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Sterilized Mosquito Net Mesh for Management of Recurrent Umbilical Hernia in a Calf

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Abstract

A calf was presented with history of recurrent umbilical hernia and earlier operated twice using herniorrhaphy technique. Clinical examination revealed a reducible hernia without adhesions and hernial ring diameter of 8 cm in length and 6 cm in width. The animal was sedated using Xylazine and local anaesthesia was achieved using 2% Lignocaine. Surgical exploration revealed presence of omentum and abomasum at the hernial site and they were reduced back into abdominal cavity. The abdominal wall defect was repaired using cost-effective and easily available sterilized mosquito mesh as a hernioplasty material. Six months follow-up revealed complete recovery of animal without any complications.

Keywords: Calf; hernia; hernioplasty; mosquito mesh; umbilical

Introduction

Hernia is protrusion of contents of body cavity through a weak spot of body wall. Umbilical hernia is a common defect in calves (Rings, 1995). They develop from improper closure of umbilicus at birth due to developmental anomaly or hypoplasia of abdominal muscles or from manual breaking or resection of cord close to abdominal wall (Turner and McIlwraith, 1989). Hernia may be small at birth and gradually enlarges with age. The contents of an umbilical hernia are usually fat, omentum, abomasum and segments of small intestines. The hernias are generally repaired using herniorrhaphy or hernioplasty techniques. The surgical management of hernias in human literature emphasizes the use of prosthetic materials in hernia's larger than 3 cm to avoid recurrence (Venclauskas *et al.,* 2008).

When a large defect makes the approximation of tissues impossible without undue tension, prosthetic implants are advocated and the most commonly used synthetic material is mono-filament plastic mesh made of polypropylene or polyethylene (Tulleners and Fretz, 1983).The high cost associated with synthetic material initiated the search for safe and cheap prosthetic material that can replace the commonly used highly expensive meshes. In recent years, innovative surgeons have tried replacing the use of commercial surgical mesh with cheap and sterilized mosquito net (Tongoankar *et al.,* 2003). The present case report describes successful management of large recurrent hernial defect in a calf using easily available mosquito mesh.

Material and Methods

A six month old crossbred female calf was presented with history of swelling near umbilical region and swelling was increasing day by day. Detailed history revealed that calf was operated two times for repair of umbilical hernia using open method of herniorrhaphy by the Veterinarian. Clinical examination revealed a reducible hernia without any adhesions and hernial ring diameter of 8 cm in length and 6 cm in width. Considering the condition of the animal and economic status of farmer, it was decided for hernioplasty with low cost and easily available mosquito net. The nylon mosquito net was folded into four layers and it was cut to a dimension of 15 cm length and 12 cm in width. All four layers were united by suturing with nylon in continues pattern as required (Fig. 1). The prepared mesh material was thoroughly washed with isopropyl alcohol then rinsed with normal saline and autoclaved before use.

Food and water were withheld for a period of twenty four hours and twelve hours, respectively. The skin over the umbilical area was prepared by clipping, shaving and scrubbing well with soap and water

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Fig. 1: Sterilized mosquito net

Fig. 2: Large umbilical hernia

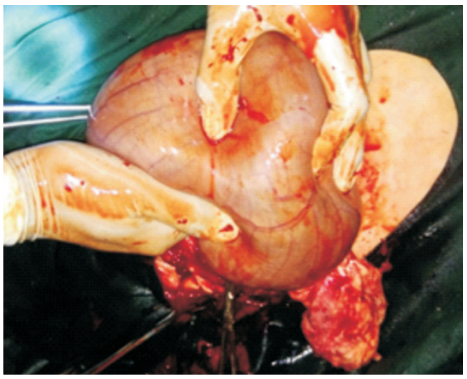

Fig. 3: Abomasum was herniated through umbilical region

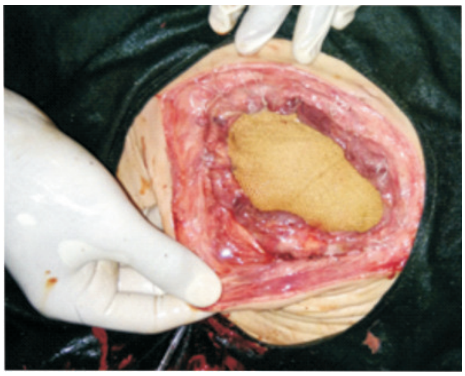

Fig. 4: Sterilized mosquito net sutured between peritoneum and abdominal muscles along the hernial ring circumference

