Scientific Works. Series C. Veterinary Medicine. Vol. LXXI (2), 2025
ISSN 2065-1295; ISSN 2343-9394 (CD-ROM); ISSN 2067-3663 (Online); ISSN-L 2065-1295

MANAGEMENT OF UTERINE PROLAPSE IN CATS - A REPORT OF THREE CASES

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Abstract

Uterine prolapse is a rare and serious obstetrical emergency in felines, typically diagnosed more than 48 hours after parturition or abortion. This study aims to assess the therapeutic and surgical approaches for three mixed-breed cats that developed post-partum uterine prolapse. The diagnostic process included a thorough clinical examination, laboratory blood tests, and Point of Care Ultrasound (POCUS) for accurate assessment. Treatment was carried out in two stages: the first involved uterine repositioning, followed by ventral midline laparotomy and ovariohysterectomy. All surgeries were conducted under general anaesthesia, ensuring patient safety. Post-operative care consisted of antibiotics, analgesia, and diligent monitoring to ensure proper recovery and prevent complications.

Key words*: feline, parturition, management, uterine prolapse, surgery.*

INTRODUCTION

Uterine prolapse is a relatively uncommon complication in felines, usually occurring during or immediately after parturition or abortion. The highest incidence of the condition typically occurs approximately 48 hours after the expulsion of the last foetus and should be considered an obstetrical emergency for both primiparous and multiparous females. Essentially, uterine prolapse is the eversion of the uterus, which turns inside out as it passes through the cervical canal into the vaginal cavity (Feldman and Nelson, 2004, Jackson, 2004; Ozyurtlu and Kaya, 2005).

There are two possible forms of clinical manifestation: complete uterine prolapse, in which both uterine horns, along with the uterine body, are prolapsed through the vaginal opening, and incomplete uterine prolapse, in which only one uterine horn, with or without the uterine body, is externalized through the vulvar opening. (Deroy et al., 2015; Kimani and Mbugua, 2020).

The complete aetiology of uterine prolapse remains unknown. Still, several contributing factors have been identified, such as excessive relaxation of the pelvic muscles, excessive dilation of the cervical canal associated with uterine atony, relaxation of the uterine and ovarian ligaments, or prolonged labour with strong expulsive efforts (Deroy et al., 2015; Jackson, 2004; Bigliardi et al., 2014; Valentine et al., 2016; Sabuncu et al., 2017).

The diagnosis of the condition is easily established through clinical examination, which reveals the prolapsed uterus through the vulvar opening.

Therapeutic options for addressing uterine prolapse are determined by the time elapsed since the onset of the condition. These options depend directly on the degree and type of vascular changes, the presence or extent of necrotic lesions, and the patient's general condition. Therapeutic alternatives described in the literature include external ovariohysterictomy, manual repositioning of the prolapsed organ with local administration of oxytocin, or lavage with hyperosmotic solutions (e.g., dextrose 50%), as well as manual repositioning after ventral midline laparotomy, with or without ovariohysterectomy (Deroy et al., 2015; Kimani and Mbugua, 2020).

In this case presentation, the therapeutic and surgical protocol was identical for all three animals and is presented in detail.

MATERIALS AND METHODS

Three mixed-breed cats were rushed to the University Emergency Hospital of the Faculty of

Veterinary Medicine in Bucharest, showing clinical signs of uterine prolapse that developed suddenly 24 to 72 hours after parturition. All three females had given birth to a total of 11 healthy, normally formed kittens. The parturition for all three females occurred without monitoring and appeared to be free of complications.

Figure 1. Bicornual uterine prolapse; note the severely swollen uterus with extensive necrotic areas (orig.)

At the clinical examination, the general status of the females was depressed, with body temperatures between 37°C and 38.6°C. Respiratory rate and pulse were within physiological limits, and capillary refill time with a tendency to increase in accordance with the haematocrit value. Uterine prolapse was complete, with externalization of both uterine horns for two cats and partial externalization of the uterine body and just one horn for the third case. The uterine mucosa appeared oedematous, with haemorrhagic and necrotic areas, and was covered with debris.

Biochemical and complete blood count (CBC) haematological examinations were performed for all three cases. Biochemical tests revealed no significant changes; however, CBC haematological examination identified alterations in haematocrit and white blood cell count, with marked neutrophilia.

For all three cases, a POCUS examination was performed focusing on the abdominal area, with no free fluid detected.

The patient's volemic status was corrected by administering a Ringer's Lactate bolus at a rate of 10 ml/kg/h for 20 minutes, followed by re-evaluation. Subsequently, the same solution was administered at a rate of 5 ml/kg/h for one hour.

Figure 2. Incomplete uterine prolapse; note the oedema, congestion, and area of necrosis (orig.)

Since no changes suggestive of intra-abdominal haemorrhage were observed during the POCUS examination, particularly in relation to the rupture of the ovarian arteries, it was decided that the treatment of the condition should be carried out in two stages: the first step involved repositioning the prolapsed organ into its anatomical intra-abdominal position, followed by a ventral midline laparotomy and routine ovariohysterectomy.

