540593124242620416.txt

by

Submission date: 02-Aug-2022 10:13PM (UTC-0500)
Submission ID: 1878292902
File name: 540593124242620416.txt (12.82K)
Word count: 1964
Character count: 11150

Introduction

As a unique histological and clinical entity, borderline ovarian tumors (BOTs) have low malignant potential, and present as intermediate lesions between benign cystadenomas and invasive carcinomas [1]. BOTs account for 10%¡ª20% of all epithelial tumors of the ovary and are characterized by atypical epithelial hyperplasia without stromal invasion [2]. Generally, this disease is common detected in young women of reproductive age and about one-third of women are diagnosed before the age of 40 [3]. The two main subtypes of BOTs are serous and mucinous and have a favorable prognosis, with 5-year and 10-year survival rate of 95% and 90% [4]. Therefore, fertility-preserving surgery is considered for patients who have a desire to become pregnant. However, recent research has indicated that this surgery may increase the risk of recurrence [5], especially for patients at stage II and above. Therefore, determining the clinicopathological characteristics of patients prone to recurrence, selecting patients who require fertility-preserving surgery, and developing a follow-up plan have become the concerns of clinicians.

BOTs are mostly asymptomatic in the early stage and can mimic the symptoms of invasive ovarian cancer, such as abdominal swelling, nausea and vomiting, as well as weight loss, so preoperative diagnosis is difficult [6]. Meanwhile, the management and follow-up of BOTs is a challenge for clinicians, and few clinical studies have addressed these issues in recent decades. Furthermore, guidelines on the management of BOTs are poorly developed due to a relative lack of evidence. Recent study suggested that although BOTs had a good clinical outcome in terms of prognosis and biological characteristics, the possible shorter disease-free survival should be considered,

especially in patients with microinfiltrates identified by histopathological evaluation and undergoing fertility-preserving surgery [7]. In addition, it is necessary to conduct long-term follow-up. Here, we report a case of postoperative recurrence in a young female patient with BOTs who underwent fertility-sparing surgery. This patient provided informed consent and the study protocol was approved by the ethics committee of hospital.

?

Case presentation

A 19-year-old G1P0 woman presented to our hospital in November 2, 2019 with unexplained abdominal distention for two weeks. Physical examination revealed that patient had normal development. The abdominal examination revealed a bulging abdomen with positive mobile turbid sounds and unsatisfactory palpation of the uterus and bilateral adnexa. Transabdominal ultrasound showed a small uterus with a large amount fluid in the abdominal and pelvic cavities; the cystic masses measuring 134mm * 95mm and 10mm * 80mm were detected in the anterior part of the uterus (Figure 1). Magnetic resonance (MR) showed a cystic and solid mass in the lower abdomen and pelvis, which was considered to be derived from adnexal tumor lesion (Figure 2A-D), suspicious for ovarian cystadenocarcinoma with local peritoneal metastasis. Furthermore, no abnormalities were observed in routine blood biochemical tests. However, the serum concentrations of cancer antigen (CA125, reference range: < 35 U/mL) and human epididymis secretory protein (HE4, reference range: 0 ¨C 140 pmol/L) were 2685.0 U/mL and 456.5 pmol/L.

Since the patient was young and not yet fertile, we decided to perform fertility-sparing surgery. In November 13, 2019, the patient underwent laparoscopic exploration, abdominal right adnexectomy, left ovarian mass excision, pelvic lesion resection, and pelvic catheterization. During the operation, a large amount of fluid (about 5000 mL) was found in the abdominal cavity (Figure 3A). There was an uncapsulated cauliflower mass in the right ovary, with a size of 10*9*7 cm; a 15*13*12 cm capsule mass was observed in the left ovary, and no obvious abnormality was seen in the appearance of the fallopian tube (Figure 3B). In addition, bilateral appendages were adhered to the pelvic floor intestinal canal, and extensive miliary metastases were observed in the pelvic peritoneum, transverse septum, and greater omentum, with no macroscopic lesions in other abdominal organs. Subsequently, the resected right appendage was collected for pathological examination. We found that the tumor tissue showed classic serous BOTs changes with multi-level branching papillae (Figure 4A); cells were stratified with hyperchromatic nuclei, moderate atypia, and mitoses (Figure 4B). In addition, a cribriform arrangement of tumor cells was observed in the micropapillary region (Figure 4C), and the cells were moderately atypia with mitoses (Figure 4D). Results confirmed the presence of stage III serous BOTs.

