International Journal of Veterinary Sciences and Animal Husbandry

ISSN: 2456-2912
NAAS Rating (2025): 4.61
VET 2025; 10(9): 34-36

www.veterinarypaper.com
Received: 09-07-2025
Accepted: 11-08-2025

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Surgical management of an extensive lateral hernia by hernioplasty using polypropylene mesh in a cryptorchid bull

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Abstract
A 2.5-year-old Desi bull was presented to the Veterinary Clinical Complex at the Veterinary College and Research Institute, Theni, with a history of right abdominal swelling persisting for approximately one week. Initial treatment by a field veterinarian yielded no improvement, and the swelling progressively enlarged. Upon clinical examination, the bull appeared active and alert. Palpation of the affected area revealed a painful, soft, and reducible mass located on the right lateral lower abdomen, with evidence of previously sutured skin. Further assessment identified a hernial ring measuring approximately 7.8 cm × 6.0 cm in circumference, accompanied by a fluctuating hernial mass. Ultrasonographic evaluation confirmed the presence of intestinal loops and omental fat within the hernial sac. Surgical correction was performed via hernioplasty under general anaesthesia, supplemented with local infiltration of 2% lignocaine. Postoperative management included administration of antibiotics, analgesics, and supportive therapy, along with diligent wound care. The bull recovered uneventfully within one week, with no observed complications.

Keywords: Desi Bull, Lateral hernia and hernioplasty

Introduction
A hernia is defined as the abnormal protrusion of an organ or tissue through a body wall or cavity, typically resulting from a weakness or defect in the structure, most commonly the abdominal wall. In animals, hernias may be congenital or acquired, with umbilical, inguinal, and diaphragmatic types being the most prevalent (Sutradhar *et al*., 2009) [2]. Anatomically, a hernia comprises three components: the hernial ring, hernial sac, and its contents (Amresh, 2009) [1]. In cattle, the abdominal wall is the most frequently affected site due to its role in containing and supporting the abdominal viscera, particularly the intestines. This wall is composed of muscles and ligaments that function as a protective barrier. When structural integrity is compromised either through trauma or incomplete closure of a natural anatomical opening, a defect known as the hernial ring may form. Through this opening, abdominal contents can protrude, resulting in a visible swelling beneath the skin (Singh *et al*., 2014) [3]. The present case highlights the successful surgical management of a lateral abdominal hernia in a Desi bull using hernioplasty.

Case history
A 2.5 years old Desi Bull brought to large animal outpatient surgery unit at Veterinary Clinical Complex, Veterinary College and Research Institute, Theni, with a history of progressive swelling on right abdominal region for about a week and was treated by field Veterinarian and the treatment was unresponsive and the swelling large in due time. On physical examination, animal was active and alert. Palpation of swelling revealed, painful, soft reducible soft mass on right lateral lower abdomen with pre-sutured skin sutured, further examination revealed hernial ring about 7.8 cm × 6.0 cm circumference in diameter with fluctuating hernial mass. Ultrasound examination revealed presence of intestinal loop along with omental fat within the hernial mass.

Treatment

The animal was restrained by general anaesthesia using, Premedicated (IM-route) with Inj. Xylazine-@ 0.1 mg/kg B. wt and Inj. Butorphanol @ 0.2 mg/kg B. wt. followed with induction (IM-route) by Inj. Ketamine-@5 mg/Kg B. Wt. and Inj. Diazepam-@ 0.5 mg/kg B. Wt. 10 minutes and was Maintained under Inj. Ketamine-@ 2.5 mg/kg B. Wt.-I/V and Inj. Diazepam-@ 0.25 mg/kg B. Wt.-IV route.

