Clinical Case Report

Medicine®

OPEN

Port-site metastasis as a primary complication following diagnostic laparoscopy of fallopian tube carcinoma

A case report

Yan Chen, MD[a,b], Chen Ling, MD[a], Ce Bian, MD[a,*]

Abstract

Rationale: Fallopian tube carcinoma is a rare female genital cancer with no specific clinical and surgical features. It is hardly diagnosed on imaging due to non-specific presentation. Laparoscopy has been recommended as the diagnostic procedure for the assessment of suspicious ovarian and adnexal masses. However, it has brought new complications like tumor recurrences at the trocar insertion sites, called port-site metastasis (PSM).

Patient concerns: A 65-year-old, postmenopausal woman presented to hospital with loss of appetite, Ultrasound showed ill-defined pelvic mass. The patient was diagnosed with fallopian tube carcinoma by a diagnostic laparoscopy.

Diagnoses: The PSM as a primary complication following diagnostic laparoscopy of fallopian tube carcinoma, which is presumed by positron emission tomography/computed tomography and confirmed by Nodule resection and further pathological assessment.

Interventions: As port-site metastasis was suspected, the patient was advised to undergo umbilical mass resection.

Outcomes: the patient has no signs of recurrence was detected 20 months after the last surgery during follow-up.

Lessions: Laparoscopy plays a significant role in the diagnose and treatment of fallopian tubal and ovarian malignancies but has a risk of PSM occurrence. When isolated PSM occurs the management should be local resection.

Abbreviations: CA-125 = cancer antigen 125, CT = computed tomography, EOC = epithelial ovarian cancer, FDG-PET/CT = 18F-fluoro-2-deoxy-D-glucose positron emission tomography/computed tomography, FIGO = International Federation of Gynecology and Obstetrics, PSM = port-site metastasis.

Keywords: fallopian tube carcinoma, laparoscopy, port-site metastasis

1. Introduction

Fallopian tube carcinoma is a rare female genital cancer accounting for approximately 0.14% to 1.8% of gynecologic malignancies.[1] It is reported that the average incidence of fallopian tube carcinoma is 3.6 per million per year.[2] It is rarely suspected preoperatively because of the nonspecific presentation in symptoms or imaging and is hardly diagnosed intraoperatively because of the lack of specific surgical features.[3] Most of the reported cases confirmed their diagnosis based on postoperative pathologic findings.[4] At present, therapeutic strategies of fallopian tube carcinoma are the same as ovarian cancer, such as surgical staging, adjuvant chemotherapy, debulking, and chemotherapy for advanced disease.[5] The reported 5-year survival rate of fallopian tube carcinoma is about 65% in general, which is in relation to stages.[6–8] Prognosis of fallopian tube carcinoma is affected by a lot of factors, such as residual disease after initial surgery, the depth of invasion, advanced age, bilaterality, positive peritoneal cytology, and the level of the cancer antigen 125 (CA-125), whereas the most significant factor is the stage of carcinoma at the time of diagnosis.[9,10]

Laparoscopy has been recommended, but remains contentious as the diagnostic procedure for the suspicious adnexal masses.[11] It has brought lots of advantages such as reduced pain, shorter recovery time, decreased time to return of bowel function, and potential to initiate neoadjuvant therapy earlier.[12] However, with increasing use of laparoscopy, it has brought new complications like tumor recurrences at the trocar insertion

Editor: N/A.

Authorship: CB provided technical and material support, participated in the patient's medical treatment, helped design the study, and obtained funding. YC and LC drafted the manuscript and provided materail support.

Funding: This study was funded by No. 2017SZ0141 Science and Technology Project of Sichuan Province, P. R. China.

The patient signed written informed consent and consent for publication of anonymized data.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

The authors have not published or submitted this manusript or its accompanying data elsewhere.

The authors report no conflicts of interest.

[a] Department of Gynecology and Obstetrics, Key Laboratory of Obstetrics & Gynecologic and Pediatric Diseases and Birth Defects of Ministry of Education, West China Second Hospital, Sichuan University, [b] Department of Gynecology and Obstetrics, Chengdu First People's Hospital, Chengdu, P. R. China.

