



### *Case Report*

## **POST OESTRAL VAGINAL PROLAPSE IN A NON-PREGNANT HEIFER (A CASE REPORT)**

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### **ABSTRACT**

The present study reports a case of post oestral vaginal prolapse in a non-pregnant heifer with secondary uterine inflammation. The clinical signs, hematology, biochemistry, ultrasonographic findings and therapy were described.

The vaginal prolapse type was recognized as grade III but systemic signs as increased body temperature, digestive tract and locomotors function disturbances were not observed. The blood samples investigation showed decrease of haemoglobin content, red blood cells, haematocrit and phosphorus. Fluid filled uterine horns, open cervical canal, newly formed corpus luteum and follicles into the ovaries were detected by ultrasound examination.

The treatment included epidural anaesthesia, prolapsed vagina replacement, Bühner suture setting, human chorion gonadotropin injection and supported therapy by antibiotics, antiphlogistic drugs and analgetics. This clinical case could be in contribution to the veterinary practice.

**Key words:** Heifer, Vaginal prolapse

### **INTRODUCTION**

The genital prolapse in ruminants is an emergence condition covering uterine and vaginal prolapse and should be treated before excessive edema, traumatic lacerations fatal hemorrhage and bacterial contamination lead to unfavourable prognosis (1-3). Vaginal prolapse has been registered in delivered buffaloes, cows and sheep and usually observed in the last months of pregnancy (4-6).

This condition was observed immediately post-partum or latter in mature animals (7, 8) but single reports for incidences in young sheep and buffalo heifers also are available (9).

The mean reason to the disorder is a relaxation of the pelvic ligaments and surrounding soft

tissue structures and alterations in the antepartal metabolism of vaginal connective tissue (10, 11). The prepossessing factors could be high levels of estrogens and relaxin around parturition (12), increased intra-abdominal pressure (13), altered micro- and macro mineral metabolism (14, 15), foods containing phytoestrogenic substances (Miesner and Anderson, 2008), ovarian cysts leading to nymphomania (16) or genetic predisposition (17).

Wolfe and Carson (18) constructed a clinical evaluation system for vaginal prolapse in cattle. They showed four grades of prolapse depending of the presence of cervix and/or urinary bladder prolapsus and vaginal wall damages. Kuijlaars (19) accepted the disease for acute when the vaginal mucosa is in good condition whereas in the chronic cases significant changes and fibrosis were observed. Success of treatment depends on the type of case and degree of damage. The cure is directed mainly to systemic disturbances elimination, vaginal replacement and recurrence prevention (20, 21). Different authors (19, 22)

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recommend utilization of a Bühner suture or vaginal retention by Jonson и Minchev techniques. Although the disease was described by many authors it continues to be a problem for the veterinary practice. Information about postestral vaginal prolapse in heifers was not detected.

The aim of our report was to present a rare case of postestral vaginal prolapse in non-pregnant heifer and described its clinical signs, hematology, biochemistry, ultrasonographic findings and therapy.

## MATERIAL AND METHODS

A 24 months-old Bulgarian Black White heifer, weighing 320 kg, was presented to the Clinic of Food Animals of the Faculty of Veterinary Medicine, Stara Zagora for examination and treatment. The last oestrus has been started 6 days prior to the examination. According to the owners two days later oval shaped protrusive formation with red color was observed caudal from the vulva.

The daily ration included small amount concentrate, straw, 8 hours uncontrolled grazing and water ad libitum. Similar problem in the dam was not available.

The body temperature; heart rate; respiratory rate and ruminal activity were determined by routine veterinary methods. Blood sample was collected by jugular venipuncture into heparinized vacutainer. The haematological indices - haemoglobin content (Hb), red blood cell counts (RBC), haematocrit and white blood cell counts (WBC) – were analysed with an auto hematology analyser BC - 2800 Vet (Mindray, China). Biochemical analysis of blood plasma was performed using automatic system BS 120 (Mindray, China). Transabdominal ultrasonography was undertaken with ultrasonic equipment (Aloka SSD 500 Micrus, Tokyo, Japan) with a 5MHz linear transducer and Mitsubishi P91E printer.

Thereafter the basic therapy included vaginal prolapse replacement, Buhner suture setting and gonadotropin hormone administration was accomplished.

## RESULTS

### *Clinical examination*

The body temperature was 38.2 °C; heart rate 78/1 min; respiratory rate 16/1 min, ruminal movements 9/5 min. There were no detected any deviations of locomotion, appetite and water intake. During the inspection a total vaginal prolapse and visualization of portio vaginalis uteri was determined (**Fig. 1A**).

