True Vaginal Prolapse Complicated with Uterine Horn Intussusception and Urethral Obstruction in a Postpartum Bitch

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Abstract. *The current report presents a clinical case of a true vaginal prolapse complicated with unicornual uterine intussusception and anuria caused by urethral obstruction due to compression in a postpartum bitch. Transabdominal ultrasonographic examination showed no presence of retained fetuses into the birth canal, but an extremely enlarged urinary bladder. After repositioning of the protruded vaginal wall, laparotomy was performed, invagination of the right uterine horn into the uterus was observed, placed back to normal position, and spontaneous urination occurred. Ovariohysterectomy and cervicopexy to the abdominal wall for prevention of recurrence were done. The bitch had full recovery at one month follow-up. True vaginal prolapse in a bitch could be complicated with urethral obstruction due to compression, which may secondarily cause life-threatening azotemia. Reposition of the prolapsed vaginal tissue in the bitch is recommended to be followed by laparotomy in order to correct intussusception of the uterine horns and the body if presented.*

Introduction

Vaginal wall protrusion from the vulva in the bitch is occasionally due to the presence of a vaginal fold prolapse or hyperplasia as a result of edematous swelling of tissues during proestrus and estrus, influenced by increased levels of estrogens (Johnston, 2001). A very rare condition in the female dog is a true vaginal prolapse, which occurs around the time of parturition, influenced by decreasing progesterone, increasing estrogens and relaxin (Antonov & Karadaev, 2019). It is usually observed in bitches with constipation, dystocia or forced separation during breeding (Purswell, 2000; Alan, 2007; Ober, 2016).

During an early puerperal period in small animals, several uterine complications can occur (Johnston, 2001). A rarely described canine uterine disorder is intussusception of the uterine body or horns, and until now fewer than 10 cases of the condition have been reported in the scientific literature (Gorham & Spink, 1975; Izquierdo & Cueto, 2013; Pinto, 2015; Silva, 2019; da Silva, 2020; de Oliveira Néia, 2021; Antonov, 2022).

Several complications of a vaginal prolapse might occur: extensive edema, hemorrhage, necrosis and automutilation (Feldman & Nelson, 2004; Sontas, 2010), rectal prolapse (Ober, 2016), herniation of the colon (Yesilkaya, 2020) or retroflexion of the bladder (Alan, 2007; Canatan, 2015; Acar, 2017; Özgenç, 2017; Yesilkaya, 2020) into the prolapsed vaginal tissue, which may lead to partial or total urethral occlusion, leading to dysuria or anuria (Schaefers-Okkens, 2001; Sontas, 2010).

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In the present report, the treatment of a very rare true vaginal prolapse complicated with unicornual uterine herniation and urethral obstruction due to compression in a postpartum bitch is described.

Case description

A two-year-old, intact female Pincher dog, weighing 4.9 kg, was presented to the small animal clinic of the University Veterinary Hospital of the Faculty of Veterinary Medicine, Trakia University, in Stara Zagora. The owner reported that the bitch gave birth to one dead puppy 12 hours ago without any signs of dystocia, and the vaginal prolapse occurred during the subsequent night, but without exact information when and how it happened.

Physical examination of the animal showed presence of lethargia, dehydratation, tachypnea, tachycardia and anuria. The visible mucosae were red colored. The prolapsed vaginal wall was reddish, edematous, with dried and slight necrotic mucosa (Fig. 1). The external urethral orifice could not be visualized in the prolapsed tissue. The mammary gland was edematous and with presence of lactation.

Transabdominal ultrasonography showed no presence of retained fetuses into the birth canal, but an extremely enlarged urinary bladder. Complete blood cell counts and biochemical laboratory analysis showed no changes in the parameters.

Manual reposition of the prolapsed vaginal wall was done after subcutaneous premedication using 0.04 mg/kg of atropine sulfate (Atropinum sulfuricum; Sopharma; Bulgaria), followed by intravenous administration of 5 mg/kg of propofol (Propofol 1%, Fresenius, Germany). Perivulvar and perianal skin was cleaned and disinfected using Tinctura jodi 5% (Vetprom, Radomir, Bulgaria). In order to reduce tissue edema, the prolapsed vaginal tissue

was bandaged with sterile gauze, irrigated with 0.1% Rivanoli solution (Fig. 2), and then replaced by digital manipulation. During the manual reposition into the cranial vaginal lumen, a presence of soft tissue was palpated in the forward direction, so a decision for laparotomy was made.

