

CT findings in two cases of port-site metastasis after laparoscopy for ovarian cancer

J. Viala¹, P. Morice², P. Pautier³, D. Castaigne², D. Vanel¹

¹Department of Radiology, ²Gynecologic Surgery and ³Oncology
Institut Gustave Roussy, Villejuif (France)

Summary

Cases: Two patients with histologically proven port-site metastasis following laparoscopic procedures for ovarian cancer underwent a CT scan. These two patients were initially treated for a stage IA and III ovarian cancer. Port-site recurrence occurred six and 19 weeks following the laparoscopic procedure. In one patient, the abdominal wall recurrence was associated with peritoneal carcinosis. In both patients, CT scan revealed the presence of an heterogeneous nodular lesion inside the left oblique muscle. Histologic analysis confirmed the diagnosis of port-site recurrence.

Conclusions: Port-site metastases could be observed in the treated patients with a laparoscopic approach for ovarian cancer. When this diagnosis is clinically suspected, a CT scan should be performed in order to precise the diagnosis of port-site metastasis and to evaluate potential intra-abdominal recurrent disease. However, only histologic examination can confirm a diagnosis of port-site recurrence.

Key words: Laparoscopy; Recurrence; Trocarsite; Ovarian cancer; CT scan.

Introduction

In the literature, tumor recurrence at port sites after laparoscopic treatment has been largely reported [1-4]. A number of mechanisms may explain why these metastatic lesions occasionally occur: exfoliation or spillage of tumor cells in the hydroperitoneum fluid and/or from ovaries following pneumoperitoneum (with positive intra-abdominal pressure) and laparoscopy; inoculation of the trocar site through contact between the laparoscopic instruments and the tumor; contamination of the port sites as resected specimens are extracted through an excessively small incision [4, 5]. Nevertheless the exact impact of the laparoscopic procedure in the occurrence of this complication remains debatable [6, 7]. However in the literature no paper focuses specifically on the radiological aspect of this metastasis. We report two cases of port-site metastasis following a laparoscopic procedure for ovarian cancer focusing on CT findings. The aim of this report is to describe CT imaging.

Case Report

Case No. 1

Mrs T., 71 years old, underwent a hysterectomy with bilateral oophorectomy and omentectomy via laparotomy for a stage III ovarian tumor (moderately-differentiated serous adenocarcinoma) followed by six courses of cisplatin-containing chemotherapy outside our institution. A second-look procedure was performed using a laparoscopic approach after the end of this treatment. During this surgical procedure, persistent macroscopic disease was found in the peritoneum. The patient was referred to our institution for adjuvant treatment. At clinical examination, six weeks after the laparoscopic procedure, a 4 cm

Revised manuscript accepted for publication April 3, 2002

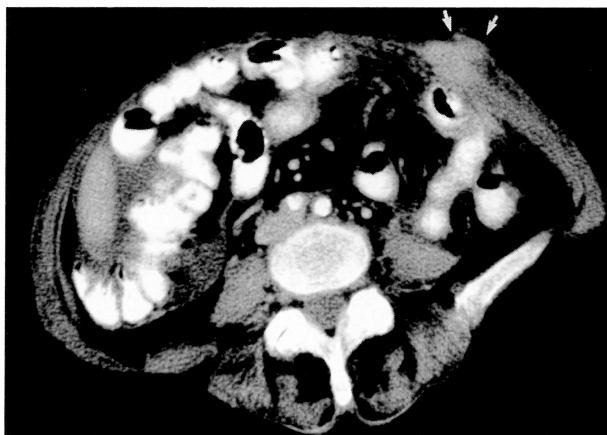


Figure 1. — Case No. 1: Abdomino-pelvic CT scan performed two months after laparoscopy. A heterogeneous nodular lesion was visualized inside the left oblique muscle (arrows).

metastasis was found at the site of the left supra-pubic trocar. A CT scan revealed a left parietal nodule inside the muscle (oblique) (Figure 1). Percutaneous cytopuncture confirmed port-site metastases from ovarian cancer. The patient received paclitaxel-containing chemotherapy. She died of progressive peritoneal disease one year later.

Case No. 2

Mrs A., 63 years old, underwent a laparoscopic procedure for a left ovarian cyst of 4 cm at another institution. A left salpingo-oophorectomy was performed. Histologic analysis concluded that ovarian tumor was an endometrioid adenocarcinoma. The first CT scan was carried out six days following the laparoscopic procedure and revealed the presence of a thickened left oblique muscle due to the recent laparoscopy but without nodular lesions (Figure 2). A hysterectomy with contralateral salpingo-oophorectomy, peritoneal cytology, multiple perito-

