CORRECTION OF UMBILICAL HERNIA IN A RABBIT AT TEACHING & TRAINING PET HOSPITAL AND RESEARCH CENTER, DHAKA: A CASE REPORT

by

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A clinical report submitted as per approved by style and content

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ABSTRACT

The case report outlines the successful surgical correction of an umbilical hernia in a six-month-old male mixed-breed rabbit weighing 1.5 kg which was presented at the Teaching and Training Pet Hospital and Research Center (TTPHRC), Purbachal, Dhaka. The rabbit presented with a three-month history of a soft, reducible, and painless umbilical swelling. Clinical indicators were within physiological norms, and surgical intervention was necessary. Anesthesia and control measures included a 10-hour fasting period, followed by sedation with xylazine and induction with ketamine HCL after atropinization. Surgical protocols were strictly followed. A small incision exposed 2 cm hernial sac, and the caecum segments were gently relocated before suturing the hernial ring. Post-surgery, the rabbit received ciprofloxacin, chlorpheniramine maleate, and meloxicam, with bactrocin 2% applied to the surgical site. The rabbit was advised to wear an e-collar, maintain high fiber diet, and limit excessive activity. The rabbit recovered smoothly, with no post-anesthetic complications. A follow-up on the seventh day confirmed complete incision site healing. This case highlights the importance of timely surgical intervention for rabbit umbilical hernias and emphasizes the need of strict preoperative and postoperative care for successful outcomes.

Keywords: Umbilical hernia, rabbit, surgical correction.

CHAPTER I

INTRODUCTION

A hernia is when an organ or piece of tissue protrudes through a tear (Tiwari *et al*., 2004) in the abdominal wall or a natural opening like the femoral canal or inguinal canal (Kemparaja, 2003).In laboratory animals, hernias are an unusual pathological finding. It frequently affects domesticated animals like dogs, pigs, calves, and foals (Monsang *et al., 2014).*

Animals can develop umbilical hernias due to insufficient supporting muscles around the umbilicus or incorrect closure of the umbilicus during birth due to hereditary factors. Additionally, it can happen if the umbilical cord is cut too closely to the abdominal wall (*Ismer et al.,* 2023). Intestines protrude through the intestinal wall to form the "ball-like" structure as a result of the umbilical opening failing to seal completely (Ronald and Barbara, 2008).The umbilical defect and hernia content affect its size (Sutradhar *et al.,* 2009, Monsang *et al., 2014).*

Umbilical hernias are typically seen as a soft lump ventral on the abdomen around the umbilical scar during the clinical examination. Deep palpation can, but does not always, detect the umbilical ring. In addition to a clinical examination, radiographs and ultrasounds should be utilized to provide a firm diagnosis and determine the size of the hernia (Fossum, 2013). If the adhesions are not removed at the proper moment after the intestines come into close touch with the skin, regular digestion may be hampered (Warson *et al.,* 2014). It results from intestinal blockage or strangling. In such cases, the hernia is usually warm and painful, and the content is irreducible (Grunkemeyer *et al.,* 2010, Fossum, 2013, Monsang *et al.,* 2014)

Anorexia, weight loss, incontinence in urination, and sadness are symptoms of gastrointestinal distress in rabbits. Dehydration in these circumstances frequently results in widespread ileus, and prompt medical attention is advised (Reusch, 2005). At a young age, a lot of umbilical hernias can resolve themselves on their own. Any sort of hernia must be corrected because it will improve the welfare and health of the distressed animals. This report describes an umbilical hernia in a rabbit and how it was surgically managed.

CHAPTER II

Case Presentation

2.1 Case history and description:

A six-month-old male mixed breed rabbit with a 1.5 kg weight was brought to the TTPHRC with a three-month-old history of enlarged umbilical tissue. Firsthand palpation revealed a soft, reducible, and painless swelling with the presence of the hernial ring and its contents. The rabbit had a typical appetite, and all the clinical indicators fell within the physiological norms. No other approaches were employed because the case was proven by palpation, signs, and symptoms, as well as taking into account the expense and owner's condition. For the procedures (Surgical Correction), the owner provided written, informed consent.

