

## Short Communication

# Surgical Correction of Third Degree Rectovaginal Fistula (RVF) in a Mare

Hafsah Tihami, Rana Muhammad Shabbir\*

Faculty of Veterinary and Animal Sciences, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi (46300), Pakistan.

\*Correspondence: [m.shabbir2051@gmail.com](mailto:m.shabbir2051@gmail.com)

### Article History

Received: March 03, 2023

Accepted: April 14, 2023

Published: April 30, 2023

### Abstract

Rectovaginal fistulas (RVF) occur during foaling or secondarily to dystocia. The injury occurs mainly in primiparous mares. There are many reasons to why it occurs. Strong expulsive forces by the mare, along with malposition of the fetus, during parturition, like foot-nape posture or dorsopubic position can cause RVF. During the process of foaling, a mare who had never given birth before experienced severe rectovaginal lacerations classified as third degree. This unfortunate incident occurred when the fetus's hoof became trapped in the birth canal. In an attempt to extract the fetus, the owner exerted force without properly adjusting the mare's posture, position, and presentation, resulting in significant tears in the vagina and rectum. Upon examination, it was discovered that a fistula had formed, connecting the rectum and vagina. The mare underwent surgery and received postoperative care which included the administration of antibiotics (specifically, 10g of Ceftriaxone in normal saline via intravenous injection daily for 7 days) and analgesics (1ml of Ketoject per 40kg of body weight via intravenous injection for 3 days). The mare had access to water at all times and was given a small amount of lush green fodder twice a day. Laxatives were added to the feed to maintain regular fecal consistency and prevent the formation of hard fecal masses. During the first week, the mare was confined to a specific area, and in the second week, an assistant provided hand walks for exercise. The skin sutures were removed after a few weeks, and the mare was continuously monitored until it made a full recovery.

**Keywords:** Rectovaginal fistulas; Dorsopubic position; Lacerations.

### Introduction

First, in footnape posture the fetal forelimbs lie over its head, so the limbs stuck in vagina. Due to expulsive forces the limbs will injure the vagina causing fistula. Second, equine fetus during gestation is normally in dorsopubic position. It rotates to dorsosacral position during last days of gestation. During this rotation, foal's legs exert strong pressure on the dorsal and lateral walls of birth canal, leading to increase chances of lacerations. Also, if fetus fails to rotate during gestation, its head gets stuck in vagina, and with strong expulsive forces, fistula forms in vagina. Third, forced extraction of an oversized fetus with a less dilated birth canal can also lead to RVF. Fourth, fetus extraction before complete dilation of birth canal can be a cause. Fifth, it is considered that mares carrying male fetuses have slightly longer gestation period with male foals being heavier and larger at birth. This causes undue force during delivery of slightly



Copyright: © 2023 by the authors.  
Licensee Roots Press, Islamabad  
Pakistan.

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

large fetus from insufficiently dilated birth canal causing tearing and lacerations. Then primiparous mares are more likely candidates of RVF. In primiparous mares, vestibule vaginal sphincter is prominent where the foal's hooves are forced into roof of vestibule due to mares' abdominal compressions (LeBlanc, 1999; Woodie, 2006). There are three degrees of lacerations to perineum. First degree lacerations happen when the mucosa of vagina along with vulva is involved. In second degree lacerations, there is damage to submucosa and muscularis of the anal sphincter, vulva and the perineal body, but rectal mucosa is not teared. RVF is a third-degree perineal laceration where tearing is seen through the rectovaginal septum, muscularis of the vagina and rectum and the perineal body. This rectovaginal communication causes the passage of fecal material into the vagina. Hence, the breeding soundness of the mare can only be ensured by the reconstruction of RVF. Surgery is usually avoided on an emergency basis. Early attempted repairs are commonly unsuccessful. The damaged tissues are inflamed, hemorrhagic, edematous, contaminated and necrotic at that time. A delay of 3-6 weeks will resolve edema and inflammation (Turner, 1989).