[*] Correspondence: Ce Bian, Department of Gynecology and Obstetrics, Key Laboratory of Obstetrics & Gynecologic and Pediatric Diseases and Birth Defects of Ministry of Education, West China Second Hospital, Sichuan University, Chengdu 610041, P. R. China (e-mail: drbiance@163.com).

Medicine (2018) 97:26(e11166)

Received: 24 January 2018 / Accepted: 15 May 2018

http://dx.doi.org/10.1097/MD.0000000000011166

sites, called port-site metastasis (PSM). Dobronte et al reported the first case of port-site metastasis subsequent to laparoscopy in an ovarian cancer patient in 1978.[13] PSM has been reported in various gynecological cancers after laparoscopic surgery, such as cervical cancer,[14] endometrial carcinoma,[15] fallopian carcinoma[16] and vaginal carcinoma,[17] as well as in other multiple non-gynecological cancers including gallbladder cancer, hepatoma, gastric cancer, urinary tract cancer and peritoneal carcinomatosis.[18]

The incidence of PSM after gynecological cancer surgery ranges from 1% to 2% in published literatures.[19] Though never proved in large series, PSM relating to fallopian tube carcinoma appeared to be at an even lower percentage. To our knowledge, there were only two case of PSM followed laparoscopy in fallopian tube carcinoma patient reported by Bacha et al in 1996[16] and Zivanovic et al in 2008.[20] The purpose of this case study is to describe a rare case of isolated port-site metastasis following diagnostic laparoscopy for high-grade fallopian tube cancer.

2. Case presentation

A 65-year-old, postmenopausal woman, para 2, gravida 8, last menstruated at the age of 50, presented to local hospital with loss of appetite for a week. Ultrasound showed an 8*7 cm irregular, ill-defined pelvic mass and multiple lesions in the pelvis. Then she was referred to our hospital for further examination. A computed tomography (CT) scan showed the presence of a 10*7 cm irregular, ill-defined and mixed pelvic mass with omental nodularity, as well as 6.6 cm of ascites. The uterus was not visualized. The CA-125 level was elevated to 500.2 U/ml. The serum CA 19-9 and carcinoembryonic antigen level were also elevated to 1.8ng/ml. The human chorionic gonadotropin and alpha fetoprotein level had risen to 3.6 mIU/mL and 3.8 ng/mL, respectively. On physical examination, she was found to have an immobile, solid left adnexal mass of 5 cm in diameter. Ovarian cancer and peritoneal seeding metastasis were suspected.

To confirm the diagnosis, the patient underwent a diagnostic laparoscopy. The 3 ports used during the procedure were 10 mm at the umbilicus and 5 mm at the bilateral inguinal areas. A biopsy was performed on the surgically removed bilateral fallopian tubal and omental nodules, and histological examination of a frozen section revealed poorly differentiated adenocarcinoma. To reduce the volume and extent of carcinoma, the patient received 2 cycles of neoadjuvant chemotherapy comprised of paclitaxel (175 mg/m2, iv) and cisplatin (75 mg/m2, ip) 21 days after the operation.

After 2 cycles of treatment, a CT scan revealed a left adnexal mass, 5×3 cm, solid and cystic, with omental nodularity but no ascites. Compared to the image before neoadjuvant chemotherapy, the amount and volume of abdominal and pelvic metastasis lesions had decreased. On physical examination, the patient's left adnexal lesion decreased and nodule above the umbilicus disappeared visibly on palpation. Therefore, the patient underwent primary debulking surgery. The postsurgical pathology revealed high-grade serum adenocarcinoma of the fallopian tube with invasion of the bilateral ovaries, omentum, and uterosacral ligaments. Furthermore, metastases of the left obturator lymph nodes (2/3) were detected. The International Federation of Gynecology and Obstetrics (FIGO) stage was IIIC. Subsequently, the patient received 10 cycles of combined chemotherapy consisted of paclitaxel (175 mg/m2, iv) and cisplatin (75 mg/m2, ip).

