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# Abstract

Atresia ani is a congenital anomaly defined as the failure of the development of anal opening. A 4-month-old female calf was brought to Shahedul Alam Quadary Teaching Veterinary Hospital (SAQTVH), Chattogram Veterinary and Animal Scinces University (CVASU) with a history of the passage of feces through the vagina. After clinical examination, it was found that there was no anal opening. The signs were straining, tenesmus and abdominal pain due to difficulty of defecation. Based on history and clinical observation the case was diagnosed as Atresia ani with recto-vaginal fistula. Then it was referred to surgery to correct the condition. Surgery was done under local infiltration anaesthesia using 2% Lidocaine hydrochloride and diazepam for sedation. Surgery was performed in two steps: anal reconstruction and closing the rectovaginal fistula. First, a circular skin incision was made at the end of the rectal pouch to create an anus, and then the skin of the anus and the mucous with recto-vaginal fistula membrane of the rectum were brought into apposition by simple interrupted sutures. Second, the recto-vaginal fistula was ligated on both the vulval and anal sides. The recto-vaginal communication was closed and the calf was able to urinate and defecate normally. Surgical intervention is the only technique of choice for the treatment in such a case and it was attempted successfully in this present case. Post-operatively animal was treated with antibiotics, anti-inflammatory and antihistaminic drugs for 5 days.The calf grew to become a normal adult without any complications.



**Keywords:** Atresia ani, Congenital anomaly, Recto-vaginal fistula

# Chapter 1: Introduction

Atresia ani is the failure of the anal membrane to break down to make an anal orifice. It has been reported amost frequently encountered surgical affection in calves (Hossain *et al.,* 1986; Das and Hashim, 1996; Samad, 2008).

Though atresia ani is a common congenital defect in newborn calves, it becomes complicated when recto-vaginal fistula is found with atresia ani. In Bangladesh about 23% congenital cages in calves are atresia ani (Hossain *et al*., 2014). It becomes difficult for veterinarians to manage atresia ani with recto-vaginal fistula in the field. This case report may solve the problem. Atresia ani occur more commonly in indigenous calves than crossbred calves. The percentage of indigenous calves affected with atresia ani was about 71.74% and the crossbred was 28.26%. The prognosis of surgical correction of atresia ani in calves was found good.( Hossain *et al*., 2014).

Atresia ani can only be managed by surgical intervention. Several surgical techniques have been used to correct this congenital condition in domestic animals (Singh, 1989). Possible complications of atresia ani are mega-colon after prolonged obstruction, fecal incontinence because of sphincter dysfunction and anal stricture after surgery (Randolph *et al*., 2012). Complications of recto-vaginal fistula include urinary tract infection, foul smell from vaginal discharge. There are four major types of intestinal atresia. Type I atresia is a mucosal blockage within the intestinal lumen. In animals with type II atresia, the proximal segment of the intestine terminates in a blind end and the distal segment beings similarly with two ends being joined by a fibrous cord devoid of lumen. Type IIIa atresia is similar to type II except that the Proximal and the distal intestinal segments blind ends are completely separated and there is a mesenteric defect corresponding to the missing segment of the intestine. Animals with type IIIb atresia have a coiled distal segment of the intestine. Type IV atresia involves multiple sites of atresia ( Kilic and Sarierler, 2004; Rahal *et al*., 2007). Atresia ani was reported as a possible genetic defect in Swedish Highland Cattle, Holsteins, and other breeds. Atresia ani is the most common intestinal defect in sheep and is believed to be due to the presence of an autosomal recessive gene. In a series of 64 cases of atresia ani in sheep, 42 (62%) were associated with defects of other body systems, especially the urogenital and musculoskeletal systems (Loynachan *et al*., 2006; Rahman *et al*., 2006; Magda and Youssef, 2007; Bademkıran, 2009). Atresia ani with recto-vaginal fistula is an unusual observation and

this present report documents the surgical correction of a case of atresia ani with recto-vaginal fistula in a four-month-old calf.

**Objectives of this report are**

- Demonostration of the management of atresia ani with recto-vaginal fistula
- To know about the post-operative care after surgical intervention and
- To know about the outcome of surgical management of atresia ani with recto-vaginal fistula.

