Clinical Article

Surgical Management of Gastric Dilation and Malposition Complicated with Splenic Torsion in a German Shepard dog

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Abstract

This case reviews the successful outcome of gastric decompression and gastropexy as a surgical management approach for gastric dilation and volvulus (GDV) in a 10-year-old male German Shepherd dog. The pet, weighing 28 kg, was referred from the district veterinary hospital with a history of sudden onset of restlessness, retching, tachypnoea and hypersalivation 30 minutes post feeding. The dog was stabilized with intravenous fluids, cefotaxime @ 50mg/kg b.wt., meloxicam @ 0.2mg/kg b.wt. A 16-gause needle was used to decompress the distended stomach from the right flank. Right lateral radiograph revealed a gas distended stomach containing radio-opaque material; the spleen was pushed caudoventrally suggestive of splenic torsion. Midventral celiotomy under general anaesthesia confirmed gastric dilation with malposition accompanied by splenic torsion. The stomach and the spleen were successfully de-rotated and repositioned to their normal anatomical locations. The dog recovered uneventfully, with no complications or recurrence observed during the two months follow-up period.

Keywords: *Emergency surgery, Gastric dilation volvulus, Splenic torsion*

Gastric dilation-volvulus (GDV) is a gross gas or fluid distension of the stomach, accompanied by mal-positioning, which causes pathology of multiple organs. It commonly affects large or giant breeds of dogs (Broome & Walsh, 2003). Purebred dogs over 3 years of age, either large or giant breeds weighing 30 kg, have been found more susceptible to developing GDV. The ingestion of foreign bodies, diarrhoea, and grass consumption were also associated with an increased likelihood of developing GDV (di Virgilio et al., 2020). In addition to age, body weight, and neuter status, thoracic conformation of the dog has also been reported as an important determinant of susceptibility to GDV (Glickman et al., 1994). Non dietary risk factors for GDV include increasing age, previous history of GDV, fast eating, and feeding from a raised feeding bowl especially in large and giant breed dogs (Glickman et al., 2000a). Splenic torsion is a potentially life threatening condition, most commonly associated with GDV wherein large or giant breed and deep chested dogs like German Shepherds and Great Danes are commonly affected (Mai, 2006). Splenectomy is the only recommended procedure in dogs with chronic splenic torsion when the vascular pedicle cannot be untwisted due to fibrosis, splenic rupture, or

vascular thrombosis; however, this was not the case in the present study. This case study reviews the successful outcome of gastric decompression and gastropexy as a surgical management of GDV complicated with splenic torsion in a 10-year-old male German Shepherd dog.

History and Clinical Findings

A ten-year-old male German shepherd dog was referred in a recumbent position from a District Veterinary Hospital with a history of consuming meat mixed with rice. After 30 minutes of feeding, the dog exhibited symptoms of retching, lethargy, tachypnoea, hypersalivation and defecation. Physical examination revealed enlarged abdomen, tachycardia (182/minute), prolonged capillary refill time (>3 seconds), pale mucus membrane, and hypersalivation. Based on the history and typical clinical signs, the condition was tentatively diagnosed as GDV.

Radiographic Findings

A right lateral radiograph revealed a large, distended, gas-filled gastric shadow pushing the liver cranioventrally and the diaphragm cranially. Additionally, there was craniodorsal displacement of the pylorus and as shown in Fig. 1. The condition was confirmed as GDV based on the radiographic lesions such as presence of marked gastric gas and mispositioning of the spleen.