Six months after the completion of the chemotherapy, a subcutaneous, 1-cm diameter nodule was noticed at the umbilical port site. During follow-up, the lesion, which was fixed and purplish-red, grew progressively to 4×3 cm, rising out of umbilical surface and became solid and cystic on palpation. On 18F-fluoro-2-deoxy-D-glucose positron emission tomography/computed tomography (FDG-PET/CT), uptake of FDG was seen in the lesion, and no uptake of FDG was seen in other organs (Fig. 1). Port-site metastasis was suspected. Given the medical history and the examination results, the patient was advised to undergo umbilical mass resection. The pathological assessment revealed poorly differentiated adenocarcinoma with extensive necrosis, suggested the primary tumor's recurrence and metastasis (Fig. 2). As this was the only site of recurrence, the patient was advised to receive no further adjuvant therapy. Up till now, no signs of recurrence were detected 20 months after the last surgery during follow-up.

3. Discussion

Fallopian tube carcinoma is one of the rarest cancers of the female reproductive system, accounting for approximately 1% of all the female malignancies.[21] Recently, a few researchers had reported that PSM after laparoscopy in fallopian tube carcinoma was an infrequent occurrence. In 2008, Zivanovic et al reported on 1439 laparoscopic procedures in patients with female malignancies, in which they observed 18 (1.25%) of patients presented PSM, whereas only 1 was with fallopian tube carcinoma.[20]

The etiology of PSM remains indistinct, whereas some risk factors had been proposed, such as the pneumoperitoneum of carbon dioxide, hematogenous spread, leakage of gas along the tracers (called chimney effect), local immune reaction, the surgeons' skill, the pollution of port site with cancer cell, and the presence of ascites.[19] Several reports revealed the presence of ascites was significantly associated with a higher rate of PSM in ovarian cancer patients.[18] To minimize PSM, some measures were recommended, which included the use of wound protectors, performing gasless laparoscopy, modifying surgical technique by trocar fixation, minimal tumor manipulation, intraperitoneal and port-site lavage, preventing carbon dioxide leaks, use of a bag for intact specimen removal, suturing 10 mm trocar wounds.[22] However, the efficacy of those preventive measures is unclarified.[22] Therefore, randomized clinical trials are needed to determine the best option of PSM prevention.

In a case report published by Bacha et al,[16] the patient underwent laparoscopically assisted vaginal hysterectomy and bilateral salpingo-oophorectomy to evaluate the left adnexal cystic mass demonstrated on ultrasonography. During the excision of the cystic mass, rupture of the cyst and spillage of cystic fluid into the pelvic cavity happened. The final histological examination revealed a moderately differentiated papillary fallopian tube adenocarcinoma. Seven months after the laparoscopy, an isolated PSM at the manipulation port was observed. She underwent the resection of the recurrence and postoperative chemotherapy. The patient was well and had no signs of recurrence 14 months after metastasis at the trocar port.

In our case, the patient underwent a diagnostic laparoscopic procedure to evaluate the adnexal mass. Diagnostic laparoscopy has become a preferred way to confirm the diagnosis, identify the stage, and assess the operability of fallopian tube carcinoma.[23] Fallopian tube carcinoma is difficult to diagnose preoperatively, with a rate of preoperative diagnosis ranging from 0% to 10%, because it is similar to epithelial ovarian cancer (EOC) on clinical