# Chapter 2: Case Presentation

## 2.1. Case History and Clinical Observation

A four-month-old female bovine calf, with 68kg body weight was presented with a history of the passage of feces through the vagina at SAQTVH, CVASU. Examination of the perineal region confirmed the absence of anal opening with a recto-vaginal fistula. The signs were straining, tenesmus and abdominal pain due to difficulty of defecation. Based on the clinical history and clinical observstions, the case was tentatively diagnosed as atresia ani with recto-vaginal fistula. For further confirmation, radiography was done to know about the condition of the colon and rectum.

## 2.2. Laboratory Examination

Complete blood count (CBC) and biochemical examination of blood were performed to analyze the physical condition of the patient. The results of these tests are as below:

**Table 2.1. Test report of CBC**

| Name of the test | Result | Normal Range |
|---|---|---|
| Hemoglobin | 8.4 | 8.0-15.0 g/dl |
| PCT/HCT | **22.2** | 24.0-46 |
| Total Erythrocyte Count(TEC) | 6.01 | 5.0-10.0 milliom/cumm |
| Total Leukocyte Count(TLC) | **14.8** | 4.0-12.0 thousand/cumm |
| Differential Leucocyte Count(DLC) | | |
| • Lymphocyte | 7.5 | 2.5-7.5 |
| • Monocyte | 1.1 | 0-0.8 |
| • Platelets | 337 | 100-800 |
| • MCV | **37.0** | 40.0-60.0 |
| • MCHC | 37.8 | 31.0-38.0 |
| • RDW% | 22.8 | 0-99.9 |

Most of the parameters stated in the report were within normal range which indicated that the overall health condition of the calf was good.

**Table 2.2. Result of the biochemical tests**

| Serum type | Units | Normal ranges | Results |
|---|---|---|---|
| Calcium | mg/dl | 11.5-12.8 | **6.94** |
| Phosphorus | mg/dl | 5.0-7.3 | 6.21 |
| Magnesium | mg/dl | 2.2-8.0 | **1.01** |
| Glucose | mg/dl | 50-80 | 63.24 |
| Alkaline phosphate | u/l | 68-337 | 89.34 |

The biochemical report indicates the values are in normal ranges except calcium and magnesium level which were lower than the normal range in blood. A calf does not need a supplement of calcium and magnesium as it will get those from milk. We also did fecal examination under a microscope and did not find any parasitic egg. Other general examination findings such as heart rate (pulse) and respiratory rate were 120 bpm and 50 bpm respectively which were normal. Then, we decided to correct the case through surgical intervention by using local anesthesia expecting that surgical wound to be healed completely 2-3 weeks after surgery.

### 2.3. Restraining and anesthesia

The animal was restrained on the operation table on lateral recumbency by the assistants. The operation site was shaved. Then the surgical site was prepared for surgery by cleaning with soap water and then with 70% alcohol. Then the site was scrubbed with povidone-iodine. After that the site was drapped by using sterile surgical drapes. At first, diazepam was used for sedation at the dose of 7 ml. The perineal area was desensitized by local infiltration of 5ml (1.5mg/kg) 2% lidocaine hydrochloride subcutaneously at the proposed site of the incision. Through out the surgery period, normal saline was administered continuously through intravenous route slowly.

### 2.4. Surgical technique

After achieving a sufficient amount of desensitization at the site, a surgical opening of the anus was made by circular incision of skin and removing a circular piece of skin from the bulge of the anus to form the normal anatomical opening. Careful blunt dissection was used to locate the rectal pouch, which was secured to the skin edge with 4-full-thickness sutures of catgut 3, then the rectum was incised and its mucosa was sutured to the skin with simple interrupted sutures by using catgut. After that, the rectum was irrigated to wash the faeces by normal saline using Duche Cane. This provided mechanical irritation to the intestinal mucosa resulting in straining, which helped in the early expulsion of left faeces. Finally, the rectal pouch was sutured to the skin with simple interrupted suture by using catgut. The fistula between the rectum and vagina was also corrected with chromic catgut (no 2) by following using a simple interrupted suture pattern and it was confirmed that there was no chance of leakage of feces from the rectum through the vagina.

### 2.5. Post operative care:

After completing surgery, the surgical wound was cleaned and dressed regularly with isotonic saline solution and the patient was treated with antibiotic, antihistaminic, pain killer, Non-steroidal anti-inflammatory drug (NSAID), antiseptic ointment and laxative. The owner was advised to closely follow up the calf for a period of 4 weeks and to lubricate the anal opening trice daily with glycerine. The skin sutures were removed after 14 days.

