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Dystocia Secondary to Vaginal Hyperplasia and Prolonged Gestation with Fetal Mummification in a Bitch: A Case Report on Medical and Surgical Management

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ABSTRACT: Canine dystocia, also known as difficult labor, is a common reproductive emergency that can be brought on by a number of things, such as birth canal obstruction, uterine dysfunction, or anatomical anomalies. Vaginal hyperplasia is an uncommon but known cause of dystocia in dogs. It is characterized by an excessive development of vaginal tissue. When the vaginal tissues interfere with the birth canal, it can prevent a regular delivery and cause the mother and her puppies a great deal of discomfort. The surgical intervention of a dystocia in an 8-year-old dog with a history of pyometra in a prior heat is highlighted in this case report. The patient was 72 days pregnant, had dystocia, and vaginal hyperplasia. There was no improvement with oxytocin and epidosin treatment, and it was speculated that the obstructive hyperplasia mass was hindering the delivery. After a 24-hour wait, no fetal birth took place, prompting the choice to surgically remove the hyperplasia. Long-term labor and indications of blockage during birth were seen in a female dog. Significant vaginal swelling, which was determined to be vaginal hyperplasia, was confirmed by clinical examination and diagnostic imaging. The puppies were unable to pass through the birth canal due to a mechanical blockage induced by the mass. The hypertrophic vaginal tissue was surgically removed in order to remove the impediment and enable the puppies to pass through safely. Since the fetus was macerated cesarean section was carried out and dead fetus was removed by surgical intervention under general anesthesia and the recovery period following the procedure went smoothly.

Keywords: Dystocia, Vaginal Hyperplasia, Surgical Management, Canine Reproduction, Obstetrics.

INTRODUCTION

The fetal malposition, uterine inertia, or anatomical obstructions within the delivery canal are some of the causes of dystocia, also known as difficult labour, a common reproductive issue in dogs. Vaginal hyperplasia is considered as a major clinical condition generally seen in young, intact bitches either due to increased oestrogen stimulation leads to hyperaemia, oedema and excessive folding of vaginal mucosa (Devarajan *et al*., 2024). It is a very uncommon but substantial cause of dystocia in dogs. According to Reece and Lund (2009), this overgrowth may result in mechanical obstruction of the birth canal, which would hinder the fetuses' normal passage during labour. Both the mother and her puppies may be at risk if the hyperplastic tissue creates an impediment that prolongs or obstructs labor, although the disease is more frequently observed in non-pregnant bitches, its effects during pregnancy might be more severe and necessitate immediate management to prevent consequences like fetal death, uterine rupture, or mother suffering. A prevalent uterine condition in female dogs, pyometra usually affects older or unspayed females (Goldstein, 2006). Pyometra stands as a serious and prevalent gynaecological disorder in intact female dogs, characterized by the accumulation of inflammatory exudates in the uterine lumen. Complications associated with pyometra include sepsis, peritonitis, and uterine torsion then dystocia and mummification of the fetus (Sureshkumar *et al.*, 2023). Clinical signs of inappetence or anorexia, lethargy, polyuria, polydipsia,

vomiting, nausea, and vulvar discharge were observed in pyometra (Bante *et al.*, 2024). When parturition cannot proceed physiologically, a dystocic birth occurs, which may be due to maternal factors such as uterine inertia, fetal factors such as malpresentation, malformations, or fetal oversize, or a combination of both (Rodriguez *et al*., 2024). In natural deliveries, the transition of neonates from the intrauterine to the extrauterine environment is particularly delicate (Mila *et al*., 2017). In dogs, corpora lutea are the sole source of progesterone during pregnancy, so luteolysis and the resulting drop in progesterone are essential to trigger labour. Hormones such as cortisol, oxytocin, and relaxin likely stimulate prostaglandin production, leading to luteolysis (Arlt, 2020). However, the exact prepartum luteolytic pathway in dogs remains unclear. PGF2α also gradually enhances uterine contractions, which are crucial for the onset of whelping. Fetal death, depending on timing and maternal-fetal immune interaction, may result in mummification, maceration, or expulsion. Mummification involves fetal tissue breakdown, absorption of fluids, and placental regression, and must be distinguished from maceration, where the fetus decays due to bacterial infection through an open cervix. If bone development has occurred, maceration leaves only bones. Mummification likely takes several weeks and usually occurs late in gestation after fetal ossification (Spruijt *et al*., 2022). Overall, neonatal mortality in puppies following a natural delivery ranges between 20 and 40 %, including an 11 % stillbirth rate and neonatal deaths comprising 8–31 %. Neonatal mortality rates across all breeds from cesarean sections range from 2.3 % to 8 % (Veronesi and Fusi 2021). The development of these anomalies can be attributed to genetic factors or teratogenic influence, such as nutritional deficiencies, exposure to irradiation, toxins, or infectious agents during pregnancy (Estevam *et al*., 2024). The nature of the crossbreeding (inbreeding/outbreeding) has also been cited as a cause that may predispose to dystocia in the canine species (Pereira *et al*., 2022). Different retrospective studies reported an incidence between 34.4 and 50 % of primiparous females who underwent cesarean sections, with no differences between emergency and scheduled cesarean sections (Adams *et al*., 2022; Guest *et al*., 2023). Parturition may be hampered by vaginal hyperplasia, a frequent benign condition in dogs, particularly if pregnancy complicates the situation. Careful diagnosis and a calculated strategy are necessary to manage such cases to protect the mother and the puppies. The successful surgical treatment of a dog with dystocia brought on by vaginal hyperplasia is covered in this case study.

