CASE REPORT OPEN ACCESS

Asymptomatic Gastric Metastasis From Ovarian Adenocarcinoma Presented as Gastric Subepithelial Tumor: Case Report

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ABSTRACT

Background: Ovarian tumor metastasis to the stomach is uncommon. Clinical manifestations of metastasis to the stomach are variable and lack features. Gastric metastasis resembling a subepithelial tumor is unusual, making the diagnosis challenging.

Case Presentation: Here, we reported a case of gastric metastasis from ovarian adenocarcinoma presenting as a subepithelial tumor diagnosed by endoscopic ultrasound-guided tissue acquisition.

Conclusion: This case provides significant reference value and serves as a cautionary reminder for the diagnosis and management of gastric subepithelial tumors.

1 | Introduction

Ovarian tumor metastasis to the stomach is rare. Gastric metastasis can mimic a primary gastric tumor or, less frequently, present as subepithelial tumors (SETs). SETs may originate from any layer between the deep mucosa and the serosa. Metastasis to the gastrointestinal tract generally involves the muscularis propria and subserosal layers and can be misleading as a gastrointestinal stromal tumor (GIST). Here, we report a case of gastric metastasis from ovarian adenocarcinoma presenting as a subepithelial tumor diagnosed by endoscopic ultrasound-guided tissue acquisition.

1.1 | Case Report

A 54-year-old female was referred to our hospital for evaluation of an incidentally discovered gastric subepithelial tumor. The patient was asymptomatic with unremarkable physical examination findings. She had previously undergone laparotomy and cytoreductive surgery for advanced gynecological malignancy. Postoperative pathology confirmed bilateral high-grade serous carcinoma of the ovaries. Postoperatively, she completed six cycles of systemic chemotherapy and maintained stable disease status throughout a five-year follow-up period.

At her most recent routine follow-up, the serum CA125 was 77.7 U/mL, while the serum CA153 was 45.4 U/mL. The contrast-enhanced computed tomography (CT) showed a newly emerged subepithelial tumor in the gastric fundus with intact laying mucosa (Figure 1A), raising suspicion of stromal tumors, with no other notable changes compared to previous imaging. Gastroduodenoscopy identified a SET in the gastric fundus, radiologically consistent with either a GIST or leiomyoma (Figure 1B). Endoscopic ultrasound (EUS, Fujifilm SU-9000H)

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demonstrated a well-defined hypoechoic mass measuring 3.7 cm × 2.5 cm emanating from the muscularis propria, exhibiting typical sonographic features of GIST (Figure 1C). Given the patient's oncological history, EUS-guided fine needle aspiration (EUS-FNA) using a 22-gauge needle (Expect 22G; Boston Scientific Corporation, Marlborough, MA) was performed for definitive diagnosis. A single pass of the needle was enough to obtain the final cytological diagnosis. The result of HE staining was revealed by Figure 1D. Immunohistochemical examination yielded the following results (Figure 2): WT-1(+), CK7(+), CA125(+), PAX-8(+), ER(+), PR(+), CEA(−), CDX-2(−), SATB(−), CGA(−), CD56(−), SYN(−). These results revealed poorly differentiated adenocarcinoma; combined with the clinical history, the findings were consistent with metastatic high-grade serous

