

## What Is Your Diagnosis?

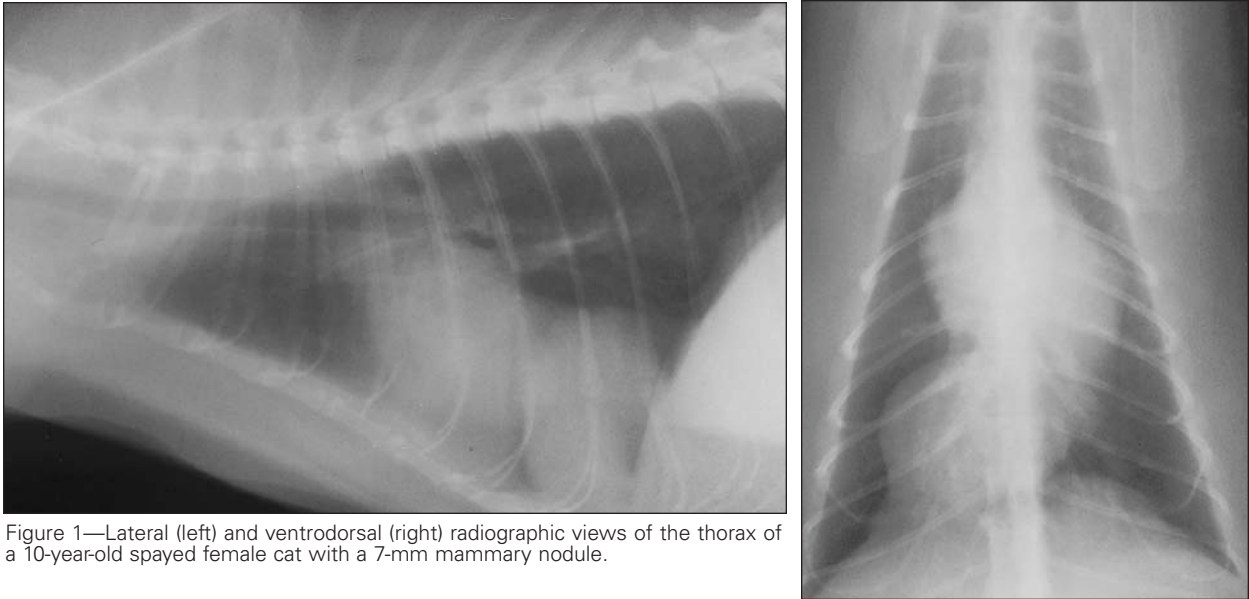


Figure 1—Lateral (left) and ventrodorsal (right) radiographic views of the thorax of a 10-year-old spayed female cat with a 7-mm mammary nodule.

### History

A 10-year-old spayed female domestic shorthair cat was evaluated because of a mammary mass that had first been detected during a routine office visit. Physical examination revealed a 7-mm firm, mobile, subcutaneous nodule caudal to the third nipple on the left side. Radiographs of the thorax were obtained to rule out metastatic disease (Fig 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page ▶

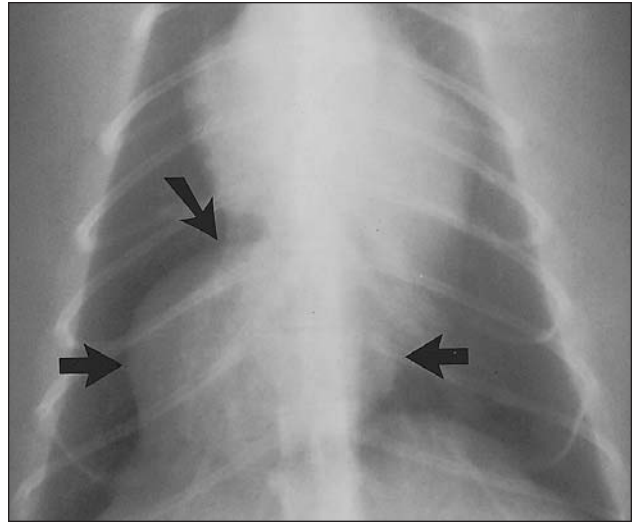
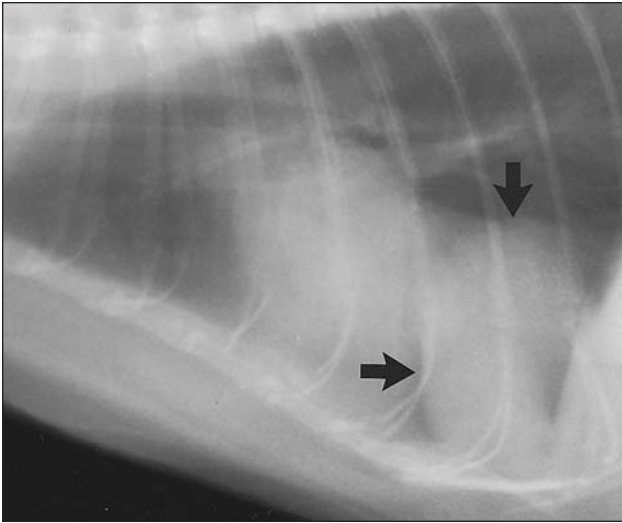


Figure 2—Same radiographic views as in Figure 1. A circumscribed 3.5-cm soft-tissue mass (arrows) is evident in the ventral region of the thoracic cavity between the heart and the right crus of the diaphragm.

