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Surgical management of a traumatic lateral hernia involving the spleen in a cat: A case report

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Abstract

Traumatic body wall hernias are characterized by protrusion of organs from a body cavity via a traumatically created defect. A one year old, male, Persian cat was presented to the Small Animal Surgery - Out-patient unit of Madras Veterinary College, Chennai, with a history of being attacked by a dog the previous day. On physical examination, a soft, painless, reducible mass with a hernial ring was palpable on the left lateral abdomen. On clinical examination, the pet was normal in habits, therefore, surgical repair of the hernia was opted. A skin incision was made over the mass and the subcutaneous tissue was undermined. The herniated organs were diagnosed as the spleen with omentum. Adhesions between the spleen and the hernial ring were relieved and the spleen was exteriorized to assess vitality. The spleen and omentum were replaced back into the abdominal cavity as no abnormalities were evident. Herniorrhaphy was chosen over hernioplasty. The animal recovered uneventfully and sutures were removed 10 days post-operatively.

Keywords: Traumatic lateral hernia, spleen, cat, herniorrhaphy

Introduction

Traumatic body wall hernias can be defined as the protrusion of any organ(s) through a defect produced by a traumatic episode (usually, dog bite wounds – 40% of the cases, road traffic accidents – 30% of the cases) [1, 2]. As these hernias often occur at sites other than anatomic apertures, they lack a hernial sac and are hence, referred to as false hernias. Blunt trauma is the most common cause, as a blunt force over a large surface area can prevent the penetration of relatively elastic skin but can disrupt deeper, less elastic tissue like muscle and fascia. At times, shearing forces may develop which can produce avulsions of muscle or tendon attachments [1].

While the omentum frequently herniates, the spleen has rarely been observed in external hernias, although relatively common in internal hernias like diaphragmatic [5] (25% of the time [3] / 5.9% of the time [4]) or hiatal hernias [6, 7].

Traumatic hernias are surgically treated to restore continuity to the body wall and prevent strangulation of the herniated organs. Surgery is ideally performed once the animal has been stabilised. Emergency correction is only indicated when signs of incarceration become evident [2, 8, 9]. An abdominal exploration is simultaneously warranted as the incidence of intra-abdominal injuries in such cases is high.

Case history

A one year old, intact male, Persian cat was presented to the Small Animal Surgery - Out-patient unit of Madras Veterinary College, Chennai, with a history of being attacked by a dog the previous day. A swelling on the left lateral abdomen was noticed since the incident. On physical examination, all vital parameters were within normal limits. The swelling was soft in consistency and no pain was evinced during manipulation of the mass. It was reduced into the abdominal cavity and a hernial ring was palpable but the contents of the hernia could not be recognised. Orthogonal radiographs of the abdomen were taken to identify the hernial contents. Radiography revealed an intact diaphragm and a normal abdominal serosal pattern with no vertebral body lesion (Fig. 1). Routine haemogram (Tab. 1) and biochemistry (Tab. 2) were performed which revealed a mild anaemia and moderate thrombocytopenia. As the animal was normal in habits and clinically stable, elective surgical correction of the tentatively diagnosed traumatic lateral hernia was performed.



Fig 1: Ventrodorsal radiograph - The arrow marks the site of the herniated mass. Hernial contents could not be identified as the reducible mass had returned back into the abdomen during radiographic positioning

Table 1: Haemogram- Mild anaemia and moderate thrombocytopenia

Parameter	Value	Normal range ⁽¹⁰⁾
Haemoglobin (g/dL)	8.9	9.8-15.4
PCV (%)	26.5	30-45
RBC (cells/ μ L)	5.386×10^6	$5-10 \times 10^6$
WBC (cells/ μ L)	15.2×10^3	$5.5-19.5 \times 10^3$
Thrombocytes (cells/ μ L)	81×10^3	$300-800 \times 10^3$
DLC (%):		
Neutrophils	74	45-64
Lymphocytes	20	27-36
Monocytes	5	0-5
Eosinophils	1	0-4

Table 2: Biochemistry profile: All parameters are within their respective normal ranges

Parameter	Value	Normal range
Total protein (g/dL)	6.1	5.7-8
Albumin (g/dL)	2.6	2.4-3.8
ALT (IU/L)	202	8.3-53
ALP (IU/L)	46	12-65
BUN (mg/dL)	21.43	14-36
Creatinine (mg/dL)	0.88	0.6-2.4
Glucose (mg/dL)	127	60-120
Calcium (mg/dL)	9.38	8.2-10.8
Phosphorous	5.64	2.4-8.2

The animal was presented on the day of surgery after a 12-hour fasting period. A prophylactic antibiotic, Inj. Ceftriaxone-Tazobactam @ 20 mg/kg I/V, and analgesic, Inj. Meloxicam @ 0.2 mg/kg S/C, were administered and the surgical site was aseptically prepared.