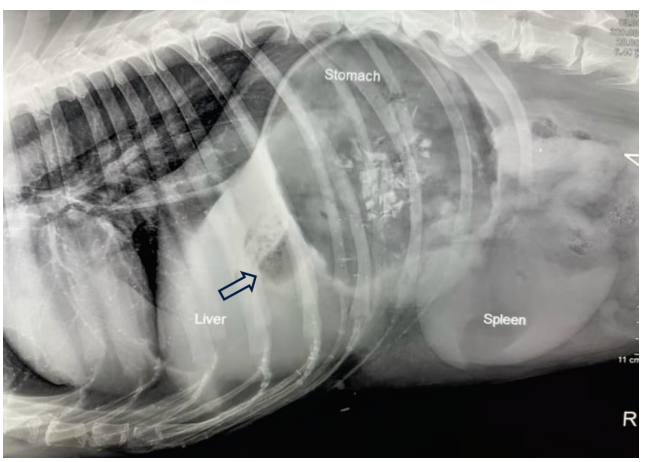

Fig. 1. Right lateral radiograph showing gastric pneumatosis with malpositioning of the pylorus (black arrow) and spleen

Preoperative Treatment and Stabilization

The dog was stabilized with intravenous fluids (Ringer's Lactate @ 60 ml/kg body weight) to correct hypovolemia and electrolyte imbalance. To alleviate pain and discomfort, inj. Meloxicam was given @ 0.2mg/kg, intravenously, along with inj. Cefotaxime @ 50mg/kg twice daily.

Anaesthesia and Surgical Procedure

The dog was premedicated with inj. Xylazine (1mg/kg) and inj. Atropine sulphate (0.04 mg/kg), IM. The anaesthesia with induced a combination of inj. Ketamine (5mg/kg) and inj. Diazepam (0.5 mg/kg), intravenously, till effect. Anaesthesia was maintained through incremental doses of injection Ketamine-Diazepam combination. Preoperatively, stomach decompression through gastrocentesis using a 16-gauge needle was unsuccessful. An exploratory midventral celiotomy was performed, further confirming the condition as the pylorus was moved ventrally across the left side with 360-degree torsion. Before correcting the gastric torsion, the stomach was decompressed via gastrocentesis intraoperatively. The twisted spleen was de-rotated to its normal position, and upon evaluation, no ischemic necrosis was observed. The stomach was then returned to its normal position and an incisional gastropexy was performed using 1.0 Polyglactin interrupted sutures to prevent recurrence.

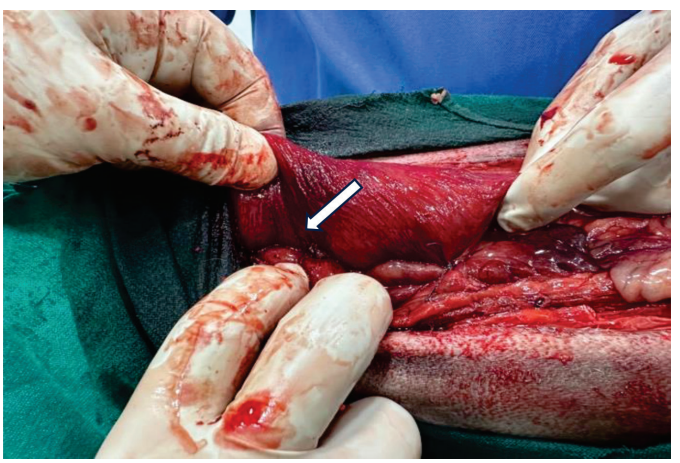

Fig 2. Placement of gastropexy sutures (Arrow)

Postoperative Care and Management

Postoperative follow-up was done for 5 days with intravenous dextrose normal saline and Ringer's lactate @ 60 ml/kg, daily wound dressing, cefotaxime @ 50mg/kg and meloxicam @ 0.2 mg/kg was given for 3 days. The owner was advised to feed the dog a liquid- based diet starting from the fourth postoperative day. Right lateral radiograph on the 15th day post operative showed stomach with mild gas in the cranial abdomen (Fig. 4). The gastric axis appeared normal. The tail of the spleen was observed in the midventral abdomen. Small intestinal segments were collapsed with small amount of gas in few segments. The dog showed progressive recovery with no complications.