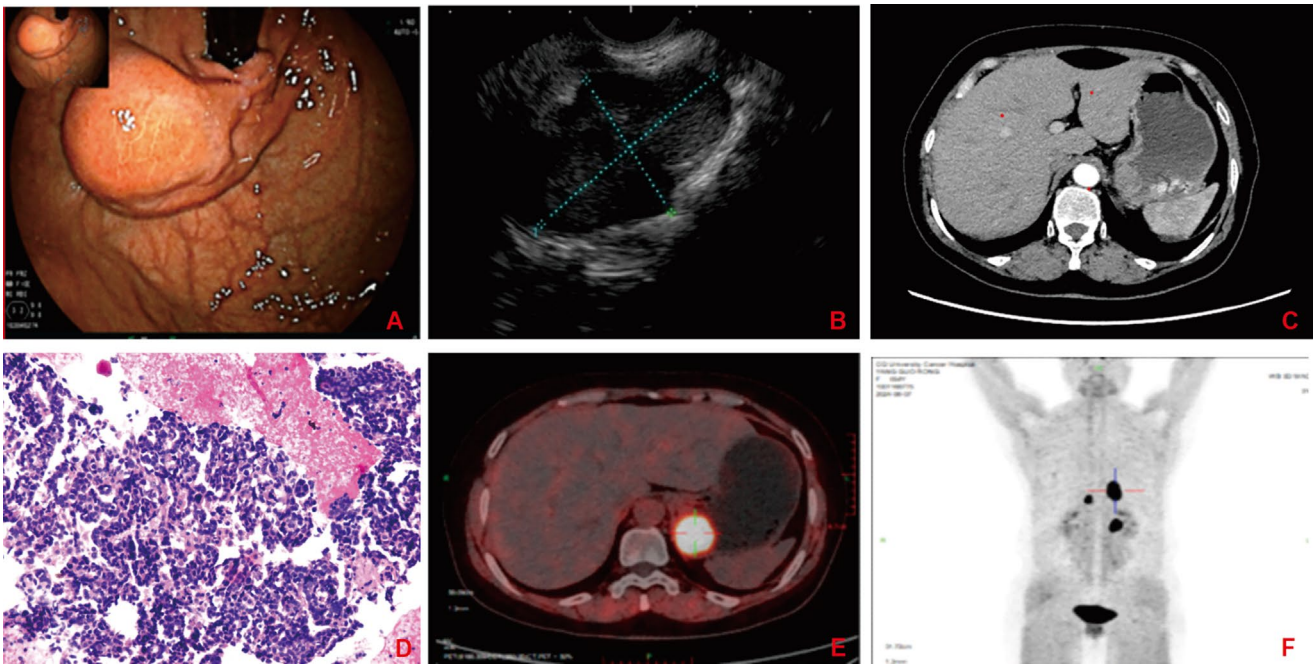

FIGURE 1 | (A) CT showed a submucosal tumor in the gastric fundus; (B) Gastroduodenoscopy revealed a submucosal tumor in the gastric fundus with intact mucosa; (C) EUS demonstrated a hypoechoic mass measuring 3.7 cm × 2.5 cm emanating from the muscularis propria; (D) HE staining of the puncture specimens; (E, F) The PET-CT revealed FDG-avid lesions in the gastric fundus, right hemidiaphragm, and mesentery adjacent to the left renal hilum.

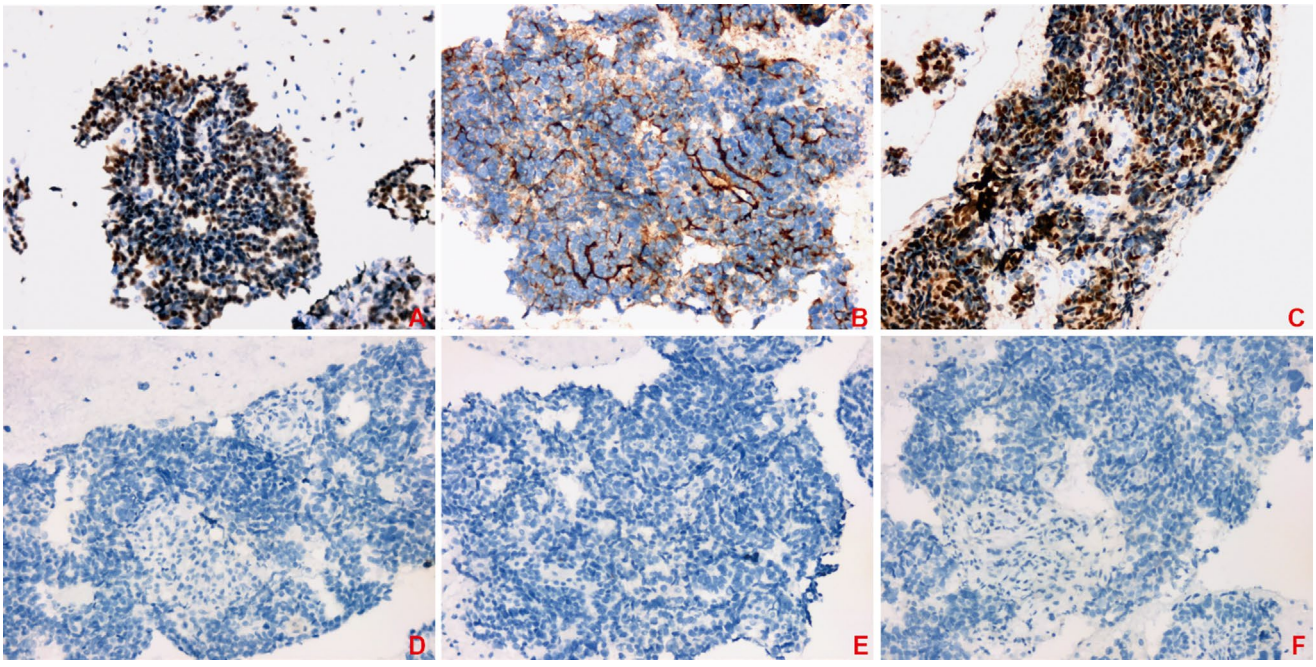

FIGURE 2 | Immunohistochemical staining of the puncture specimens: (A) WT-1(+); (B) CA125(+); (C) PAX-8(+); (D) CDX-2(−); (E) CGA(−); (F) SATB(−).

TABLE 1 | Literature review of cases of ovarian tumor with metastase to stomach.

