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Surgical management of foetal maceration in a queen: A case report

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Abstract

A case of 1.5 years old Persian cat was presented with prolonged gestation, abdominal distension, fetid vaginal discharge, anorexia and general weakness, accompanied by a history of abortion at the Veterinary Clinical Complex, Veterinary College, KU, Navsari. The cat had aborted two underdeveloped kittens before five days. Clinical examinations indicated mild dehydration and palpable firm structures with associated pain in the abdominopelvic region. Ultrasonography confirmed the presence of foetal structures and absence of foetal movements and heartbeats. Based on the clinical findings ovariohysterectomy was performed under general anesthesia. Upon incision of the exteriorized uterine horns, two macerated fetuses, in an advanced stage of putrefaction, were delivered. The queen recovered uneventfully following postoperative medications and management, with complete wound healing observed three weeks post-surgery.

Keywords: Abortion, caesarean section, cat, maceration

1. Introduction

Foetal maceration or mummification occurs only when foetal death takes place after the formation of foetal bones, as death prior to the development of bony structures leads to rapid tissue autolysis and subsequent resorption within the uterus (Lefebvre, 2015)^[1]. Complications in pregnant cats can arise at any stage of gestation, potentially leading to embryonic or foetal death, with subsequent pregnancy loss manifesting as foetal resorption, abortion, stillbirth, maceration or mummification (Givens and Marley, 2008)^[2]. Foetal maceration is characterised by the septic decomposition of foetal tissues within the uterus, facilitated by an open cervix that permits the entry of oxygen and putrefactive organisms; this condition leads to the disintegration and lysis of foetal soft tissues, leaving only the foetal bones (Tunc and Celik, 2021)^[3]. Foetal maceration remains one of the least documented reproductive pathologies in cats (Suresh *et al.*, 2023)^[4] and can lead to potential complications, such as metritis and pyometra. This condition arises after intrauterine foetal death due to a variety of factors, including infectious agents, trauma, exposure to certain toxins or drugs, metabolic disturbances and genetic or hormonal abnormalities and is commonly observed in the later stages of gestation (Lamm and Njaa, 2012)^[5] and it represents a clinical emergency that must be addressed promptly to ensure a favourable prognosis. This condition results in foetal loss and can significantly impact future fertility; the longer the condition remains untreated, the greater the damage to the endometrium, leading to poorer outcomes (Devi *et al.*, 2020)^[6]. Common clinical signs include thickened painful abdominal loops on palpation, weakness, loss of appetite and foul-smelling vaginal discharge; although in some cases, the discharge may be absent (Suresh *et al.*, 2023)^[4]. Management of foetal maceration comprises medical and surgical interventions, depending on the severity of the condition. In cases where medical treatment proves inadequate, surgical interventions, such as hysterotomy, hysterectomy or ovariohysterectomy are indicated (Opaluwa Kuzayed *et al.*, 2024)^[7].

2. Case history and Clinical Observation

A case of 1.5 years old Persian cat was presented with prolonged gestation, abdominal

distension, fetid vaginal discharge, anorexia and general weakness, accompanied by a history of abortion at the Veterinary Clinical Complex, Veterinary College, KU, Navsari. The cat had aborted two under developed kittens before five days. Owner reported that no straining was noticed after queening of the last kitten. Clinical examinations indicated mild dehydration and palpable firm structures with associated pain in the abdominopelvic region. Ultrasonography confirmed the presence of foetal structures and absence of foetal movements and heartbeats (Fig.2). Haematology revealed anemia and neutrophilia (Fig.1). Based on the history, clinical signs, haematology and ultrasonography the condition was diagnosed as foetal maceration.