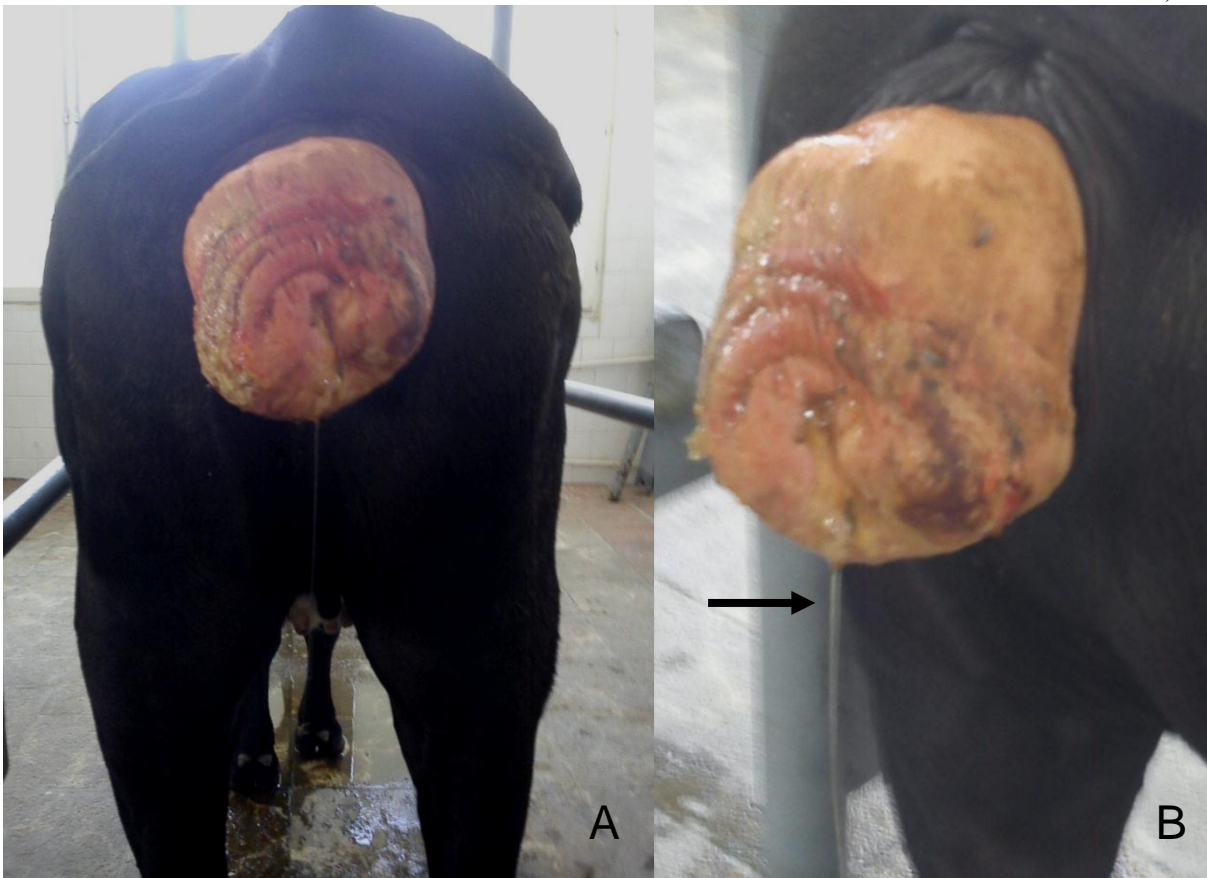
The vaginal mucosa was edematous, red colour with traumatic and inflamed loci and covered by catarrhal-purulent mass. Mucous secret accompanied with purulent floccules discharged from the cervix (**Fig. 1B**).

### *Haematology and blood biochemistry*

In hematological indices was registered insignificant drop of Hb, RBC and haematocrit and the biochemistry showed only phosphorus decrease (**Tabl.1**).