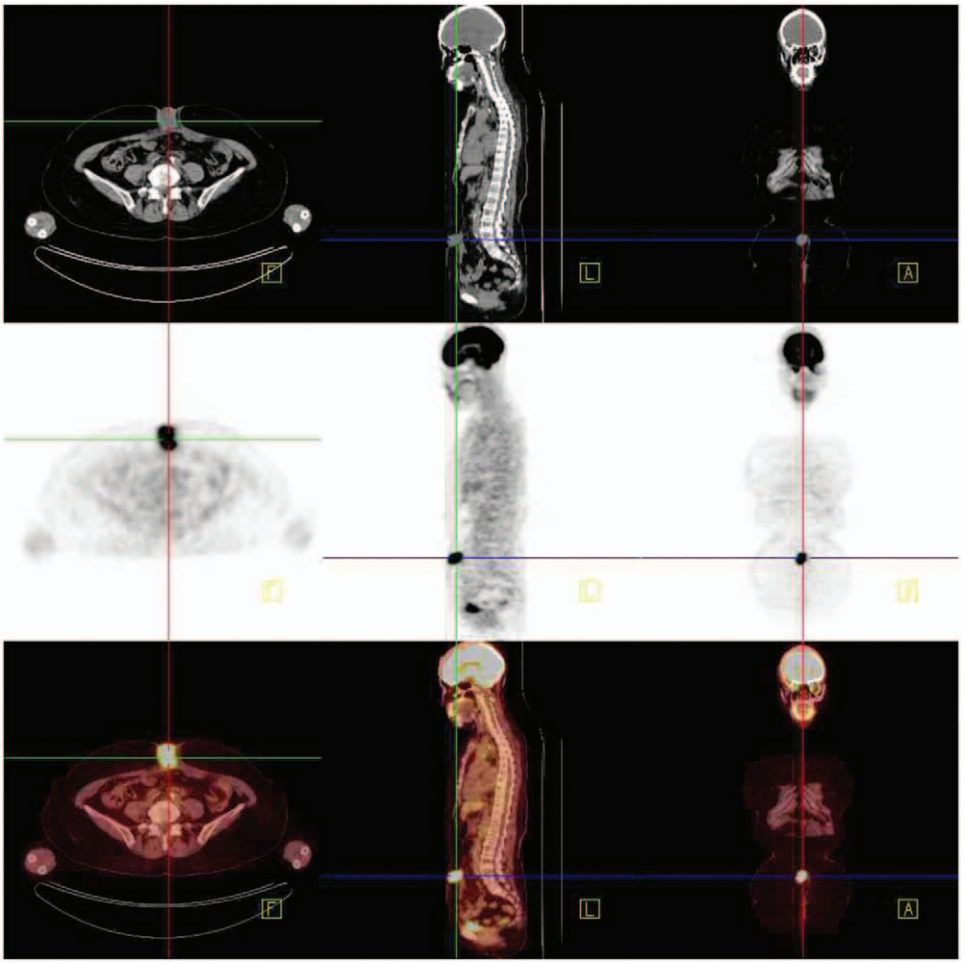

Figure 1. The follow-up positron emission tomography/computed tomography 582, days after diagnostic laparoscopy showed a $3.3 \times 2.8 \times 2.8\,cm^3$ abdominal wall mass at the umbilical port site.