**Table 2.3. Drugs used in this case**

| Groups of drug | Generic Name | Generic Dose (mg/kg) bwt | Trade Name | Route | Duration (Days) |
|---|---|---|---|---|---|
| 1.Antibiotic | Penicillin &streptomycin | 10 | Inj.Strepcin-G | Intamusculrar | 5 |
| 2. Antihistaminic | Pheneramine Maleate | 0.5 | Inj. Histavet | Intramuscular | 5 |
| 3.NSAID | Ketoprofen | 3.3 | Inj. Kop Vet | Intramuscular | 3 |
| 4. Antiseptic | Povidone Iodine | - | Oint. Viodin | Topical | 10 |
| 5. laxative | Magnesium Hydroxide | 500ml/mg | Sus.Magvet | Oral | 10 |
| 6.Sedative | Diazepam | 0.5 | Inj. Sedil | Intravenous | - |
| 7.Anesthesia | 2% lidocaine HCL | - | Inj.Jasocaine | Infiltration | - |
| 8.Fluid therapy | 0.9 % NaCl | - | Inj. NS | Intravenous | - |

In the follow-up period, there was no clinical side effect except the mild sign of digestive discomfort (diarrheoa) which did not require any treatment. The fecal passage was achieved satisfactorily without any need for specific care or interference and no passage of faeces through the vagina which indicated healing of the recto-vaginal fistula.

# Chapter 3: Discussion

A recto-vaginal fistula is considered an embryologic failure of the uro-rectal septum to separate the cloaca into urethra-vesicle and rectal segments. Atresia ani or atresia ani et recti may be hereditary due to the presence of a single autosomal recessive gene (Chaudhary *et al*., 2010). Kilic *et al*., (2004) stated that the history and physical examination findings in calves with intestinal atresia frequently are similar. Most affected calves initially will stand and suckle normally after birth. Frequently, the owner had not seen the calf pass meconium or feces. Thick mucus may be passed through the anus if it is patent or through the vagina in heifer's contaminant recto-vaginal fistula. In calves with atresia ani, the owners may have noticed the defect when attempting to administer an enema or while obtaining a rectal temperature reading. Since the clinical signs and physical examination findings were sufficient to establish the diagnosis, radiographic studies were not necessary to confirm the disease. However, radiographs are considered important to determine the position of the fistula and to differentiate that beforehand the 4 types of congenital atresia ani (Rahal *et al*., 2007). As, we have a facility for radiography therefore, we checked to analyze the condition of the colon. The most congenital anomalies of the digestive system observed in calves were atresia ani and atresia recti. However, in this case we observed only the lesions of atresia-ani and recto-vaginal fistula. And it was treated by anal reconstruction with closing of recto-vaginal fistula. Atresia ani is a fatal affection to the male unless surgical intervention occurs to provide a new anal stoma. In some females, fecal pressure result in rectum break through vagina forming a recto-vaginal fistula and thus permitting defecation via vulva, therefore, affected female does not require further care or surgical correction, and may not be identified (Norrish and Rennie, 1968). But in this case, surgical correction was required for recto-vaginal fistula. In post-operative care, we used a combination of penicillin and streptomycin to prevent the growth of both gram-positive and gram-negative bacteria. Penicillin inhibits bacterial cell wall synthesis and streptomycin inhibits bacterial protein synthesis and the combination acts as bacteriocidal (Dagmar *et al*., 2014). Procaine penicillin and benzyl-penicillin enhance the healing of the wound (Hossain *et al*., 2014). Non-steroidal anti-inflammatory drug (NSAID) was used to treat pain and fever after surgery. It inhibits the enzyme cyclo-oxygenase resulting in prostaglandin synthesis inhibition (Ghlichloo and Valerie, 2021). Glycerine was used to lubricate the anal area for easy passage of faeces through the anus. Glycerine containing glyceol is an osmotic dehydrating agent that possesses hygroscopic and lubricating properties (Fluhr *et al*,. 2008). In other studies, they used