**Table 1.** Hematological and biochemical blood indices

Indices	Values of the patient	Reference (FVM lab.)
Hb ( g/l)	83	90-136
HCT (%)	24.4	28-43
RBC (T/l)	4.89	5-7.5
WBC (G/l)	9.7	6-10
Ca (mmol/l)	2.44	2.1-2.6
P (mmol/l)	1.26	1.5-2.9
Mg (mmol/l)	0.78	0.74-1.3
Total protein (g/l)	78.2	65-85
Blood glucose (mmol)	4.3	2.5-4.2
AST (U/I)	58	58-100
ALT (U/I)	18	15-40
Cholesterol (mmol/l)	3.99	2.3-6.6

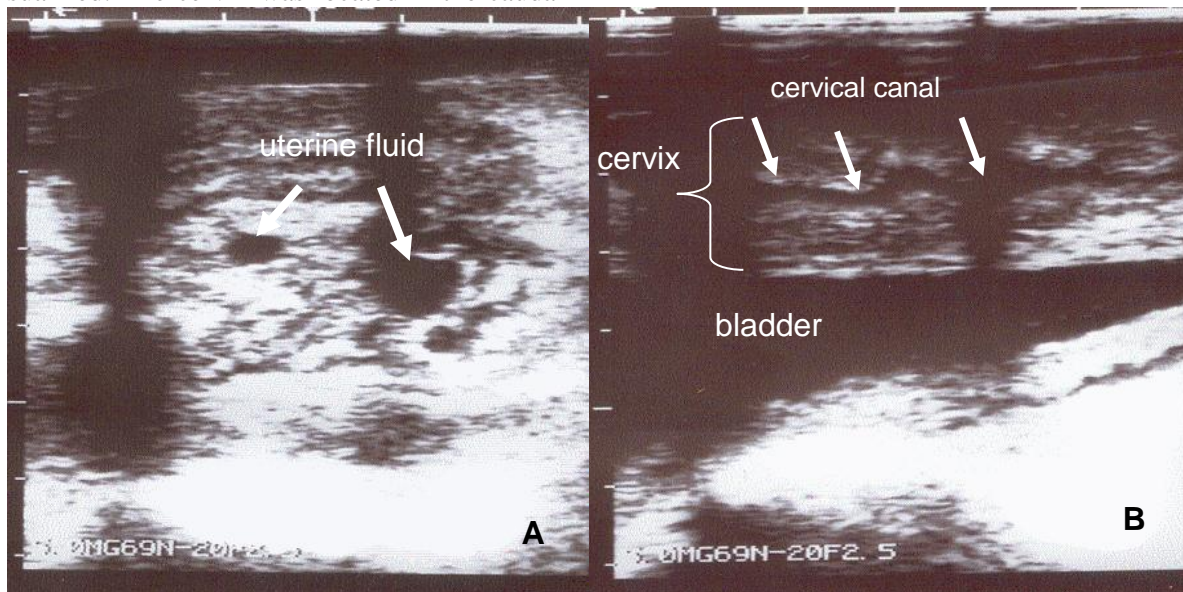


**Fig. 1.** Vaginal prolapse in non-pregnant heifer (A) with cervical discharge (B).

*Ultrasonography*

By ultrasonography a fluid into uterine horns (**Fig. 2A**), small and medium follicles and newly formed corpus luteum in the right ovary were visualized. The cervix was located in the caudal

part of the pelvic cavity and the cervical wall was hyperechoic and thick. The urinary bladder was observed as pear-shaped formation consisted of small amount urine (**Fig. 2B**).



**Fig. 2.** Ultrasonography of uterus (A), cervix and urinary bladder (B).

### Therapy

Before intervention the animal was fixed in a squeeze chute and injected intramuscular with 20 ml Methamezol natrium 30% (Vetprom, Radomir, Bulgaria). Epidural anaesthesia was achieved using 10 ml 1% Novocain solution (Vetprom, Radomir, Bulgaria). The debris and faecal materials were gently removed and the prolapsed vagina was washed via saline (0,9% NaCl, Actavis, Bulgaria). Next the vagina was wrapped through sterile cloths and irrigated with 0,1 % potassium permanganate solution during the 20 min for tissue edema reduction (**Fig. 3A**). Antibiotic suspension (Mastijet fort, syr.

intramam, MSD Animal Health, Bulgaria) was used for lubrication of the vaginal mucosa and prolapsed part was replaced according to method described by Roberts (23). Perivulvar and perianal skin were assiduous cleaned, disinfected using Tinctura jodi 5% (Vetprom, Radomir, Bulgaria) and subcutaneous infiltrated with 40 ml 1% Novocain solution. Retentio of the vagina was carried out by Bühner suture setting (**Fig. 3B**) using the technique showed by Bhattacharyya et al. (21), as suture material presented sterile gauzed tape. The area was covered with thin film of 1% Rivanoli unguent (Vetprom, Radomir, Bulgaria).



