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Clinical Article

SURGICAL MANAGEMENT OF CONGENITAL DIAPHRAGMATIC HERNIA ALONG WITH CRANIAL ABDOMINAL HERNIA IN AN AMERICAN BULLY PUP

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SUMMARY

A two month old male american bully pup was presented to Veterinary Clinical Complex, Hisar with the complaint of a large swelling at the cranio-ventral abdomen just caudal to sternum along with concurrent history of slight respiratory distress, exercise intolerance and inappettance. Radiographic examination of the thorax revealed the herniation of the intestines into the thoracic cavity suggesting diaphragmatic hernia. Based on history and radiographic examination, the case was diagnosed as congenital diaphragmatic hernia and immediate surgical intervention was performed. Diaphragmatic herniorrhaphy was performed after reducing the contents into the abdominal cavity. Animal recovered uneventfully without any reported complications.

Keywords: Congenital, Diaphragm, Hernia

CDH is a common congenital form in pups and is the result of a defect during the prenatal development of diaphragm (Statz *et al.*, 2007).Other congenital anomalies such as hydrocephalus, umbilical hernias, sternal defects, cranial midline abdominal hernias and intra-cardiac defects can be associated with this anomaly (Wright *et al.*,1987) whereas, umbilical hernias being the most frequent finding in canines (Evans and Biery,1980).

A two-month old male bully pup was presented to Veterinary Clinical Complex with the complaint of a swelling at the cranio-ventral abdomen along with concurrent history of respiratory distress, exercise intolerance and inappettance (Fig. 1). On physical examination of the swelling, a large hernial ring was palpable with the contents being reducible in nature. Clinical examination revealed pale mucous membrane and on auscultation of heart muffled sounds were evident. Radiographic examination of the lateral thorax revealed intestinal loops in thoracic cavity (Fig. 2A) suggestive of diaphragmatic hernia. Physiological and hematological parameters were examined and it revealed an elevated respiratory rate and heart rate along with normal haemogram. Thus, on the basis of history, physical and radiographic examination, the case was diagnosed as congenital diaphragmatic hernia along with cranio-ventral abdominal hernia and immediate surgical intervention was undertaken.

The pup was fasted 6-8 hours prior to surgery and was prepared for aseptic surgery as per standard protocol. Inj. Atropine Sulphate @ 0.04 mg per kg b.wt s/c was used as premedicant followed by anesthetic induction with combination of Xylazine hydrochloride @ 1 mg per kg b.wt and Inj. Ketamine Hydrochloride @ 5mg per kg b.wt i/m and maintained on inhalant anesthesia with isoflurane (1-3%) along with intermittent positive pressure ventilation in dorsal recumbency for the rest of the procedure.. Skin over the swelling at the cranio-ventral abdomen was incised and the underlying tissue were bluntly dissected to expose the hernial ring. Further through the incision, the defect in the diaphragm causing the herniation of intestines into the thoracic cavity was evident ventrally on both mid and left side of diaphragm (Fig. 3). The herniated intestine was reduced from thoracic cavity into the abdomen and diaphragmatic herniorrhaphy was performed with Vicryl no:1 in simple continuous appositional suture pattern (Fig. 4). After diaphragmatic herniorrhaphy, the cranial abdominal hernia was also repaired as per standard procedure. Peritoneum, muscles and skin were closed as per routine surgical procedure. Post-operative radiograph revealed the presence of clear cardiac silhouette and diaphragmatic line.

Postoperatively, antibiotics and analgesics were administered parenterally for a period of five days and the owner was advised to monitor the patient for any post-operative complications. Daily wound dressing and application of fly repellant spray was also advised. Sutures were removed 10th day post-operatively and the animal recovered without any complications.

Clinical signs of diaphragmatic hernia are not specific and depend on the degree and nature of herniation. The most frequent clinical signs involve the digestive tract (vomiting, diarrhea, anorexia, weight loss) and the respiratory system (dyspnea, cough, and wheeze) whereas abdominal discomfort or swelling, shock and collapse occur less frequently (Reed and Pennock, 1971). The

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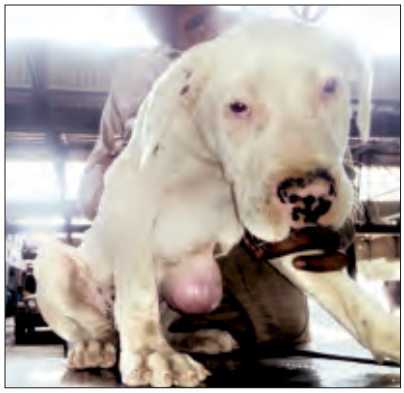

Fig. 1. The pup presented with of cranial-abdominal hernia.

