Unusual cases of vaginal prolapse concurrent with cystocele in two dogs

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SUMMARY

A 2-year-old non pregnant Anatolian shepherd (case 1) and 3-year-old, pregnant pit bull terrier (case 2) each presented with a history of dysuria and a mass prolapsed from the vulva. Vaginal prolapse and retroflexion of the urinary bladder were diagnosed in both cases according to clinical and diagnostic examinations. Foetal stress was detected on ultrasonography and caesarean section was performed in case 2. The urinary bladder was replaced in the normal anatomic position and cystopexy was performed via a midline laparotomy in each dog, and an ovariohysterectomy (OHE) was performed to prevent recurrence of vaginal prolapse. Surgical amputation of the prolapsed vagina was performed after the cystopexy and OHE. This case report demonstrates the possibility of severe vaginal prolapse concurrent with cystocele in bitches.

Keywords: Vaginal prolapse, cystocele, dog

Introduction

Vaginal prolapse is the protrusion of oedematous vaginal tissue through the opening of the vulva [15]. Vaginal prolapse in dogs, depending on the hyperoestrogenic effect, is commonly seen in the proestrus and oestrus stage of the sexual cycle [9, 12]. True vaginal prolapse may occur near parturition as the result of a decrease in progesterone concentration and an elevation in oestrogen concentration [9, 14].

Cystocele is the protrusion or prolapse of the urinary bladder into the vagina [3]. Retroflexion of the urinary bladder has been mostly reported in old male dogs, as well as in female cats and bitches [1,16]. The most common treatment for retroflexion of the urinary bladder is incisional cystopexy [3, 7].

The present report describes the clinical presentation of prolapsed vagina in a pregnant bitch and in a bitch in heat concurrent with cystocele and successful treatment with cystopexy and surgical amputation of the prolapsed vagina in a pregnant and a in proestrous bitch.

Case Reports

CASE 1

A 2-year-old Anatolian shepherd bitch, weighing 23 kg, was admitted to the Small Animal Hospital with a history of dysuria and a mass protruding from the vulva for 2 days. The owner had noticed that the prolapsed mass was enlarging gradually. A physiological examination showed that the rectal temperature, pulse, and respiratory rate of the dog were within reference ranges. There were no clinically relevant symptoms including vomiting and bradycardia, and routine blood work including complete blood count and serum biochemistry profiles were found in normal limits. The oedematous tissue protruding from the vulva had necrotic and haemorrhagic areas (Fig. 1).

Figure 1: Gross appearance of prolapsed vagina (12.4 x 24.3 cm width x length) and cystocele in the Anatolian shepherd bitch.
Ultrasonography of the prolapsed tissue revealed an anechoic, fluid-filled and bladder-like body. The urinary bladder was not detected in its anatomic location during the ultrasonography and radiography of the abdomen for the diagnostic purposes. However, dysuria was observed due to urethral opening prolapsed to caudally. According to diagnostic examinations, retroflexion of the bladder was confirmed. Vaginal cytology revealed that the dog was in the proestrus stage. By the reason of the masses covered the urinary bladder in this case, the digital manipulation and other clinic applications were avoided. However the orificium urethra externa was seen, due to the urinary bladder prolapsed to caudally into the mass and inhibited the manipulation of catheterization. Consequently, cystocentesis was preferred for drain the urinary bladder. Under general anaesthesia, urine was emptied from the bladder with a 21G needle through the vaginal mucosa. General anesthesia was induced with propofol (4 mg/kg, IV) and maintained with Isoflurane delivered in 100% oxygen. The dog was placed in dorsal recumbency, and a midline laparotomy was performed. The urinary bladder was replaced in its normal anatomic position (Fig. 3), and a cystopexy was performed to the right abdominal wall to prevent recurrence. The bladder serosa and abdominal wall areas (half thickness manner) to be sutured were abraded by scalpel (incisional). Five simple interrupted sutures of 3-0 polypropylene (non-absorbable suture material) for preserving the bladder mucosa were placed between the bladder and the right abdominal wall, from the apex to the trigone (Fig. 5). The urethral opening was identified and catheterised. An ovariohysterectomy was performed to prevent the recurrence of vaginal prolapse, and surgical amputation of the prolapsed vaginal tissue (simple interrupted size 0 polyglycolic acid sutures) was performed before repositioning. Amoxicillin–clavulanic acid (Amoksilav; Sandoz) 25 mg/kg bid, carprofen (Rimadyl; Pfizer) 2 mg/kg bid and famotidine (Famodin, Ilsan) 1 mg/kg, sid were administered after surgery for five consecutive days. No recurrence of the prolapsed vagina and no retroflexion of the urinary bladder occurred during a one-month follow-up.

**CASE 2**

A 3-year-old, pregnant pit bull terrier, weighing 18 kg, presented to the Small Animal Hospital with a history of dysuria, dystocia, and a mass protruding from the vulva (Fig. 2).

The owner reported that the mass was noticed after the first stage of parturition, average within 4 hours, and that the prolapsed tissue was enlarging gradually. According to anamnesis, this case did not have gynecologic pathology in the past. The pulse and respiratory rates of the dog were slightly higher than normal ranges; rectal temperature was 37.2°C. The tissue protruding from the vulva was oedematous. An anechoic area was determined by ultrasonographic examination of the prolapsed tissue. The urinary bladder was not detected in its anatomic location during the ultrasonographic and radiographic examinations of the abdomen. The diagnosis of urinary bladder into the prolapsed mass was confirmed by needle aspiration of urine and ultrasonographic examination. And the urethral

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**Figure 2:** Gross appearance of prolapsed vagina (20,2 x 16,3 cm width x length) and cystocele in the pregnant pit bull bitch.