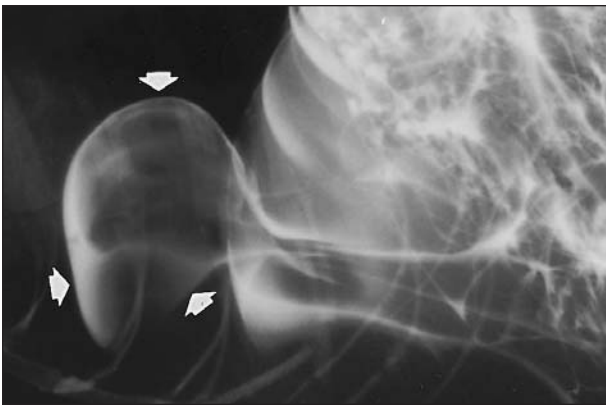


Figure 3—Lateral radiographic view centered over the diaphragm of the cat described in Figure 1, obtained after intraperitoneal injection of 20 ml of iohexol. Notice the contrast-enhancing sac-like protuberance evident in the caudal region of the thoracic cavity (arrows).

## Diagnosis

**Radiographic diagnosis**—A circumscribed 3.5-cm soft-tissue mass in the ventral region of the thoracic cavity between the heart and the right crus of the diaphragm (Fig 2).

## Comments

Differential diagnoses for a soft-tissue mass in the thoracic cavity include diaphragmatic hernia or, less likely, a pulmonary mass. Radiographs were obtained after the cat received an intraperitoneal injection of 20 ml of iohexol. A sac-like protuberance containing a multilobulated structure outlined with contrast material was evident extending from the diaphragm into the caudal region of the thoracic cavity (Fig 3). These findings were consistent with a diagnosis of diaphragmatic hernia.

Thoracic ultrasonography was performed to obtain a fine-needle aspirate of herniated abdominal contents; cytologic evaluation of the aspirate revealed hepatocytes. Cytologic evaluation of a fine-needle aspirate of the mammary mass revealed epithelioid neoplasia. A unilateral chain mastectomy with inguinal

lymph node dissection was performed. Results of histologic evaluation of the mammary mass were consistent with a diagnosis of ductular ectasia and carcinoma in situ. Two years after surgery, the mammary mass had not reoccurred, nor was there evidence of pulmonary metastatic disease. The radiographic appearance of the diaphragmatic hernia also had not changed.

Diagnosis of diaphragmatic hernia from survey radiographs can be difficult if there is excessive pleural effusion or if the hernia comprises parenchymal abdominal organs (ie, liver or spleen). A soft-tissue mass that silhouettes with the diaphragm may be the only roentgenographic sign. Positive contrast peritoneography (celiography) is a quick, simple, minimally invasive means of determining diaphragmatic integrity.<sup>1,2</sup> Finding contrast material within the pleural cavity is usually indicative of a diaphragmatic tear. However, diaphragmatic hernia may be incorrectly diagnosed if contrast material is inadvertently spilled onto the patient or injected into the thoracic cavity, or if the patient has a paracostal hernia and intercostal tear rather than a true diaphragmatic hernia.<sup>1,2</sup> Alternatively, the diagnosis may be missed if viscera occlude the diaphragmatic defect or excessive effusion dilutes the contrast agent.<sup>1,2</sup> Contraindications for performing positive contrast peritoneography include known hypersensitivity to iodinated contrast agents, hypovolemia, and peritonitis. Ultrasonography may also be used to aid in the diagnosis of diaphragmatic hernia.<sup>3</sup>

1. Rendano VT. Positive contrast peritoneography: an aid in the radiographic diagnosis of diaphragmatic hernia. *J Am Vet Radiol Soc* 1979;20:67-73.

2. Stickle RL. Positive-contrast celiography (peritoneography) for the diagnosis of diaphragmatic hernia in dogs and cats. *J Am Vet Med Assoc* 1984;185:295-298.

3. Stowater JL, Lamb CR. Ultrasonography of noncardiac thoracic diseases in small animals. *J Am Vet Med Assoc* 1989;195:514-520.

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