#### **History and clinical observations**

A primiparous mare was presented with third degree rectovaginal lacerations. This happened during foaling. Hoof of fetus was stuck in birth canal. Owner attempted to pull the fetus out without adjusting the normal posture, position, presentation, and caused lacerations in vagina and rectum. Upon examination, it was observed that fistula was formed between rectum and vagina. There was common passage for both defecation and urination. Initially surgery was not performed on emergency basis as torn tissues were grossly contaminated and edematous. Mare was given a time period of 4 weeks to resolve the edema and inflammation before surgery. During this waiting period, the mare was kept under close observation as there were chances of excessive straining that may lead to prolapse of viscera. After 4 weeks of initial referral, with satisfactory resolution of inflammation, the mare was presented for the surgery.

#### **Surgical preparation and management**

The mare was kept off-fed 2 days before surgery and fluids were given till surgery (IV normal saline, Ringer lactate solution & dextrose (5%, 10%) BID for 2 days. For muscle relaxation, injection nos-pa (drotaverine HCl, IV, 0.8mg/kg) was administered five hours before surgery to remove the feces from tract. Tetanus vaccine (Imatet) and Strepto Penicillin (penbiotic) were administered too before surgery. Then mare was sedated with Xylazine (slow IV, 1mg/kg). 10ml of Lignocain HCl was used in 1<sup>st</sup> and 2<sup>nd</sup> intra-coccyal space to achieve the caudal block. The tail hair was wrapped and held in a cranial direction to prevent interference during a surgical procedure. Fecal material was manually removed from the rectum, and then perineal region was scrubbed and cleansed with distal water, soap using paper towel to wash it gently and allowed it to air dry. **In surgical procedure**, retraction is provided by two stay sutures, applied on each side of the perineum. An assistant held these temporary sutures tied to the skin and gripped them apart. This was done to enhance the visualization of the surgical site, as shown in pictures 1 and 2. The procedure contains three steps, rebuilding the shelf between the vagina and rectum, repairing of the perineal body and then conducting caslick's procedure. Initially separate shelves for rectum and vagina were created by separating the dorsal wall of vagina and ventrum of rectum. After separating two structures, the shelf between vagina and rectum is rebuild by six bite vertical pattern (modified Goetz). This is done by using absorbable, polyglyconate No. 1 (monofilament) suture material, as it maintains adequate strength. For this technique, first bite is taken on left vaginal flap directed ventrally to dorsally. The second bite is incorporated in left rectal shelf. It penetrates the submucosa of rectum but does not cross the mucosa, rather

exits from the edge. The third bite incorporates the right rectal shelf and exits between vestibular and vaginal flaps. Then next bite incorporates through right vaginal flap directed dorsal to ventral, exits in vaginal vault. As shown in picture 3. Then needle is passed through right vestibular fold, directed dorsal to ventral. The final bite is similar, incorporating in left vaginal flap directed in dorsal to ventral, exiting in vaginal vault. The sutures were continued till the perineal body is reached. Finally, a caslick's procedure is performed. At mucocutaneous junction a strip of tissue is excised in an elongated U shape. These excised raw edges are apposed using continuous suture pattern, as shown in picture 4. At ventral commissure of vulva, enough room, almost 3cm, is left for urination. This technique offered better conformational soundness and improved fertility in the perineal area.

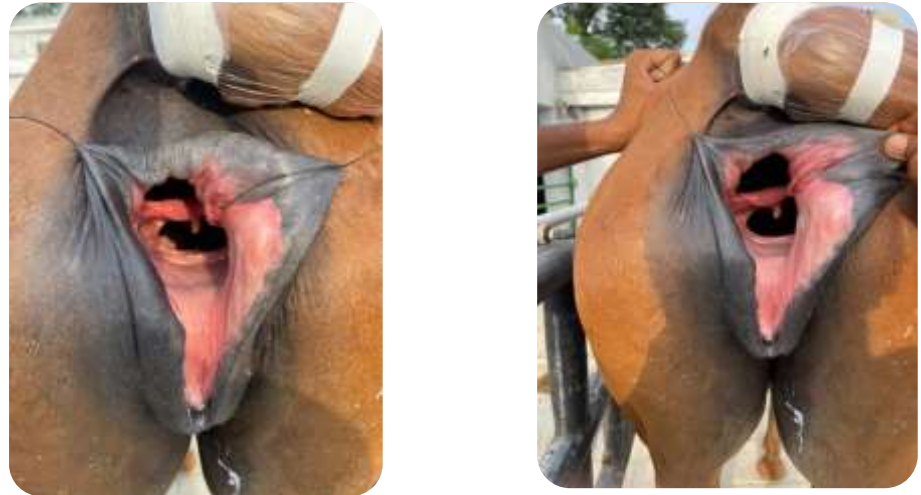


Figure 1, 2. Showing Stay suture to increase the view.

