

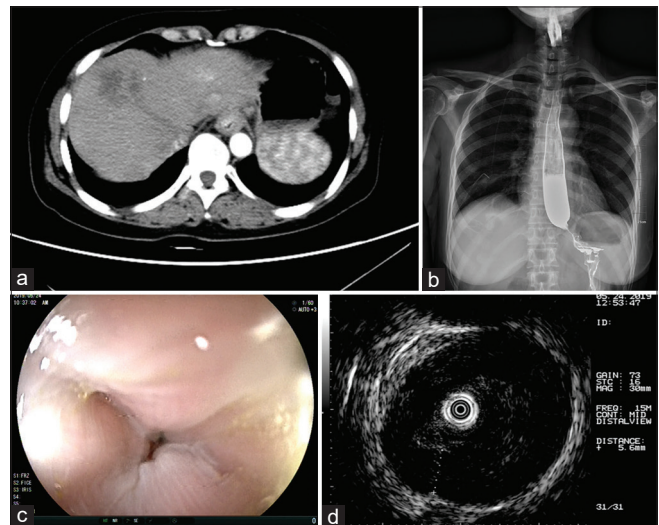
# An unusual case: Pseudoachalasia caused by metastatic ovarian cancer

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A 51-year-old woman was referred to our hospital with a 6-month history of progressive dysphagia and 20 pounds weight loss. This patient was diagnosed with ovarian cancer (OC) 12 years ago and underwent radical operation. Her disease had recurred 7 years prior to presentation, and she was currently on bevacizumab and docetaxel. The contrast-enhanced computed tomography demonstrated that abnormal thickening of gastric wall in cardia area [Figure 1a]. A barium study showed esophageal dilatation, delayed esophageal emptying, and tapering of the distal esophagus consistent with achalasia (“Bird’s beak” appearance) [Figure 1b]. Gastroscopy revealed mild stenosis from the lower esophagus to the cardia [Figure 1c]. The esophageal mucosa was normal, and multiple biopsy samples did not show any abnormality.

However, the patient had a past medical history of OC recurrence and no mucosal lesions were found in endoscopy, endoscopic ultrasonography (EUS) was performed to evaluate submucosal lesions. Mini-probe endoscopic ultrasonography demonstrated that the normal structure of the esophagus at the stenosis disappeared and was replaced by a hypoechoic, circumferentially, thickened lesions. The



**Figure 1.** (a) Contrast-enhanced computed tomography showed that hepatic metastasis of ovarian cancer, multiple enlarged lymph nodes in paraesophageal and retroperitoneal cavity, and abnormal thickening of gastric wall in cardia area. (b) A barium study showed esophageal dilatation, delayed esophageal emptying, and tapering of the distal esophagus consistent with achalasia (“Bird’s beak” appearance). (c) Endoscopy showed mild stenosis from the lower esophagus to the cardia, and the esophageal mucosa was normal. (d) Mini-probe endoscopic ultrasonography demonstrated that the normal structure of the esophagus at the stenosis disappeared and was replaced by a hypoechoic, circumferentially, thickened lesions. The thickest lesion was 5.6 mm, and the serosa layer was incomplete

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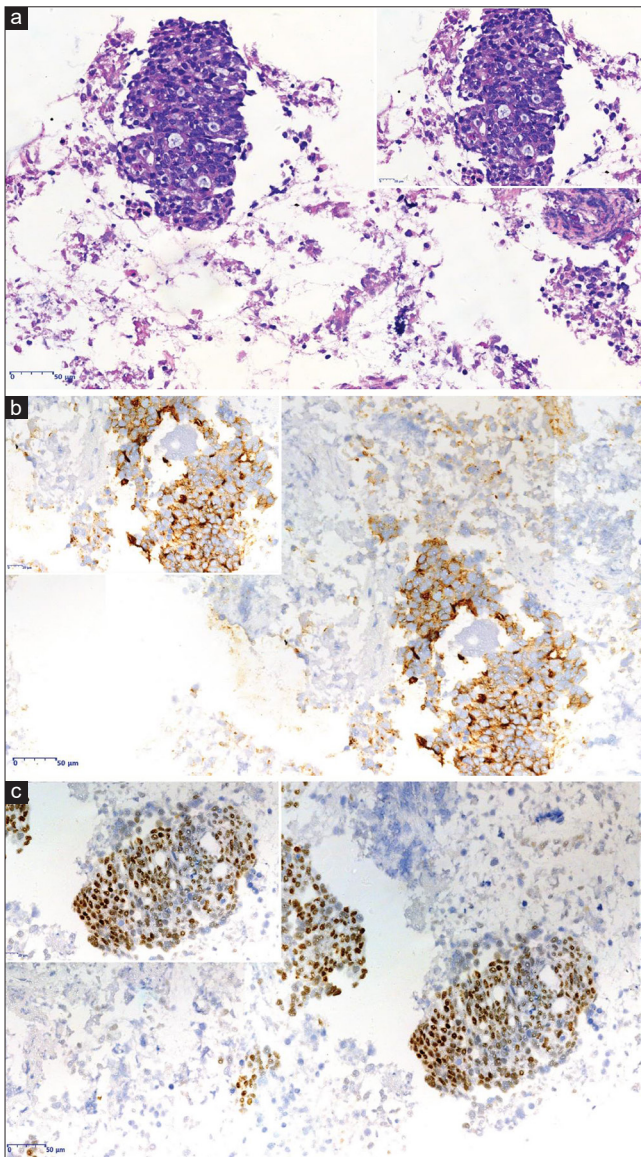
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**Figure 2.** H and E staining and immunohistochemical staining of the FNA specimen. (a) Cell block preparation showed mild nuclear atypia and a papillary arrangement (HE,  $\times 200$ ); inset (HE,  $\times 400$ ). (b) Positive anti CA125 staining ( $\times 200$ ); inset ( $\times 400$ ). (c) Positive anti PAX8 staining ( $\times 200$ ); inset ( $\times 400$ )

thickest lesion was 5.6 mm, and the serosa layer was complete [Figure 1d]. To clarify the nature of esophageal submucosal lesions, endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) was performed using a 19 G needle. The immunohistochemistry of samples showed positivity for CK7, CK125, WT1, PAX-8, and negativity for CK20 [Figure 2a-c]. Considering her past history of OC, this examination was in favor of an ovarian origin of metastatic carcinoma. Consequently, the

patient was diagnosed with pseudoachalasia secondary to metastatic OC.

The achalasia refers to a motility disorder characterized by loss of peristalsis in the lower two-thirds of the esophagus and impaired relaxation of the lower esophageal sphincter. Pseudoachalasia resembles primary achalasia in terms of clinical, radiologic, and endoscopic findings.<sup>[1]</sup> The most common etiology of pseudoachalasia is primary cardia-esophageal adenocarcinoma, but metastatic disease rarely is implicated in pseudoachalasia, and few of these cases involve OC.<sup>[2]</sup> This article is the first reported case of pseudoachalasia resulting from metastatic OC, but also the first reported case of posterior mediastinal metastasis of OC diagnosed by EUS-FNA.

This article presents that EUS and EUS-FNA are valuable tools in the evaluation of pseudoachalasia, particularly where clinical suspicion is high and other modalities have been unrevealing. They can obtain pathological samples by minimally-invasive puncture and provide cytological and histopathological diagnosis, which plays an important role in the selection of follow-up treatment and the judgment of overall prognosis.

#### *Declaration of patient consent*

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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#### *Conflicts of interest*

There are no conflicts of interest.

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