Metastatic fallopian tube carcinoma presenting as an inguinal hernia

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A 76-year-old married woman, gravida 4, para 4, who went through menopause at the age of 50 years, with hypertension and diabetes under fair control, was admitted to the general surgery ward of Taichung Veterans General Hospital, Taichung, Taiwan due to a self-palpable right inguinal nodule that had persisted for more than 1 month. A physical examination revealed a tender nodule about 3 cm in size over the right groin area. There was no swelling, local heat, or erythematous change. Abdominopelvic computed tomography (CT) showed a right inguinal hernia with a mild inflammatory process in the lower abdomen (Fig. 1). She underwent hernioplasty with high ligation of the inguinal sac and mesh prosthesis. During the operation, an indirect hernia sac with incarcerated omentum was found. Pathology of the inguinal sac and a small tissue sample of the omentum both revealed high-grade metastatic serous carcinoma, and gynecological cancer was highly suspected. Therefore, she was transferred to our clinic, where a bimanual examination revealed a smooth cervix. Ultrasonography showed a normal-sized uterus, a thin endometrium, bilateral small adnexae, and no ascites. Laboratory tests showed an elevated level of tumor marker CA-125: 159 U/mL. Other tests including whole blood cell count, biochemistry, and chest X-ray were normal.

She then underwent exploratory laparotomy. The bilateral ovaries and fallopian tubes were grossly normal, and there was no obvious ascites. There were multiple tiny tumors seeded in the posterior cul-de-sac and serosa of the sigmoid colon, all smaller than 5 mm. Other tiny tumors seeded over the anterior cul-de-sac and uterine serosa were found, with the largest one measuring 1 × 1 × 0.5 cm³. There were also tiny tumors seeded in the upper portion of the ascending colon. The lower end of the omentum adhered to the right hernioplasty wound, the appendix looked unremarkable, and the subdiaphragm and liver surface were smooth by palpation. She underwent total abdominal hysterectomy, bilateral salpingo-oophorectomy, pelvic lymph node dissection, para-aortic lymph node sampling, appendectomy, infracolic omentectomy, and complete resection of visible intra-abdominal metastases. Because there were no gross residual tumors, the procedure was designated as optimal debulking. The final pathological diagnosis was Stage IIIb serous carcinoma and intraepithelial carcinoma of the right fallopian tube (Fig. 2), with metastasis to the uterine serosa, left fallopian tube, peritoneum, omentum, and sigmoid colon.

After the 1st postoperative week, she received six consecutive courses of chemotherapy, with 135 mg/m² paclitaxel (Taxol; Bristol-Myers Squibb, Wallingford, CT, USA) and carboplatin (Paraplatin; Bristol-Myers Squibb, Princeton, NJ, USA), with an area under the curve of 5 mg/mL/min, administered at 3-week intervals. The tumor marker level dropped to a normal range after the operation, and after chemotherapy abdominopelvic CT showed no residual tumors. She received regular follow-up at our outpatient department, where an elevated CA-125 level of up to 116 U/mL was noted 7 months after the last course of chemotherapy. She also complained of a poor appetite, and tumor recurrence was highly suspected. She therefore received chemotherapy with 20 mg/m² pegylated liposomal doxorubicin (Lipo-Dox; TTY Biopharm Co. Ltd., Indianapolis, IN, USA) and gemcitabine HCl (Gemzar; Eli Lilly, Indianapolis, IN, USA) administered at 2-week intervals for a total of 11 courses. After she had completed the chemotherapy, she was followed up at our outpatient department, and was still disease free 4 years after the salvage chemotherapy.

Inguinal hernia is a common condition, and its prevalence in the elderly population is approximately 6% [1]. Other pathological
entities may also be found in the inguinal region, including lipomas, dermoid cysts, endometriosis, uterine leiomyoma, ovarian cysts, bladder diverticulum, and malignancy [2–4]. Malignant tumors presenting in inguinal hernias are rare, occurring in < 0.4% of cases [5]. The primary tumor may be of colonic origin, which is the most commonly observed site. Other possible sites are the ovaries, prostate, mesothelium, appendix, peritoneum, stomach, bile duct, tonsils, and rectum [6–8]. Twelve cases of ovarian neoplasms presenting as inguinal hernias have been reported in the English language literature obtained through a PubMed search. There are different stages and cell types, such as adenocarcinoma, malignant mixed mullerian tumor, or clear cell carcinoma [9–11]. However, there has never been a reported case of primary fallopian tube carcinoma (PFTC) presenting as an inguinal hernia. The preoperative diagnosis of malignancy within an inguinal sac is rarely made even with a CT scan. Some authors believe that a routine pathological examination of the excised hernia sacs is not cost effective and should be performed only in selected cases such as an irreducible hernia, rapidly enlarging hernia, and suspicious lesions [12]. However, occult malignancies have also been reported in grossly normal hernia sacs [13,14]. Therefore, routine microscopic examination of the hernia sac should be considered.

PFTC is a rare tumor that histologically and clinically resembles epithelial ovarian cancer. More than 90% of fallopian tube carcinomas are papillary serous adenocarcinomas, and most cases of PFTC are detected incidentally during exploratory laparotomy. A definite preoperative diagnosis is made in only 3–15% of patients. PFTC should be considered in the following clinical situations: postmenopausal bleeding or spotting with negative diagnostic curettage; smear showing abnormal cells or glands alternating with a negative smear; and unusual, unexplained or persistent serosanguineous vaginal discharge [15]. Serum CA-125 is a useful tumor marker for the diagnosis, assessment of response to treatment, and detection of tumor recurrence during follow-up [16].

PFTC is usually managed in the same manner as ovarian cancer [17]. Surgery is the definitive treatment, and aggressive cytoreductive surgery is mandatory. Postoperative adjuvant chemotherapy similar to that used for epithelial ovarian carcinoma usually involves the prescription of intravenous paclitaxel and carboplatin. Treatment regimens for recurrent disease are the same as that for ovarian cancer. In platinum-sensitive patients, defined as women who relapse later than 6 months after the last course of chemotherapy, carboplatin and liposomal doxorubicin are now widely used for recurrent disease [18]. For patients who are partially sensitive to platinum (treatment-free interval 6–12 months), combination chemotherapy with pegylated liposomal doxorubicin and gemcitabine is well tolerated, with acceptable toxicity and clear activity based on different mechanisms of cytotoxicity, lack of cross-resistance with other agents, low-level and nonoverlapping toxicity, and synergistic preclinical antiproliferative activities [19].

In conclusion, this is the first report of fallopian tube carcinoma with an initial presentation of inguinal hernia. An inguinal hernia in elderly women may be a sign of occult malignancy with peritoneal seeding. Careful history taking and physical and pelvic examinations are mandatory. Imaging studies should also be obtained. Pathological examination of the inguinal sac must be considered in selected patients.

**Conflicts of interest**

The authors have no conflicts of interest relevant to this article.

**References**