Inhalation anaesthesia was performed after endotracheal intubation of the bitch with isoflurane (TerrellTM; Minrad Inc.; USA). Aseptic preparation of the ventral abdominal wall was made, a midline laparotomy was performed, and abdominal exploration revealed an extremely enlarged urinary bladder and full herniation of the pregnant right uterine horn into the uterine body (Fig. 3). There were no signs of tissue congestion or adherence of the invaginated uterine wall. Gentle retraction of the right uterine horn was done in the cranial direction in order to place it back to the normal position (Fig. 4), followed by spontaneous urination. Finally, ovariohysterectomy followed by cervicopexy to the ventral abdominal wall were performed to prevent recurrence with USP 2/0 polyglycolic acid (Marlin; Catgut GmbH; Markneukirchen). The abdominal cavity was closed with a cross-stitch pattern using the same suture material, and the skin was sutured with simple interrupted non-absorbable sutures USP 2/0 (Vitalon; Dr Hammer & Co. GmbH; Hamburg). Ringer's solution was administered intravenously at a dose of 20 mL/kg/h only on the day of operation. Post-operative therapy included oral application of antibiotic – 25 mg/kg of amoxicillin-clavulanic acid (Synulox RTU; Zoetis; USA), for 7 days. Lactation of the mammary gland was ceased by daily oral treatment with 5 mg/kg of cabergoline (Dostinex; Pfizer; Italiy), for 10 days. Skin sutures were removed after 12 days. Follow-up examination at one month showed that the bitch had full recovery and no complications.

Fig. 1. Caudal view of the prolapsed vaginal tissue of the patient

Fig. 2. Prolapsed vaginal tissue bandaged with sterile gauze, irrigated with 0.1% Rivanoli solution

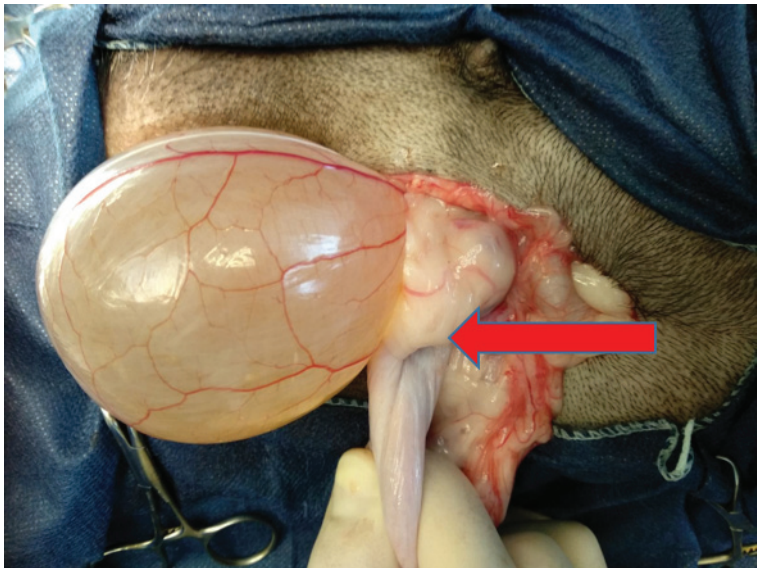

Fig. 3. Intraoperative appearance of the pregnant uterine horn intussusceptum of the patient (red arrow)

