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Obstetric emergency in a domestic canine during a sterilization campaign in the municipality of Barcarena, Pará

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Abstract. Reproductive emergencies frequently occur in routine clinical care for small animals. Dystocia, a reproductive pathology classified as the difficulty in expelling the fetus through the birth canal, is the most common condition in dogs, due to the physiological and anatomical particularities of the species, with its etiology having a wide scope of possibilities, ranging from maternal to fetal, or both. In this work, a literature review and a case report of maternal dystocia in a female dog are presented, seeking to contribute to the literature on the subject, given the importance of this information in the areas of emergency and clinical surgery for dogs and cats, due to the high occurrence of cases in routine veterinary clinics.

Keywords: Emergency, obstetrics, reproductive pathology, small animals

Emergência obstétrica em cadela doméstica durante uma campanha de esterilização no município de Barcarena, Pará

Resumo. As emergências reprodutivas ocorrem frequentemente na rotina clínica de atendimentos de pequenos animais. A distocia, patologia reprodutiva classificada como a dificuldade para expulsão do feto pelo canal do parto é a afecção mais comum em cadelas, devido a particularidades fisiológicas e anatômicas da espécie, sendo sua etiologia uma ampla gama de possibilidades podendo ser de origem materna, fetal ou de ambas. No presente trabalho, apresenta-se uma revisão de literatura e um relato de caso de distocia materna em cadela, buscando contribuir com a literatura acerca da temática, diante da importância dessas informações nas áreas de emergência e clínica-cirúrgica de cães e gatos, devido à grande ocorrência de casos na rotina clínica veterinária.

Palavras-chave: Emergência, obstetrícia, patologia reprodutiva, pequenos animais

Introduction

Reproductive disorders in females show great relevance in the clinical practice of small animals, as they demonstrate a high rate of morbidity and mortality, and the most reported are uterine infections, mammary neoplasms, and dystocia in bitches and cats, especially when related to the use of

antiprogestins and environmental interferences ([Apparício et al., 2015](#); [Costa et al., 2019](#)). Reproductive emergencies are most recorded in bitches ([Moura et al., 2022](#); [O'Neill et al., 2019](#)).

Dystocia consists of the difficulty of expelling fetuses through the birth canal, and this condition is more common in bitches than in cats. As for its etiology, it can occur due to maternal or fetal origin, and, in general, small, or brachycephalic breeds are more predisposed to the condition ([Adami et al., 2021](#)). Dystocic birth can be caused by adversities such as poor fetal positioning, large fetuses in relation to the mother, pelvic canal anomalies, uterine inertia, and fetuses with malformations or some abnormality that prevents their birth ([Bistner et al., 2013](#)).

However, the main causes of dystocia in bitches are characterized by being of maternal origin ([Münnich & Küchenmeister, 2009](#)). And among the main causes of maternal dystocia, we can mention primary uterine inertia, myometrial failures, gestation of a single fetus, neurological problems, hypocalcemia, endocrine disorders, as well as premature birth. Furthermore, iatrogenic causes are commonly reported in bitches with dystocia after treatment with progestins ([Darvelid & Linde-Forsberg, 1994](#); [Luz et al., 2005](#); [Münnich & Küchenmeister, 2014](#)).

As a treatment, assisted removal of the fetus can be instituted when there is a change in fetal statics in the initial phase; use of oxytocin when the female presents uterine inertia; and, if necessary, surgical intervention by cesarean section or cesarean section plus ovariohysterectomy (OH) ([Bojrab et al., 2014](#)).

Canine pregnancy can be diagnosed 30 days after mating, by abdominal ultrasound examination from 25 days after coitus, or by abdominal x-ray from 50 days onwards. Furthermore, it lasts an average of 73 days ([Apparício et al., 2015](#); [Nelson & Couto, 2015](#)).

Labor is divided into three distinct stages, the first being called the prodromal phase, the second being the being the dilation phase, and the third being the expulsion and dequitation phase. In the first stage, females are restless, tend to seek proximity to their owners, and begin to build nests; in the second stage, the fetuses themselves are released; and in the last stage, the fetal membranes are released ([Linde-Forsberg, 1991](#)). Birth can be eutocic, in which the fetus and fetal annexes are expelled in a physiological way, or dystocic, in which there is difficulty or impediment to birth, which can be characterized by being of maternal, fetal origin, or both ([Nelson & Couto, 2015](#); [Reichler & Michel, 2009](#)).

The present work aims to report a case of dystocia in a dog in the municipality of Barcarena, Pará, Brazil, and seeks to contribute to the literature on the topic of these animals treated in sterilization campaign in Brazil.

