

## Integrated Surgical Approach for Pyometra and Unilateral Uterine Torsion with Fetal Mummification in a Dalmatian Bitch

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**ABSTRACT:** Pyometra stands as a serious and prevalent gynecological 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. Uterine torsion can arise due to factors such as inadequate fetal fluids, violent turning, or rotation of the uterus, and may be concomitant with complications such as pyometra and fetal mummification. This case report presents the clinical presentation and surgical management of uterine torsion in a bitch with a previous history of fetal mummification, which was also accompanied by pyometra. The difficulties encountered in diagnosing and treating this condition, as well as the significant insights gained from this case that contribute to a better understanding of complex reproductive disorders, have been discussed.

**Keywords:** Canine, Uterine torsion, Pyometra, Caesarean section, Ovariohysterectomy.

### INTRODUCTION

Uterine torsion is the twisting of a uterine horn around its longitudinal axis (Noakes *et al.*, 2001). The degree of torsion may vary between 180 and 270 degrees (Kumru *et al.*, 2011), although torsions exceeding 360 degrees, particularly from the ovarian attachment, have been reported in dogs (Kodie *et al.*, 2019). Torsion can involve either gravid (Nagaraja *et al.*, 1997; Prabhakar *et al.*, 1995; Brown, 1974) or non-gravid uterine horns (Barrand, 2009; Misumi *et al.*, 2000; Shull *et al.*, 1978) or a single horn (Nagaraja *et al.*, 1997; Barrand, 2009) or both uterine horns (Chambers *et al.*, 2011; Shull *et al.*, 1978). The torsion may occur clockwise or counterclockwise, and in some cases, both horns may twist around each other (Shull *et al.*, 1978). This condition can affect dogs of various sizes, from toy breeds to giant breeds, and dogs of ages ranging from 3 to 15 years (Chambers *et al.*, 2011). Uterine torsion is rarely observed in female dogs and may result from factors such as a lack of fetal fluid, excessive uterine contractions, and hyperactive movement of the dog towards the end of gestation (Arunmozhi *et al.*, 2014; Roberts, 1982; Jackson, 2004). Additionally, greater rotational force on the uterus during a fall or roll can lead to torsion (Lenarduzzi *et al.*, 2002). Multiparous bitches may also be at an increased risk due to the increased laxity of the uterine ligaments (Chambers *et*

*al.*, 2011). Freeman suggested that a pendulous organ suspended via a dorsal mesentery might be susceptible to torsion (Freeman, 1988). Moreover, pyometra, resulting from bacterial infection and endogenous or exogenous steroid hormones (estrogen or progesterone), may predispose a dog to uterine torsion (Barrand, 2009). The confirmatory diagnosis of uterine torsion is typically made during laparotomy or cesarean section (Chambers *et al.*, 2011; Noakes *et al.*, 2001). Given the life-threatening nature of this reproductive disorder, immediate surgical intervention is required to correct the torsion.

### CASE HISTORY AND OBSERVATIONS

A 6-year-old intact female Dalmatian dog was presented to a veterinary clinic with a previous history of full-term pregnancy and greenish discharge. Abdominal ultrasound revealed the presence of hyperechoic fetal bones and vertebrae, while fetal heartbeat was absent. Lateral abdominal radiographic examination revealed five distinct radiopaque masses consisting of fetal skeletons. A tentative diagnosis of primary uterine inertia was made and treated with 25% Dextrose, calcium gluconate, and oxytocin at the recommended dosage. All fetuses lodged in the vaginal canal were manually dislodged through careful manipulation. One month later, the same patient was presented with signs of anorexia, lethargy, and

sanguinopurulent vaginal discharge. Physical examination revealed abdominal distension and tenderness. Abdominal ultrasound showed enlarged uterine horns filled with anechoic fluid. Blood samples were taken for hematology and biochemistry, revealing mild anemia (Hemoglobin: 8g/dl) and leukocytosis (26,500/cmm). The animal was stabilized, and urgent surgical intervention was deemed necessary.

