SURGICAL MANAGEMENT OF UMBILICAL HERNIA WITH ABOMASAL INCARCERATION IN HOLSTEIN FRIESIAN CROSS CALF: A CASE REPORT

A clinical report submitted by

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Session: 2016-2017

Report presented in partial fulfilment for the degree of

Doctor of Veterinary Medicine (DVM)

Faculty of Veterinary Medicine
Chattogram Veterinary and Animal Sciences University.
Khulshi, Chattagram-4225

November 2022

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ABSTRACT

A nine-months-old Holstein Friesian crossbred calf was presented to Chakaria Upazilla Veterinary Hospital (CUVH) in Cox's Bazar district with the complaint of depression, anorexia, scanty feces, hanging mass in the umbilical region from birth but increasing in size since last few months. Clinical sign and physical examination revealed Umbilical hernia with abomasal incarceration. The case was handled surgically by means of herniorrhaphy where 2% lidocaine was used for local anaesthesia (ring block), diazepam for sedation, correction of abomasum, hernial ring closed by simple interrupted suture technique and organic absorbable suture materials reduction of swelling. The post-operative care includes Pronapen 40lac (preparation of benzyl penicillin 30 lac iu and procaine penicillin 10 lac iu) at 20,000-40,000 IU/kg i/m, Meloxicam @ 0.5 mg/Kg, S/C and application of topical antiseptic, sulphanilamide powder on the external of the surgical wound. Injectable treatment was continued for 7 days, but topical application was continued for 15 days. The patient was followed up for two months. After 1 month no problem was found.

Keywords: Calf, Herniorrhaphy, Umbilical hernia, Abomasal Incarceration**.**

CHAPTER I

INTRODUCTION

Hernia is a bulge of skins that contain body cavity contents and pass through a weak area in the body wall. This could happen accidentally or as a result of a natural anatomical opening that doesn't fully serve its functional purpose (Sutradhar et al., 2009). Anatomically Hernia consists of three parts, Hernial Ring, Hernial Sac and Contents (Amresh, 2009). Both small and large animals can develop hernias, which are divided into umbilical, inguinal, scrotal, femoral, perineal, and ventral (or abdominal) hernias based on anatomical locations (Fossum, 2013).

Umbilical herniation is a very common surgical condition in dairy Holstein Friesian and other cattle breeds. It may be inherited by a dominant character with incomplete penetrance, or be conditioned by environmental factors. It is unlikely to be sex linked (Weaver et al., 2005). Umbilical hernia occurs when the umbilical ring fails to close properly at birth. This might be congenital or acquired at birth. Multiple births and shorter gestation periods, two key risk factors for congenital umbilical hernias in calves (Herrmann et al., 2009). Besides, heritable factors, inflammation and sepsis of the umbilicus, post-calving infection of umbilical infection, breakage of the umbilicus during manual traction of the fetus, external trauma to the umbilicus, excessive straining, cloned calves (less collagen in the ventral abdominal wall), hypoplasia of the abdominal musculature are considered as the cause and predisposing factor for umbilical hernia (Misk et al., 2008).

An umbilical hernia can be symptomatic or asymptomatic upon their clinical presentation and usually seen shortly after birth. Besides, it is usually painless if it is non-strangulated and non-infected hernias and omentum, small intestine, or abomasum are the most common contents that appear in most cases of umbilical hernia. The size and shape of the hernial ring vary from ring diameter of less than 2 cm, 2-5 cm, greater than 5 cm ring diameter. Moreover, the nature of the umbilical ring determines the degree of fibrosis and the possibility of suture retention (Fesseha, 2020).

The abomasum, with or without the omentum, was the most commonly involved viscera in umbilical hernias in cattle. If not treated properly, complications can arise; increasing the

complexity (Shah et al., 2016). Incarceration of the abomasum is one of the complication of the umbilical hernia. An incarcerated hernia is a part of the intestine or abdominal tissue that becomes trapped in the sac of a hernia the bulge of soft tissue that pushes through a weak spot in the abdominal wall. A part of the abomasum, mainly the pyloric part, is entrapped in a large umbilical hernia. Sometimes, also loops of the small intestine are included. Usually, the abomasal incarceration is accompanied by a marked abomaso-ruminal reflux syndrome (Dirksen, 1994).

