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## What's Your Radiographic Diagnosis?

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# What's Your Radiographic Diagnosis?

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## HISTORY

A four-year-old intact female Schnauzer was referred to the Iowa State University Veteri-

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nary Teaching Hospital for cardiac work-up after radiography of the spine indicated an enlarged cardiac shadow. The patient's clinical signs included hind limb weakness and some pain on palpation of the lumbar area. No murmurs were present; heart sounds were faint on auscultation. Thoracic radiographs and a barium swallow were made.

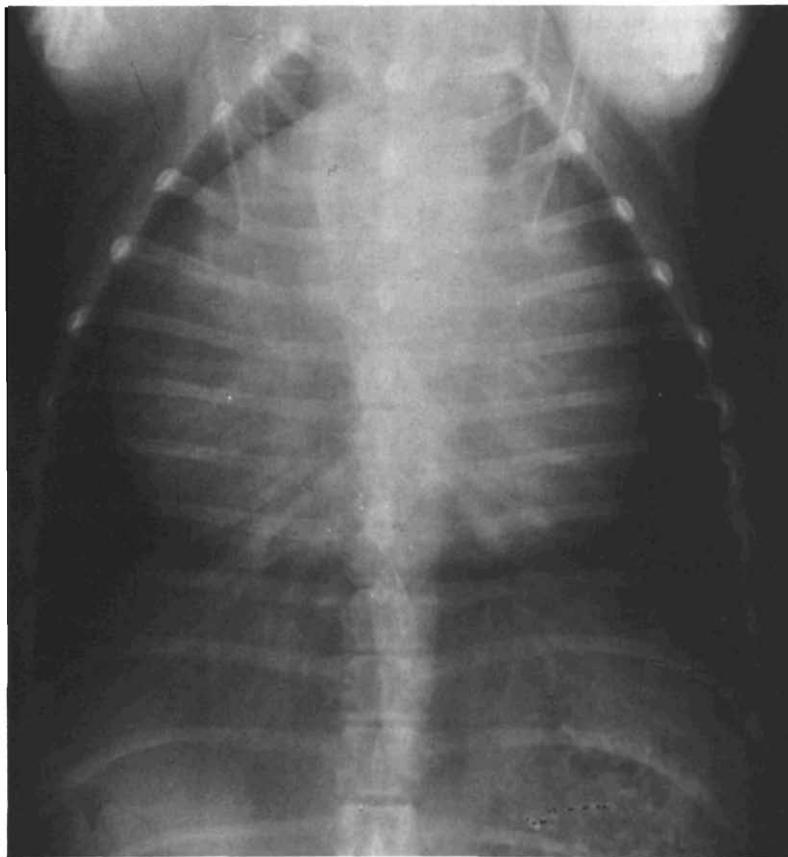
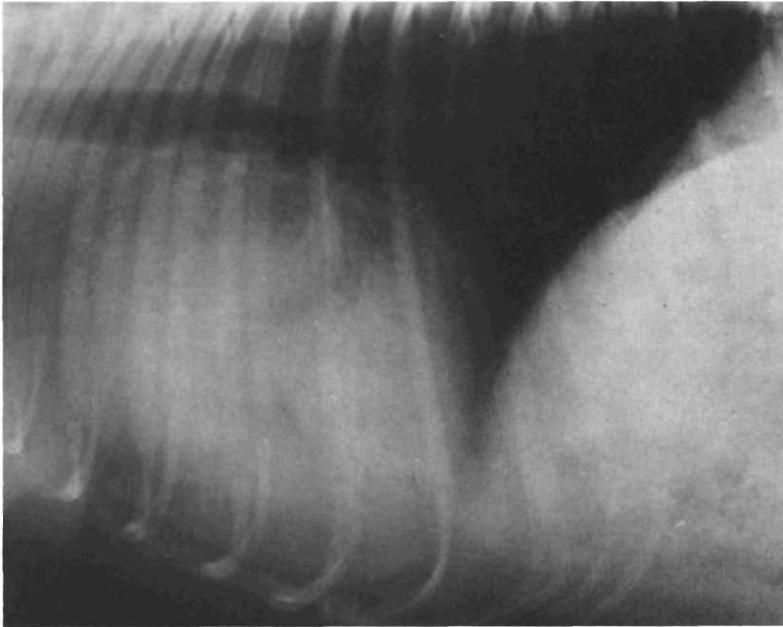
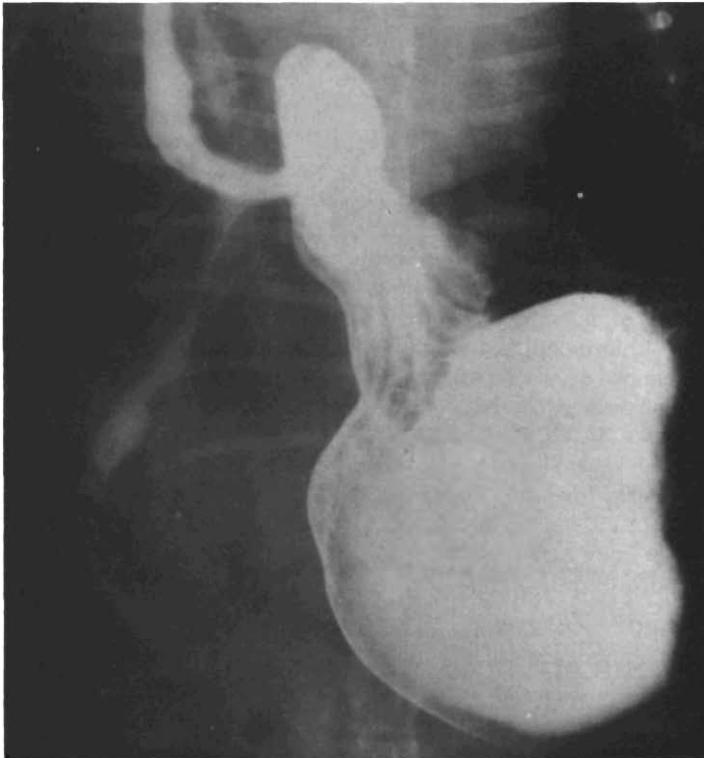