2.2 Anesthesia and control:

The animal was denied food and drink for around 10 and 6 hours, respectively, before to surgery. The animal was sedated with xylazine at 4 mg/kg b.w., IM, followed by induction with ketamine HCl at 40 mg/kg b.w., I.M., after 10 minutes of atropinization (atropine sulphate at 0.02 mg/kg, I.M.). Until the end of the surgical procedure, maintenance was provided by a diazepam and ketamine combination (one third of the induction dose).

2.3 Operation procedure:

During surgery, we always put a strong emphasis on maintaining patient safety and managing their discomfort. An sterile general surgical pack was utilized. Anesthesia was administered and kept up to standards. The operative site was allowed to remain exposed by keeping the patient on the operating table and covered with sterile draper. With the use of a scalpel blade, a small incision is first produced in the skin. the layer of fat afterwards. The 2 cm long hernial sac was located and examined. There was no obvious tissue changes when the caecum segments exit via the hernia ring. With the hernia ring, they were slowly relocated. Before suturing, the hernial ring was adjusted and cleaned for rapid healing. Vicryl 2-0 was used to stitch the muscle defect using a simple continuous suture design. In order to eliminate the

empty space and prevent a future hernia, interrupted sutures were also administered. The subcutaneous tissue were subsequently stitched using a continuous subcuticular suture. Finally, the skin was stitched with simple interrupted sutures. Povidone was then administered to the suture line of skin.

2.4 Post-operative treatment and care:

Following surgery, 0.3 ml of the antibiotic ciprofloxacin @ 10 mg/kg body weight (Susp. Ciprocin 5 ml) was given orally twice a day for seven days. For seven days, oral antihistaminic chlorpheniramine maleate @ 1 mg/kg body weight (Syp. Histacin 60 ml) was given. Meloxicam, an analgesic, was injected subcutaneously for three days at a dose of 0.3 mg/kg body weight (Inj. Melvet 10 ml). It was also advised to apply Bactrocin 2% antibacterial ointment twice daily to the surgical region. It was proposed that the animal wear an e-collar. It was suggested to the owner to keep a tight eye on the rabbit and to limit any excessive behavior. Additionally, foods high in fiber were advised.

CHAPTER III

RESULT & DISCUSSION

Result:

The rabbit recovered from the anesthesia, indicating that the surgery was successful. Within 30 minutes, the animal was free of any complications following its anesthesia. Following anesthetic recovery, the patient was taken to his owner's home. The owner was given a prescription and advised to administer the medication as directed on a regular basis. During that patient's follow-up, no problems were noticed. On the seventh day following surgery, the patient's incision site had fully recovered.

Discussion:

A hernia is when the contents of a body cavity protrude through a weak point in the body wall (Ring *et al,* 1995). Umbilical hernias in rabbits, characterized by a protrusion of abdominal contents through a weakened abdominal wall, are common and can be congenital or acquired. While small hernias may resolve naturally, large ones pose serious health risks, including strangulation of tissues, necessitating immediate surgical correction with an excellent prognosis. In swine small sized hernia was repaired by used of elastrator ring has been reported (Pollicino,2007). The exact causes and incidence of these hernias remain unclear (Al-Sobail and Ahmed 2007; Monsang *et al.,* 2014), though some genetic predisposition has been suggested. Diagnostic imaging is crucial for accurate diagnosis, and various surgical techniques, such as counter-irritation, clamping, sutures, safety pins, rubber bands, and elastrator rings, have been employed based on the size and persistence of the hernia (Al-Sobail and Ahmed 2007; Pollicino *et al.*, 2007,Monsang *et al.*, 2014). Unlike humans, in rabbits, a hernia size between 2.8 and 3.5 cm is considered significant and linked to higher mortality, morbidity, and recurrence rates, primarily in abdominal hernias (Yang *et al.*, 2019). This case study contributes to our understanding of hernia correction in veterinary medicine, emphasizing the importance of timely intervention, even when the exact causes remain uncertain, and surgical repair can be performed more straightforwardly when the hernial sac is not adhered to the herniated visceral content. If the discomfort is left untreated,