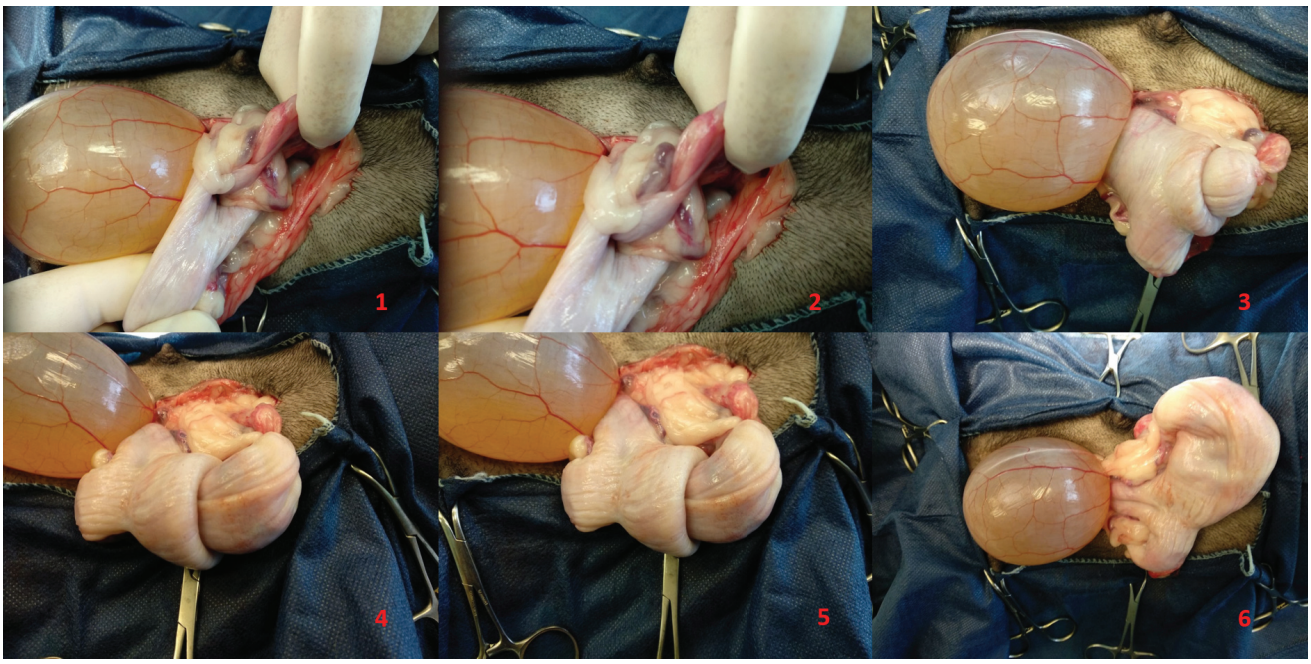

Fig. 4. Reposition of the right uterine horn during operation (consequent steps)

Discussion

A true vaginal prolapse in the bitch is a very rare condition, usually occurring during or shortly after parturition (Schaefers-Okkens, 2001; Ober, 2016; Antonov & Karadaev, 2019), which is often complicated with herniation of other abdominal organs (Wikes, 1986). In the present case, the pregnant uterine horn was invaginated into the uterine body and the cranial part of the vagina, which then caused anuria due to obstruction of the urethra as a result of external compression. Unfortunately, the presence of uterine horn intussusception was not detected during the ultrasound examination, even if it could be successfully used as a diagnostic method (Antonov, 2022), and it was recognized during the abdominal operation, as it usually happens (Gorham & Spink, 1975; Izquierdo & Cueto, 2013; Pinto, 2015; Silva, 2019; da Silva, 2020; de Oliveira Néia, 2021). In our opinion, the reason for this could be the extremely enlarged bladder, which almost filled the abdominal cavity.

Usually, the urethral obstruction leads to acute renal failure and post-renal azotemia, causing fast deterioration of the animal's general health condition (Niles & Williams, 1999). Establishing a patent urinary tract is an emergency, so early operative treatment of a vaginal prolapse is recommended (Canatan, 2015). In the described case, the vaginal prolapse and uterine horn intussusception were corrected within the first 12 hours after occurrence, so there were no signs of even initial kidney failure.

Conclusion

In order to reduce additional complications, reposition of the prolapsed vaginal tissue in the bitch should be done as soon as diagnosed, followed by laparotomy in order to correct possible abnormalities of the abdominal organs. Additionally, ovariohysterectomy and cervicopexy should be performed to minimize the risk of potential recurrence.

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