After operation, patient was treated with hyperthermic perfusion combined with normal saline, docetaxel, and lobaplatin from November 14 to November 16, 2019. Postoperative recovery was stable. The patient was asymptomatic on the 5th postoperative day (November, 18, 2019) and was discharged home. The patient was followed up every six months for tumor markers (CA125 and HE-4) assessment, and

no abnormality was found. In addition, the patient had a normal menstrual cycle after surgery.

After 20 months, the patient came to our hospital for examination in July 18, 2021 with abdominal pain and diarrhea for 10 days. Abdominal B-ultrasound showed no obvious abnormality in the liver, pancreas, and spleen, while there was effusion in the abdominal cavity (about 22 mm). Subsequent ultrasound scans revealed a mixed echogenicity in both the left ovary and pelvic region (Figure 5). MR scan showed a new cystic solid mass in the left ovary, measuring about 52 mm * 33 mm * 60 mm, with partially unclear borders. The DWI, T1WI, and T2WI showed high, slightly low, and high signal (Figure 6A-C). The solid part was observed and separation was significantly strengthened via enhanced scan (Figure 6D). Meanwhile, the level of CA125 (48.770 U/mL) was elevated, thus we considered postoperative recurrence of BOT.

This time, patient still want to preserve fertility. Patient underwent fertility-sparing surgery after being advised of potential risk. On July 20, 2021, the patient received laparoscopic left ovariectomy, electrocautery of pelvic lesions, greater omentum resection, pelvic adhesion release, and thermoperfusion tube placement. During the operation, milky white erosion-like lesions were observed flowing out from the left ovary and a cauliflower-like lesion with a size of about 2*1 cm was found on the surface (Figure 7A); a milky white lesion the size of a peanut was seen in the left greater omentum (Figure 7B); multiple membranous adhesions were found on both side of the bowel and lower abdominal wall as well as on the liver surface and anterior wall of the upper abdomen (Figure 7C). Peritoneal effusion was about 100 mL. An

intraoperative frozen section of the left ovary revealed the BOT with a localized patter of micropapillary growths and cells were moderate atypia (Figure 8A and 8B). In addition, the immunohistochemical results of p16 and P53 were positive and wild-type (Figure 8C and 8D). Therefore, it was determined that the patient had a BOT recurrence.

The operation was successful and the patient received three times of intraperitoneal hyperthermia after operation. Then, the tumor marker levels of patient were subsequently followed every two months, and CA125 and HE-4 were within the normal range until the latest follow-up. However, the patient reported having been in menopause for six months.

?

Discussion

Since BOTs are more common in women of childbearing age and have a good prognosis, fertility-sparing surgery is the first choice for BOT patients with fertility needs [8]. Notably, compared with radical surgery, conservation surgery has a higher recurrence rate (about 5%), but most of them do not become malignant, and postoperative recurrence can be treated by surgery again without affecting the overall survival [9]. This study reported a case of recurrence 20 months after fertility preservation surgery in a 19-year-old female patient with stage III serous BOT.

The most common histopathological types of BOTs are serous and mucinous, among these, serous BOTs account for approximately 50% of all case [10]. In this case, patient was diagnosed with stage III serous BOTs. Fang et al. [11] found that patients with serous BOTs at advanced-stage (¡Ýstage II) were related to shorter recurrence

interval and higher recurrence rate. In addition, micropapillary is also associated with higher incidence of recurrence [12]. Previous study indicated that both micropapillary and fertility-preserving surgery were considered as risk factors for recurrence in patients with serous BOTs [13]. In the study of Falcone et al. [14], they recruited 91 patients with stage II-III serous BOTs undergoing fertility-sparing surgery and found that 53.8% of patients experienced at least one recurrence with the median time to first relapse was 22 months. Moreover, a small number of these relapsed patients would be accompanied by malignant transformation [15]. Similar to these studies, we also observed a short-time recurrence (about 20 months) after fertility preservation surgery in this case. Considering that this patient was young with fertility needs, a second fertility-sparing surgery was conducted. A recent meta-analysis revealed that secondary fertility-sparing surgery was a safe procedure for stage I patients with reproductive needs, resulting in higher pregnancy and live birth rates after surgery; however, the benefits and risks of a second surgery should be weighed for patients with advanced stage [16]. Therefore, for patients need to preserve fertility, we should explain to her the risk of high recurrence rate and the need for more careful follow-up. Reproductive-outcome is the most concerned topic for patients after fertility-sparing surgery. Previous study showed that conservative treatment effectively preserved fertility and allowed natural pregnancy, with a cumulative spontaneous pregnancy rate of 50¨C60% after operation [17]. However, each additional ovarian surgery performed after recurrence may carry a risk of reducing ovarian reserve and inducing premature ovarian failure, while conservative treatment does not appear to preserve fertility completely [18]. In a study of 52 women of reproductive age, Chevrot et al. found that