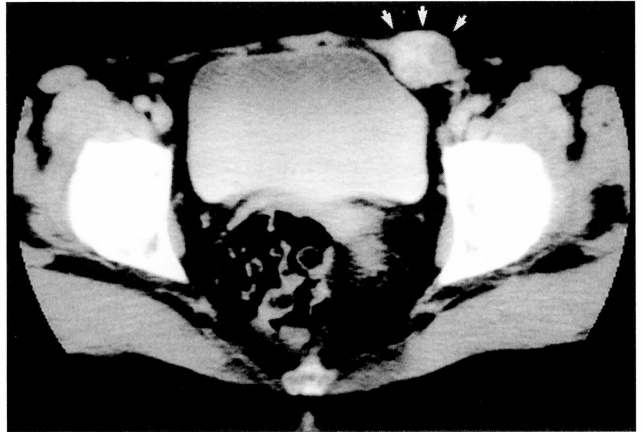
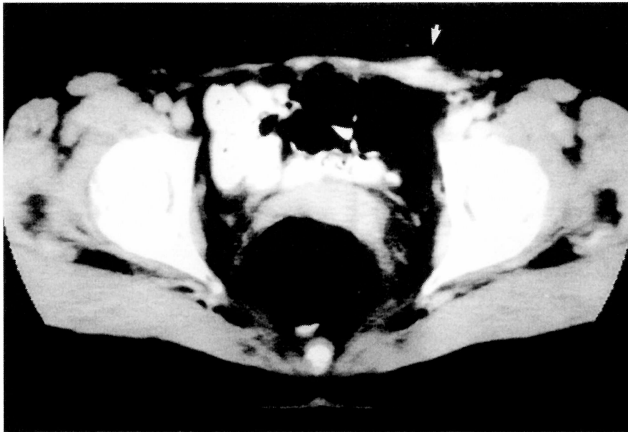


Figure 2. — Case No. 2: Abdomino-pelvic CT scan performed six days following initial laparoscopy, with IV injection of contrast medium. Left oblique muscle was thickened (arrow) due to the recent laparoscopy without nodular lesion.

Figure 3. — Case No. 2: Follow-up abdomino-pelvic CT scan, with IV injection of contrast medium, performed 19 months after laparoscopy. A heterogeneous nodular lesion inside the left oblique muscle (arrows) was visualized. Histological analysis confirmed the metastasis from ovarian adenocarcinoma.

neal biopsies, omentectomy, pelvic and para-aortic lymphadenectomy were performed via laparotomy. Histologic examination did not reveal the presence of residual tumor. Thus this patient had a stage IA ovarian tumor according to the FIGO classification. Nineteen months later she complained of an abdominal wall nodule. CA 125 level was unknown at this time. A CT scan was performed and revealed the presence of a 4 cm heterogeneous nodular lesion inside the left oblique muscle. Surgical resection was performed. Histologic examination confirmed a port-site recurrence of the ovarian tumor without peritoneal disease (Figure 3). The patient received six courses of chemotherapy (*paclitaxel*-based chemotherapy). A second left abdominal wall recurrence occurred 12 months later (without peritoneal carcinomatosis). An iterative abdominal wall resection was performed followed by *platinum*-based chemotherapy. The patient died of progressive peritoneal disease 30 months later.

Discussion

This paper is the first one to focus on the evaluation of CT imaging in patients with port-site metastasis. In our study, CT images were not specific but very suggestive of abdominal wall recurrence. Port-site metastases were located inside the parietal muscles (left oblique muscle) where the laparoscopic trocar had been inserted. The lesions were enhanced after IV injection of contrast medium and were hyperdense compared to adjacent muscles. These lesions were nodular, but diffuse invasion of the muscle did occur. When a patient undergoes laparoscopy for an ovarian neoplasm, it is essential to closely examine the CT scan to appreciate the appearance of the abdominal wall and to analyze the port sites. In this context, nodular enhancement or localized wall thickening may signify metastasis. Furthermore a CT scan could also evaluate potential recurrence in another abdominal site (peritoneum, pelvic and para-aortic lymph nodes, liver surface...). However confirmation of a diagnosis of port-site metastasis should be given only after histologic examination.

Conclusion

Port-site metastases could be observed in patients treated using a laparoscopic approach for ovarian cancer. This diagnosis should be suspected systematically when a mass appears during a follow-up examination procedure. In this case, a CT scan should be performed in order to precise the diagnosis of port-site metastasis and to evaluate potential intra-abdominal associated disease. However, only histologic examination of the abdominal wall resection can confirm this diagnosis.

Acknowledgement

Acknowledgement to Lorna Saint-Ange for editing the manuscript.

References

- [1] Childers J. M., Keith A. A., Surwit E. A., Hallum A. V., Hatch K. D.: "Abdominal wall tumor implantation after laparoscopy for malignant conditions". *Obstet. Gynecol.*, 1994, 84, 765.
- [2] Kadar N.: "Port-site recurrences following laparoscopic operations for gynecological malignancies". *Br. J. Obstet. Gynecol.*, 1997, 104, 1308.
- [3] Leminen A., Lehtovirta P.: "Spread of ovarian cancer after laparoscopic surgery: report of eight cases". *Gynecol. Oncol.*, 1999, 75, 387.
- [4] Morice P., Viala J., Pautier P., Lhommé C., Duviard P., Castaigne D.: "Port site metastasis after laparoscopic surgery for gynecological cancer. Report of 6 cases and surgical implications for prevention". *J. Reprod. Med.*, 2000, 45, 837.
- [5] Wang P. H., Yuan C. C., Lin G., Ng H. T., Chao H. T.: "Risk factors contributing to early occurrence of port site metastases of laparoscopic surgery for malignancy". *Gynecol. Oncol.*, 1999, 72, 38.
- [6] Tsivian A., Shtabsky A., Issakov J., Gutman M., Sidi A. A., Szold A.: "The effect of pneumoperitoneum on dissemination and scar implantation of intra-abdominal tumor cells". *J. Urol.*, 2000, 164, 2096.
- [7] Allardyce R. A.: "Is the port site really at risk? Biology, mechanisms and prevention: a critical view". *Aust. N. Z. J. Surg.*, 1999, 69, 479.

Address reprint requests to:
P. MORICE, M.D.
Institut Gustave Roussy
39 rue Camille Desmoulins
94805 Villejuif (France)