Surgical Case Report:

Hiatal Hernia

**EMPHASIS:**

Hiatal hernia is a rare cause of chronic vomiting in the dog. Two types of hiatal hernias are reported in humans:

a. the paraesophageal hiatal hernia in which the gastric fundus passes through the esophageal hiatus (this hernia is very rare in dogs).

b. the sliding hiatal hernia in which the abdominal portion of the esophagus, along with the cardia and fundus of the stomach, move forward into the thorax.

(See Figure 1)

The signs may be intermittent, since the involved tissues can slide back into a normal position and forward through the esophageal hiatus intermittently. Confirming the diagnosis may, therefore, be a challenge.

In humans fundoplication can be performed, wrapping a portion of the stomach around the abdominal portion of the esophagus. This prevents recurrent herniation, and minimizes reflux esophagitis by creating external compression of the esophagus at this level. This procedure is technically demanding and has various possible complications in the dog.

We prefer to surgically stabilize this type of hernia by performing a double gastropexy. This technique maintains the stomach properly within the abdomen while avoiding the complications associated with surgical manipulation of the esophageal hiatus and gastroesophageal junction. This paper will describe the diagnostics and surgical treatment for a sliding hiatal hernia.

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*Figure One:* This schematic drawing depicts **A)** the anatomical landmarks of the stomach. **B)** the sliding hiatal hernia from the stomach into the lumen of the esophagus. **C)** the sliding hiatal hernia as seen from a left thoracic view.
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PREOPERATIVE DIAGNOSTICS:

1. Complete physical examination.
3. Two view thoracic and abdominal radiographs:
   a. caudodorsal mass effect in the mediastinum
   b. megaesophagus
   4. Contrast radiography.
   5. Barium fluoroscopy.
      a. Barium swallow: this will also help reveal any esophageal motility disorders.

AXIOM: Look for signs of pneumonia secondary to chronic vomiting.

DANGER:
Since the hernia can be intermittent, radiographs may reveal no abnormalities.

4. Contrast radiography.
5. Barium fluoroscopy.
   a. Barium swallow: this will also help reveal any esophageal motility disorders.

AXIOM: Biopsy the stomach and small intestine to rule out inflammatory bowel disease.

AXIOM: All other causes of vomiting should be identified and treated, before concluding that surgery is required.

PREOPERATIVE CARE:

1. Indwelling cephalic catheter.
2. Intravenous anesthetic induction protocol (Ketamine/Valium, Propofol, etc.)
3. Endotracheal intubation and inflate cuff.
4. Isoflurane inhalant anesthesia to effect.
5. Lead II ECG and pulse oximetry monitoring during prep and surgery.
6. Clip and prepare the abdomen for aseptic surgery.
7. Place the patient in dorsal recumbency.
8. Cephalexin 20mg/kg IV immediately preoperatively.

SURGICAL PROCEDURE:

1. Midline abdominal approach, from xiphoid to umbilicus.
2. Drape in the incision edges with suturing or Michel wound clips.
3. Remove the falciform ligament.

DANGER:
Make sure to achieve adequate hemostasis at the cranial portion of the falciform ligament as it disappears under the xiphoid cartilage. Hemorrhage in this area can be hidden from the surgeon’s view.

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4. Visualize the esophageal hiatus, retracting the liver lobes as necessary.

5. Gentle traction on the stomach will reduce the hernia.

**AXIOM:** A single gastropexy, at the body of the stomach, could allow recurrent herniation of the fundus. Therefore, two gastropexies will be performed: one at the gastric fundus and another at the gastric body.

6. Grasp the middle portion of the fundus, near the greater curvature, and retract this towards the left abdominal wall, to identify the proper location for the gastropexy incision on the abdominal wall. (see Figure 2).

**AXIOM:** The ideal location is the point where the stomach will not be under significant tension, but all the slack has been taken up in the gastric wall so there is no laxity which could permit recurrent herniation (see Figure 3).

7. Perform the gastropexy:
   a. Make a U-shaped incision in the peritoneum and abdominal muscle wall (see Figure 4).
   b. Open the peritoneum/muscle flap, and place mattress sutures of 2-0 polypropylene suture (using a taper-point needle) to draw the stomach into the defect thus created.
   c. Place two mattress sutures at the deepest point of the flap, to draw the stomach further in (see Figure 4).
   d. Suture the corners of the flap onto the serosa of the stomach. This will maximize the surface area in contact with the stomach, creating a strong gastropexy.

**AXIOM:** This gastropexy will prevent the fundus from herniating. However, this alone does not adequately restrain the distal esophagus and cardia, and could allow a small degree of herniation of this region to occur. A second gastropexy, at the gastric body, will eliminate this risk.

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8. Grasp a portion of the body of the stomach, approximately one-third of the distance along the gastric curvature (see Figure 5) and retract it towards the left abdominal wall, caudal to the previously completed gastropexy.

AXIOM: Again, identify the location where the gastropexy will be as far caudally as possible without creating excessive tension at the gastropexy site.

9. Perform a muscular flap gastropexy at this level as described above.

10. Routine abdominal, subcutaneous, and skin closure.

POSTOPERATIVE CARE:

1. Pain management as needed using injectable, oral or transdermal analgesic.

2. Medical management as needed for any esophagitis that may be present.

3. Antiemetics as needed.

4. If esophagitis, gastritis, or inflammatory bowel disease is present, treat as needed.

5. Suture removal 14 days postoperatively.

PROGNOSIS:
In our experience, the great majority of patients respond well to this procedure. Since there is no surgical manipulation of the esophagus, esophageal hiatus, or cardia, the risk of complications is minimal.

AUTHOR’S NOTE
If you have any questions concerning this paper, additional references, surgical supplies or sources of products mentioned or used in this protocol, please FAX us at 1-310-479-8976. We will answer your questions promptly.

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