Clinical case report

The Veterinários da Amazônia association, a group focused on population control and lectures on the well-being and responsible ownership of dogs and cats, carried out a castration action promoted by the City Hall of the Municipality of Barcarena.

In this action, a total of 94 animals were castrated, and among them there was an emergency case in which a female canine of no defined breed, approximately two years old, weighing 16.8 kg, was treated in the action carried out on March 5th, 2023, with a history of abandonment by the former guardian and in a state of advanced pregnancy, but without any knowledge about the gestational period. On clinical examination, intense prostration was observed, with the animal remaining in lateral decubitus, pearly mucous membranes, respiratory distress due to abdominal distension, rectal temperature 37° C, distended abdomen, enlarged breasts with milk production, absence of abdominal contractions, secretion of greenish vagina with a putrid odor, a fetus in the birth canal (palpation), and the presence of myiasis in the perivulvar region ([Figure 1](#)), on abdominal auscultation, there was no evidence of fetal heartbeat, and on abdominal palpation, fetuses with no apparent movement.

Considering the clinical health status of the animal and the report of the person responsible for taking the dog to the campaign, reporting that the animal had shown signs of pain for 5 days and due to the absence of equipment (ultrasound) and structure in the campaign to carry out laboratory tests, additionally, the Informed Consent Form was presented to the person responsible for due authorization to perform the emergency ovariohysterectomy (OH) surgical procedure.

To perform the surgical procedure, a pre-anesthetic protocol was used using a combination of acepromazine 0.2% (dose 0.05 mg/kg), xylazine 2% (0.5 mg/kg), morphine 10 mg/mL (0.5 mg/kg), ketamine 10% (2 mg/kg), antibiotic therapy with application of pentabiotic 12000 IU (40,000 IU/kg), meloxicam 0.2% (0.2 mg/kg), dipyrone 500 mg/mL (25 mg/kg) and as anesthetic induction and maintenance, a combination of ketamine 10% (10 mg/kg) + midazolam 5 mg (0.5 mg/kg).



Figure 1. Emergency ovariohysterectomy surgery in a dog. **A.** Perivulvar region with the presence of fly larvae. **B.** Intense greenish vulvar secretion in the perineal region; dirt can be seen on the toilet mat. **C.** Abdominal distension and slight hyperemia of the breasts. **D.** Exposure to enlarged and friable uterine horns.

After anesthetic induction, the surgical procedure was performed as described in the literature by [Fossum \(2021\)](#) and [Oliveira \(2022\)](#), with a pre-retro-umbilical incision in the midline of the abdominal region. The surgery required two assistants to support the uterine horns, as the uterus was friable and increased in volume due to the decomposition of the fetuses. Due to this characteristic and the absence of any sign of live fetuses, the ovaries and uterine horns were sectioned and removed with OH. A team was responsible for checking the viability of the fetuses, and the presence of nine fetuses was found, all dead ([Figure 2A](#)), some with signs of maceration ([Figure 2B](#)), due to the prolonged period of intrauterine death. One fetus presented a malformation called gastroschisis ([Figure 2C](#)).

For the animal's post-operative period, the following medications for oral use were prescribed enrofloxacin 100 mg (10 mg/kg), once a day, for 10 days, meloxicam 1 mg (0.1 mg/kg), once a day, for 4 days, dipyrone 500 mg (25 mg/kg), three times a day, for 4 days, metronidazole 400 mg (15 mg/kg), twice a day, for 7 days and Capstar® 54 mg in a single dose, due to the presence of ectoparasites. For topical use, the use of chlorhexidine digluconate 10 mg/mL spray was recommended, with daily dressing until the stitches were removed (12 days after surgery), associated with the use of surgical clothing until the stitches were removed. At the time, the removal of the stitches was scheduled for March 17, 2023;

on this date, the animal returned looking healthy and with adequate healing of the surgical wound ([Figure 3](#)).

