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Clinical Article

SURGICAL MANAGEMENT OF CONCURRENT FETAL MUMMIFICATION AND MACERATION IN A BITCH

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SUMMARY

Fetal death can occur at any point during pregnancy and may result in a variety of outcomes, including resorption, abortion, or retention of the fetus that can result into maceration or mummification depending upon the cervical dilatation. Rarely both conditions are evidenced in a single case and present case reports the combined occurrence of fetal maceration and fetal mummification in a bitch and its successful surgical management.

Keywords: Fetal maceration, Fetal mummification, Bitch, Surgical management

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Canine fetal maceration and mummification are two forms of incomplete abortions that can occur as a result of fetal mortality (Romagnoli, 2002). Fetal maceration refers to the putrefaction and autolysis of muscles and soft tissues of the fetus within the uterus, leaving only fetal bones (Johnston *et al.*, 2001). This process can occur when the fetus fails to be expelled due to uterine inertia, and pathogens enter the uterus through a dilated cervix (Long, 2009). However, fetal mummification, occurs when the fetus dies in the uterus and the fetal tissues become dehydrated due to absorption of placental and fetal fluids, and involution of the maternal placenta, leading to the preservation of the fetal body (Lefebvre, 2015). While fetal maceration is more commonly encountered in cattle, it is a rare occurrence in dogs due to their ability to expel the fetus upon fetal death (Feldman and Nelson, 1996). Even though fetal mummification has been reported in female dogs, its exact incidence remains unknown, but it is believed to be infrequent (Vikram *et al.*, 2015). The process of mummification can take several weeks and typically occurs in the last stage of gestation after ossification of the bones. Both fetal maceration and mummification can have significant consequences for the dam's health and future reproductive success as can result in various complications, including uterine perforation, endometritis and perforative peritonitis (Spruijt *et al.*, 2022). Rapid bacterial invasion in the canine uterus can lead to toxemia and septicemia, resulting in fatal consequences. Several reports regarding management of fetal maceration or mummification in canines have been published till date but no report depicting fetal mummification and maceration in single case has been published. Present case report describes surgical management of fetal maceration combined with fetal mummification in a bitch.

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Case History and presentation

A 3-year-old German Shephard bitch in 3rd parity was presented to VCC, COVS Rampura Phul, GADVASU having history of mated 68 days back and exhibitsfoul smelling greenish vulvar discharge for 4 days. On general clinical examination the animal was anorectic and rectal temperature recorded was 99.8º F. Per-vaginal examination revealed congested vaginal mucus membrane and an oversized autolyzed fetus stuck in pelvic cavity and even mild traction resulted in disintegration of fetal parts. Emergency radiograph of animal revealed presence a small sized bony structure in addition to a fully-grown fetus. In light of risk associated with uterine perforations due to the presence of macerated fetus, it was decided to go for emergency surgery.The owner was duly informed about the prospective impact on the animal's future fertility; however, they persisted in opting for a cesarean section over an ovariohysterectomy.

Treatment and discussion

Prior to the surgical procedure, venous catheterization was carried out and any risk of hypovolemia during operation was managed by administering 0.9% NaCI. The pre-anesthetic medication wasconsisted of atropine sulfate at a dose of 0.04 mg/kg, administered subcutaneously, butorphanol at a dose of 0.2 mg/kg administered intramuscularly. Anesthesia was induced by administering mixture of midazolam (0.5 mg/kg) and ketamine (5 mg/kg). Linea alba approach was chosen for the surgical procedure. The animal was placed in dorsal recumbency and prepared for aseptic surgery. Laparotomy was performed using standard procedures and both uterine horns were exteriorized. Digital manipulation of horns

revealed presence of a bony structure in one horn with one fetus present in cervical canal. Further, incision was given on uterus over the bony structure and was removed from uterine lumen. Similarly, another fetus (putrefied) stuck in cervical canal was also delivered. Scanty amount of foul smelling brownish coloured uterine fluid (pasty consistency) was present in uterine horns which was removed by gently milking the uterine horns. Uterine lumen was flushed using mild solution of betadine and surgical wound was closed using standard technique. Post-operative care including broad spectrum antibiotic therapy, NSAIDs and other supportive therapy was instituted to animal and sutures were removed 14 days post-surgery. Animal showed complete recovery with normal appetite and no post-partum complication were observed till 1.5 months post- surgery.

Radiograph of bony structure removed from uterus revealed completely formed and ossified fetal skeleton/bony structure which was found wrapped inside shriveled fetal membranes covered with sticky brownish coloured material. Thus, present case was diagnosed as case of fetal mummificationfollowed with maceration in another fetus. Post-operative antibiotics with other supportive treatment was prescribed and animal showed complete recovery.

Fetal death can occur at any point during pregnancy and may result in a variety of outcomes, including resorption, abortion, or retention of the fetus(Soni *et al.*, 2018). In some cases, the retained fetus may become mummified, while in others, bacterial contamination can lead to maceration (Tilghman *et al.*, 2019). Fetal mummification is a relatively uncommon occurrence in canines, typically resulting from fetal death after the first third of pregnancy. This process involves the gradual resorption of fetal fluids, causing the placenta to shrink and envelop the deceased fetus (Ahuja *et al.*, 2017). Presence of mummified fetus generally does not affect the viability of another fetus and generally live fetus alongside mummified fetus can be observed (Roberts, 2004). In present case death of fetus was supposed to occur after complete ossification but was retained with another live fetus. On completion of gestation length, cervical dilatation occurred but oversized fetus resulted in dystocia leading to maceration of full-grown fetus due to entry of autolytic microorganisms through patent cervical opening as previously described by Mahla *et al.*, 2016; Tunc and Celik, 2021.

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