Author (year)	Histology	Recurrence sites	CA125	Endoscopic presentation	EUS	CT/PET-CT	Treatment of secondary
Yang (2018) [6]	Serous cystadeno carcinoma	Stomach	10.40 kU/L	Submucous eminent lesions in the lesser curvature of gastric antrum	NR	Occupying lesion of the lesser curvature of gastric antrum (size 3.6×2.8 cm)	Subtotal gastrectomy + chemotherapy
Sikora, et al. (2024) [7]	High-grade serous adenocarcinoma	Stomach	4240 U/mL	Fundic mass with ulcer	NR	FDG avid focal thickening seen involving gastric fundus	Proximal gastrectomy + chemotherapy
Antoni, et al. (2017) [5]	High-grade serous adenocarcinoma	Stomach	138 U/mL	Subepithelial tumor with intact overlying mucosa on the posterior wall of the gastric antrum.	A mass within the muscularis propria, hypoechoic but more hyperechoic than the muscular tissue	NR	Chemotherapy
Kim, et al. (2014)	Serous adenocarcinoma	Stomach	NR	Submucosal tumor with erosion on the greater curvature of the antrum	Heterogeneous low-echogenic lesion showing irregularity at the propria muscle layer	Focal thickening and mass formation in the greater curvature of the gastric body	Subtotal gastrectomy+chemotherapy
Zhou, et al. (2012)	Serous adenocarcinoma	Stomach	116.5 U/mL	Subepithelial tumor with tiny ulceration in the gastric antrum.	NR	PET/CT revealed a mass located in gastric antrum with high F-FDG uptake	Local gastrectomy
Akce, et al. (2012) [9]	Serous adenocarcinoma	Stomach + peritoneum	NR	Subepithelial mass with superficial overlying erosion	Hypoechoic masses emanating from the muscularis propria	Calcified, mixed intermediate and high-density deposits worrisome for peritoneal carcinomatosis	Chemotherapy
Carrar, et al. (2011) [4]	NR	Stomach	NR	Subepithelial mass with a deep round ulcer.	A focal lesion involved the third layer of the gastric wall	NR	NR

carcinoma of gynecologic origin. The patient was subsequently referred to the gynecological oncology department for further management. The PET-CT revealed FDG-avid lesions in the gastric fundus, right hemidiaphragm, and mesentery adjacent to the left renal hilum (Figure 1E,F), further suggesting metastatic disease. Based on these findings, systemic chemotherapy was initiated.

2 | Discussion

Gastric metastasis is rare, with an incidence reported as low as 0.2%. The most common primary tumors metastasizing to the stomach are breast cancer, lung cancer, and cutaneous melanoma [1]. Metastasis of ovarian tumors to the stomach is exceptionally unusual. The clinical symptoms are not specific to metastatic disease, mostly are asymptomatic, while others may present as epigastric pain, melena, anemia, or signs of gastrointestinal bleeding. Furthermore, the endoscopic manifestations of metastatic gastric lesions exhibit remarkable heterogeneity. Reported manifestations include multiple nodules with ulcerated tips, non-ulcerative masses, thickened gastric walls, volcano-like lesions, and subepithelial tumors [2]. This diverse spectrum of clinical and endoscopic presentations poses significant diagnostic challenges.

The histopathological types of gastric SETs are diverse, but most are benign lesions, including stromal tumors, leiomyomas, lipomas, granular cell tumors, etc. Notably, only less than 15% exhibit histological features of malignancy [3]. The diagnostic accuracy of endoscopic evaluation can be enhanced when characteristic features are presented, such as central depression or surface ulceration. In general, the combination of enhanced computed tomography venous phase imaging and EUS yields high diagnostic accuracy for gastric subepithelial lesions. In this case, the patient presented as a subepithelial mass with smooth mucosa, and both EUS and CT strongly suggested the possibility of gastric stromal tumor. Typically, endoscopic resection or surgical resection would be chosen. However, the patient's history of ovarian malignancy prompted us to further perform EUS-FNA. The biopsy ultimately confirmed metastatic disease.

Until now, several cases have been reported in the literature [4–10]. We performed a comprehensive review of gastric metastasis from ovarian cancer (Table 1). According to the review, most patients presented with elevated CA125 levels, while other tumor markers showed no significant elevation. In previous cases, the SETs were typically located in the body or the antrum of the stomach and were mostly accompanied by varying degrees of erosion and ulceration. The presence of such mucosal disruption significantly increases the likelihood of malignancy in SETs [11]. In our case, the SET was located in the gastric fundus and covered by normal mucosa, making the diagnosis particularly challenging. Although benign lesions constitute the majority of SETs, this case underscores the importance of maintaining vigilance for potential malignancy, particularly in patients with a prior oncological history, even in the absence of specific endoscopic features. Moreover, the EUS imaging revealed predominantly hypoechoic features of the mass with muscularis propria infiltration, characteristics typically associated with GIST. Notably, among all reported cases, EUS-guided FNA was performed in only three cases. In our opinion, EUS-FNA is strongly recommended to improve diagnostic accuracy and avoid unnecessary surgical interventions. Additionally, F-FDG PET/CT has proven to be a valuable diagnostic tool. In our case, the F-FDG PET/CT scan revealed a hypermetabolic lesion in the gastric antrum, consistent with observations documented in some of the reports.

In conclusion, gastric metastasis from primary ovarian cancer is indeed very rare; this case provides significant reference value and serves as a cautionary reminder for the diagnosis and management of gastric subepithelial tumors.

Conflicts of Interest

The authors declare no conflicts of interest.

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