Standard operative protocol was followed, positioned on left lateral recumbency, pre surgical scrubbing was done with Povidone iodine and sprit. Incision was made on the out pouched area, after incision the hernial sac was incised and the intestinal loop with omental tissue were replaced into abdominal cavity, prior to closure the abdominal cavity was examined for any adhesion. A standard herniorrhaphy was performed with overlapping suture pattern in a far near-near far pattern. An overlay herniorrhaphy was performed (Figure 4). The subcutaneous tissue was apposed with PGA 1-0 and skin was sutured using Polyamide 1 in cross mattress pattern. After the surgical procedure a drain tube was placed to facilitate post-operative drainage (Figure 6).

Animal treated with Inj. Ceftriaxone @ 10 mg/kg B.Wt.-IV, Inj. Meloxicam @0.5mg/kg B.Wt.-IV and Inj. Chlorphenaramine maleate-10 ml I/M and adviced to followed the same medication for a week except pain medication along with daily wound management. Animal recovered a week later without any complication and recurrence (Figure 7).

Discussion

A hernia is characterized by the protrusion of body cavity contents through a weakened area in the body wall, resulting in a visible bulge beneath the skin (Jettennavar *et al*., 2010) [4]. Epidemiological data indicate a higher prevalence of hernias in females, with a sex distribution of 72.4% females and 27.6% males (Yasin, 2017) [5]. However, the present case involved a male bull diagnosed with unilateral cryptorchidism (Figure 8), contrasting with the typical demographic trend. Ventral abdominal hernias are commonly acquired conditions in ruminants and horses, and are more frequently observed in dogs and pigs compared to other domestic species (Fossum, 2013) [6]. This aligns with the current case, which may have resulted from a gore injury. Polypropylene mesh is widely recognized for its advantages in hernia and abdominal wall repair, offering robust and durable support to weakened tissues. It facilitates tension-free closure, thereby minimizing the risk of recurrence. Successfully employed polypropylene mesh to correct a ventral abdominal defect in a cow. Despite its benefits, prosthetic mesh use can be associated with complications such as adhesions and stercoral fistulas. Reported one case of stercoral fistula among eleven adult bovines treated with nylon mesh for massive ventral hernias. In the present case, hernioplasty was performed using polypropylene mesh, and no postoperative complications were observed, underscoring its effectiveness and safety in managing lateral abdominal hernias in bovines.

Fig 1: Lateral hernia in desi bull

Fig 2: Lateral hernia arrow indicated

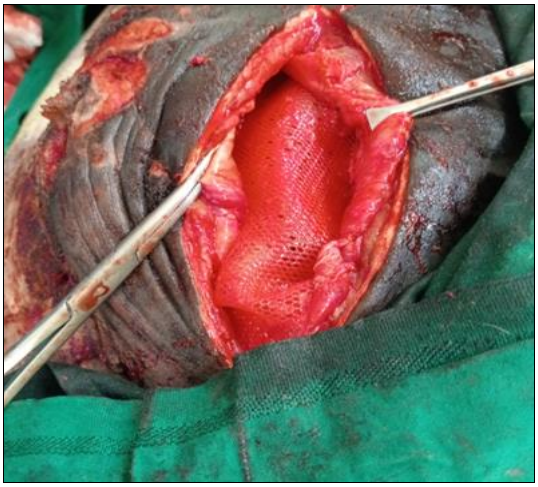

Fig 3: Polypropylene Mesh

Fig 4: Overlapping suture with reinforced mesh

Fig 6&7: Post-operative with complete healing

Conclusion

Accordingly, hernioplasty using polypropylene mesh was found to effective in managing acquired lateral abdominal hernia in Nattu madu without any complications and recurrence. General anaesthesia along with local infiltration of 2% lignocaine. Animal was treated with antibiotic, pain medication and supportive medication along with wound care the animal recovered without any complication after a week.

Conflict of Interest

Not available

Financial Support

Not available

Reference

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How to Cite This Article
Alagar S, Gokulakrishnan M, Sowbharenya C, Arun R, Senthilkumar A. Surgical management of an extensive lateral hernia by hernioplasty using polypropylene mesh in a cryptorchid bull. International Journal of Veterinary Sciences and Animal Husbandry. 2025;10(9):34-36.