coconut oil or glycerine as lubricant (Hossain *et al*., 2014). Ointment containing povidone-iodine was provided as an antiseptic to use tropically. Other antiseptics and antibacterial ointments also give excellent result to control contamination of surgical site (Hossain *et al*., 2014, Haben Fessha, 2020). Povidone-iodine is an iodophor with a powerful broad-spectrum germicidal activity against a wide range of bacteria, virus, fungi and protozoa (Durani and Leaper, 2008). Antihistaminic drugs block histaminic $H_1$-receptors and were used to relieve itching. It also has anticholinergic and moderate sedative effects (Martin and Diana, 2013). We suggested magnesium hydroxide suspension known as milk of magnesia orally as laxative. Magnesium hydroxide increases peristaltic activity causing osmotic retention of fluids, thus resulting evacuation of feces (Keith Hiller, 2007). Otherwise constipation may occur which can lead to the recurrence of recto-vaginal fistula. The causes of these defects according to genetic and environmental factors have not been determined yet. However, we consider that the lesions of this fact may be reduced by surgical operation and this operation may improve body weight gain of the calf and reduce economic losses caused by the disease.

# Conclusion

In conclusion, surgical correction of atresia ani in calves is the only successful treatment method for atresia ani. This case was complicated and unusual and also difficult to correct. But the prognosis of surgical correction was good. So, it is recommended for clinicians to correct atresia ani by following circular skin removal technique for anal reconstruction to minimize stricture formation and simple interrupted suture pattern to close recto-vaginal fistula as it was healed without any complication.

Atresia ani with recto-vaginal fistula is a common congenital defect. So, it is important to know more about the etiology, management and prevalence of the disease. It would be better, if we studied  case series on atresia ani with recto-vaginal fistula but we had a limited time period for internship and we did not get any further cases of this type.

# References


Bademkiran S., Icen H. and Kurt D. 2009. Congenital rectovaginal fistula with atresia ani in a heifer: A case report, Y.Y.U. *Vet.* Fak. Derg.; 20(1): 61-64.

Chaudhary S.R., Shrawankar P.R., Patel T.P., Patel C.N. and Parmar J.J. 2010. Surgical management of congenital anal and rectal defects in farm animals. Intas. Polivet.; 11(2): 140-142.

Johnson R., Ames N.K. and Coy C. 1983. Congenital intestinal atresia of calves. J. Am. Vet. Med. Assoc.; 182(12):1387-9.

Ghanem M., Yoshida C., Isobe N., Nakao T., Yamashiro H., Kubota H., Miyake Y. I. And Nakada K. 2004. Atresia ani with diphallus and separate scrota in a Calf: A Case Report. Theriogenology.; 61:1205–1213.

Hossain M.A., Shahidullah M. and Ali M.A. 1986. A report on surgical diseases and reproductive disorder recorded at the veterinary hospital of bangladesh agricultural university, mymensingh. Bangladesh J.Vet.Med.; 20: 1-5.

Hossain M.B., Hashim M.A., Hossain M.A. and Sabrin M.S. 2014. Prevalence of atresia ani in new born calves and their surgical management. Bangladesh J.Vet. Med.; 12 (1): 41-45.

Kilic N. and Sarierler M. 1999-2003. Congenital intestinal atresia of calves. Rev. Med. Vet.; 155(7):381-384.

Loynachan A.T., Jackson C.B. and Harrison L.R. 2006. Complete diphallia, imperforate ani (type 2 atresia ani), and an accessory scrotum in a 5- day-old calf. J.Vet. Diagn. Invest.; 18(4):408-412.

.