### DIAGNOSIS AND TREATMENT

Based on the history, clinical signs, and clinical examination, the case was diagnosed as pyometra. As the patient's condition began to deteriorate, an emergency cesarean section was performed. Preoperatively, the patient was premedicated with Atropine at a dose of 0.04 mg/kg S/C and Xylazine at 1 mg/kg I/V. General anesthesia was induced with intravenous Ketamine and Diazepam at dose rates of 5 mg/kg and 0.25 mg/kg I/V, respectively. A standard midline retroumbilical abdominal incision was made, and the incision was extended through the muscle layers to reach the peritoneal cavity. The uterus was exteriorized, with the right uterine horn appearing dark red, enlarged, and rotated 360 degrees clockwise at the level of the ovary (Fig. 1-3). Due to the ischemic condition of the uterine horn and the presence of adhesions, an ovariectomy was performed without releasing the uterine torsion. The abdominal cavity was washed with a Metronidazole solution, and the surgical wound was closed following standard procedures.

Postoperatively, medical care was diligently provided, including antimicrobials (Ceftriaxone at 20 mg/kg I/V) and analgesics (Tramadol at 2 mg/kg I/V) for five consecutive days. Antiseptic dressing of the suture line was performed with povidone iodine. Sutures were removed on the 15<sup>th</sup> postoperative day. After three weeks, the patient showed an uneventful recovery, displaying activity, alertness, normal vital parameters, and all blood parameters within the normal range.



**Fig. 1.** Uterine horn followed cranially up to the ovary.



**Fig. 2.** Twisting of uterine horn (unilateral uterine torsion).



**Fig. 3.** Grossly enlarged uterus, filled with inflammatory exudates and twisting of uterine horn.

### RESULTS AND DISCUSSION

Successful treatment of uterine torsion associated with pyometra and fetal mummification has been achieved, as reported by Marretta *et al.* (1989); Jutkowitz (2005). The incidence of uterine torsion is higher in pregnant bitches, and unilateral torsion is more common than bilateral torsion due to the lack of an intercornual ligament (Arunmozhi *et al.*, 2014). Although the exact cause of this disorder is unknown, predisposing factors such as the lack of fetal fluid, excess fetal movements, violent uterine contractions, and hyperactive movement of the bitch towards the end of gestation have been suggested (Arunmozhi *et al.*, 2014). The clinical signs in the present case are consistent with those described in earlier reports of uterine torsion. Typical clinical signs include anorexia, lethargy, straining, vaginal discharge, abdominal distension, and anemia (Barrand, 2009; Ritt and Fossum 1997; Shull *et al.*, 1978). Preoperative diagnosis of uterine torsion is challenging, and a confirmatory diagnosis can only be made through explorative laparotomy (Chambers *et al.*, 2011; Noakes *et al.*, 2001). As a consequence of uterine torsion, uterine vasculature may become compromised, leading to subsequent necrosis of uterine tissue, as reported in present case (Johnston *et al.*, 2001). Hence, surgical intervention is considered necessary to prevent additional complications, such as sepsis, peritonitis, and disseminated intravascular coagulation, as indicated by Ritt and Fossum (1997). Pyometra associated with uterine torsion is rarely reported in bitches (Schlafer and Gifford 2008). In the present case report, the exact cause of uterine torsion was not known. Ovariectomy without releasing uterine torsion is the treatment of choice to prevent complications associated with uterine torsion, such as sepsis, reperfusion injury, or the release of toxins into the systemic circulation (Jutkowitz, 2005; Walett and Lindane 1994).

### CONCLUSIONS

Uterine torsion is a relatively rare but serious condition in pregnant bitches, with a higher incidence of unilateral uterine torsion. While the exact cause remains unclear, factors such as a lack of fetal fluid, excessive fetal movements, vigorous uterine contractions, and hyperactivity in late gestation are potential predisposing factors. Although rare, the association of pyometra with uterine torsion underscores the importance of prompt and decisive treatment to prevent sepsis and systemic complications.

## FUTURE SCOPE

The potential future scope of the study encompasses advanced diagnostic methods for early uterine torsion detection, refined treatment protocols for cases involving pyometra and fetal mummification, research into preventative measures during pregnancy, including the impact of exercise, diet, and hormonal interventions, and the assessment of long-term health outcomes in dogs treated for uterine torsion, especially those with concurrent conditions like pyometra.