A primary diagnosis was made from the history and by palpation of the hernial region. Diagnosis of the cases, however, it is confirm by exploratory puncture of the swelling and demonstration of intestinal contents. It can be managed using various medical and surgical methods. The prognosis depends on the type and condition of hernia. Besides, early diagnosis and treatment of the condition improve the outcome of the umbilical hernia.

The objective of this study:

1. To investigate if surgical correction of Umbilical Hernia with Abomasal Incarceration can be achieved under clinical conditions in the Holstein Friesian cross calf.

2. To describe an operative procedure using local anesthesia for Umbilical Hernia with Abomasal Incarceration simultaneously.

CHAPTER II

MATERIALS AND METHOD

Case Observation:

Case history:

History of Dam of calf includes-

a. Parity Number: 3. b. Breed: Holstein Friesian cross. c. History of Insemination: Artificial insemination. d. Company of semen straw: ADL (American Dairy limited). e. Gestation period: 290 days (From A.I. to date of birth). f. Feeding: Concentrates (Rice polish, wheat bran, maize, soybean meal, Til oil cake), Roughage, Straw and vitamin mineral mixture with the feeding ration.

History of calf includes-

Body weight- 75kg, Color- Black with white coat, Breed- Holstein Friesian cross, Age: 9month, Sex: male.

a. Depression, Anorexia, scanty feces.
b. Swelling at the umbilical region from birth but increasing in size since last few months.

Clinical signs:

a. The hanging mass (irreducible) through an opening in ventral abdomen wall around umbilicus region under the skin.
b. Slow rumen movement
c. Body temperature- 103.5 degree Fahrenheit, Respiratory rate 60 breaths per minute, Heart rate 120 beats per minute

Physical Examination findings: Palpating in the umbilical swelling, calf was sensitive to touch which was fluctuant, non-reducible & encapsulated. A needle puncture was also performed on the swelling in order to aspirate fluid to differentiate umbilical hernia from umbilical abscess.

Diagnosis: On the basis of history and clinical examination case was diagnosed as Umbilical Hernia with Abomasal Incarceration was decided to correct surgically.

Necessary instruments:

Syringe with needle, Surgical blade, Scalpel blade handle, Artery forceps, Tissue forceps, Needle (traumatic and atraumatic), Needle holder, Suture materials (chromic cat gut, Nylon), Gauze, Cotton.

Chemical used:

Antiseptic solution (10% potassium iodide solution, 70% ethyl alcohol), Injectable Normal saline solution (0.9% NaCl), antibiotic powder (Sulphanilamide powder, 2% Lidocaine hydrochloride (Jasocaine 2%, Jayson pharmaceuticals –Bangladesh), Diazepam.

Patient preparation:

Diazepam (0.3 mg/kg body weight was administrated intravenously to sedate the patient. Then shaving and washing with the antiseptic in the umbilical region was performed before surgery.

Anesthesia:

Local anesthesia was performed by using the technique of ring block at the site of incision by injecting 2% Lidocaine. The dosage of lidocaine was calculated so that it couldn't exit over 8mg/kg body weight.

Surgical operative procedure of Umbilical Hernia with Abomasal Incarceration.:

Calf was placed in dorsal recumbency on surgical table and legs were fixed cranially and caudally from surgical field. Slow and careful semilunar shaped skin incision around the umbilicus. Skin was separated from hernial sac. Hernial sac was held and incised carefully to avoid hernial content. The index finger was placed inside the hernial sac to prevent herniation of abdominal content. Incised outer part of skin was removed for smooth operation. The sac was incised to reach closer to the hernial ring. The skin was separated from the hernia sac. Adhesion of part of abomasum with the hernial sac and strangulation of abomasum by the hernial ring occurred. Gangrene was formed some part of the abomasum and removed the gangrenous part of abomasum and hernial sac was removed. Sutured the abomasum by lembert's pattern using catgut (size 2). Normal saline solution (0.9% NaCl) was used for washing of external part of abomasum. After that, abomasum was pushed inside the body cavity. Then povidone Iodine and antibiotic powder (Sulphanilamide powder) were used inside ring. Index finger was then placed inside hernial ring was helpful to prevent hernial content from coming out. Hernial ring was sutured by using catgut(size 2).Simple interrupted pattern suture used to closure of hernial ring. Again, povidone Iodine and antibiotic powder (Sulphanilamide powder) were applied. Then skin was sutured by using Nylon.Vertical mattress pattern suture used to closure of skin. Povidone iodine was placed with soaked gauze over wound to prevent contamination.