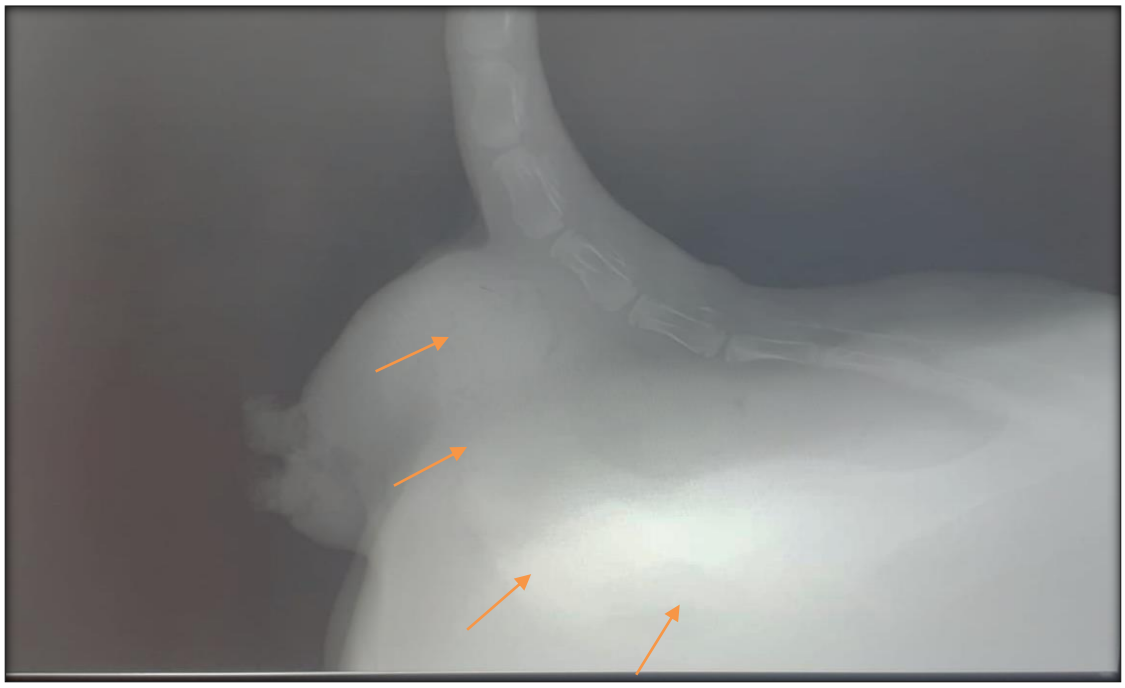
Rahal S.C., Vicente C.S. and Mortari A.C. 2007. Rectovaginal fistula with anal atresia in 5 dogs. Can. Vet. J.; 48: 827–830.

Newman S. J., Bailey T. L., Jones J.C., DiGrassie W.A. and Whittier W.D. 1999. Multiple congenital cnomalies in a calf. J. Vet. Diagn. Invest.;11, 368–371.

Singh A.P.(1989). Congenital-malformations in ruminants-a review of 123 cases. Indian Vet. J.; 66(10): 981-985.

# Figures

**Figure 1.1: Passage of feces through the vagina indicating the absence of anus and recto-vaginal fistula in a four-month-old calf**



**Figures 1.2: Confirmatory diagnosis of atresia ani with recto-vaginal fistula through radiography and rectum containing feces were distinct which is indicated in the image**

**Figure 1.3: Preparation of surgical site through shaving and washing with soap water and finally applying povidone-iodine to decontaminate the incision site**

**Figure 1.4: Subcutaneous infiltration of local anesthetic (2% lidocaine HCl) in the incision site before surgery for desensitization of the area**