## REFERENCES

- Arunmozhi, N., Sathiamoorthy, T., Sridevi, P. and Joseph, C. (2014). Surgical management of uterine torsion in a bitch. *Indian Vet J.*, 92, 61–63.
- Brown, A. J. (1974). Torsion of the gravid uterus in a bitch. *Vet Rec.*, 94, 202.
- Barrand, K. R. (2009). Unilateral uterine torsion associated with haematometra and cystic endometrial hyperplasia in a bitch. *Veterinary Record*, 164, 19-20.
- Chambers, B., Laksito, M., Long, F. and Yates G. (2011). Unilateral uterine torsion secondary to an inflammatory endometrial polyp in the bitch. *Australian Veterinary Journal*, 89(10), 380-384.
- Freeman, L. J. (1988). Feline uterine torsion. *Compend Cont Educ Pract Vet.*, 10, 1078–1082.
- Jackson, P. G. G. (2004): Dystokia in the dog and cat In: Jackson P.G.G.: Handbook of Veterinary Obstetrics, 2nd ed. W.B. Saunders Company, Philadelphia 141-166.
- Jutkowitz, L. A. (2005). Reproductive emergencies. *Vet Clin North Am Small Anim Pract.*, 35, 397–420.
- Johnston, S. D., Kustritz Root, Olson PNS M. V. (2001). Canine parturition: eutocia and dystocia. In: Johnston SD, Root Kustritz MV, Olson PNS, editors. Canine and Feline Theriogenology, Philadelphia, USA: W.B. Saunders, p. 122–125.
- Kodie, D. O., C. O. Oguntoye, N. S. Oyetayo and Eyarefe, O. D. (2019). Unilateral uterine torsion with a near complete rip of the affected right horn in a parturient German shepherd bitch. *Sokoto Journal of Veterinary Sciences*, 18(2), 108-113.
- Kumru, I. H., Seyrek-Intas, K., Seyrek-Intas, D., Tek, H. B. and Wehrend, A. (2011). Clinical case: Unilateral en bloc ovariocornuectomy as a treatment for uterine torsion in a bitch. *Revue de Médecine Vétérinaire*, 162(2), 76-78.
- Lenarduzzi, T. A., Norton, J. C., Clark, B., McCoy, C. P. and Cantwell, H. D. (2002). What is your diagnosis? *J Am Vet Med Assoc.*, 221, 1687–1688.
- Marretta, S. M., Matthiesen, D. T. and Nichols, R. (1989). Pyometra and its complications. *Prob Vet Med.*, 1, 50–62.
- Misumi, K., Fujiki, M., Miura, N. and Sakamoto, H. (2000). Uterine horn torsion in two non gravid bitches. *J Small Anim Pract.*, 41, 468–471.
- Noakes, D. E., Parkinson, T. J. and England, G. C. W. (2001). Maternal distocia: causes and treatment. *Arthur's Veterinary Reproduction and Obstetrics*. 8th ed. Harcourt Publishers Ltd. pp. 238.
- Nagaraja, R., Jayadevappa, S. M., Srinivas, C. L. and Ravgnath, B. N. (1997). Unilateral torsion of gravid uterine horn in a Great Dane bitch. *Ind. J. Vet. Surg.*, 18, 42.
- Prabhakar, S., Kochhar, H.P. S. and Nanda, A S. (1995). Torsion of one uterine horn in a primi-gravid Great Dane bitch. *Indian Vet J.*, 72, 416–417.
- Ritt, M. G. and Fossum, T. W. (1997). Successful treatment of uterine torsion and fetal retention in a postparturient Great Pyrenees bitch with septic peritonitis and prothrombotic complications. *J Am Anim Hosp Assoc* 33, 537–539.
- Roberts, S. J. (1982): Torsion of uterus. In: Veterinary Obstetrics & Genital Diseases. 2<sup>nd</sup> ed. CBS publishers and distributors. pp. 182-189.
- Schlafer, D. H. and Gifford, A. T. (2008). Cystic endometrial hyperplasia, pseudo-placentational endometrial hyperplasia, and other cystic conditions of the canine and feline uterus. *Theriogenology*, 70, 349–358.
- Shull, R. M., Johnston, S. D., Johnston, G. R., Caywood, D. and Stevens, J. B. (1978). Bilateral torsion of uterine horns in a nonpregnant bitch. *J Am Vet Med Assoc.*, 172, 601–603.
- Walett, D. and Lindane, F. (1994). Dystocia in bitch- a retrospective study of 182 cases. *J. Small Animal Practice*, 35(8), 402-407.

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