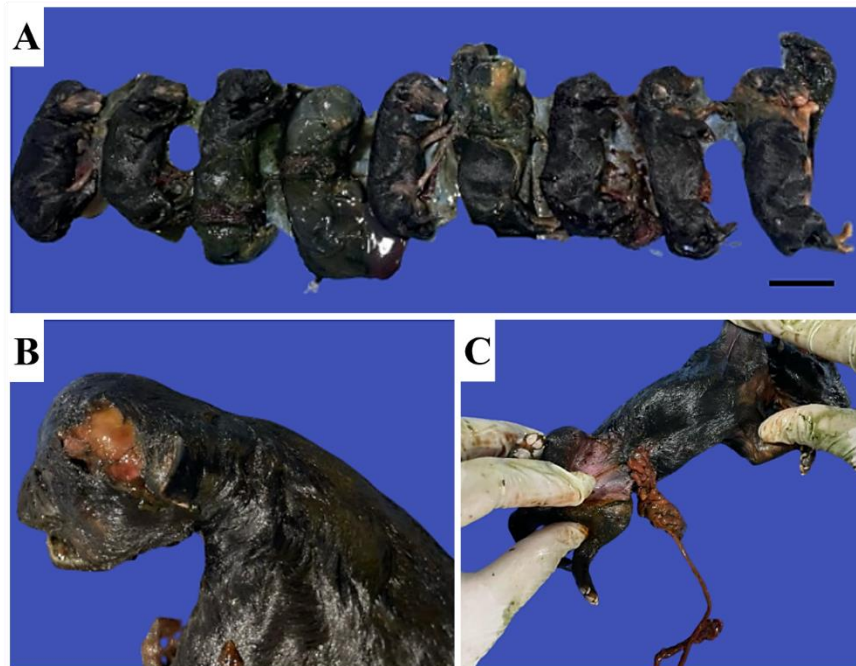


Figure 2. A. Image of the nine dead fetuses removed shortly after the removal of the uterus from the abdominal cavity. Scale bar: 4 cm. B. Fetus showing signs of maceration. C. fetus presents a malformation called gastroschisis.



Figure 3. A. Animal in the immediate postoperative period, in the insert observation of fly larvae in the perivulvar region. B-C. Return of the animal 12 days post-operatively to remove the stitches and evaluate the surgical wound.

Discussion

Dystocia is a very common clinical condition in the veterinary routine of dogs and cats, and this condition is considered an emergency. Therefore, the stabilization of the animal is extremely important for the survival of both the pregnant woman and the fetuses ([Henrique et al., 2016](#); [Luz et al., 2005](#)). Therefore, the animal in our report was initially stabilized with fluid therapy, the administration of antimicrobial drugs, and pain control. If there was no immediate intervention after recognizing the situation, the dog would die due to uterine rupture and septicemia. Therefore, the decision of the surgical team, in common agreement with the new person responsible for caring for the dog, to perform the emergency surgical procedure was vital for the animal's survival.

However, adverse situations often go unnoticed by owners who refer pregnant women in critical condition for care, which makes it difficult to preserve the lives of puppies and even pregnant women ([Chagas et al., 2018](#)). Such information is relevant considering the clinical presentation presented in this work, as the animal treated was a victim of abandonment by its former guardian, which did not allow for adequate gestational monitoring.

Furthermore, dystocia (of maternal, fetal, or simultaneous origin) can affect all domestic species. However, maternal dystocia, due to a series of anatomical factors and physiological characteristics of childbirth, is more frequent in ruminants and bitches ([Adami et al., 2021](#)). In small animals, some dystocia attributed to parturient women is caused by inadequate use of contraceptives. Therefore, considering the animal's history of abandonment and poor nutrition, which was certainly decisive in accentuating any pre-existing and unknown factor for the non-occurrence of eutocic birth, Furthermore, because the animal did not have a guardian and the search for veterinary medical help was late, it was also crucial that there were no viable puppies.

Therefore, considering the report from the person responsible for taking the dog that the animal had been showing signs of pain for about 5 days, one of the likely causes of dystocia is uterine atony due to poor nutrition, together with the animal's advanced age (a characteristic observed by the wear of the animal's teeth). Uterine atony can be primary, when the uterus does not contract during preparation for childbirth, or secondary, when the muscles of the uterus become exhausted, mainly seen in fetal dystocia ([Toniollo & Vicente, 2003](#)). However, it can be assumed that the cause of dystocia is uterine atony, but it was not possible to determine whether it was primary or secondary due to the lack of knowledge about the animal's history.

Furthermore, the assumption that the origin of reproductive pathology is uterine atony is supported by the numerous etiologies, which are: hormonal dysfunction, particularly estrogen, oxytocin, and relaxin; fetal envelopes taking muscle fibers to the limit of distension; pathological multiple gestation, among others.

Conclusion

It is up to veterinary clinicians to better guide owners of small animals to avoid the indiscriminate use of contraceptives and encourage routine ultrasound examinations for gestational monitoring of dogs and cats, avoiding later complications. Castration of females should also be encouraged when there is no interest in reproduction. Thus, the role of Amazon veterinarians with the local city hall was fundamental in improving the animal welfare and reproductive control of the dogs and cats cared for in the municipality of Barcarena.

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