Fig. 1. Survey film: dorsoventral view of thorax.



**Fig. 2.** Survey film: lateral view of thorax.



**Fig. 3.** Barium study: dorsoventral view of thorax.

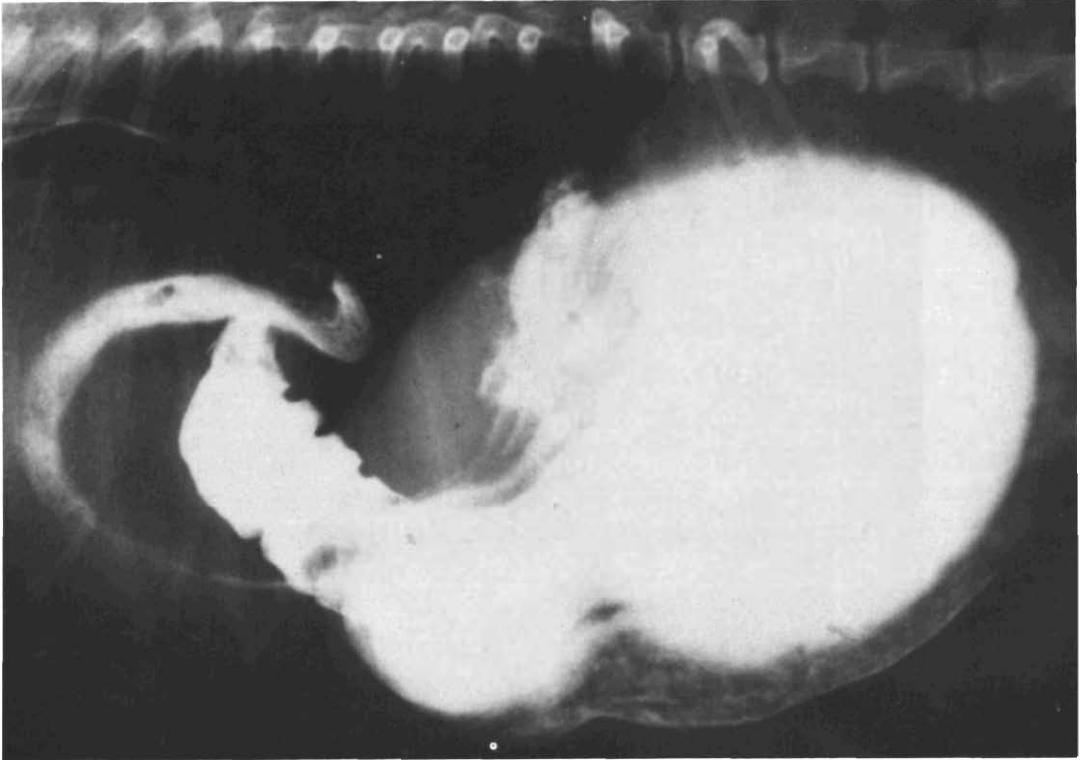


Fig. 4. Barium study: lateral view of thorax.

### RADIOGRAPHIC SIGNS

Survey radiographs (Figures 1 and 2) showed a rounded, greatly enlarged cardiac shadow. Non-uniform densities were seen within the cardiac shadow on the lateral view, suggesting that tissues of different x-ray attenuation were present. Fluoroscopic examination showed cardiac pulsations occurring only at the cranial-most aspect of the cardiac shadow. The barium study (Figures 3 and 4) showed displacement of the pyloric canal and part of the duodenum into the pericardial sac. The cranial displacement of the spleen and colon suggested that part of the liver may also have been located within the pericardium.

### RADIOGRAPHIC DIAGNOSIS

*Discussion:* This is a peritoneopericardial diaphragmatic hernia, a congenital defect of development of both the pericardium and diaphragm. Incomplete fusion of the pleuro-

pericardial membranes and inadequate development of the cupula of the diaphragm cause a permanent communication between the pericardial and peritoneal cavities. Herniation of variable amounts of the liver, omentum, or stomach may then occur. These "true" herniations may be clinically silent for long periods of time. When clinical signs are present they may relate to the respiratory tract (dyspnea/tachypnea due to compressed and compromised lungs), GI tract (vomiting, particularly if a small foreign body is present in the displaced stomach or duodenum), or cardiovascular system (shock, collapse due to decreased cardiac output or venous return).

*Outcome:* Surgical exploration identified two liver lobes, the gall bladder, the cranial part of the duodenum, pancreas, and pylorus of the stomach within the pericardial sac. The diaphragmatic defect (5 cm × 3 cm) was successfully repaired. The patient recovered uneventfully.