3. Surgical management and Discussion

As the case was protracted, leading to possibilities of adhesions, and since the foetal parts appeared to have undergone autolysis, ovariohysterectomy was chosen as the treatment option after discussion and consent of the owner. The OH was performed under general anesthesia using Inj. xylazine (@1 mg/kg b.wt. i.m.), Inj. ketamine (@15 mg/kg b.wt. i.m.) and Inj. Atropine sulphate (@0.04 mg/kg i.m.) as preanaesthetic. The surgical site was aseptically prepared by trimming the superficial hair, then cleansing with soapy water and finally scrubbing with 2% povidon iodine (Fig.3). Then, ventral midline skin incision was made (Fig.4), allowing for the dissection of subcutaneous tissues, abdominal muscles and peritoneum to access the peritoneal cavity and approach the ipsilateral (left) and contralateral (right) uterine horns. Haemorrhage was meticulously controlled. The left and right uterine horns, along with the ovaries, were exteriorised. Initially, the left ovarian suspensory ligament was manually ruptured and an opening was created in the mesovarium to facilitate ligation. The ovarian vascular pedicle was ligated with 2-0 absorbable suture material (Fig.5). The severed ovarian stump was inspected for haemorrhage and then returned to the peritoneal cavity. The same procedure was repeated for the right uterine horn and ovary. The gravid uterine horns (left and right) were found to have no foetal pulsations and were gently elevated to expose the uterine body. Next, the uterine body was grasped with non-crushing forceps to prevent rupture and haemorrhage, while collateral uterine blood vessels were ligated with 2-0 absorbable suture material. Transfixing ligatures with 2-0 absorbable suture material were placed on the uterine body cranial to the cervix. The uterine horns, along with a small portion of the uterine body, were transected and removed. The uterine stump was carefully inspected for haemorrhage and then returned to the peritoneal cavity. The abdominal cavity was lavaged with sterile normal saline twice, followed by two metronidazole flushes. Then, the laparotomy incision was routinely closed, which involved suturing the peritoneum and abdominal muscles and subcutaneous fatty tissue and fascia with a simple continuous suture, using absorbable suture material. The skin edges were approximated with a subcuticular suture followed by horizontal mattress sutures (Fig.6), using the non-absorbable suture material. Finally, povidone-iodine was applied with sterile gauzes topically to prevent local contamination. The excised gravid uterine horns were longitudinally incised, revealing a macerated foetus within each horn (Fig.7-9). Post operatively, Inj. Amoxicillin sulbactam @40 mg, Inj. Flunixin meglumine@0.05ml; Inj. Pentoprazol @ 3 mg/kg, Normal saline @ 100 ml were given and advised to continue for 5 more days. Upon incision of the exteriorized uterine horns he scattered foetal skeletal parts,

foetal adnexa were observed. The queen recovered uneventfully following postoperative medications and management, with complete wound healing observed 3 weeks post-surgery.

Early diagnosis of foetal death and immediate removal of retained foetal remnants are crucial for safeguarding reproductive health and future fertility in cats. When foetal remnants are identified, prompt and decisive actions are necessary to minimise the risks of prolonged inflammation, infection, irreparable damage to the reproductive tract and systemic complications (Alcantara *et al.*, 2021) ^[8]. The gestation period in cats lasts approximately 65 days and usually concludes with three distinct stages of labour (Romagnoli *et al.*, 2019) ^[9]. Dystocia occurs when the normal progression of labour is disrupted, arising from either maternal or foetal factors (Bailin *et al.*, 2022) ^[10]. Trauma and stress during late pregnancy may also contribute to foetal death (Linde-Forsberg 2010) ^[11].

Parameter	Value
Hb	10.0
WBC	40,000
Neutrophils	86
Lymphocytes	08
Eosinophils	02
Monocytes	04
Platelet	3.0

Fig 1: Haematological parameters



Fig 2: Transabdominal ultrasound scan illustrating foetal components. Bright echogenic structures resembling foetal bones and hypoechoic zones resembling foetal and uterine fluid.



Fig 3: Preparation of surgical site



Fig 4: Ventral midline incision



Fig 5: Ligatation



Fig 6: Skin suture by horizontal mattress

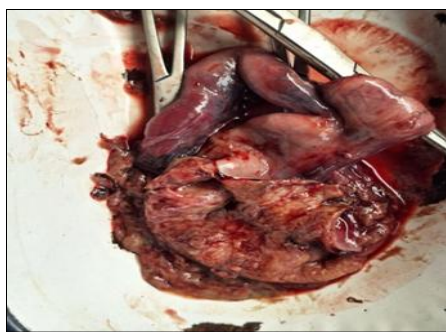


Fig 7: Uterine content



Fig 8: Uterus



Fig 9: Fetal bone

Conclusion

In the present case, however, overt signs of trauma, stress, dystocia, or labour were absent, as reported by the owner and no infections or diseases were evident upon presentation. Therefore, the exact aetiology of foetal death remains undetermined. The partially dilated cervix might have facilitated ascending infections, resulting in foetal death and subsequent decomposition of the placenta and foetal soft tissues. This phenomenon likely explains the fetid, purulent vaginal discharge in the queen. The ultrasonography complemented the clinical findings, leading to a presumptive diagnosis of intrauterine foetal death and enabling the decision to proceed with surgical management. Surgical intervention further revealed the condition, confirming the diagnosis of foetal maceration.

Conflict of Interest

Not available

Financial Support

Not available

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