

# **Umbilical Hernia in Holstein Friesian Calf and its Surgical Management**



**A Clinical Report submitted as per approved style and content**

**A partial fulfillment for the degree of Doctor of Veterinary Medicine**

# Umbilical Hernia in Holstein Friesian Calf and its Surgical Management



-----  
Signature of the Author  
A Clinical Report Submitted by  
Roll No: 15/102  
Reg No: 01477  
Intern Id: 53  
Session: 2014-2015

-----  
Signature of Supervisor  
**Submitted to**  
**DR. Mohammed Ashif Imtiaz Shawn**  
**Assistant Professor**  
**Dept. Of Physiology, Biochemistry &**  
**Pharmacology**  
**Faculty Of Veterinary Medicine**

**Report presented in partial fulfillment for degree Doctor of Veterinary  
Medicine  
Faculty of Veterinary Medicine**

**Chittagong Veterinary and Animal Sciences University, Khulshi,  
Chittagong-4225**

| Serial no | List of Content       | Page  |
|-----------|-----------------------|-------|
| 01        | Abstract              | 04    |
| 02        | Introduction          | 5-7   |
| 03        | Materials and methods | 8-11  |
| 04        | Result                | 12    |
| 05        | Discussion            | 13-14 |
| 06        | Limitation            | 15    |
| 07        | Conclusion            | 16    |
| 08        | Reference             | 17-18 |
| 09        | Acknowledgement       | 19    |

## **Abstract**

A three-months old Holstein Friesian calf weighing about 58kg body weight was presented to Upazila Veterinary Hospital, Hathazari, Chittagong with a history of swelling at the umbilical region from its birth . Clinical examination revealed umbilical hernia with a hernial ring of 3 fingers breadth. This case was handled surgically by means of herniorrhaphy. The animal was prepared via clipping and shaving of hairs precautionary with the site aseptically. It was sedated using Xylazine 0.03mg to 0.05 mg/ Kg body weight and the site of operation was desensitized by using 2% lignocaine hydrochloride. The calf was positioned on dorsal recumbency and an elliptical incision was given on the hernial ring. While giving incision care was taken not to puncture any visceral organ. Moreover giving incision, the contents of intact peritoneum was inverted into abdominal cavity. After re-positioning of the hernial ring, kelotomy was performed. The hernial ring was stitched with over-lapping mattress suture using nylon no.2. The suture was first preplaced and then tightened from centre to periphery. The skin of hernial sac was trimmed off lateral to hernial ring and stitches were put on to the skin using nylon by simple interrupted pattern. After that the animal was treated post-operatively with antibiotics and anti-inflammatory for 5 & 3 days respectively. The suture was removed after 14th days of post operative treatment.

**Key word: Hernia, Hernial ring, Herniorrhaphy, Suture**

## Chapter 1

### INTRODUCTION

Bangladesh is an agricultural South Asian developing country. Among the total population of Bangladesh, 25% are directly dependent where as 50% are indirectly dependent upon the livestock. (Bangladesh | FAO Regional Office for Asia and the Pacific | Food and Agriculture Organization of the United Nations, 2021) But these livestock attach with a lot of diseases, which slow down the economic improvement of our country. In our country surgical cases are most common in cattle. The most common surgical cases is prolapsed, fracture, hernia, cesarean section, abomasal displacement ect. Among all hernia cases umbilical hernia is that kind of disease which is very common in our country.

So, hernia is the protrusion of an organ or tissue through an opening. The opening may be one by caused by a tearing in the abdominal wall or diaphragm or it may be a natural opening like the inguinal canal or femoral canal. (A venogopalan 2018)

On other sentence, Hernia is defined as the protrusion of the contents of a newly cavity through a normal or abnormal opening in the wall of that cavity either to lie beneath the intact skin or occupy another adjacent body cavity. (Tyagi et al 2017 A hernia is the protrusion or displacement of an organ, part of an organ, or tissue outside the abdominal cavity through an abnormal opening in the abdominal wall which can be noted from the outside of an animal's body and can be detected with an external examination. (Fesseha, 2020)

A hernia is the abnormal exit of tissue or an organ, such as the bowel, through the wall of the cavity in which it normally resides. (Mishra, Yadav and Hasan, 2020)

Hernia may be classified as congenital or acquired (according to occurrence). It may be external, internal or intestinal. According to location: umbilical hernia, inguinal hernia, scrotal hernia, diaphragmatic hernia perineal hernia, ventral hernia, femoral hernia.