**Figures 1.5: Circular shape incision on the skin followed by the rectal pouch to expose the anal opening**

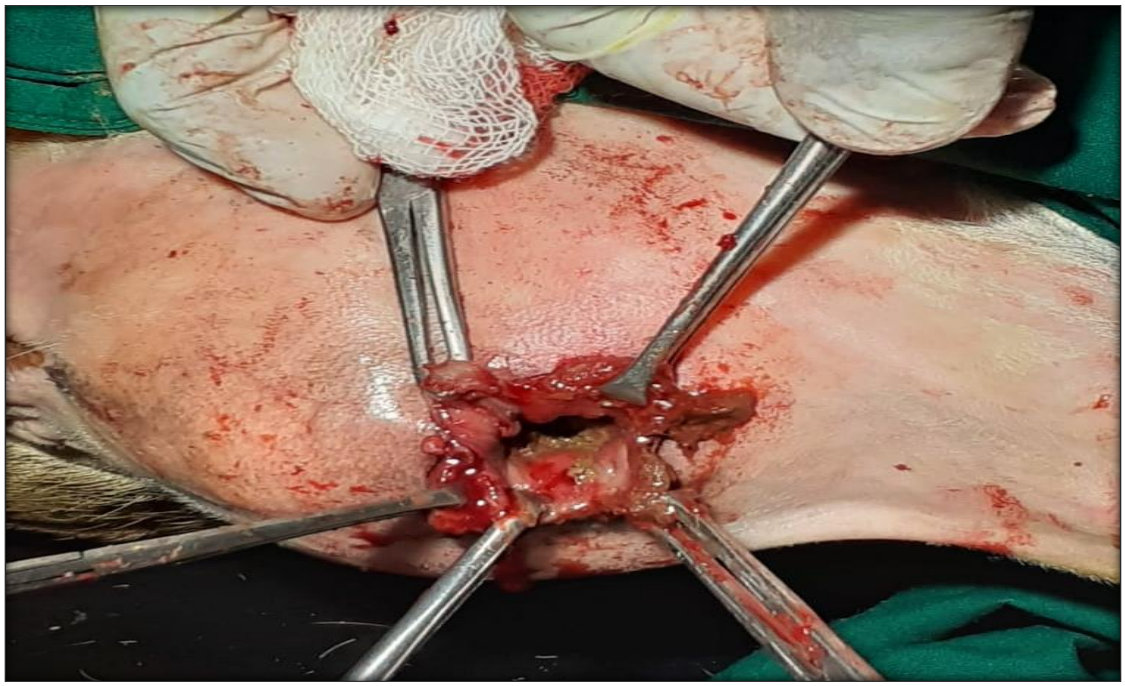


**Figure 1.6: Exposure of anal opening after incision in the rectal pouch and fecal materials was present**

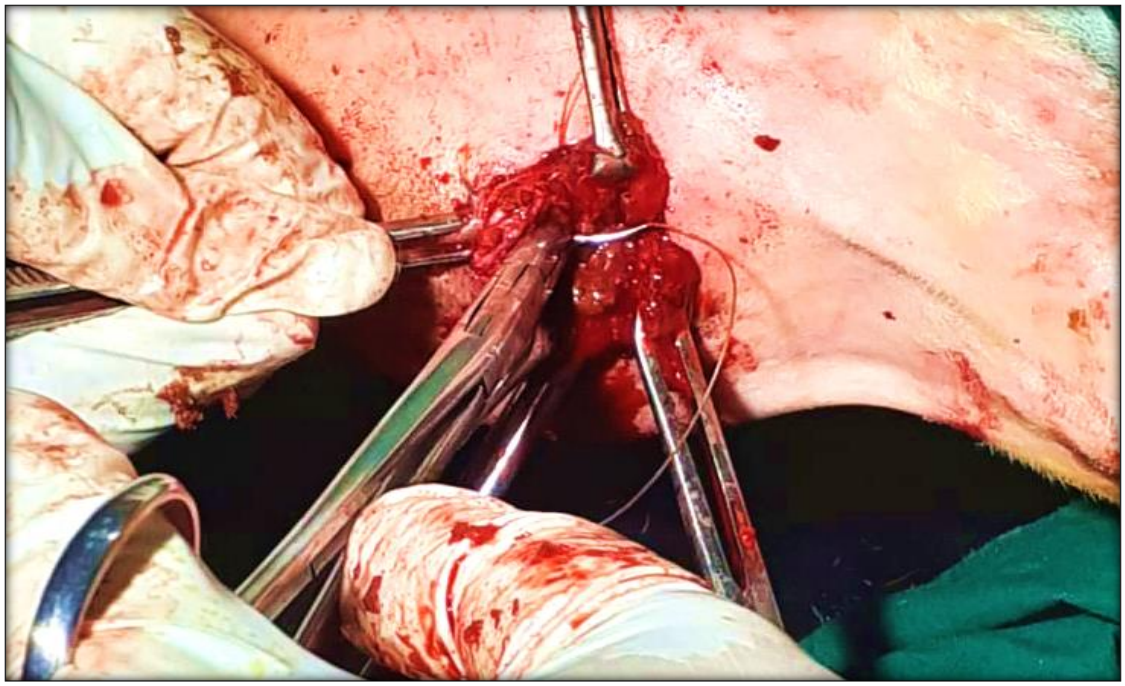


**Figure 1.7: Suturing of the skin with the rectal mucosa by simple interrupted suture with catgut to facilitate anal opening**

**Figure 1.8: Passage indicated by Allis tissue forceps from anal opening towards vagina indicated recto-vaginal fistula**