FIGURES OF SURGICAL CORRECTION

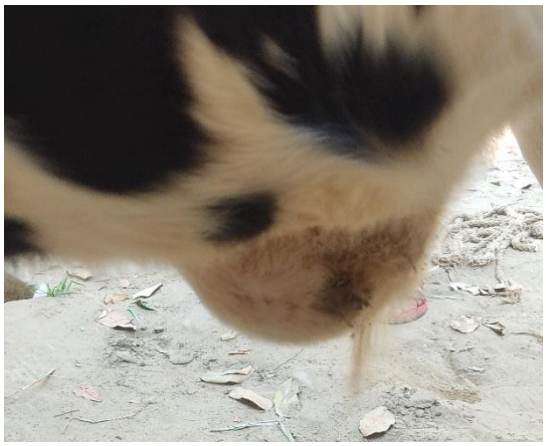

Figure-1: Clinical presentation of umbilical hernia in calf

Figure-2: Administration of sedative intravenously.

Figure-3: Shaving & antiseptic washing of patient

Figure-4: Administration of local anaesthesia by ring block technique

Figure-5: Semilunar shaped skin incision around umbilicus

Figure-6: Removal of gangrenous part of abomasum

FIGURES OF SURGICAL CORRECTION

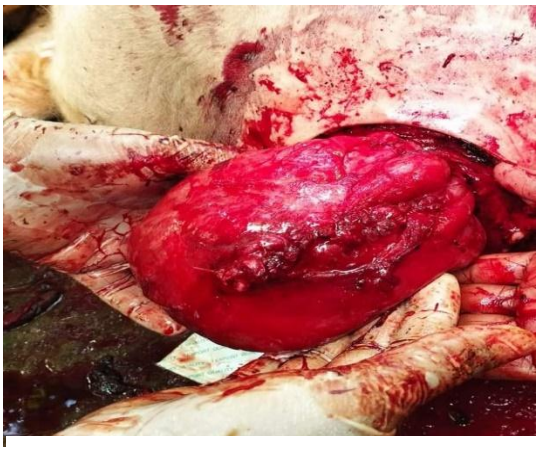

Figure-7: Suturing abomasum Lembert's pattern using catgut.

Figure-8: Washing abomasum by Normal saline solution.

Figure-9: Closure of hernial ring by simple interrupted suture using catgut

Figure-10: Suturing of skin by vertical mattress using nylon.

POST-OPERATIVE CARE

The following enlisted antibiotics and anti-inflammatory drugs were prescribed-

1. Pronapen 40 lac @ 1ml/10kg (40,000 iu/kg body weight), intramuscularly bid for 7 days.
2. Injection. Melocam @ 1ml/10kg (0.5mg/kg body weight), subcutaneously for 5 days.
3. Dressing of the surgical wound with povisep 10% solution (10% solution of potassium iodide) and application of topical antibiotics (Sulphanilamide powder).

CHAPTER III

RESULT AND DISCUSSION

RESULT:

Umbilical hernia with abomasal incarceration is successfully reconstructed through the reduction of swelling by this surgical process.

During the postoperative period, the owner was advised to closely monitor the calf, restrict movement of calf and supply with good nutrition to facilitate wound healing. Surgical wounds heal completely without any significant complications. Aside from mild digestive discomfort, there were no clinical side effects after surgery. The complete healing was recorded on 14th day post-operation without reoccurrence and other complications. Finally, the skin sutures were removed on the 14th day post-operatively. The patient was followed up for 2 month where the data (Feeding intake, body weight gain, defecation, urination) was satisfactory.

DISCUSSION:

Hernias can develop by accident or as a result of a normal anatomical opening that does not entirely fulfill its physiological role. As a result, a portion of an internal organ protrudes through a weakening muscle, tissue, or membrane that would ordinarily contain it. Hernias develop as a result of a combination of muscular weakness and strain (Amith, 2019). Hernias have a variety of congenital and acquired causes that might have an adverse effect on the productivity and reproductivity of the affected animals (Kumar, 2014). Besides, the rate of congenital abnormalities in cattle is 0.2-3%, with 40-50% born dead, and such abnormalities are frequently visible from the outside. Congenital abnormalities, such as umbilical hernia, lower the value of affected calves and should be managed surgically. The condition is quite frequent in dairy cattle; particularly Holstein Friesian breeds. It may be inherited by a dominant character within complete penetrance, or be conditioned by environmental factor (Weaver et al., 2005).

