

Tumor Implantation along Abdominal Trocar Site after Pelviscopic Removal of Malignant Ovarian Tumor

- A Case Report -

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The application of pelviscopic surgery for the management of ovarian tumors has increased dramatically in the last few years. Of particular concern is the pelviscopic excision of malignant ovarian tumors. One of the important potential problems with this approach is disseminating malignant cells to peritoneal surface. The aim of this report is to draw attention to the possibility of the occurrence of a tumor implantation at the pelviscopic port site in patients with malignant ovarian tumors. A case is presented here in which a localized tumor implant occurred in the abdominal trocar site after pelviscopic removal of ovarian mass subsequently found to be squamous cell carcinoma arising in mature cystic teratoma with brief review of literatures.

Key Words : Ovarian cancer, Pelviscopic surgery, Tumor implantation.

INTRODUCTION

Over the last decade, modern pelviscopic equipment and technique have expanded the role of diagnostic and operative pelviscopy. A growing number of patients with ovarian masses are now enjoying the advantage of this minimal-access surgery, even including patients with malignant ovarian tumors. However, major and minor complications related to this procedures can occur. Hemorrhage from injury of the blood vessels, perforation of the intestinal tract, gas embolism, and injury to the abdominal wall are distinct possibilities(Nord, 1992). Especially in case of malignant disease, the risk of inadvertently puncturing and spilling ovarian carcinoma may decrease survival in early lesions(Webb et al.,

1973). Tumor implantation along abdominal trocar site after pelviscopic management of malignant ovarian tumor is rare with only a few cases reported in the literature(Doboronte et al., 1978 ; Stocdale and Pocock, 1985 ; Hsiu et al., 1986 ; Miralles et al., 1989 ; Gleeson et al., 1993 ; Childers et al., 1994 ; Shepherd et al., 1994). We present a case of tumor implant occurring in the abdominal trocar site after pelviscopic removal of ovarian mass subsequently found to be squamous cell carcinoma arising in mature cystic teratoma with brief review of literatures.

CASE REPORT

A 30-year-old woman was admitted to a local hospital with the chief complaint of severe abdominal pain after sexual intercourse. Pelvic examination revealed a hen egg-sized right adnexal mass with tenderness, which was confirmed to be a 6 cm-sized ovarian cyst with partial solid portion with accompanying small amount of peritoneal fluid by ultrasonography. On emer-

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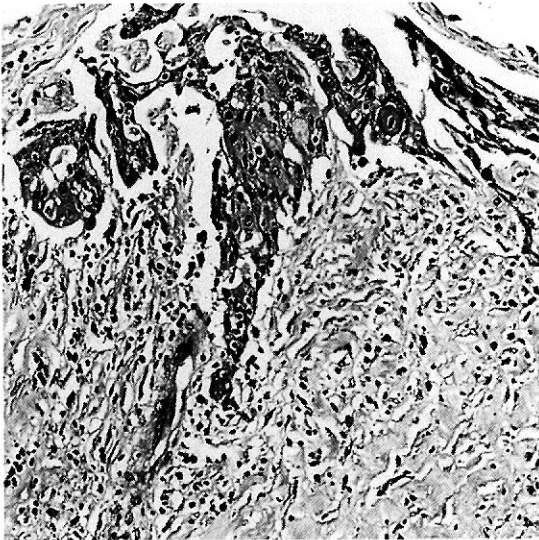


Fig. 1. Right ovarian tumor showing moderately differentiated squamous cell carcinoma arising in a mature cystic teratoma (H & E, $\times 100$).

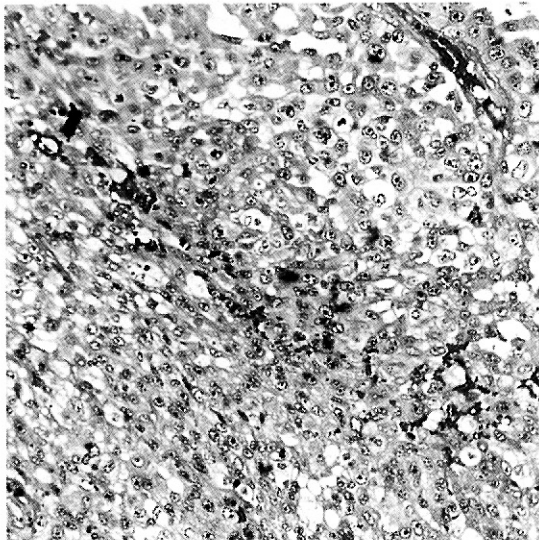


Fig. 2. The tumor adjacent to the squamous cell carcinoma in Figure 1, the multiple peritoneal and mesenteric deposits, and the mass excised from the previous abdominal trocar site were poorly differentiated carcinomas resembling embryonal carcinoma (H & E, $\times 200$).