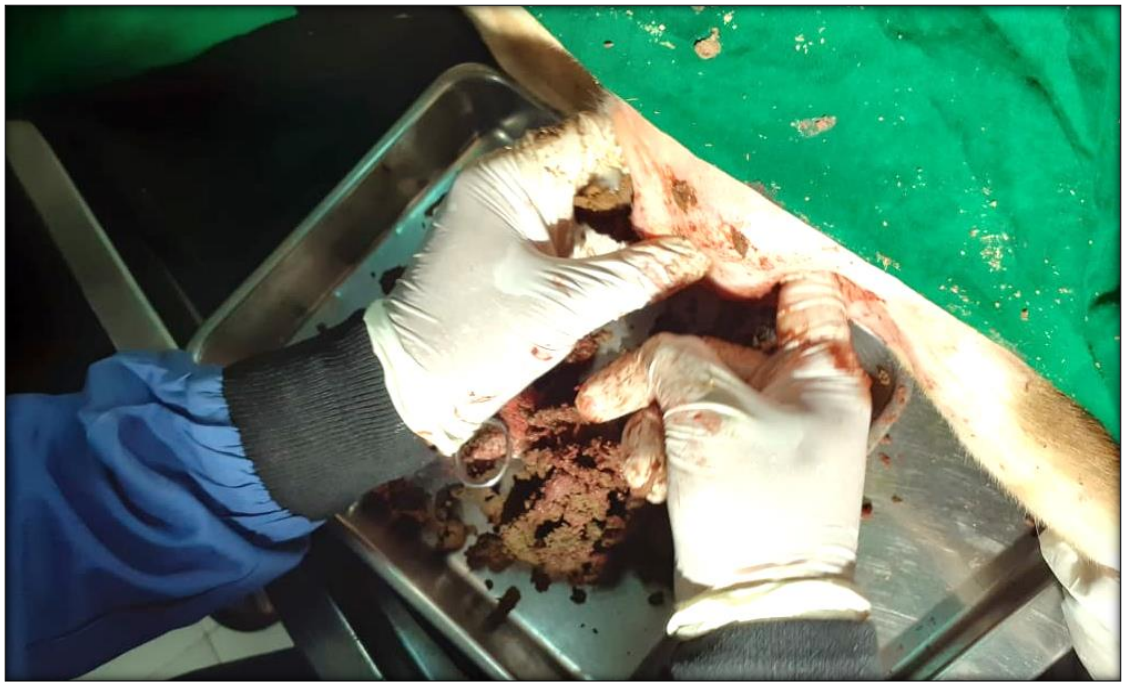


**Figure 1.9: Removal of feces from the rectum and vagina manually to expose recto-vaginal fistula before closing by suture**

