitch. If the puppy is covered with the membrane, a person in attendance may remove it to facilitate puppy's breathing. The bitch's vigorous licking stimulates breathing and cardiovascular system of the puppy. The bitch also sever the umbilical cord during the licking. If the umbilical cord is intact, it can be ligated with a thread about an inch from the puppy, and cut with scissors. Dipping in 2% iodine solution should disinfect the cut end.

The puppy delivery by head or tail coming first is considered normal. Lochia or postpartum discharge in the bitch is dark green color compared to red color in other

domestic animals. The green color comes from biliverdin, a pigment in the placental band, attached to the uterus. As the placenta detaches from the uterus, the pigment is released. Lochia may be discharge for 2-3 weeks post whelping.

Stage III

Placental delivery is completed during this stage. As discussed before, the placenta usually follows the delivery of each puppy, which may take 5-15 minutes during 2nd stage of whelping. Retention of fetal membrane is uncommon.

Managing Healthy Puppies

About one-third of all pups born alive die by weaning age; most die within the first 2 weeks of life. Causes of puppy mortality are poorly understood, and fetal maturity is difficult to assess. Maternal age, however, does appear to influence puppy survival, performance decline after the fifth year of life or after the sixth litter.

a. Hypothermia

The most critical need of a new puppy is **warmth**. Usually, the newborn is protected against hypothermia by its closeness to the dam and littermates. Neonatal puppies cannot regulate their body temperature until 12-14 days after birth. Neonate can maintain its body temperature only 8 to 12⁰F above the environmental temperature. The owners must ensure that the pup's environmental temperature be approximately 85⁰F.

The physiologic reasons for the lack of adequate thermoregulation include decreased body fat, poor peripheral vasoconstrictive reflexes, a large surface area to body weight ratio, and lack of a shivering reflex. The shivering reflex begins at about six to eight days of age. The absence of an adequate cardiovascular response to hypothermia seemingly makes hypothermia an irreversible event in the newborn, especially if accompanied by anorexia.

Hypothermia is recognized when the core body temperature drops below 94⁰F. Ineffective nursing may manifest it. The bitch may push the ill puppy away from the others. Initially, the pup may become more active, but this activity stops as the core body temperature begins to fall. As hypothermia worsens, the pup will become motionless, with very slow respiration.

One method of treatment is to slowly re-warm the puppy by holding the pup next to one's body - inside a loose garment or pocket - and by gently massaging the pup. Rapid re-warming should be avoided as this will result in an increase in metabolic rate with the possibility of increasing tissue hypoxia. Other heating devices that have been used include heating pads, lamps, and hot water bottles. Regardless which heating device is utilized, care should be taken to prevent burns, as the neonate may not show pain, and the peripheral circulation may be inadequate to effectively distribute the heat. Another alternative is to use of an incubator, which should be kept 85-90⁰F. Care should be taken

not to exceed 90°F, because this can lead to respiratory distress. For both the normal and hypothermic neonate, the relative humidity within the incubator should be maintained at 55% to 60%, and the oxygen concentration should be between 30% and 40%.

b. Colostrum Deficiency

Colostrum is the second critical need of the newborn. Even though carnivore placentas are relatively thin compared to other domestic species, the neonate acquires relatively small amounts of immunoglobulins prior to birth; ingestion of colostrum is almost essential to normal growth. Colostral antibodies are absorbed within the first 24 hours. Although puppies deprived of colostrum may survive if fed bitch milk replacer, they will have been deprived of 80-90% of the passive immunity nursing puppies acquire. If the pup is slightly chilled or weak, it should be warmed and then a saturated glucose solution (sugar water, honey water, karo syrup, etc.) is preferred to administration of either mother's milk or milk replacer.

Reference

1. Johnston SD, Root Kustritz MV, Olson PNS. Canine parturition – Eutocia and Dystocia. In: Canine and Feline Theriogenology. WB Saunders, Philadelphia, p. 105-128, 2001.
2. Veterinary Pediatrics - Dogs and Cats from Birth to Six Months. Editor, Hoskins JD. 2nd ed. WB Saunders, Philadelphia, 1996.