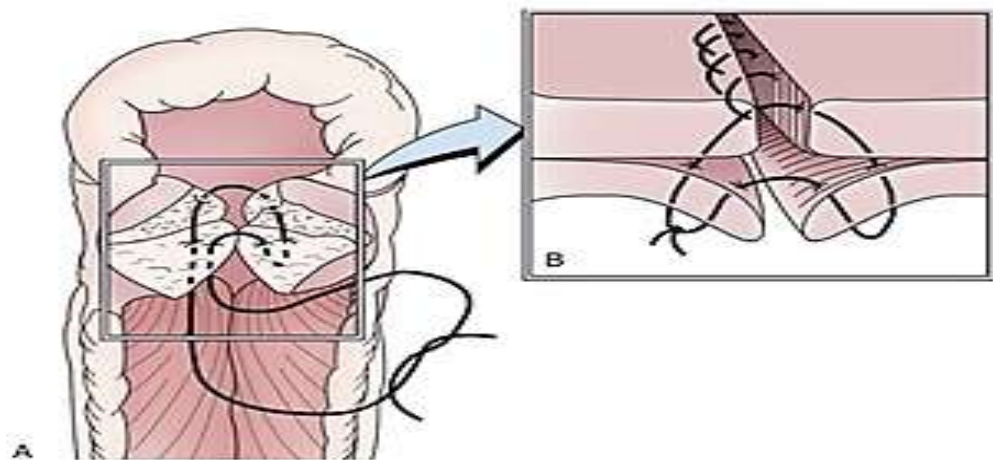


Figure 3. A is showing a six bites suturing procedure. B, Line diagram showing the six bite method to repair a third degree perineal body

After surgery in postoperative care, the mare was maintained on antibiotics (inj. Ceftriaxone 10g in normal saline IV each day continuous for 7 days and inj. Ketoject as analgesic 1ml/40kg IV for 3 days. The mare was offered water ad libitum. Half handful lush green fodder is offered twice a day. To manage fecal consistency, laxatives were added to feed to avoid any hard mass of feces. The mare was kept confined for the first

week. In the second week, the mare was on hand walk by an assistant. Skin sutures were removed after few weeks. The mare was kept under examination till complete recovery. Postoperative complications like pain, tenesmus, constipation, atony of rectum may cause suture dehiscence. But with the technique described above, the complications were abolished and successful subsequent matings were carried out by mare later on.

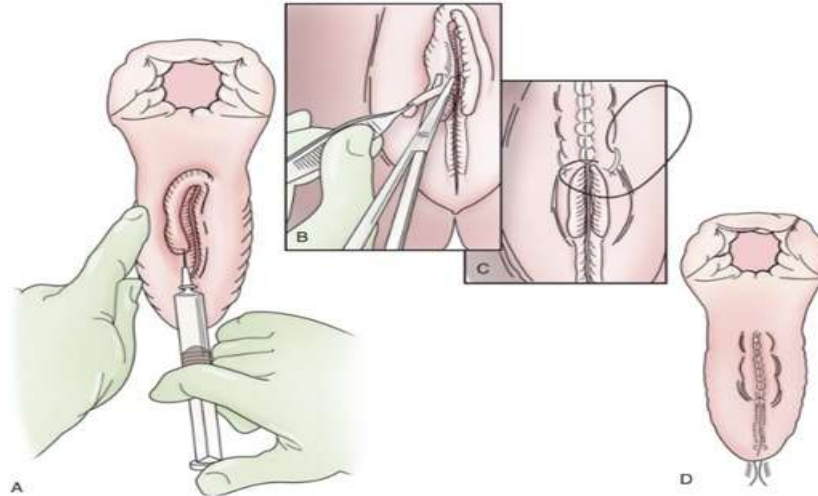


Figure 4. Showing a Caslick procedure. A, Local anesthetic is injected at the mucocutaneous junction. B, strips of tissue is removed at the mucocutaneous junction. C, the raw edges are apposed with a continuous suture. D, it shows a completed Caslick procedure.



Figure 5. Showing fully cured mare with intact parts after surgery.