**Figure 1.10: Washing of the recto-vaginal fistula inside the vaginal wall with normal saline**

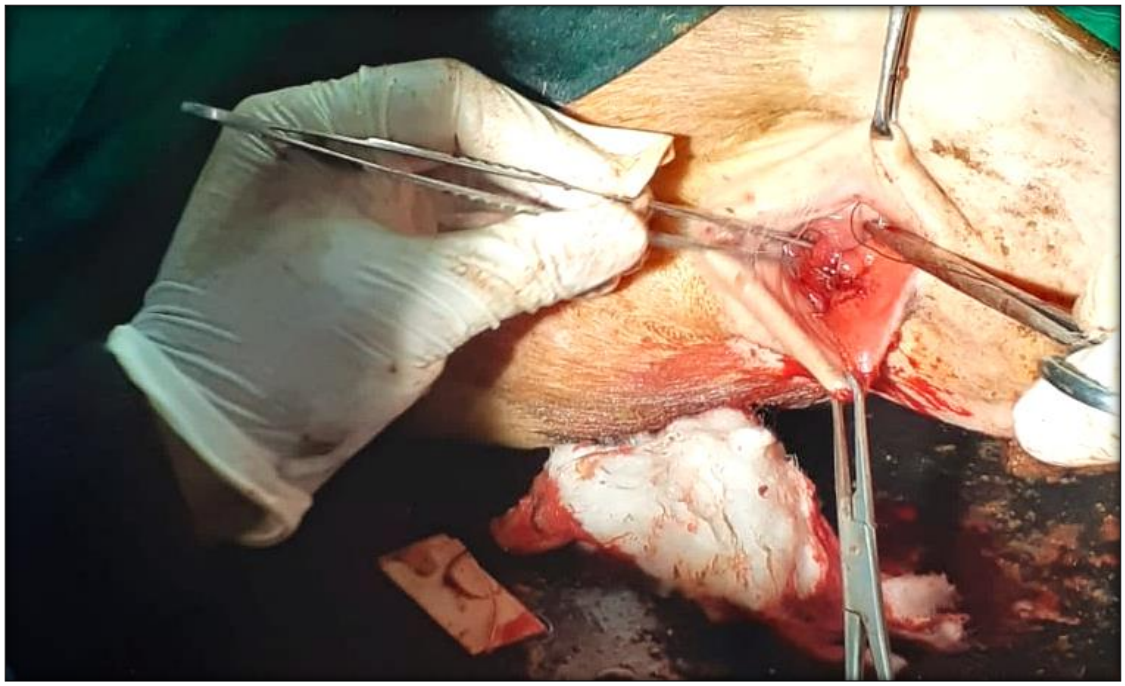


**Figure 1.11: Closure of the recto-vaginal fistula with simple interrupted suture pattern**

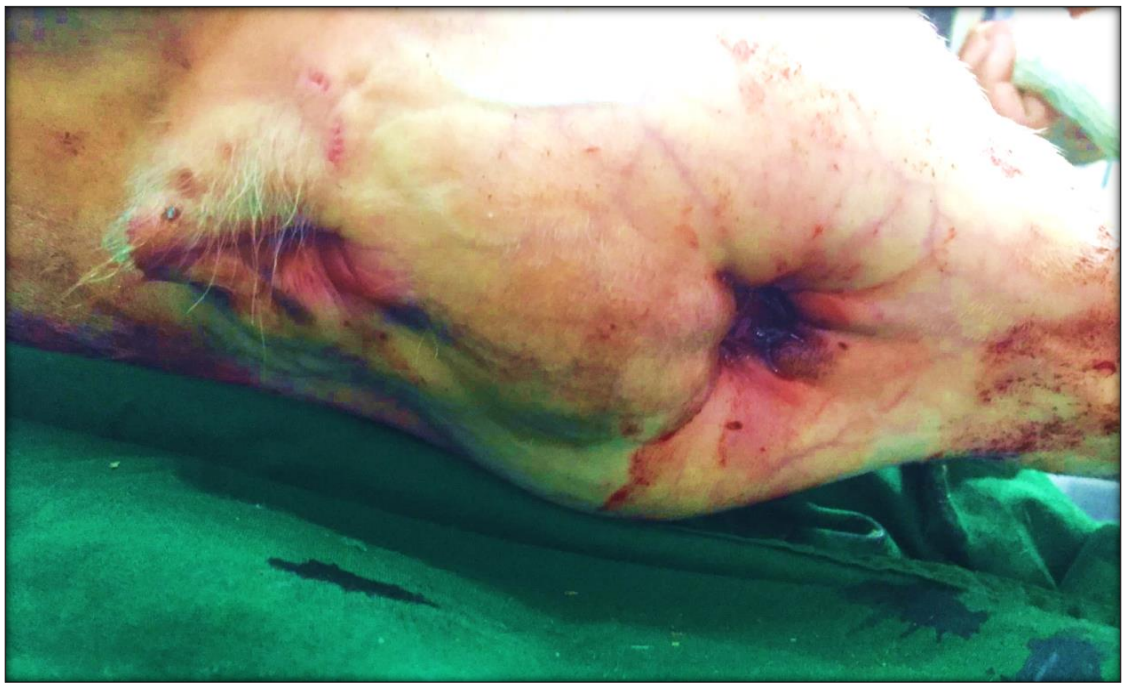


**Figure 1.12: Image of the atresia ani with recto-vaginal fistula after surgery**

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**The Author**

**November, 2021**

# Biography

I am **Fatematuz Zohora**, daughter of **Nurul Ali** and **Maleka Begum**. I have passed the Secondary School Certificate Examination in 2013 followed by Higher Secondary Certificate Examination in 2015. I enrolled for Doctor of Veterinary Medicine (DVM) degree at Chattogram Veterinary and Animal Sciences University (CVASU), in the session of 2015-2016. At present, I am an intern veterinarian under the Faculty of Veterinary Medicine at Chattogram Veterinary and Animal Sciences University. I would like to work as a veterinary practitioner and do research on Public Health in Bangladesh.