The umbilical opening in calf should be closed after birth in a few days. Failure of this opening to close properly results in umbilical hernia and its cause might be either congenital or acquired factors that hamper this closure, such as omphalitis or abscesses (Al-Sobayil et al., 2007). Anderson (2004) stated that Hernias are composed of a hernia sac, peritoneum, and may contain peritoneal fluid and viscera. The abomasum with or without omentum was the most commonly involved viscera in umbilical hernias in cattle. Hernias can be tiny at birth and get larger over time. Hernias that are simple (or uncomplicated) are easily reducible later it may be complicated with incarcerated viscera without strangulation or concurrent infection of umbilical structures. Similarly in this case report, size of hernia enlarged with the age & complicated with incarceration with viscera (abomasum).

Depending on the size of the hernial ring, there are many treatment options for umbilical hernia. Smaller hernial rings can be effectively treated by using a bandage, clamps, or ligatures. Herniorrhaphy is the only remedy that is commonly done under local block in calves.This should be applied in case of large hernial opening (more than 1 finger in size or if it persists for more than 3 to 4-weeks) but extensive umbilical hernia warrants hernioplasty (Fesseha, 2020).

Size of the hernia depends upon the extent of umbilical defect and the quantity of herniated contents in calves (Pugh, 2002). According to this case report, calf was sensitive to touch during palpation in the swelling & show signs of pain. This is similar to the previous reports which stated that, in case of incarcerated umbilical hernia, the hernial ring cannot be palpated easily as it will be impossible to reduce the hernial contents. Hernial contents seldom get strangulated with symptoms of pain and intestinal obstruction (Doijode, 2019). Proper positioning of animal is important to facilitate reduction of hernial contents and herniorapphy. Reduction of large hernial contents may be easier with the animal in lateral or dorsal recumbency (Edmondson, 2008; Sutradhar et al., 2009)

Limitation

- Lack of well-equipped Operation Theater in Chakaria Upazilla Veterinary Hospital.
- No laboratory for hematology and blood biochemistry.
- The surgical case was the only single case.

CHAPTER IV

CONCLUSION

Appropriate surgical technique and time of presentation ensured an uneventful recovery in the present case without any postoperative complications. There is no alternative way without herniorraphy. Using this study, the field veterinarian can correct such a type of condition in calves in a smooth and easy manner.

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ACKNOWLEDGEMENT

All praises are due to the Almighty of Allah, the creator and supreme authority of the universe, who empowers me to strength and opportunity to complete the report successfully. The accomplishment of this work, as the partial fulfillment of the requirements for the degree of Doctor of Veterinary Medicine (DVM) in CVASU, not only has given me the pleasure, but also has given me the confidence to move ahead and showed me a new opening to knowledge. Standing at this opening, it is an honor to revoke the names of the person and the Organization I am grateful to.

I would like to extend my gratitude to my supervisor **Professor Dr. Md. Rayhan Faruque,** Director (Veterinary Clinics), Shahedul Alam Quadary Teaching Veterinary Hospital (SAQTVH), Chattogram Veterinary and Animal Sciences University**.** My heartfelt thanks to her for his valuable guidance, suggestion, supervision and encouragements during the entire period of this study to complete this clinical report.

I would like to express my deep sense of gratitude and thanks to **Professor Dr. Gautam Buddha Das,** Honorable vice chancellor and Professor Dr. Md. Alamghir Hossain, Dean, Faculty of Veterinary Medicine, CVASU for arranging this type of learning scope as a compulsory part of this internship program. I express my sincere gratitude and thanks to Professor **Dr. A. K. M. Saifuddin,** Director of External Affairs, CVASU for his supervision and kind co-operation during the period of internship.

I would like to express great gratitude and thanks to **DR. Supan Nandy,** Upazilla Livestock Officer, Chakaria Upazilla Veterinary Hospital, Cox's Bazar, for his kind cooperation, guidance and suggestion during the time of surgery.

Thanks to owners of animal and attendance that have helped me in collecting data for this study. Last but not least, I am profoundly grateful to my family members for their endless sympathies, kind cooperation, sacrifices and prayers.

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November, 2022

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