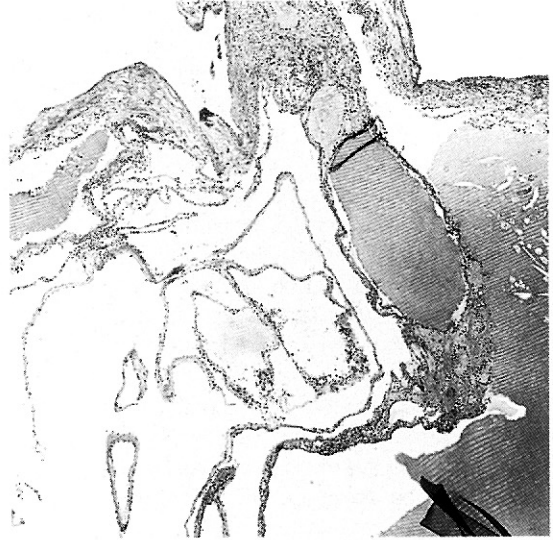


Fig. 3. Left ovarian tumor showing monodermal teratoma made of mature thyroid tissue (struma ovarii) (H & E, $\times 40$).

tube were extracted from the pelvic cavity through the second pelviscopic puncture in the right lower quadrant. She made an uncomplicated recovery except the blue discoloration and consolidation at the site of tumor extraction. Grossly, the excised right adnexa consisted of a partly solid multicystic focally hair bearing ovarian mass and unremarkable fallopian tube. Microscopically, keratin cysts lined by mature keratinizing squamous epithelium, intermixed with mature adipose tissue, and skin comprised the great bulk of the specimen, while in a minute focus, infiltrating islands of atypical squamous epithelium with prominent nucleoli were observed (Fig. 1). In the adjacent areas, the tumor was poorly differentiated with sheets of large pleomorphic cells showing ample, eosinophilic cytoplasm and nuclei with prominent nucleoli, similar to the better differentiated area (Fig. 2). A diagnosis of squamous cell carcinoma arising in a mature cystic teratoma was made and the patient was referred to the Gynecologic Oncology Clinic at Asan Medical Center 2 weeks after initial pelviscopy. Investigations including chest x-ray, intravenous pyelogram, colon study, and routine laboratory tests revealed normal findings. The CT scan of abdomen and pelvis showed enlarged left ovary and 3cm-sized mesenteric mass. Serum levels of CA 125, CA 15-3, CEA, AFP and SCC-Ag at the time of patient transfer were 64.7 U/ml, 13.1 U/ml, 1.8 ng/ml, 1.5 ng/ml and under 1.0 ng/ml, respectively. An exploratory laparotomy with vertical incision was performed and approximately 100cc of bloody

gency pelviscopy, the cyst was already ruptured and twisted once, and 300cc of bloody ascites was visualized. Under the impression of benign ovarian cyst with torsion and rupture, right salpingo-oophorectomy was performed pelviscopically, and the tumor and the right

ascites was present in the pelvic cavity. There were 2 cm-sized remnant right adnexal mass, 4×4×3 cm-sized left ovary which was adherent to a 3 cm-sized mesenteric mass and sigmoid colon, and multiple small implants on the serosal surface of pelvic cavity. An ill-defined, 4×3×3 cm, indurated mass was noted in the anterior lower abdominal wall at the previous trocar entry site. A total abdominal hysterectomy, left salpingo-oophorectomy, total omentectomy, excision of tumor nodules on peritoneal surface, and excision of indurated mass at the previous abdominal trocar site were performed. The procedure was well tolerated and all visible tumor were removed. Just before the closure of the abdomen, cisplatin 100mg in 200cc of normal saline was infused in the peritoneal cavity. Pathologic examination revealed the multiple peritoneal and mesenteric deposits to be squamous cell carcinoma, exclusively made of poorly differentiated carcinoma similar to the original tumor(Fig. 2). In addition, the specimen excised from the previous abdominal trocar site also revealed scattered net of same tumor implants in the subcutaneous tissue(Fig. 2). Immunohistochemical stains for alpha fetoprotein and human chorionic gonadotropin were performed to rule out an embryonal carcinoma that might have been misinterpreted as poorly differentiated squamous carcinoma, and were negative, while cytokeratin was strongly positive in tumor cells. The mass in the remnant right ovary consisted of suture granulomas and fat necrosis. The enlarged left ovary was involved by monodermal teratoma composed of mature thyroid tissue(Fig. 3). The postoperative course was uneventful and the patient was managed with 6 cycles of PF(cisplatin + 5-FU) combination chemotherapy. After the chemotherapy, the tumor markers including CA 125 and CA 15-3 were decreased to 24.2 U/ml and 6.8 U/ml, respectively. The patient was doing well until 10 months later without any evidence of recurrence.