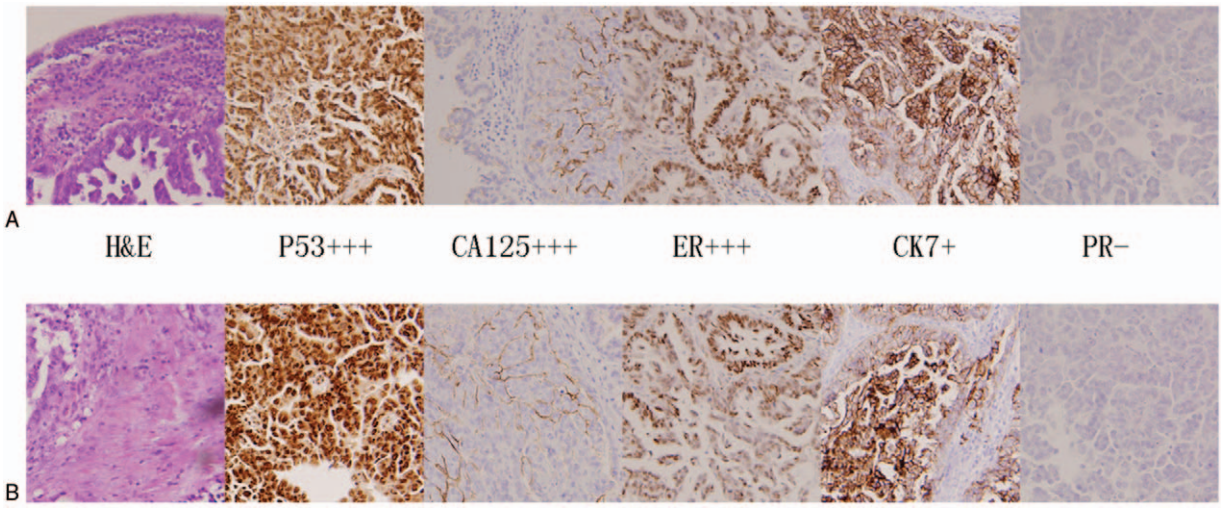

Figure 2. The histologic findings of the primary tumor (A) and port-site metastasis tumor (B) were similar and suggested poorly differentiated serous adenocarcinoma in both samples (A, B ×200). CA125 = cancer antigen 125, CK7 = cytokeratin 7, ER = estrogen receptor, H&E = hematoxylin-eosin staining, PR = progestrone receptor.

manifestations, imaging and CA-125 level.[5] The diagnosis of fallopian tube carcinoma is usually confirmed by postoperative histopathological examination. The FIGO stage of the patient was IIIC. As with the patients with EOC, patient with fallopian tube carcinoma except for stage IA and IB could accept adjuvant platinum-based combination chemotherapy.[5] PSM after adjuvant chemotherapy in patients with fallopian tube carcinoma is rare with few published literature, whereas several researchers reported PSM in patients with EOC after neoadjuvant chemotherapy.[23–25] Prognosis of the patients with EOC after neoadjuvant chemotherapy who developed PSM still remains controversial.[23] Some reported that PSM after adjuvant chemotherapy did not affect the prognosis of EOC patients.[24,25] Van Dan et al[24] revealed that prognosis was not worse in the group of patients presenting with PSM after neoadjuvant chemotherapy. Similarly, Vergote et al[26] reported that PSM after adjuvant chemotherapy did not have important influence on the outcome. However, those patients who developed PSM after neoadjuvant chemotherapy, according to Huang et al,[25] had poor prognosis and all died of their cancer. The patient in our case accepted surgical resection after her confirmed diagnosis of isolated PSM, and had no signs of recurrence 19 months after last operation.

The role of laparoscopic techniques in the treatment of fallopian tubal and ovarian malignancies remains a significant area of debate.[23] With the popularity of diagnostic laparoscopy in the evaluation of adnexal mass, PSM has become a common concern especially in the advanced patients with ascites. Whether PSM is associated with poor outcome in the patients accepted neoadjuvant chemotherapy is still contentious, surgeons should make efforts to take protective measure as much as possible. Nevertheless, when isolated PSM occurs, the management should be local resection.

Author contributions

Data curation: Chen Ling.
Investigation: Yan Chen.
Methodology: Ce Bian.
Supervision: Ce Bian.
Writing – original draft: Yan Chen, Chen Ling.
Writing – review & editing: Ce Bian.

