

# CHAPTER I

## Introduction

Hernia is the accidental or physiological protrusion of an organ or part of an organ through an aperture. It is a common defect in calves (Rings, 1995). In calves, the most common form of congenital hernia is the umbilical hernia where portions of the abdominal contents protrude out through the natural opening in the ventral abdomen left by the umbilicus (Smith *et al.*, 2009). Herniation is the primary problems associated with the umbilicus in calves. Congenital defects and disorders of domestic animals cause considerable economic loss to farmers. Improper closure of the umbilicus at birth due to maldevelopment or hypoplasia of the abdominal muscles has been found to be associated with umbilical hernia in calves (Singh *et al.*, 1989). It occurs due to the imperfect closure of an embryonic defect, weakness of the abdominal wall, increased intra-abdominal pressure like straining, forceful parturition and due to direct violence by a blunt object. Multiple births and shortened gestation periods are two important risk factors for congenital umbilical hernias in calves (Herrmann *et al.*, 2001). Sire and umbilical infections are associated with risk of an umbilical hernia in calves during the first 2 months of life (Steenholdt and Hernandez, 2004). The umbilicus in calves consists of the urachus, umbilical vein, and paired umbilical arteries. These latter structures are often referred to as the umbilical remnants.

Several methods for hernial treatment have been described like ligation of the hernial sac, use of clamps, suturing of the hernial sac and radical operation are normally performed to correct the umbilical hernia, although open herniorrhaphy is the most common method of veterinary treatment (O'Connor, 1980). In the past, hernial surgery and abdominal wall reconstructions frequently have used tense suture to approximate and close a hernial ring or defect. Large hernia requires safe closure to avoid wound dehiscence, recurrent hernias and no healing of the wound due to tissue ischemia with the sutures cutting through the soft tissue (Matthews *et al.*, 2003). Simple apposition of hernial ring with minimal or complete avoidance of

tension at the healing suture line is essential for ideal healing (McFarland, 1980 and Fubini and Ducharme, 2004). Herniorrhaphy can be done by simply closing the abdominal wall with a horizontal mattress pattern of stitches using absorbable or non-absorbable sutures (Pugh, 2002). Horizontal mattress and purse string suture patterns with catgut and silk are widely practiced in Bangladesh (Rahman *et al.*, 2001). Though there are lot of techniques for management of umbilical hernia and literature are also available but objective of the study is to evaluate the surgical efficacy of umbilical hernia in field condition of Bangladesh.

# CHAPTER II

## Materials and Methods

### **Study area and period**

The present study was carried out on a female local breed calf (Red Chittagong cattle) approximately body weight 30kg affected with umbilical hernia presenting at Upazilla veterinary hospital, Raozan, Chittagong, Bangladesh during the internship rotation from 01.02.18 to 29.03.18.

### **Clinical examination and diagnosis of hernia**

A tentative diagnosis was made from the history and by clinical examination of the umbilical region. However confirmative diagnosis was made by exploratory puncture of the navel swelling and demonstration of intestinal contents. Detection of hernia ring with the index finger also aided diagnosis. Reducibility of the contents was detected by pushing the contents back to the abdominal cavity (Fig.1). The length and width of the umbilical swelling was approximately 3cm and 2 cm respectively.

### **Surgical techniques**

#### ***Patient preparation***

Withdrawal of food was done for 12 hours prior to the operation. The animal was placed on the operation table in lateral recumbency and was restrained physically by the assistants. The operation site was clipped and shaved.