The repositioning of the prolapsed uterus into the intra-abdominal position was performed under light sedation using Dexmedetomidine (4 mcg/kg), Butorphanol (0.2 mg/kg), and Ketamine (4 mg/kg). The uterine lavage was performed in two stages: initially with a saline solution containing Iodine (1:10 ratio), followed by a rinse with saline at room temperature. To facilitate the repositioning and minimize the risk of further injury, the uterus was wrapped with an elastic band starting from the distal end and moving toward the vulvar opening, similar to the technique described for bovines (Miesner and Anderson, 2008). The repositioning process was significantly aided by maintaining a postero-anterior slope position throughout the procedure. After the repositioning, the second phase of the procedure was initiated. This phase was performed under inhalation anaesthesia. Anaesthesia was induced with Propofol (2 mg/kg, intravenously), followed by oro-tracheal intubation, and maintained with Isoflurane and 100% Oxygen. During the surgery, vital parameters were continuously

monitored, including heart rate, respiratory rate, End Tidal CO2, oxygen saturation, and blood pressure measured oscillometrically.

Figure 3. Intraoperative aspect of the uterus; note the intussusception of the right uterine horn (orig.)

Due to the uterine topographic change, both ovarian pedicles, including the ovarian arteries and veins, were elongated (Figure 4), and the ovaries were positioned in the caudal region of the abdominal cavity. Ligation of the ovarian pedicles and removal of the uterus were performed according to standard procedures.
After closing the cervical stump with Polydioxanone 3/0, pexia to the lateral abdominal wall was performed.
The ventral abdominal wall was closed with Polydioxanone 2/0 in a continuous pattern suture, and the skin was sutured with Nylon 3/0, also in a continuous pattern.

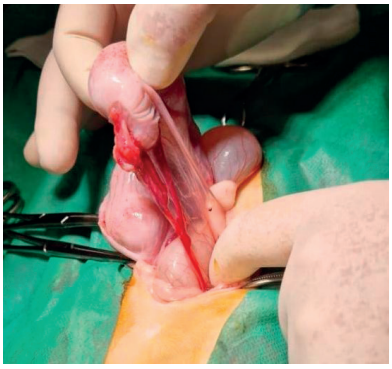

Figure 4. Intraoperative aspect of the elongated right ovarian ligament

Postoperative analgesia was provided with Meloxicam (0.2 mg/kg subcutaneously) and Buprenorphine (20 mcg/kg intravenously).

Prior to the surgery, 20 mg/kg of Amoxicillin with clavulanic acid was administered as a broad-spectrum antibiotic.
The patients were placed in the supine position, and the abdomen and perineal area were shaved and aseptically prepared for surgery. A ventral midline incision along the *linea alba* was made to facilitate the ovariohysterectomy, which was performed using the routine technique.
The animals were monitored postoperatively for 24 hours, and the sutures from the surgical wound were removed 10 days after surgery.

RESULTS AND DISCUSSIONS

Uterine prolapse is an extremely rare condition in felines, and its ethiology has not been fully elucidated. Prolonged calving, strong expulsion efforts, postpartum uterine atony, and exaggerated laxity of the supporting ligaments are believed to be predisposing factors for the occurrence of uterine prolapse in cats. Human medicine describes various contributing factors relevant to veterinary medicine, such as obesity, feto-maternal disproportion, and prolonged calving. In the cases presented here, none of these risk factors could be identified, primarily because the parturition was unattended, and no additional information was available regarding the duration or nature of the expulsion efforts.
Visual inspection can easily diagnose this condition. Palpation of the prolapsed organ and abdominal POCUS examination are crucial to rule out the possibility of the bladder or an intestinal loop being involved externally. It is also necessary to assess the potential presence of another foetus in the abdominal cavity or internal bleeding resulting from the rupture of the ovarian pedicle.
Uterine prolapse requires immediate attention, as it constitutes an obstetrical emergency. The condition can lead to severe internal haemorrhage, either through rupture of the ovarian or uterine arteries in cases of broad ligament tearing. Cleaning the uterus of placental debris and other impurities is mandatory, ideally using mild antiseptic solutions. In cases with severe oedematous changes, hypertonic solutions can be used to reduce oedema and facilitate uterine repositioning. The literature also mentions the potential use of intramural Oxytocin at a dose of

0.5-1 I.U. to reduce uterine size and facilitate repositioning. However, from the authors' experience, while Oxytocin may improve lymphatic drainage by increasing myometrial tone, it can also increase endometrial fragility, thereby raising the risk of further injury.

The primary goal of uterine prolapse therapy is to prevent uterine or systemic infections. Medical management focused on preserving the reproductive capacity of females is rarely successful and is typically reserved for animals of high reproductive value, mainly when the prolapse is recent, and the uterus shows no extensive necrotic lesions.

Ovariohysterectomy is the most commonly recommended surgical procedure for uterine prolapse in felines, significantly when the uterus is severely affected, with extensive areas of necrosis or ruptured intra-abdominal vessels.

Ovariohysterectomy can be performed with or without restoring the prolapsed organ to its anatomical position within the abdomen. When the uterine wall is intact, repositioning the prolapsed organ into the intra-abdominal position, after thorough cleaning, facilitates the procedure and reduces the risks associated with additional surgery.

CONCLUSIONS

Uterine prolapse, although a scarce condition in felines, must be treated as a significant obstetrical emergency due to the increased risk of internal bleeding. The treatment approach depends on the severity of the lesions, which are directly correlated with the duration of exposure of the prolapsed organ.

While the literature describes techniques for performing external ovariohysterectomy, the authors believe that when the physical integrity of the uterine wall is maintained and the prolapsed organ can be repositioned, it should be handled using a routine surgical technique. A significant advantage of this approach is the possibility of performing abdominal colpopexy, which helps prevent the development of post-surgical urinary incontinence, an important complication associated with this condition.

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