26% of patients required assisted reproductive drugs to become pregnant after surgery [19]. In our case, although the patient had normal menstruation after the first surgery, she was in menopause until last follow-up after the second surgery. We speculate that it may be due to the damage to ovarian function caused by reperfusion therapy after recurrence. So, if the patient wants to become pregnant, it is necessary to wait for recovery of ovarian function. Several studies have assessed the obstetrical outcomes of women treated with fertility-sparing surgery for BOTs. Johansen et al. [20] surveyed 213 women with BOTs in Sweden who undergone fertility-sparing surgery and found that 23% of women delivered after surgery, with a mean interval from surgery to delivery of 32 months; they also indicated that 9% of patients received assisted reproductive treatment, and eight of them achieved delivery. In five patients in Korea who underwent fertility-sparing surgery, Song et al. [21] found that these patients had normal menstrual cycles, four of whom conceived spontaneously and one patient conceived after two cycles of ovulation induction with clomiphene citrate, and the median interval between tumor treatment and pregnancy was 15 months. Taken together, depending on the histological type of BOT, age of patient, and risk of recurrence, the duration of pregnancy after fertility-sparing surgery may be an important problem. In general, it is preferable to conceive immediately after the procedure when circumstance allow [22].

In addition, assisted reproductive techniques should be considered when the likelihood of natural conception appears to be low after conservative surgery. Previous study indicated in vitro fertilization pregnancy outcomes in patients with BOTs after preservation surgery are generally good, with a pregnancy rate of 63.5% [23]. Thus, for

young women diagnosed with BOTs, enhanced follow-up and tumor fertility counseling are necessary, especially for patients with advanced stage [24]. In this case, we found that the patient had not undergone oocyte cryopreservation. At further follow-up, we should recommend patients to cryopreserve ovarian tissue, oocytes, or embryos as soon as possible.

Conclusion:

In summary, fertility-sparing surgery may be a feasible strategy for patients with BOTs, but it may be accompanied by a high risk of recurrence. Therefore, clinicians should consider the patient¡¯s fertility needs and intensive follow-up before making a final decision. Meanwhile, it is advisable to advise the patient to conceive immediately after surgery or to undergo oocyte freezing when circumstances permit.

540593124242620416.txt

ORIGINALITY REPORT

8%	2%	8%	0%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Mingdan Wang, Kuiran Liu. "Advances in fertility preserving surgery for borderline ovarian tumors", European Journal of Obstetrics & Gynecology and Reproductive Biology, 2022 Publication	3%
2	Francesca Falcone, Enrico Breda, Gabriella Ferrandina, Mario Malzoni et al. "Fertility-sparing treatment in advanced-stage serous borderline ovarian tumors. An analysis from the MITO14 study database", Gynecologic Oncology, 2021 Publication	1%
3	Song, T.. "Oncologic and reproductive outcomes in patients with advanced-stage borderline ovarian tumors", European Journal of Obstetrics and Gynecology, 201106 Publication	1%
4	assets.researchsquare.com Internet Source	1%
5	ir.ymlib.yonsei.ac.kr	

	Internet Source	<1%
6	Rosa Maria Alvarez. "Fertility sparing treatment in borderline ovarian tumours", ecancermedicalscience, 2015 Publication	<1%
7	www.ncbi.nlm.nih.gov Internet Source	<1%
8	&NA;, . "ESGO 18 Meeting Abstracts, Liverpool :", International Journal of Gynecological Cancer, 2013. Publication	<1%
9	&NA;. "Abstracts presented at the 17th International Meeting of the European Society of Gynaecological Oncology :", International Journal of Gynecological Cancer, 10/2011 Publication	<1%

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		