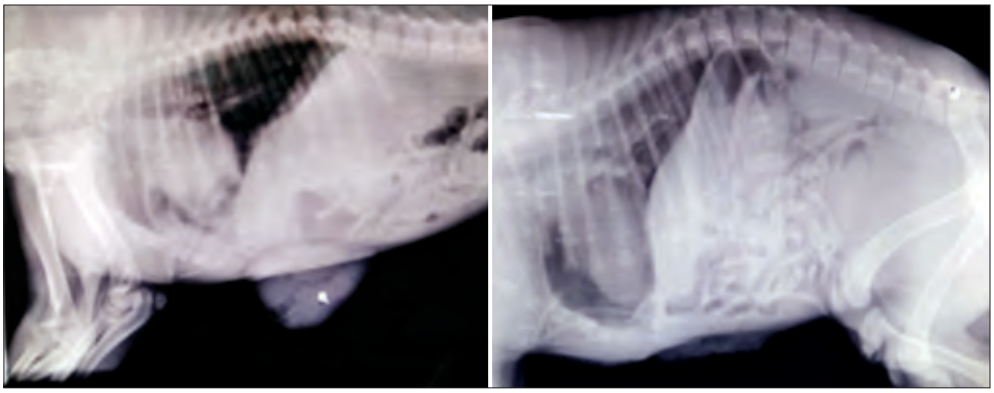

Fig. 2. Pre-operative radiograph showing the presence of loops of intestine in the thoracic cavity (A) and post-operative radiograph after diaphragmatic herniorrhaphy (B).

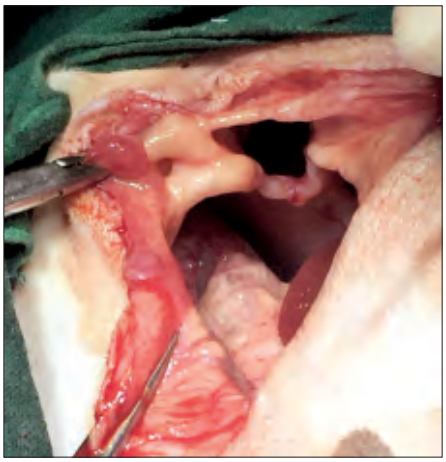

Fig. 3. Image showing the defect in the diaphragm along with herniated intestines in thoracic cavity

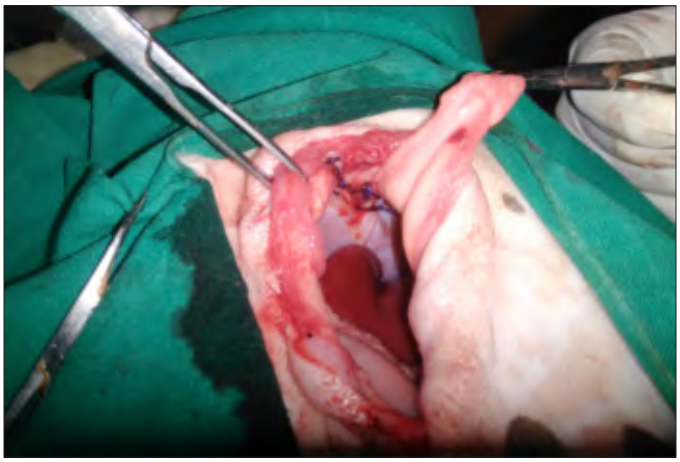

Fig. 4. After complete diaphragmatic herniorrhaphy.

present case also showed similar type of symptoms like respiratory distress, exercise intolerance and inappettance. The most part of patients suffering from diaphragmatic peritoneo-pericardial hernia are identified within the first years of life (48.0%), but a relatively high percentage is identified later, after 8 years of age (6.0%) (Evans and Biery, 1980). In the present case also, the pup was within 6 months of age. Diagnostic imaging facilities like radiography combined with the history and clinical examination facilitated the diagnosis of congenital diaphragmatic hernia.

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