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TWO STAGE SURGICAL MANAGEMENT OF GASTRIC DILATATION AND VOLVULUS IN DOGS

L. Nagarajan, R. Sureshkumar, C. Ramani and K. Ameerjan

Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai, 600 007, India.

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Gastric Dilatation and Volvulus (GDV) in dogs is an acute disease requiring immediate medical and surgical interventions. Treatment of GDV is carried out either immediately as the case is presented or after decompression and stabilization for 2-6 hours (Lantz *et al.*, 1984 and Matthiesen, 1993).This paper reports successful two stage surgical management of GDV in two dogs.

Materials and Methods

A male Great Dane of 4 years weighing 45 kg was brought with a history of unproductive retching. The dog showed a distended abdomen and respiratory distress. The capillary refill time (CRT) was 2.5 seconds. Clinical examination revealed tympanic sound at the epigastric region and an obviously distended stomach. The mucous membrane was severely congested. The dog was presented in lateral recumbency.

The second case was a German shepherd, aged 6 years and weighing 24 kg. The mucous membrane was brick red and the capillary refill time was 3.5 seconds. The dog was in a state of shock with severe respiratory distress. The abdomen was severely distended and marked splenic enlargement was palpable on the ventral abdomen.

Ventro dorsal survey radiograph revealed compartmentalization of the stomach distended with gas and a displaced pylorus indicating presence of volvulus. Both the conditions were diagnosed as GDV and the dogs were prepared for temporary decompression.

As soon as the animals were brought Ringer lactate was administered @ 45ml / Kg for the first one hour. Then the rate of administration was reduced to 15ml/Kg. Dexamethasone was administered @ 2mg/ Kg intravenously. Both the dogs were placed on dorsal recumbency and the area behind the xiphoid was prepared for temporary gastrostomy, lignocaine (2%) was instilled locally. A 2" incision was made on the skin starting from xiphoid extending backwards. The linea alba was incised and omentum was visualized over the severely distended and congested stomach suggestive of gastric volvulus. Generalized congestion of the stomach was noticed in the Great Dane. A small portion of the stomach appeared greyish in the German shepherd. A stab incision was made on the stomach and the gas was slowly relieved. The gastric wall was temporarily sutured with the skin using black braided silk creating a stoma. Vaseline was smeared over the skin to prevent scald that may be created by the gastric secretion. After temporary gastrostomy the animals were

kept under continuous fluid infusion @ 15ml / Kg and ECG monitoring for the signs of cardiac arrhythmias. By 6 hours following temporary decompression both the dogs showed an improved cardio vascular status with a CRT of less than 2 secs, improvement in the colour of the mucous membrane and a normal respiration. Both the dogs were ambulatory. The animals were prepared for a permanent gastropexy.

Glycopyrolate was administered @ 0.01 mg/Kg intra muscularly for premedication. Anaesthesia was induced with propofol to effect intubation and was maintained with isoflurane 2%. The skin incision made for temporary gastrostomy was extended behind umbilicus after removing the stay sutures. The greater omentum covering the stomach was cleaned with saline and retracted back. The stale gastric contents were aspirated and the stomach was thoroughly washed with saline.

The gastric wall in the Great Dane appeared viable and the gastrotomy incision was closed with PDS I/0 using Connell's suture pattern. In the German shepherd, a portion of the gastric wall was necrosed and hence a partial gastrectomy was performed. The wound edges were then closed with PDS 1/0 using Connell's suture pattern.

Subsequently, detorsion of the stomach was brought about. A stomach tube was inserted to confirm effective de rotation. A 1" sero muscular incision was made on the gastric wall near the pyloric antrum and another incision on the transverse abdominis at the 11th inter costal space on the right side. Incisional gastropexy was performed by suturing the incision on the gasric wall with the incision on the transverse abdominis. The abdomen and the skin were closed in the routine manner.

Results and Discussion

The timing of surgery for permanent gastropexy depends on many factors and still remains controversial. Some authors prefer immediate surgery while the others advocate prolonged stabilization period as long as 12-48 hours after temporary decompression. (Warshaw and Johnson, 1976 and Wingfield, 1981). A greater threat for surgery is the anaesthetic risk of the compromised patient. Cardiac output and arterial blood pressure are greatly reduced in GDV due to compression of inferior vena cava and portal vein (Orton and Muir, 1983). These pathophysiological changes make anaesthesia of these patients challenging. Both the animals showed marked improvement in the cardio vascular status exhibited by improvement in CRT, colour of the mucous membrane, strong pulse following decompression and stabilization therapy and the animals were ambulating by 6 hours.

The improvement in the colour of the gastric wall following temporary gastrostomy indicated, in both the cases, that decompression and volume replacement has aided in better perfusion of the stomach due to an improved cardio pulmonary function. However, the small grayish area in the German shepherd did not show any change in colour and was necrosed. While a 360° volvulus, which most affected dogs do not have, is reported to interfere with gastric venous drainage, effects of lesser degree of volvulus are unknown (Lantz, 1984).

The second stage gastropexy was performed immediately after 6 hours in both

the cases to avoid the risk of encountering cardiac arrhythmias which are reported to occur 12-36 hours after presentation. (Muir and Banagura, 1984 and Muir and Lipowitz, 1978).

Both the dogs developed ventricular pre mature contractions (VPC) 6 hours after gastropexy. Cardiac grade Lidocaine was administered intravenously @ 2 mg/kg as a bolus. The Great Dane had 4 episodes of ventricular premature contractions which responded immediately to bolus intra venous injections of Lidocaine. The German shepherd had persistent VPC which was managed by continuous intra venous infusion of Lidocaine for 12 hours @ 0.04 mg/kg as recommended by Muir and Banagura (*loc.cit*). Signs of lidocaine toxicity like vomitting, muscle tremors or convulsions were not observed in both the cases.

In addition to cefatoxime, a broad spectrum antibiotic, both the animals were given oral potassium chloride, intra venous amino acids and intra muscular ranitidine to counter and treat hypokalaemia, hypoproteinaemia and gastric mucosal injury due to excess acid production which are the commonly encountered complications following GDV. (Matthiesen, 1993). The Great Dane was started on liquid food 24 horus after surgery and the German shepherd was started on oral alimentation 48 hours after surgery owing to the partial gastrectomy performed. The Great Dane resumed normal gastro intestinal motility exhibited by borborygmus, and passed motion 12 hours after feeding. The German shepherd did not pass the stools even 36 hours after feeding and did not show signs of GI motility, probably due to hypo motility induced by gastric necrosis. This was managed by subcutaneous administration of 10mg of metaclopromide twice daily for 2 days. Barring the aforementioned complications both the animals recovered well and the sutures were removed on the 12th post operative day.

Summary

A successful two stage surgical management of Gastric Dilatation Volvulus complications encountered are reported and discussed. The first stage decompression of the stomach proved to be very helpful in successful II stage gastropexy. The stabilization period of 6 hours was also found to be optimum since no cardiac arrhythmias were encountered during surgery and both animals were ambulatory at the end of the stabilization period.

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