According to hernia contents: enterocele (containing portion of intestine), epiplocele or omentocele (of omentum) gastrocele (of stomach) vesicocele (of bladder), hepatocele (of liver), hysterocele (of uterus). (A venogopalan 2018):

Predisposing causes of hernia are 1) Imperfect closure of an embryonic defect, e.g. imperfect closure of umbilicus predisposing to a umbilical hernia, imperfect formation of the diaphragm predisposing to a diaphragmatic hernia. 2) Weakness of the abdominal wall due to contusions, local inflammation, Exciting Cause: 1) Increase in the intra-abdominal pressure due to straining from constipation, diarrhea, during parturition, violent coughing, gastric or intestinal tympani. 2) Direct violence due to falling on a blunt object.( A Venogopalan 2018)

Hernias are conventionally classified into different types according to their anatomical site, ventral or lateral abdominal hernia, diaphragmatic, inguinal or scrotal, umbilical, perennial, pelvic, and femoral hernia Besides, hernias can also be classified as Reducible Hernia: In this type can be manually or automatically return the hernial contents into the abdominal cavity. Irreducible (incarcerated) Hernia: in this type, the hernial contents cannot be returned into the abdominal cavity. (Fesseha, 2020

Anatomically Hernia consists of three parts, Hernial Ring, Hernial Sac and Contents. In cattle's most common site of a hernia is the abdominal wall which consists of the muscles and ligaments, which act as shield and the natural function of it carrying

the abdominal contents mainly the intestines. When any weakness extend in the abdominal wall, the shield loses his job and form a hole which called hernial ring, then part of the viscera of the abdominal cavity pass through the hole and then bulging which is visible on the skin as a hernia . The hernia either occur when there is a natural weakness in the inguinal canal and femoral or the umbilicus area caused wide in these canal and passing of viscera through.

Umbilical hernia is the most common form of congenital hernia in calves. However, many umbilical hernias are secondary to umbilical sepsis. Umbilical hernia can be divided into 3 categories including uncomplicated umbilical hernia, umbilical hernia with subcutaneous infections (abscess), and umbilical hernia with umbilical remnant infection. (Fesseha, 2020)

Umbilical hernias are almost always congenital. The umbilical ring should close shortly after birth following rupture of its contents, leaving the umbilical cervix. An umbilical hernia develops if the umbilical ring is malformed or too large to allow contraction at birth, or develops if contraction of the umbilical ring does not occur. The cause of umbilical hernia is predisposing and exciting cause. Predisposing causes: usually congenital imperfect closure of the umbilicus. That's the most common causes. Exciting causes: compression of the abdomen during birth, straining due to constipation or diarrhea.

A discrete spherical swelling observed at the umbilicus. The hernial contents are usually fat and omentum. A larger hernia sac may contain loops of the small intestine. The sac is formed by the skin, fibrous tissue and peritoneum. A circular or oval hernia ring can be palpated without any pain if the hernia contents are reducible. However presence of adhesions or umbilical abscess can prevent reduction. Hernial contents may rarely get strangulated with symptoms of pain and intestinal obstruction.(Hosgood et all 1998)

## Chapter 2

### Materials and Methods

A three-months old Holstein Friesian crossbred calf weighing 58 kg was presented to Upazila Veterinary Hospital, Hathazari, Chittagong with a history of swelling at the umbilical region from birth since last few months. The surgical procedure is



Umbilical hernia in calf

#### **General Considerations:**

Umbilical hernias may be associated with heredity (e.g: in Holsteins). Unfortunately no simple method exists for differentiating acquired hernias from inherited hernia. Surgery should be performed before the animal is a month of age, if possible.

**Material requirement:** Syringe, 25-gauge needle. surgical knife with blade, forceps, dissecting scissors, needle holder, forceps, sutures materials, towel, towel clamp.



**Restraint and Anesthesia:**

General anesthesia is recommended. Heavy sedation with local anesthesia is acceptable. Movement of the patient during the procedure may jeopardize a surgical process. Place the patient in dorsal recumbency on a basically level plane. The patient's head may be placed at a slightly lower level to preclude the possibility of aspiration of regurgitated material if an endotracheal tube is not used. The animals were sedated using Xylazine 0.03 to 0.05 mg/ Kg bodyweight. The site of operation was desensitized using 2% lignocaine hydrochloride by local infiltration.

**Presurgical Procedures:**

Deprivation of food and water. Similar to that used for general anesthesia. Decreases bulk and bloat during surgery. Removal of all debris from the ventral abdominal area. Removal of hair over a liberal ventral abdominal area around the hernia. Thoroughly scrub the skin with water and an iodophor solution and complete normal surgical preparation.