**Fig. 3.** Effort to tissue edema reduction (A) and Bühner suture (B).

Immediately after the above procedures intramuscular injections with 35 ml Oxytetracillin (Oxyvet 20% L.A., Veterin S.A, Greece), 8 ml Dehamethasone 0,2% (Veterin S.A, Greece) и 1500 UI hCG - human chorion gonadotropin (Chorulon, MSD Animal Health, Bulgaria) were provided consecutively.

Detailed instructions in connection with continued therapy, retention suture removing and breeding regimen were given of the owner and general vet patrician. Until now recurrence was not reported.

## DISCUSSION

The incidences of a genital prolapse occurs frequently in buffaloes and have been recorded as 14% (14) during the last pregnancy phase or immediately post-partum, especially in a case of dystocia (24,25). At the same time this disease was also registered in cattle and sheep (21, 26).

The present study shows that vaginal prolapse could be observed in a non-pregnant heifer after normal estrus. Khan (17) also reported about suffering of young buffalo heifers and ewes.

The last investigations on the problem have been directed to clarifying etiology and pathogenesis of the disorder (11, 19). A combination from rising estrogens levels with the production of relaxin and low progesterone, especially in the last two week of pregnancy (27), led to relaxation of the pelvic ligaments and surrounding soft tissue structures (12). These changes in conjunction with increased intra-abdominal pressure play key role in the vaginal prolapse (10, 16). However in our case parturition and preconditions for high intra-abdominal pressure were not recorded.

Regardless of negative echography during the examination for ovarian structures producing high estrogen levels they could be a probably reason to disease because it was diagnosed after rising estrogens levels in the course of estrus activity. Besides the long time on pasture was a prerequisite for additional phytoestrogens intake that were showed as a reason for vaginal prolapse by Miesner and Anderson (1).

A survey of the progesterone and estrogen concentrations in blood plasma of ewes suffering from this disorder demonstrated low expression rate of estrogen receptors  $\alpha$  and lack of an oedema in deep epithelium (11). The authors rejected the hypothesis about influence of steroid hormones on the occurrence of disease in ewes and confirmed that expression of  $\alpha 2$ -chain of collagen 1 was lower in ewes with prolapsed vaginal tissue such as concluded to presence of alterations in the antepartal metabolism of vaginal connective tissue. Nevertheless the precise role of estrogens and progesterone in the disease still remains unknown (19).

The decrease of Hb, RBC, haematocrit with rising white blood cells number could indicate an

inflammation and toxins input into the blood circulation. In our opinion the presence of uterine luminal fluid, open cervical canal and catarrhal-purulent discharges were indicative for endometritis that we consider as a secondary disease. Ahmed et al. (5) reported for low values of haemoglobin content, RBC, haematocrit and leucocytosis in buffaloes with vaginal prolapse.

The biochemical blood profile results are in accordance of the other theory (15, 23) for importance of micro- and macro elements in etiology of genital prolapse. The echographic appearance of urinary bladder and the small amount urine are an evidence for retroflexio and urethral compression absence.

The obtained data from performed examinations was a reason to categorize this condition as grade III according to classification of Wolfe and Carson (18) and argue the therapy option. The most authors (9, 19, 21, and 22) also recommend Bühner suture to retention of vagina after replacement and recurrence prevention. Another sutures (Jonson and Minchev) or cervicopexy used in similar case (3, 28) are not appropriate choice in terms of future conception and adequate pregnancy and parturition performance. Disadvantages associated with the above methods include wounding of the urethra, bladder or blood vessels and increased risk for bacterial infection (1).

The injection of hCG was used for supporting of newly formed corpus luteum and accelerated progesterone production, ovulation or luteinization of follicles if corpus luteum fall. Tandon (29) stated that sufficient concentration of progesterone was an important factor for vaginal prolapse prevention. The application of additional therapy including antibiotics, antiphlogistics and analgetics has benefit effect in vaginal prolapse with complications. The lack of recurrence in this case supports treatment option.

In conclusion vaginal prolapse could occur in non-pregnant heifer after normal estrus and increased haemoglobin content, RBC, haematocrit, phosphorus and secondary uterine inflammation could be observed. Appropriate therapy in these cases include vaginal prolapse replacement after epidural anaesthesia, Bühner suture setting and administration of hCG drugs,

antibiotics, antiphlogistics and analgetics. The present case report could be in contribution to the veterinary practice.

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