CASE HISTORY AND MANAGEMENT

An 8-year-old female dog was presented at 72 days of gestation with signs of dystocia. The bitch had a prior history of pyometra, which had been successfully treated during her last heat cycle. During the current pregnancy, vaginal hyperplasia was noted and appeared to obstruct the birth canal. On presentation, she lacked typical signs of impending parturition such as vulvar discharge or nest-building behaviour. On general examination, she appeared clinically healthy, and no prodromal signs were evident. Abdominal palpation revealed a small, firm structure and a slightly enlarged uterus, with no vulvar discharge present. Ultrasonographic evaluation showed a collapsed fetus in the uterus, surrounded by a moderate amount of echogenic fluid. Plasma progesterone concentration measured 2.3 ng/ml, indicating declining luteal function. Based on these findings, a parturition induction protocol was initiated using a progesterone receptor antagonist followed by PGF2α to induce cervical relaxation and uterine contractions. Despite this treatment, the bitch exhibited continued signs of dystocia, including prolonged labor and straining without fetal progression. The fetus was suspected to be obstructed by the hyperplastic vaginal tissue. Oxytocin, calcium sandoz and epidosin were administered to stimulate uterine contractions and facilitate delivery, but there was no improvement, and the fetus failed to descend into the birth canal. Due to the suspected physical obstruction caused by the vaginal hyperplasia and the lack of response to medical management, surgical intervention was pursued. The hyperplastic tissue was surgically addressed, and a 24-hour waiting period was allowed for spontaneous delivery. However, when the bitch still failed to deliver, a cesarean section was ultimately performed to ensure the safety of both the mother and the fetus.

SURGICAL MANAGEMENT

The first step in managing the case involved the surgical removal of the vaginal hyperplasia mass. Under general anaesthesia, the area was thoroughly examined, and the hyperplastic tissue obstructing the birth canal was excised. The mass was carefully removed to ensure no injury to surrounding tissues and to create a clear passage for the puppies. After the hyperplasia excision, the patient was closely monitored for any signs of labour. However, despite the removal of the mass, no progress in parturition was noted. After 24 hours of observation, with no signs of fetal passage, the decision was made to perform a cesarean section to save the mother and her puppies. The cesarean section was carried out under sterile conditions. The surgical procedure was performed under general anaesthesia with appropriate monitoring and aseptic technique to ensure the safety of the patient. The anaesthesia was induced with atropine sulfate (0.02 mg/kg) to counteract any potential bradycardia, followed by xylazine (1 mg/kg) for sedation and muscle relaxation. Maintenance of anaesthesia was achieved with ketamine (5 mg/kg) administered intravenously. The dog was positioned in dorsal recumbency on the operating table. The abdominal area was clipped, disinfected, and draped in a sterile manner. A midline abdominal incision was made to access the uterus. Once the uterus was exposed, the surgeon identified the site of obstruction due to the hyperplastic mass and carefully began the process of cesarean section. The uterus was carefully incised, and one dead fetus was delivered along with large amounts of greenish

discharge, indicative of meconium staining, which was likely a sign of fetal distress. The discharge was thoroughly evacuated, and the uterine cavity was flushed with sterile normal saline to remove any residual debris or contamination and reduce the risk of infection. After cleansing the uterine cavity, the incision was closed in layers. The uterine muscles were sutured with absorbable sutures (such as Vicryl®) to ensure proper closure and to promote healing. The uterine incision was then closed using a continuous suture pattern. The uterine serosa was sealed using non-absorbable suture material (such as Nylon) to provide additional strength and durability at the suture line, preventing dehiscence. Once the uterine repair was completed, the abdominal wall was closed routinely, ensuring all layers were properly approximated. The skin was sutured with a non-absorbable suture material. The surgical site was then disinfected, and the patient was closely monitored during recovery.

