

Surgical management of pneumovagina in a cross bred cow: A case report

S. Dhara^{1*}, M. Mahajan¹, D. Arya¹ and S. Kumar¹

¹Department of Veterinary Gynaecology and Obstetrics, G. B. Pant University of Agriculture and Technology, U. S. Nagar, Pantnagar- 263 145, Uttarakhand, India

Abstract

Pneumovagina is caused by faulty closure of vaginal lips as a result of abnormal conformation or traumatic injuries to the vagina due to malhandling of the genitalia and fetus during parturition. A four years old crossbred pluriparous cow was presented at TVCC, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, with a history of air suckling into the vagina and repeat breeding syndrome. The cow was examined clinically and gynaecologically. The anamnesis showed that the cow had a history of previous difficult parturition. Whiteside test (WST) was found positive. The history and gynaecological examination revealed it was a case of pneumovagina with a uterine infection. The animal was subjected to a modified Caslick operation or vulvoplasty under local anesthesia. The post-operative care was done with antibiotic and analgesic medication. The cow was recovered successfully and artificial insemination was recommended after getting negative WST in the next cycle. After three months, per-rectally pregnancy diagnosis was done and the cow was pregnant.

Key words: Caslick operation, Parturition, Pneumovagina, Traumatic injuries, White side test

Highlights

- Cured the cow from Pneumovagina condition after a modified Caslick's operation.
- The successful surgical management prevented further genital infections.
- The cow was recovered from repeat breeding condition and became pregnant.

Rectovaginal injuries in cows such as fistula, perineal laceration, pneumovagina, and urovagina cause a serious economical loss to the dairy farm (Sardari *et al.*, 2005). Pneumovagina is caused as a result of faulty closure of vulvar lips due to poor conformation or traumatic injuries to the vagina during the malhandling of the fetus at parturition (Morel, 2003). This condition results from stretched, ruptured, and horizontal vulva, which may introduce fecal material, urine and air into the vagina leading to vaginitis, cervicitis, endometritis, conception failure and repeat breeding (Ricketts and Curnow, 1988). It may also arise due to malnutrition, poor body condition score (BCS), and ischial abnormality. The cows having the vulvar lips direction towards the anus are more prone to pneumovagina and subsequent infection of

genital organs (Dehghani *et al.*, 2011). The pneumovagina condition is mostly seen in mare having air suckling tendency into the vagina (Dascanio, 2021), but the incidence in the cow is low. Goncagul *et al.* (2012) reported 12.9% prevalence of pneumovagina in the cow. Adequate protection is required to prevent subsequent infections in pneumovagina conditions. In most cases of pneumovagina and urovagina, a modified Caslick operation or vaginoplasty is recommended (Peter and King, 2021).

A crossbred four years old pluriparous cow was brought into the TVCC, College of Veterinary Sciences, G. B. Pant University of Agriculture and Technology with a chief complaint of typical suckling of air into the vagina and repeat breeding syndrome. The anamnesis showed the cow had a history of

*Corresponding Author, E Mail: souvikdhara2016@gmail.com

difficult parturition in previous parity. The clinical examination revealed that all physiological parameters were within normal range. The vulvar lips were placed in a horizontal plane and had an angle of about 30-40° from the vertical plane, and there was sinking of anus (Fig. 1). During per rectal examination there was spontaneous outflow of air with a noisy way. White side test showed positive result. Based on the anamnesis and above findings the present case was diagnosed as pneumovagina with uterine infection due to conformational defects of vulvar lips. Modified Caslick surgery or vulvoplasty was recommended to manage the case of pneumovagina and to prevent the subsequent infections.

The cow was restrained in a crate and caudal epidural anesthesia was performed with 4 mL of 2% lignocaine hydrochloride (Inj. LOX* 2%). Local infiltration was done in vulvar mucosa by 10 mL of 2% lignocaine hydrochloride (Inj. LOX* 2%). The urine was catheterized by using a Foley catheter and the tail was secured to the neck of the cow. The vulva and perineal area of the cow was washed with antiseptic solution and prepared for aseptic surgery. The edge of the vulvar lips was incised about 1 cm containing skin and vulva mucosa membrane (Fig. 2). The suture (simple interrupted) was started from the dorsal commissural vulva and about two third of the vulva lips were apposed by using catgut no. 2 (Fig. 3). Post operative antiseptic dressing was recommended in every alternative day for a period of ten days. The animal was treated with antibiotic (Inj. Intamox® 4.5 g, OD) intramuscularly for 5 days, Inj. meloxicam (0.5 mg/kg, BID) intramuscularly for 3 days and Inj. chlorpheniramine maleate (10 mL, OD) intramuscularly for 3 days. The animal was recovered from the condition of pneumovagina and white side test (WST) was performed in the next cycle. The WST showed negative result and the owner was advised to inseminate the animal in the next estrus cycle. After three months again the owner took the animal and per-rectal

pregnancy diagnosis was performed. The pregnancy diagnosis was positive.