The animal was premedicated with Inj. Butorphanol @ 0.2 mg/kg I/V and Inj. Diazepam @ 0.2 mg/kg I/V. Anaesthesia was induced with Inj. Propofol @ 3 mg/kg I/V and surgical plane of anaesthesia was maintained with Isoflurane @ 2.5% using the non-rebreathing system with oxygen at the appropriate flow rate.

A skin incision was made over the mass and the subcutaneous tissue undermined. Immediately after undermining, the herniated content was identified to be the spleen (Fig. 2) and a portion of the omentum. Evident adhesions were carefully removed (Fig. 3) and the spleen was exteriorized to assess vitality. The head of the spleen was congested (Fig. 4) but with time, returned to normal colour. As the pulsation in all

the main branches of the splenic artery were found to be strong, the spleen was deduced to be vital and was returned to the abdominal cavity with the herniated omentum (Fig. 5). The stomach was then assessed for any associated torsion and both right and left gutters inspected for signs of haemorrhage, possibly from ruptured splenic, gastric or gastrosplenic vessels. No abnormalities were found. As the hernial ring was small in diameter and no tension was evinced, standard herniorrhaphy was performed.



Fig 2: Herniated content: Spleen



Fig 3: Removing the adhesions binding the spleen to the hernial ring

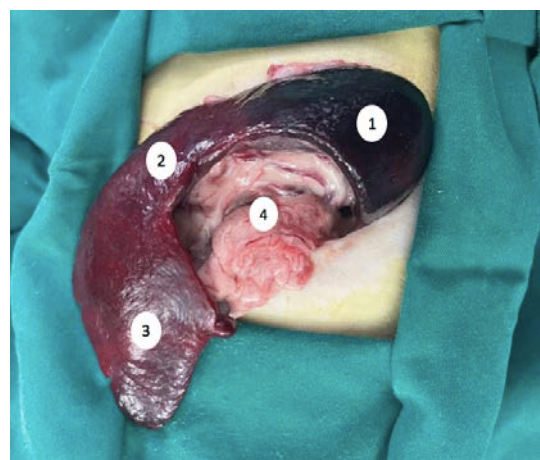


Fig 4: Congested splenic head (1, 2 and 3 are the head, body and tail of the spleen respectively; 4 is the herniated omentum)



Fig 5: After reduction of the herniated contents

Post-operative antibiotic, Syr. Cefpodoxime @ 10 mg/kg PO, OD *post cibum* for 4 days, and analgesic, Syr. Meloxicam @ 0.1 mg/kg PO OD *post cibum* for 2 days were advised. Surgical dressing was changed regularly every 3 days and as healing was uneventful, sutures were removed 11 days post-operatively.

Discussion

In a retrospective study involving 10 cats with traumatic hernias, 60% were males. 40% developed the hernia from bite injuries and 18% of the hernias were located in the lateral paralumbar region^[1]. The organs most frequently involved in abdominal hernias were the omentum (50% of the time)^[1], small intestines and urinary bladder^[2]. 60% of the cats also suffered from concurrent injuries like lacerations, uroabdomen, fractures, etc.^[1]. Haemorrhagic shock can result from liver, kidney or splenic rupture^[8,9].

In strangulated hernias, a midline approach is advised to more effectively evaluate and separate the necrotic from healthy tissue. In reducible hernias, a local approach over the hernial ring is adequate. An extensive area of the skin must be prepared aseptically as the hernial ring is often much further away than anticipated by palpation. For successful herniorrhaphy, suture placement is more important than suture type or pattern. Generous bites of healthy tissue should be incorporated^[9]. Tension dispersing mattress sutures with slowly absorbable or non-absorbable suture material are ideal^[2,9].

In the case presented, no concurrent injuries to the skin like lacerations were observed despite the history of sharp trauma. As the hernia was reducible, an incision over the mass proved sufficient. There arose no necessity to extend the skin incision as the hernial ring was within the limits of the incision, unlike most traumatic hernias. As the spleen was implicated in the hernia, it was examined for lacerations, hematomas, torsion or infarction. No such complications were observed and hence, splenectomy could be avoided.

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