#### ***Anesthesia***

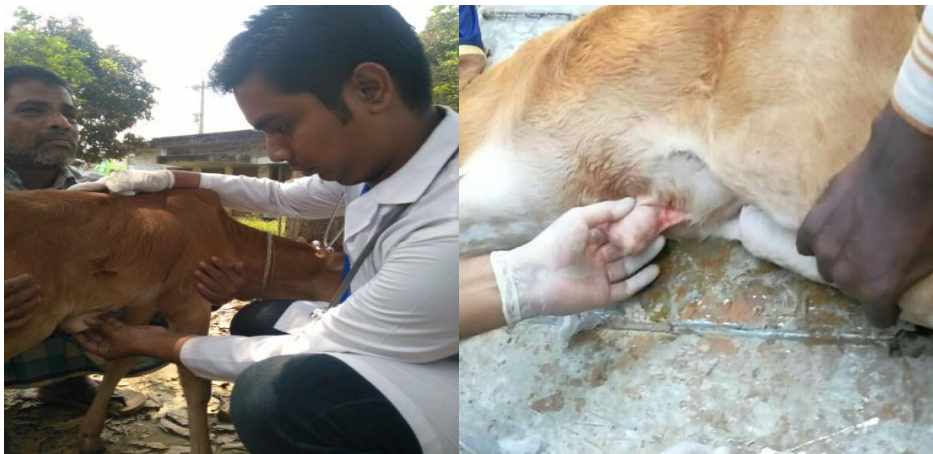
Sedation of the patient was performed with Diazepam (Sedil 2%; Square Pharmaceuticals, Bangladesh) at a dose rate of 0.4 mg/kg, intravenously. Circular infiltration anesthesia was done at the umbilical region using 2% lidocaine (Jasocaine; Jayson Pharmaceuticals, Bangladesh) at a dose of 4 mg/kg body weight (Sutradhar *et al.*, 2009).

### ***Surgical treatment***

The animal was restrained in the lateral recumbency position. A linear skin incisions was made (Fig.2) and the adhesions between the parietal peritoneum and skin were freed using both blunt and sharp dissection( Fig.3). The hernia content was pushed back to the abdominal cavity and the hernial ring was exposed and freshened before their suturing and finally closed by interrupted horizontal mattress suture by using sterilized No. 2 nylon (Sutures India, India). The subcutaneous tissues were then sutured continuously with No. 1-0 chromic catgut(Fig.4) and excessive skin was removed for better apposition and finally sutured with No. 2 silk (Johnson & Johnson, India) in a simple interrupted suture pattern (Sutradhar *et al.*, 2009) (Fig.5).

### ***Postoperative management***

This consisted of a course of antibiotic, antihista and pain killer. This animal was treated post operatively with antibiotic and antihista 3 ml intramuscularly daily for 5 days and pain killer 1 ml intramuscularly daily for 3 days. The skin stitches were removed within 10 days after operation. The animals were kept under supervision for a month to observe any complication if there was any.



**Fig.1 : Clinical examination of hernia**



**Fig.2 : Skin incision**



**Fig.3 : Detect hernial Sac**



**Fig.4:Subcutaneous tissues Suture**



**Fig.5: Suturing of skin**



**Fig.6: After correction of umbilical hernia**

## **CHAPTER III**

### **Results and Discussions**

In present study, umbilical hernia was corrected by open methods of herniorrhaphy in calf. Horizontal mattress suture patterns were used to close the hernial ring in open herniorrhaphy after exposing the skin. Recurrence of hernia and post-operative complications were totally absent. In this study, used skin incision technique that mentioned above was effective and successful without complicating the surgical site following observation and healing was excellent.

Open method of herniorrhaphy is always indicated for older calves when adhesion or abscess is commonly associated with umbilical hernia (Horney and Wallace, 1984). Herniorrhaphy can be done by simply closing the abdominal wall with a horizontal mattress pattern of stitches using absorbable or non-absorbable sutures (Pugh, 2002). In the current study, the size of the hernial rings was 3 cm and herniorrhaphy was carried out using horizontally interrupted stitches with sterilized nylon for open method. Anesthesia is important to perform smooth surgery. Local or regional anesthesia is safe and effective and is still the most suitable procedure in many situations (Edmondson, 2008). The present study indicates that local infiltration anesthesia with or without sedation may be quite sufficient for performing the surgical repair. Diazepam (0.4 mg/kg) was used intravenously as a sedative in this study, which was cheap in comparison with xylazine and also produced satisfactory results. Infiltration of local anesthesia with 2% lidocaine was also satisfactory for anesthesia of the umbilical region. Positioning on lateral recumbency of the animal on a surgical table was found to be important to facilitate reduction of the hernial contents. Better healing and no complication in this study were satisfactory results.

# CHAPTER IV

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## CHAPTER V

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# CHAPTER VI

## BIOGRAPHY



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