DISCUSSION

The recent rapid development of laparoscopic equipment and technique has made possible the laparoscopic removal of tumors from pelvic cavity even in malignant condition, and allows many benefits of this minimal-access surgery to patients with pelvic mass. However, it also introduces new disadvantages, especially in malignant disease. Because ovarian carcinomas have the propensity to spread along the abdominal peritoneal surfaces, accidental puncture and spillage of ovarian

carcinoma may affect survival in early lesions(Webb et al., 1973) and abdominal wall tumor implantation is an important complication of this technique. Tumor implantation along abdominal trocar insertion site is rare, and we are aware of a few case reports in the literature. The review of these reports and our case gave us some insight into the circumstances in which implantation occurs. Doboronte et al.(1978) and Stocdale and Pocock (1985) reported cases of ovarian cancer implantation at Veress needle insertion site, and showed that implantation can occur at any abdominal puncture site. Hsiu et al.(1986), Gleeson et al.(1993) and Shepherd et al.(1994) reported implantation developed in the presence of tumors of low malignant potential, and Childers et al.(1994) and we reported cases of poorly differentiated tumor. These suggests that implantation could involve any grade of tumor. The presence of malignant ascites are known to increase the incidence of tumor implants in the abdominal trocar site, but there are reports of cases with no ascites(Gleeson et al., 1993; Childers et al., 1994). Generally abdominal wall implants appears to grow rapidly and is recognized promptly. Almost all cases including ours were discovered within 2 to 3 weeks postoperatively as subcutaneous masses or discoloration of skin.

To gain a better understanding of this problem, the incidence and prognosis of abdominal wall implantation must be known. However there are few reports about that. Childers et al.(1994) reviewed 105 procedures in which intraperitoneal or retroperitoneal malignancies were documented, and revealed that abdominal wall implantation developed on only one port site in one patient, a frequency of 0.2% per abdominal puncture or 1.0% per procedure, and it was detected as a firm nodule eight weeks after her procedure. They believed that long-term survival might not be affected by prompt excision, and the threat of abdominal wall tumor implantation should not deter the ongoing investigation in patients with malignant tumor.

As in our case, if the tumor resected laparoscopically was subsequently found to be malignant, there were additional potential problems including inappropriate surgical procedure, incomplete surgical staging, inadequate patient preparation, and delay in definite surgery. Maiman et al.(1991), who analysed 42 cases of laparoscopically removed ovarian neoplasms subsequently found to be malignant, concluded that because these are not uncommon, laparoscopic ovarian surgery should be performed using strict criteria to reduce the likelihood that a malignancy would be disrupted. Shep-

herd et al.(1993), reporting wound recurrence by implantation, advocated that because tumor implantation converted a stage Ia tumor into a stage IIIa or even stage IV tumor, care must be taken in the selection of ovarian neoplasm considered suitable for pelviscopic surgery and in handling the tumor tissue to avoid any spillage and implantation. Recently a specimen retrieval bag such as Endopouch is used to prevent spillage of tumor content and contamination of wound(Yuen et al., 1993). In our case, there was not enough chance to consider the possibility of malignancy of the tumor because of emergency setting and young age of the patient. If the operators were to keep in mind the possibility of malignancy, more careful inspection of pelvic cavity to find out the metastatic nodules and intraoperative frozen biopsy could reveal the malignancy, and definite surgery might not be delayed.

Implantation of tumor along the trocar site can occur in non-ovarian malignancies. There are case reports of abdominal wall tumor implantation after laparoscopic procedures for gastric(Cava et al., 1990), gall-bladder (Pezet et al., 1992), urinary bladder(Anderson and Steven,1995), and pancreatic adenocarcinoma(Siriwardena and Samarji, 1993).

The main purpose of this report is to call attention to the fact that pelviscopic removal of malignant ovarian tumor may cause tumor implantation along the abdominal trocar site. Therefore careful evaluation of suitability of pelviscopic surgery is important and efforts to avoid tumor spillage or contamination of wound are warranted whether the mass is considered benign or malignant preoperatively.

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