### Discussion

RVF is a challenging surgical case in mares due to less optimal operative visibility, continued rectal peristalsis and bacterial contamination (Singh & Saharan, 2017). It also poses threat to breeding soundness. So, the results only achieved by its reconstruction. Before surgical procedure, it is advised to observe the involvement of cervix (Turner,

1989). Lacerations in cervix may result in poor prognosis for good breeding soundness in future. The cervical lacerations are more prone to conditions like endometritis and early abortion. But in our case, the presented mare lacked involvements. Different veterinarians and authors vary in their approach to repair RVF, as there are techniques other than Goetz method (one stage repair) (Anwar & Purohit, 2013; Jalim & McKinnon, 2010; Pooniya et al., 2019) to surgically treat it, such as vaginal mucosal pedicle flap technique. The vaginal mucosal pedicle flap technique performed, aims to provide adequate tissue for RVF closure along with minimal wound tension to optimize the healing process (Schönfelder & Sobiraj, 2004). In this technique when the adequate flap length and thickness is maintained, adequate tissue appears to perform successful repair of RVF. This technique is considered as an alternative to all conventional methods to treat it. In contrast the technique we performed aimed to rebuild the tissue shelf between the vestibule and the rectum, and ensured the structural integrity of perineal body is maintained. This method caused the successful repair of the mare we treated.

Also, one stage repair has advantage over two stage repair (second phase is done after 2-4 weeks later in two stage repair) which means one stage repair required less hospitalization, pre-operative and follow up than two stage (Pooniya et al., 2019). For successful postoperative care, it is suggested to manage the diet along with analgesics to reduce pain (Schönfelder & Sobiraj, 2004). Diet management will maintain the stool consistency and analgesia will help reduce the exertion for defecation. This prevents the dehiscence that would otherwise occur. Rectal evacuation is also suggested to reduce rectal content (Schönfelder & Sobiraj, 2004). The reduced defecation rate is preferred (Hospes & Bleul, 2007). In our case mare was administered less diet orally before surgery to have reduced fecal mass as well as soft stool consistency after surgery with laxatives in feed, analgesics to reduce pain and exertion during defecation. These postoperative cares lead to smooth recovery of mare. Moreover, the advantage of method we adopted, have lesser rectum impaction chances (LeBlanc, 1999).

### Conflict of Interest

The authors have not declared any conflict of interest.

### Authors Contributions

All the authors have contributed equally to the research and compiling the data as well as editing the manuscript.

### References

- Anwar, S., & Purohit, G. (2013). Occurrence and surgical repair of third degree perineal lacerations in adult female camels (*Camelus dromedarius*) by one-stage (Goetz) technique. *Open veterinary journal*, 3(2), 75-79.
- Hospes, R., & Bleul, U. (2007). The effect of extended preoperative fasting in mares undergoing surgery of the perineal region. *Journal of equine veterinary science*, 27(12), 542-545.
- Jalim, S., & McKinnon, A. (2010). Surgical correction of rectovaginal fistula in mares and subsequent fertility. *Australian veterinary journal*, 88(6), 211-214.

- LeBlanc, M. (1999). Diseases of the vagina, vestibule and vulva. *Equine Medicine and Surgery*. (5th Edn.), St Louis Mosby. pp, 1175-1193.
- Pooniya, R., Jhamb, D., Saini, R., Kumar, S., & Sharma, S. (2019). One Stage Surgical Management for Third Degree Recto-vaginal Laceration in Mares: A Report of Two Cases. *Indian Journal of Veterinary Sciences & Biotechnology*, 14(4), 59-62.
- Schönfelder, A. M., & Sobiraj, A. (2004). A vaginal mucosal pedicle flap technique for repair of rectovaginal fistula in mares. *Veterinary Surgery*, 33(5), 517-520.
- Singh, P., & Saharan, S. (2017). Surgical management of perineal laceration in mares. *MOJ Surgery*, 4(4), 86-87.
- Turner, A. S. M., C. W. (1989). Method of repair of third-degree perineal laceration. In (pp. 211-217). (Techniques in Large Animal Surgery) (Reprinted from 2nd)
- Woodie, J. B. (2006). The vulva, vestibule, vagina, and cervix. In J. A. a. S. Auer, J.A.(Eds.) (Ed.), (pp. 845-852). (Equine Surgery) (Reprinted from 3rd).