References

[1] Rexhepi M, Trajkovska E, Ismaili H, et al. Primary fallopian tube carcinoma: a case report and literature review. Open Access Maced J Med Sci 2017;5:344–8.
[2] Rosenblatt KA, Weiss NS, Schwartz SM. Incidence of malignant fallopian tube tumors. Gynecol Oncol 1989;35:236–9.
[3] Wang PH, Lee RC, Chao KC, et al. Preoperative diagnosis of primary fallopian tube carcinoma by magnetic resonance imaging: a case report. Zhonghua Yi Xue Za Zhi 1998;61:755–9.
[4] Hellström AC. Primary fallopian tube cancer: a review of the literature. Med Oncol 1998;15:6–14.
[5] Pectasides D, Pectasides E, Economopoulos T. Fallopian tube carcinoma: a review. Oncologist 2006;11:902.
[6] Inal MM, Hanhan M, Pilanci B, et al. Fallopian tube malignancies: experience of Social Security Agency Aegean Maternity Hospital. Int J Gynecol Cancer 2004;14:595–9.
[7] Sedlis A. Carcinoma of the fallopian tube. Surg Clin North Am 1978;58:121–9.
[8] Deppe G, Bruckner HW, Cohen CJ. Combination chemotherapy for advanced carcinoma of the fallopian tube. Obstet Gynecol 1980;56:530–2.
[9] Klein M, A-H G, Rosen A, et al. Tumor progression, histologic grading and DNA-ploidy as predictive factors of lymphogenous metastasis in primary carcinoma of the Fallopian tube. Cancer Lett 2002;177:209.
[10] Gadducci A. Current management of fallopian tube carcinoma. Curr Opin Obstet Gynecol 2002;14:27–32.
[11] Brun J, Rouzier RS, Darai E. External validation of a laparoscopic-based score to evaluate resectability of advanced ovarian cancers: clues for a simplified score. Gynecol Oncol 2009;112:354–9.
[12] Carlson NL, Krivak TC, Iii WEW, et al. Port site metastasis of ovarian carcinoma remote from laparoscopic surgery for benign disease. Gynecol Oncol 2002;85:529–31.
[13] Döbrönte Z, Wittmann T, Karácsony G. Rapid development of malignant metastases in the abdominal wall after laparoscopy. Endoscopy 1978;10:127–30.
[14] Patsner B, Damien M. Umbilical metastases from a stage IB cervical cancer after laparoscopy: a case report. Fertil Steril 1992;58:1248–9.
[15] Faught W, Fung KFM. Port site recurrences following laparoscopically managed early stage endometrial cancer. Int J Gynecol Cancer 1999;9:256–8.
[16] Bacha EA, Barber W, Ratchford W. Port-site metastases of adenocarcinoma of the fallopian tube after laparoscopically assisted vaginal hysterectomy and salpingo-oophorectomy. Surg Endosc 1996;10:1102–3.
[17] Morice P, Viala J, Pautier P, et al. Port-site metastasis after laparoscopic surgery for gynecologic cancer. A report of six cases. J Reprod Med 2000;45:837–40.
[18] Wang PH, Yuan CC, Lin G, et al. Risk factors contributing to early occurrence of port site metastases of laparoscopic surgery for malignancy. Gynecol Oncol 1999;72:38–44.
[19] Ramirez PT, Wolf JK, Levenback C. Laparoscopic port-site metastases: etiology and prevention. Gynecol Oncol 2003;91:179–89.
[20] Zivanovic O, Sonoda Y, Diaz JP, et al. The rate of port-site metastases after 2251 laparoscopic procedures in women with underlying malignant disease. Gynecol Oncol 2008;111:431–7.
[21] Gomes FV, Dias JL, Lucas R, et al. Primary fallopian tube carcinoma: review of MR imaging findings. Insights Imaging 2015;6:431–9.
[22] Nagarsheth NP, Rahaman J, Cohen CJ, et al. The incidence of port-site metastases in gynecologic cancers. JSLS 2004;8:133–9.
[23] Ozmen B, Sükür YE, Atabekoglu CS, et al. Early port-site metastasis during neoadjuvant chemotherapy in advanced stage ovarian cancer: report of two cases. J Gynecol Oncol 2011;22:57–60.
[24] van Dam PA, Decloedt J, Tjalma WA, et al. Trocar implantation metastasis after laparoscopy in patients with advanced ovarian cancer: can the risk be reduced? Am J Obstet Gynecol 1999;181:536.
[25] Huang KG, Wang CJ, Chang TC, et al. Management of port-site metastasis after laparoscopic surgery for ovarian cancer. Am J Obstet Gynecol 2003;189:16–21.
[26] Vergote I, Marquette S, Amant F, et al. Port-site metastases after open laparoscopy: a study in 173 patients with advanced ovarian carcinoma. Int J Gynecol Cancer 2005;15:776–9.