**Figure 3:** Intraoperative appearance of the bladder in the Anatolian shepherd bitch.

**Figure 5:** The serosal surface of the bladder was sutured to the abdominal wall by cystopexy surgery.
opening prolapsed to caudally is similar to first case. The diagnosis of pregnancy was confirmed by detection of foetal vesicles and foetuses. The beginning of fetal stress detected by ultrasonographically with evaluating the heart rate as 162-180 bpm in randomize chosen puppies respectively. There was no possibility of normal parturition due to the prolapsed vaginal tissue in this case. A caesarean section was performed under general anaesthesia with the same protocol, and five puppies were quickly removed from the uterus. Preference of the owner and the convenience of the case according to clinical assessment and routine blood work, caesarean section and ovariohysterectomy was performed concomitantly. After the ovariohysterectomy, the urine was emptied from the bladder with a 21G needle through the vaginal mucosa. The urinary bladder was replaced in its normal position (Fig. 4) and a cystopexy was performed, similar to case 1. The urethral opening was identified and catheterised for guidance of vaginal amputation surgery. And then the necrotic prolapsed vaginal mucosa was amputated (simple interrupted size 0 polyglycolic acid sutures) and the vagina was repositioned. Amoxicillin–clavulanic acid (Amoksilav; Sandoz) 25 mg/kg bid, carprofen (Rimadyl; Pfizer) 2 mg/kg bid and famotidine (Famodin, Ilsan) 1 mg/kg, sid were administered for five days. No recurrence of the prolapsed vagina or cystocele was detected during the two-month follow-up. The owner stated that the five puppies were still alive.

Figure 4: Intraoperative appearance of the bladder in the pregnant pit bull bitch.

Discussion

The most common diseases of the vagina and vestibule in the bitch are vaginal neoplasia, hyperplasia, prolapse, and vaginitis. Vaginal prolapse in bitches, due to the hyperoestrogenic effect, is commonly seen in the prooestrous and oestrus stages of the sexual cycle, and in the first three oestrous cycles in younger dogs. The incidence of prolapsed vagina is higher in large-breed dogs [9, 10]. In the first case, the bitch was in the prooestrous stage.

True vaginal prolapse in the bitch may occur near parturition as a result of decreasing progesterone and an elevation in oestrogen concentration [8, 15]. The second dog was pregnant and parturition had begun. In that case, in addition to oestrogen, the high relaxin level during parturition might have contributed to the development of vaginal prolapse. Relaxin is a pregnancy-specific hormone that promotes relaxation of the pelvic ligaments, pelvic canal, and cervix [5, 19]. Markandeya et al. [11] reported that excessive antepartum relaxation of the pelvic tissue and increased intra-abdominal pressure might contribute to prepartum prolapse. Alan et al. [2] reported that extreme tenesmus arising from dystocia might be responsible for vaginal prolapse.

True vaginal prolapse is sometimes concurrent with the exteriorization of other organs, such as the bladder, uterine body, or distal part of the colon [8, 18]. Alan et al. [2] reported the potential of urinary bladder and corpus uteri in protrusion in the prolapsed vagina in the bitch. In both of our cases, the bladder was determined to be within the prolapsed vagina.

The exact cause of cystocele is unknown. Risk factors for the development of cystocele in women are pregnancy, obesity, chronic cough, chronic constipation, genetic connective tissue weakness, hormonal status, age, and previous pelvic surgery. Cystocele is seen in elderly and parous women [4, 17]. The first case of cystocele in the veterinary literature was reported by Besalti and Ergin [3] in a young female Rottweiler who had never been pregnant. A similar case in a pregnant Rottweiler was described previously as retroflexion of the bladder by Sontas et al. [16]. Retroflexion of the urinary bladder has been mostly reported in old male dogs, as well as in female cats and bitches [1, 13, 16]. Relaxin may induce retroflexion of the urinary bladder due to relaxation of the pelvic ligaments in pregnant dogs [6, 16]. The increased abdominal pressure related to pregnancy and continuous barking might cause retroflexion of the urinary bladder [16]. Cystocele has also been described in non-pregnant and nulliparous dogs [3]. Both of the prolapsed vagina and cystocele cases in the present study involved parous dogs. Extreme straining due to the prolapsed vagina in might have contributed to the development of cystocele in the current cases. The absence of pubocervical fascia in dogs is known [3, 20]. Even if vaginal amputation and ovariohysterectomy was performed and having the potential of cystitis in dogs, urinary bladder may be retroflexed in the abdomen but cystocele can not occurred. So for preventing retroflexion, cystoexy was made in the present cases.

The most common postoperative complication in dogs associated with cystocele and cystoexy is urinary incontinence, which may be associated with ischemic or neurogenic damage to the trigone during strangulation. No urinary incontinence has been reported in the postoperative process [3]. In the present cases, no complications were reported after surgery as well.

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In conclusion, although it is a rare event in veterinary literatures, cases of severe vaginal prolapse in dogs may be concurrent with cystocele.

References