**Surgical technique:**

- Skin incision:

A standard elliptic incision encompassing the hernia is effective. A double V incision can be used with a good cosmetic result.

- Dissection of the tissue:

The lateral edges of the skin incision require separation from the hernial sac to expose the junction of the hernial sac and abdominal wall. Significant hemorrhage often occurs during the stage. Blunt dissection with scissors helps control hemorrhage and incising abscesses or infected tissue. Manual blunt dissection with a 4\*4-inch gauze pad gives the quickest result with least hemorrhage.

For a relatively small, abscess free hernia inversion of the hernia sac into the abdominal cavity. Freshen (scarify) the edges of the hernia ring. Close the hernia ring

with simple interrupted suture.

**Closure:**

- For Hernial ring:

A hernial sac and abdominal cavity that are not open Freshening the edges of the hernial ring by scarification. Inversion of the hernial sac. Closing of the abdominal wall over the sac via simple interrupted sutures.Using large suture bites with a sufficiently strong, sterile suture material to allow healing.For an open hernial sac and abdominal cavity, closing of the abdominal wall with simple interrupted sutures. Using large suture bites with a sufficiently strong, sterile suture material to allow healing. For a nearly round defect in the abdominal wall, extend the incision both anteriorly and posteriorly to facilitate closure.To avoid excessive tension in the incision using a far-near-near-far suture tension. Using surgical mash incorporated into the incision, although the high cost of mesh must be considered.

- Subcutaneous tissue:

Subcutaneous tissue is generally closed via a continuous suture pattern with an absorbable material. The objective of closure is to decrease dead space, which reduces fluid accumulation and swelling.

- Skin:

Heavy synthetic non absorbable non capillary suture material is typically used in a simple interrupted or interrupted horizontal mattress suture. ( Kent Ames 2019)



## Correction of Umbilical Hernia

### **Post Operative care:**

Post-operatively, the dressing of the wound was done using a 1% Povidone-iodine solution at second- and third-days post operation. Systemic antibiotics(Procaine penicillin), meloxicam , intraperitoneal antibiotics, or both are suggested. Protective bandage are recommended. Remove suture after adequate healing, Usually 14 to 21 days. Post operative analgesia may be considered. Giving instruction to owner that they should given good nutrition and done some exercise.

## **Chapter 3**

### **Result**

The surgery of the umbilical hernia is common but complication may occur. According to this case, complete healing was recorded on 14th day post-operation without re occurrence and others complications. Finally, the skin sutures were removed on the 14th day post-operatively. For the complete healing need times. I take information of the calf after 1 month of removing sutures. The healing of the umbilical area mostly completed and the calf was fully sound.

## Chapter 4

### Discussion

Here, We performed the umbilical hernia case on hathazari, on other side during July, 2012 to January, 2013 at Tangail Sadar Upazila of Bangladesh. A total number of 1053 animals were examined during the study period. In case of male calves maximum occurrence of the disease were in the age group of 1-3 months (45.45%) followed by <01 month of age group (36.36%) and least occur in 3-6 months of age group (18.18%) and in case of female calves maximum occur in the age of 1-3 months (71.43%) followed by in the age group of <01 month and 3-6 months (14.29%). The occurrence of umbilical hernia was more common in crossbreed calves (77.78%) than that of indigenous calves (22.22%). (Rahman, Sultana, Ali and Hassan, 2017).

As earlier I stated as hernia may be congenital and acquired causes that have several deleterious effects, such as lowering the productivity and reproductivity of the affected animals. Umbilical hernias are quite commonly observed in young calves.(Fesseha, 2020)

In this case the calf was cross Holstein Friesian and age was 3 month. Above research the percentage is 45.45%.So umbilical hernia in 3 months age is very common in our country.

Umbilical hernia is classified as external hernia and is usually manifested by as an external swelling which varies in shape and size and must be differentially diagnosed from other swellings such as abscess, cellulitis, heamatoma, cyst and neoplasm. (Doijode, 2019).

According to current case report, umbilical hernia with sign of discrete spherical

swelling observed at the sac may contain loops of the small intestine. The sac is formed by the skin, fibrous tissue and peritoneum. Diagnosis of this disease by palpation umbilicus.& hernial contents are usually fat and omentum. No abscess, cellulitis, hematoma, cyst or neoplasm in this case.