it will result in gastrointestinal hypo-motility, and gas buildup will make the agony worse (Oglesbee and Lord, 2020). Intestinal imprisonment was not suspected because a reponible, non-painful abdominal mass was present. However, bruxism as a sign of discomfort or pain was likely caused by gas buildup in the colon, which can result in the clinical symptoms mentioned here but also start to damage the intestinal blood flow. Analgesia, prokinetics, and appropriate feeding and hydration of the animal are essential for maintaining intestinal motility. According to some research, rabbits can take high dosages of meloxicam (Varga, 2015). Effectiveness of NSAID meloxicam mostly against somatic and integumentary discomfort, but they also influence rats' ability to generate less adhesions (Temple, 2018). In our instance, intraoperative gentle and meticulous manipulation with internal anesthetic, multimodal analgesia organs, good postoperative medical care, and feeding assistance led to the patient's quick recovery without incidence of the gastrointestinal condition. Utilizing meloxicam after surgery inhibit rabbits from developing adhesion.

CHAPTER IV

CONCLUSION

In conclusion, despite generally not posing any immediate health risks, umbilical hernias can be harmful if they cause blood flow obstruction and organ strangling. The prognosis, however, is typically very good after surgical repair. Although further research is advised to accelerate the operation, the disclosed surgical technique seems to be a workable and field-applicable way for treating this problem. Overall, giving sufficient analgesia, lowering stress, and taking care of any coexisting medical issues are crucial to enhancing the outcome and survival probability of patients with umbilical hernias, such as rabbits. Management of stress is crucial in preventive medicine and has a big impact on patients' general well-being.

FIGURES

Figure 1: Swollen of umbilical region

Figure 2: Prepared operation site

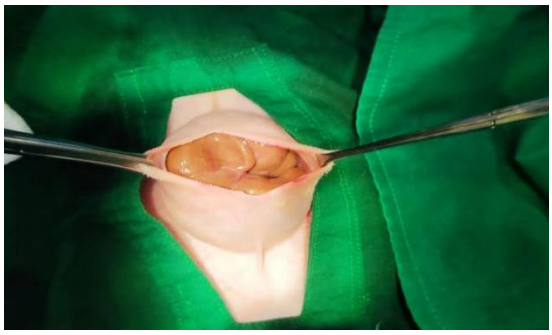

Figure 3: Exposed hernial ring and caecum segment

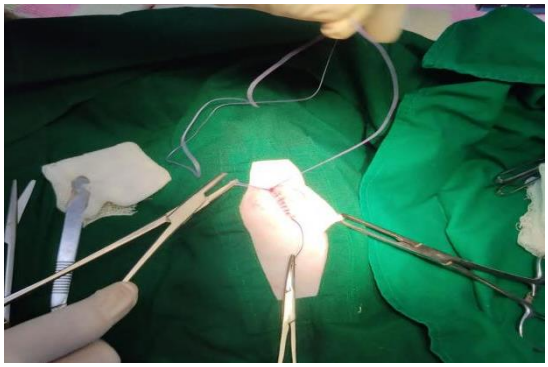

Figure 4: Continuous suture in muscle

Figure 5: Interrupted suture in skin

Figure 6: Povidone iodine bandaging

Figure 7: Surgeons with patient

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The author

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BIOGRAPHY

I'm Md. Piar Rahaman Shihab, the child of Hasina Akter and Abdur Rahman. I received a 5.00 grade point average (GPA) for my SSC from Chattogram's Gachbaria N.G. Govt. Model High School in 2014, and a 5.00 grade point average (GPA) for my HSC from Hazera Taju University College in 2016.The Chattogram Veterinary and Animal Sciences University's Faculty of Veterinary Medicine currently has me working as an intern veterinarian. I hope to practice veterinary medicine in the near future. Public health is a subject that interests me greatly, and I hope to conduct study soon.