In usual condition, the anal sphincter and vulva fissure should remain on an unbroken line and out of pubis. It is mentioned that an ideal conformation is achieved if 80% of the vulva labia lies below the pelvic floor and labia lies at an angle of at least 80° to the horizontal line (Astiz *et al.*, 2017). Dehghani *et al.* (2011) reported that the cows with 30° of vulva lips angle had 37% and the cows with 45° of vulva lips angle had 62.9% incidence of pneumovagina. If the vulva angle to the anus from a vertical plane is displaced due to various factors such as dystocia, malhandling of fetus during parturition, recto-vaginal laceration, fistula, poor body condition score, poor nutrition, senility, high number of parity and recurrent prolapsed, leading to makes the vagina prone to sucking air, fecal materials, urine and other contaminants (Azawi, 2008). Another factor is pelvic ischium conformation because when the pelvic ischium is too small then the vulva tends to fall on the horizontal plane leading to suck air, faeces and urine resulting pneumovagina, urovagina and other genital infections (Dehghani *et al.*, 2011). The consequences of pneumovagina may be vaginitis, cervicitis, endometritis, urovagina, pyometra, repeat breeding and even infertility.

It is very clear that the conformational defect of the vulva is an intrinsic factor of pneumovagina. Hence, correction of the default conformation of the vulva is the primary action to cure the case of pneumovagina and prevention of subsequent genital infections. This condition may be corrected by surgical technique developed by Caslick, called Caslick operation (Caslick, 1937). Previously, various workers successfully used this technique for reconstruction of vulva in different condition such as pneumovagina (Sardari *et al.*, 2005; Dehghani *et al.*, 2011), recurrent vagino-cervical prolapse (Rangasamy *et al.*, 2021), poor vaginal conformation (Anderson, 1986), and congenitally developed fused vulva (Yilmaz *et al.*, 2014).