The goal of surgical repair was to obliterate the hernia sac and repair of the defect in abdominal wall. Alternatives to surgical repair of hernias include the application of hernia clamps, elastrator rings and the injection of irritating substances around the base of the hernia sac. These alternatives were usually successful in obliterating the hernia sac, but do not directly repair the defect in the abdominal wall. The only remedy is surgical operation under local block to obliterate the hernia sac and repair hernia defect in calves. (Shah et al., 2017). In current case closure of hernial opening by different kind of suture method & using of silk as suture material. We use silk because lacking of prolene. Silk is less expensive than prolene.

Complication may develop in congenital umbilical hernias, which can significantly increase the complexity and expense to repair. Uncomplicated congenital umbilical hernias that have persisted until 5- 6-months of age, gradually enlarged over time, or failed to respond to conservative therapy. In this case report no adhesion was seen during the procedure between the hernial sac and contents. Umbilical hernia of cattle is very common in our country & it is correctable. Umbilical hernia success rate is good. If not corrected this problem it will be fatal & animal will be death.

## **Chapter 5**

### **Limitation**

In UVH there is no presence of so much of facilities for surgery. Such as no presence of aseptic surgery room. Lacking of advance diagnostic tools and absence of further diagnostic test. But we try our best to maintain aseptic condition. Owner of the cattle isn't literate. So maintenance of post operative care is difficult.

## **Chapter 6**

### **Conclusion**

Umbilical hernia in calf is quite a common occurrence in our country. By these disease a lots of calf death per year. The common sign include discrete spherical swelling observed at the umbilicus, hernial contents are usually fat and omentum, larger hernia sac may contain loops of the small intestine sac is formed by the skin, fibrous tissue and peritoneum. Surgical correction of the hernia recommend. If not corrected this problem will be fatal.



## References:

1. Ames Kent N. Noordsy's Food Animal Surgery; USA; 5TH edition; 2019 ; Chapter 6 Page (85-86).
2. Doijode, V., 2019. Umbilical hernia in ruminant calves. The Pharma Innovation Journal 2019;, pp.164-167.
3. Fesseha, H., 2020. Hernias in Farm Animals and its Management technique- A Review. International Journal of Clinical Studies and Medical Case Reports, 4(4).
4. Fesseha, H., 2020. Hernias in Farm Animals and its Management technique- A Review. International Journal of Clinical Studies and Medical Case Reports, 4(4).
5. Fesseha, H., 2020. Umbilical Hernia in Cross Holstein Friesian Calf and its Surgical Management: A Case Report. Veterinary Medicine – Open Journal, 5(2), pp.39-42.
6. Fesseha, H., 2020. Umbilical Hernia in Cross Holstein Friesian Calf and its Surgical Management: A Case Report. Veterinary Medicine – Open Journal, 5(2), pp.39-42.
7. Hosgood Giselle, Hoskins D. Johnny. Small animal paediatric medicine and surgery, India ; 1st edition 1998; chapter 6 page 68.
8. Mishra, P., Yadav, V. and Hasan, M., 2020. Evisceration of umbilical content with extensive adhesion: A surgical approach. Clinical Case Reports, 8(12), pp.3568-3569.
9. Rahman, M., Sultana, S., Ali, M. and Hassan, M., 2017. Prevalence of umbilical hernia of calves and its risk factors at Tangail Sadar of Bangladesh.
10. Shah, Z., Ahamd, S., Sarwar, M., Ali Khan, M. and Ali, J., 2017. Surgical Intervention of Umbilical Hernia in Dairy Cross Holstein Friesian Calf. Meat Sciences and Veterinary Public Health, Pakistan,
11. Tyagi. R.P.S, singh Jit , Ruminant surgery India; 2017; chapter 11 page 226.
12. Tyagi. R.P.S, singh Jit . Ruminant surgery; India; 2017; chapter 11 page 225

13. Venugopalan A . Essential of Veterinary Surgery, India; 8th edition ; 2018;  
Chapter 34: page 275.
14. Venugopalan A. Essential of Veterinary Surgery, India; 8th edition ; 2018;  
Chapter 34: page 276

## **Acknowledgement**

Firstly I thank my almighty for giving me a healthy life and keep sound during Covid situation. I thank the Veterinary Surgeon Dr Abdul al Masud sir and assistant of Hathazari Upazila. And I thank my supervisor of my report DR. Mohammed Ashif Imtiaz Shawn, Assistant Professor, Dept. of Physiology, Biochemistry & Pharmacology of CVASU for helping me to make the case report. I also thank my friends and family for giving support and helping me to make the report.