POSTOPERATIVE CARE

Following the cesarean section, comprehensive postoperative care was provided to ensure a smooth recovery for the bitch. The operating room was maintained in a sterile and clean condition throughout the procedure, and the surgery was completed without any intraoperative complications. Postoperative management included the administration of broad-spectrum antibiotics to prevent infection. Ceftriaxone was given intramuscularly at a dosage of 20 mg/kg body weight once daily for five days. Additionally, the antihistamine chlorpheniramine maleate was administered intramuscularly at 0.5 mg/kg body weight daily for five days to reduce the risk of allergic reactions or inflammation. Meloxicam, an analgesic and anti-inflammatory agent, was injected subcutaneously at 0.2 mg/kg body weight for three consecutive days to manage pain. Multivitamin supplements were also provided to support recovery. The patient was maintained on intravenous fluids for hydration and closely monitored for any postoperative complications, including haemorrhage and infection. The bitch was housed in a hygienic squeeze cage and kept under observation for seven days. The surgical site was inspected regularly, and the owner was advised to apply antiseptic povidone-iodine ointment to the incision area daily until complete healing occurred. The mother recovered uneventfully, and at the 14-day follow-up, suture removal revealed complete healing of the surgical site without any signs of infection or complications.

DISCUSSION

This case provides valuable clinical insight into the management of prolonged gestation in the bitch, especially when complicated by fetal death and vaginal hyperplasia. The absence of normal parturition signs and evidence of incomplete luteolysis on day 69 of gestation based on gynaecological examination, ultrasonography, and non-basal plasma progesterone levels suggested a failure in the physiological mechanisms that normally initiate labour. One possible contributing factor was the lack of active fetal-placental signalling, particularly from trophoblast cells, which are considered the primary source of prepartum prostaglandin secretion necessary for luteolysis (Kowalewski *et al.*, 2010). Mishra *et al.* (2024) have demonstrated that progesterone increases the release of endometrial glands and inhibits uterine contractions, so fostering an intrauterine environment that is conducive to the development of germs. In addition to this endocrine disruption, the presence of vaginal hyperplasia further complicated the clinical picture. Vaginal hyperplasia, characterized by estrogen-induced edema and proliferation of vaginal mucosa, can result in mechanical obstruction of the birth canal. This condition is particularly problematic during late gestation, as it may impede fetal expulsion, delay the progression of labour, or cause dystocia. In this case, hyperplasia likely contributed to the failure of spontaneous delivery and increased the need for surgical intervention. Beyond mechanical hindrance, vaginal hyperplasia can compromise local circulation, leading to tissue necrosis or infection if prolonged, thereby increasing the risks to both dam and fetus. This reinforces the importance of early recognition and appropriate management in breeding bitches, especially those with a history of hyperplastic responses during estrus or pregnancy. Although the exact timing of fetal demise could not be confirmed, the presence of fetal skull mineralisation suggested death occurred after day 41 of gestation. The rationale for a higher single dose was based on aglepristone's pharmacokinetics (slow absorption and clearance) and the need for a practical, time-efficient approach. However, due to the non-progressive labor and physical obstruction from vaginal hyperplasia, cesarean section became the definitive choice. Surgical removal of the mummified fetus provided a controlled and safe resolution, avoiding risks associated with prolonged medical protocols. For example, the treatment described by Efendic *et al.* (2018) for fetal death earlier in gestation involved extended hormone therapy over 23 days, increasing the risk of uterine complications, infection, and cost. This case also highlights the importance of confirming complete fetal evacuation post-treatment. While our palpation and hysteroscopy findings confirmed uterine clearance, the lack of virological testing remains a limitation. In ambiguous cases, follow-up imaging (ultrasound or radiographs) is recommended to ensure complete expulsion and uterine recovery.

Fig. 1. Bitch undergoing treatment for inducing parturition.

Fig. 2. x ray showing single fetus.

Fig. 3. Vaginal hyperplasia mass

Fig. 4. Removal of macerated fetus by caesarean section.

CONCLUSIONS

The present case emphasizes how crucial it is to diagnose and treat dystocia situations accompanied by vaginal hyperplasia as soon as possible. It's critical to take vaginal hyperplasia into account as a possible cause of canine dystocia. Even though hypertrophy vaginal tissue is a very uncommon disorder, the obstruction it causes can have detrimental effects on the mother and the puppies. When conservative care is ineffective, surgery is a viable therapeutic option for dystocia. The health and welfare of the dam and her children depend on early diagnosis, timely surgical intervention, and appropriate postoperative care. The hyperplasia mass needed to be surgically removed, but to protect the mother and the puppies, a cesarean section was ultimately necessary. When handling complicated obstetric situations in dogs, the case highlights the necessity of a multidisciplinary approach and the evaluation of various surgical procedures.

FUTURE SCOPE

This case highlights the need for further research into the hormonal mechanisms regulating parturition in dogs, particularly in cases involving fetal death and prolonged gestation. A deeper understanding of feto-maternal signalling, especially the role of fetal trophoblast cells and placental prostaglandins, could aid in developing more effective medical induction protocols. Additionally, exploring the impact of vaginal hyperplasia on parturition and its management could improve outcomes in similar cases. Advancements in early diagnostic tools for fetal demise and the development of standardised, evidence-based treatment protocols will be essential. Further studies on the reproductive prognosis following cesarean sections in such complex cases may also help guide future breeding and clinical decisions.

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Conflict of Interest. None.

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