(Fig. 2). The skin was swabbed with 70 percent Isopropyl alcohol followed by Povidone iodine. Ceftriaxone (Intacef[a]) was injected @ 15 mg/kg b. wt. intravenously as prophylactic antibiotic half an hour before surgery. Pre-emptive analgesia was provided using Meloxicam (Melonex[a]) @ 0.5 mg/kg b. wt. intramuscularly. Sedation was achieved using Xylazine (Xylodac[b]) @ 0.01 mg/kg b. wt. intramuscularly. Circular infiltration anaesthesia was done at the umbilical region using 2% Lignocaine hydrochloride (Lox 2%[c]) at a dose of 4 mg/kg b. wt.

An elliptical skin incisions were made over the hernia and the parietal peritoneum and skin were freed. The excessive hernial sac was incised and removed. The hernial rings were exposed and omentum and abomasum (Fig. 3) were found herniated through umbilical hernia. Following reduction and replacement of herniated abdominal contents, sterilized nylon mesh was applied between peritoneum and abdominal muscles and sutured the ends with interrupted horizontal mattress sutures with nylon material along the hernial ring circumference (Fig. 4). Subcutaneous tissues were then sutured continuously with no. 1-0 polyglycolic acid and excessive skin was removed for better apposition and finally sutured with no. 1 nylon in a simple interrupted suture pattern. The animal was treated with Ceftriaxone (Intacef[a]) @ 15 mg/kg b. wt. intravenously twice a day and Meloxicam (Melonex[a]) @ 0.3 mg/kg b. wt. subcutaneously once a day for five days. The skin sutures were removed on tenth post-operative day.

a - Brand of Intas Animal Health, Ahmedabad
b - Brand of Zydus Animal Health, Ahmedabad
c - Brand of Neon Laboratories Ltd., Mumbai

Results and Discussion

Daily physical examination revealed mild post-

operative inflammatory swelling and it was reduced gradually. Follow-up of six months revealed complete recovery without any complications. Simple suturing of adjacent hernial rings alone may not be effective in repairing large defects and this could lead to recurrence of hernia or muscle tearing (Tulleners and Fretz, 1983). This may be due to lack of sufficient tissue for safe anchoring of sutures under tension. Large defect (8 cm in the present case) may be reason for recurrence of hernia even after herniorrhaphy. Synthetic materials of high tensile strength have been used to produce meshes are best choice for use in large animals with large abdominal defects (Tulleners and Fretz, 1983). Developing countries like India, commercial meshes for hernioplasty are not easily available and even if available also, they are often unaffordable by poor farmers. Hence there is a need for use of easily available and cost-effective material for hernioplasty. So in the present case, locally available sterilized mosquito net was used to repair the umbilical defect and it was found to be effective. The strength of mesh can be improved according to the requirement by adding more layers. Preparation, sterilization, handling and application of mosquito net should be performed. Post-operatively, there was a minimum swelling and no complications were observed. Form the present case study, it was concluded that sterilized mosquito net is a cost-effective and easily available prosthetic material with promising results for management of large umbilical defects under field conditions.

References

Rings, D.M. **(1995)**. Umbilical hernias, umbilical abscesses and urachal fistulas. Surgical considerations. *Vet. Clin. North Am. Food Anim. Pract.* **11**: 137-48.

Tongoankar, R.R., Reddy, B.V., Mehta, V.K., Singh, N.S. and Shivade, S. **(2003)**. Preliminary multicenter trial of cheap indigenous mosquito-net cloth for tension-free hernia repair. *Indian J. Surg.* **65**: 89-95.

Tulleners, E.P. and Fretz, P.B. **(1983)**. Prosthetic repair of large abdominal wall defects in horses and food animals. *J. Am. Vet. Med. Ass.* **182**: 258-62.

Turner, A.S. and McIlwraith, C.W. **(1989)**. *Techniques in Large Animal Surgery,* 2nd Edn., Lippincott Williams & Wilkins, Philadelphia, p. 254.

Venclauskas, L., Silanskaite, J. and Kiudelis, M. **(2008)**. Umbilical hernia - Factors indicative of recurrence. *Medicina* **44**: 855-59.