Discussion

Gastric dilatation and volvulus is commonly encountered in deep-chested dogs

Fig 3. Right lateral radiograph of abdomen on post operative day 15 showing normal stomach and spleen

characterized by gastric distension and malpositioning of the pylorus and the spleen as in the present case. Radiography is the key diagnostic aid to confirm the disease typically indicated by a double bubbled appearance due to accumulation of air in the fundus and pylorus (Murugan et al., 2023). However, this characteristic feature was not observed in this study. Instead, a gas-filled stomach along with craniodorsally displaced pylorus accompanied with splenic malposition was evident on the right lateral radiograph confirming GDV. Although, blood and biochemical profiles could not be established considering the urgency of the case, previous studies have consistently reported findings of stress leucogram, reduced PCV and hypokalaemia.

Przywara et al., (2014) reported a case fatality rate ranging from 33% to 68% with or without volvulus. Similarly, Glickman et al., (2000b) reported 30 deaths (26.8%) out of 105 dogs with GDV and found that the incidence of GDV increases with age. Furthermore, elevated gastrin level, impaired stomach motility, and prolonged gastric emptying time have been identifies as potential risk factors. Tselepidis & Stournara (2008) documented a higher frequency of GDV-associated sudden death in German Shepard dogs compared to other breeds, however the dog under study recovered uneventfully without any complications. Kumar et al. (2021) reported a comparable outcome emphasising that early diagnosis, effective management and proper postoperative care contribute towards an uneventful recovery in GDV affected dogs. The results of this study also corroborate with the findings of Dujowich and Reimer (2008) who stated that, early recognition of GDV and rapid gastric decompression ensures a good prognosis. Furthermore, appropriate decision-making and management can help to achieve a success rate of up to 95% in GDV cases uncomplicated by gastric necrosis (Tivers & Brockman, 2009).

Reference

Broome, C. J., & Walsh, V. P. (2003). Gastric dilatation-volvulus in dogs. *New Zealand Veterinary Journal*, 51(6), 275-83.

di Virgilio, F., Rabaioli, E., Gualtieri, M., & Formaggini, L. (2020). Observations and analysis of risk factors for GDV in a single institution: a case-control study. *Journal of Veterinary Healthcare*, 2(1), 16-40.

Glickman, L. T., Glickman, N. W., Perez, C. M., Schellenberg, D. B., & Lantz, G. C. (1994). Analysis of risk factors for gastric dilatation and dilatation-volvulus in dogs. *Journal of the American Veterinary Medical Association,* 204(9), 1465-71.

Glickman, L. T., Glickman, N. W., Schellenberg, D. B., Raghavan, M., & Lee, T. (2000a). Non-dietary risk factors for gastric dilatation-volvulus in large and giant breed dogs. *Journal of the American Veterinary Medical Association*, 217(10), 1492-99.

Glickman, L. T., Glickman, N. W., Schellenberg, D. B., Raghavan, M., & Lee, T. L. (2000b). Incidence of and breed-related risk factors for gastric dilatation-volvulus in dogs. *Journal of the American Veterinary Medical Association*, 216(1), 40-45.

Mai, W. (2006). The hilar perivenous hyperechoic triangle as a sign of acute splenic torsion in dogs. *Veterinary Radiology & Ultrasound*, 47(5), 487-91.

Przywara, J. F., Abel, S. B., Peacock, J. T., & Shott, S. (2014). Occurrence and recurrence of gastric dilatation with or without volvulus after incisional gastropexy. *The Canadian Veterinary Journal*, 55(10), 981-84.

Tselepidis S, & Stournara A. (2008). Gastric dilatation-volvulus cases in military working dogs. A retrospective study. *Balkan Military Medical Review*, 11(3),108-11.

Kumar, P. R., Mallikarjunarao, C. H., & Srikala, D. (2021). Surgical Management of Gastric Dilatation and Volvulus in Dogs. *The Pharma Innovation Journal*, 10(2), 12-15.

Dujowich, M., & Reimer, S. B. (2008). Evaluation of an endoscopically assisted gastropexy technique in dogs. *American Journal of Veterinary Research*, 69(4), 537-41.

Tivers, M., & Brockman, D. (2009). Gastric dilation–volvulus syndrome in dogs: 2. Surgical and postoperative management. *In Practice*, 31(3), 114-21.