Modified Caslick operation to manage pneumovagina in a cow

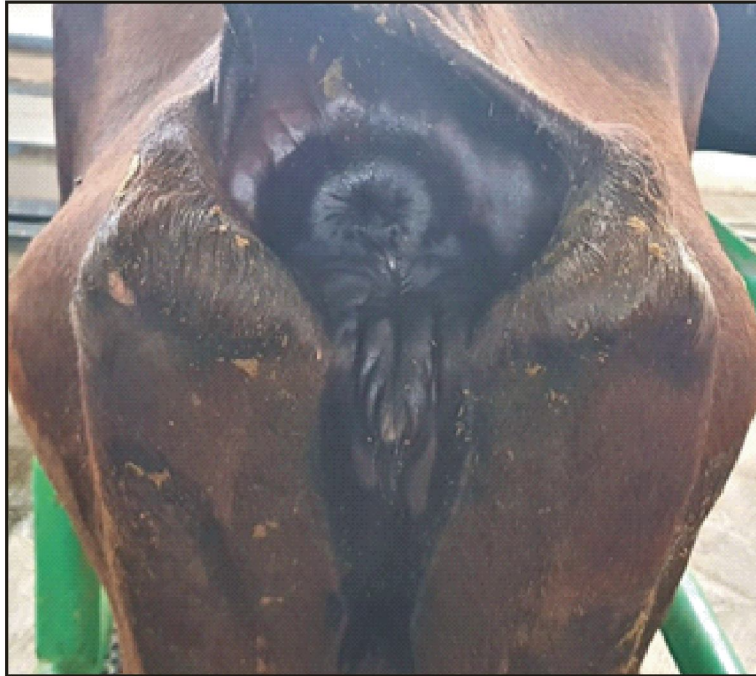


Fig. 1. Displaced vulva in a nearly horizontal position



Fig. 2. Incision area on the vulva lips

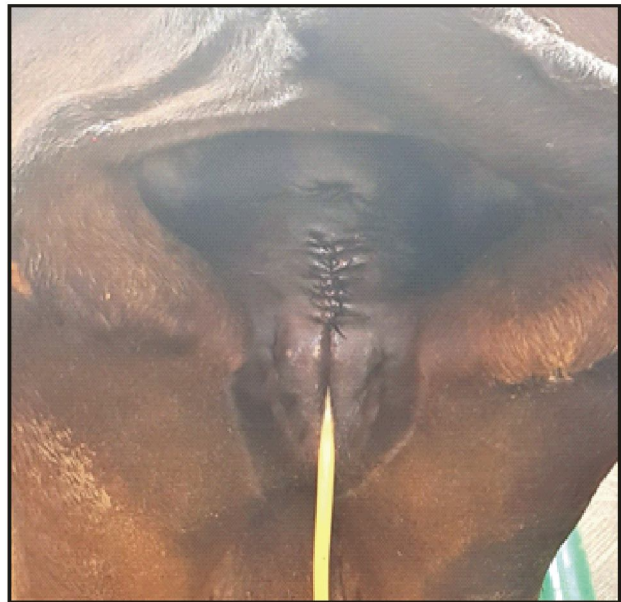


Fig. 3. Simple interrupted suture to apposed the vulva lips

In the present case the vulva of the cow was displaced in the horizontal plane with sinking of anal sphincter. The vagina was started to suck air and fecal materials and developed pneumovagina condition. To prevent the further progression of this condition and to prevent the further infections we considered the cow for vulvoplasty by modified Caslick operation. To prevent the unnecessary pain of the animal epidural anesthesia along with local infiltration was applied with 2% lignocaine HCl. Management of post operative pain and infection was done with non steroidal anti-inflammatory drug (NSAID) and broad-spectrum antibiotic injections. Use of parenteral antibiotic course was helped to exclude the uterine infection, which was confirmed by WST.

Peumovagina is not a serious health issue

of the cow and incidence is also low. Hence, most of the cases are unnoticed by the farmers. But the consequences of pneumovagina can destroy the reproductive health of the cow. Early detection of the condition and vulva reconstruction can successfully manage the condition and prevent the progression of the further reproductive damages of the animals.

Conflict of interest: Authors have no conflict of interest in this study.

Author's contribution: SD: Involved in diagnosis, treatment of the case, and preparation of manuscript; MM: Involved in diagnosis and treatment of the case; DA: Assisted in surgical procedure; SK: Helped in diagnosis the case and drafting the manuscript.

REFERENCES

- Anderson JF, 1986. A Modified Caslick's procedure for closure of the dorsal vulva in the cow. *Bov Pract*, 21: 184-186, doi: 10.21423/bovine-vol0no21p184-186
- Astiz S, Gonzalez-Bulnes A, Elvira-Partida L, Perez-Villalobos N, Cerviño-Lopez M *et al.*, 2017. Bovine neonatology. Encyclopedia of life support systems. Animal and plant productivity. Oxford, United Kingdom: UNESCO: EOLSS
- Azawi OI, 2008. Postpartum uterine infection in cattle. *Anim Reprod Sci*, 105(3-4): 187-208, doi: 10.1016/j.anireprosci.2008.01.010
- Caslick EA, 1937. The vulva and the vulvae-vaginal orifice and its relation to genital health of the thoroughbred mare. *Cornell Vet*, 27: 178-187
- Dascanio JJ, 2021. Caslick Operation or Vulvoplasty. *Equine Reproductive Procedures*. pp 191-194, doi: 10.1002/9781119556015.ch53.
- Dehghani SN, Yavari M and Kafi M, 2011. Treatment of peunomovaginitis in dairy cattle by Caslick operation. *Res Opin Anim Vet Sci*, 1(6): 349-351
- Goncagul G, Seyrek Intas K, Kumru HI and Seyrek Intas D, 2012. Prevalence and accompanying signs of pneumovagina and urovagina in dairy cows in the Southern Marmara region. *Tierärztliche Praxis*, 40(6): 359-366, doi: 10.1055/s-0038-1623144
- Morel D, 2003. *Equine Reproductive Physiology, Breeding and Stud Management*, 2nd edn., CABI Publishing
- Peter AT and King EH, 2021. Management of Vaginal, Cervico-Vaginal, and Uterine Prolapse. *Bovine Reproduction*. pp 561-578, doi: 10.1002/9781119602484.ch47
- Rangasamy S, Sarath T, Umamageswari J, Raja lakshmi R, kalyaan US *et al.*, 2021. Obstetrical management of recurrent vagino-cervical prolapse using vulvoplastic technique in a crossbred cow. *Haryana Vet*, 60: 123-124
- Ricketts SW and Curnow EW, 1988. Caslick's vulvoplasty for the correction of pneumovagina in mares. *In Practice*, 10(5): 204-208, doi: 10.1136/inpract.10.5.204
- Sardari K, Farzaneh N and Tabatabaee AA, 2005. Urethral extension and Caslick's surgery for infertility treatment in pneumovagina cases with sunken anus in Holstein cows. *J Appl Anim Res*, 27(1): 63-64, doi: 10.1080/09712119.2005.9706539
- Yilmaz O, Yazici E, Uçar M and Birdane MK, 2014. The treatment of congenitally developed fused vulva labia in a Brown-Swiss heifer. *Turk J Anim Sci*, 38(1): 116-119, doi: 10.3906/vet-1303-36

Received– 23.04.2022, Accepted– 19.06.2022, Published– 22.07.2022 (online), 01.12.2022 (Print)

Section Editor: Prof. S. K. Nandi, Associate Editor