Case Report

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Laparoscopic Surgery for a 91-year-old Woman with a Huge Solid Adult Granulosa Cell Tumor: A Case Report

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Abstract

Adult granulosa cell tumors are rare ovarian malignancies. They are usually stage I tumors and have a relatively good prognosis. Surgery is the mainstay of primary therapy. Recent studies showed that a minimally invasive laparoscopic approach is an option for selected patients with adult granulosa cell tumors. We report the case of a 91-year-old woman with an 18 cm solid adult granulosa cell tumor treated with laparoscopic surgery. The patient complained of pelvic discomfort and was found to have a solid ovarian tumor. The tumor was expected to be an early-stage sex cord-stromal tumor such as a granulosa cell tumor or thecoma because of the pelvic magnetic resonance imaging findings and abnormal hormonal blood test results. She underwent laparoscopic bilateral salpingo-oophorectomy. We successfully performed laparoscopic surgery in an elderly woman with an 18-cm solid adult granulosa cell tumor without scattering and spillage of the tumor, using a Vagi-Bag. She had no perioperative complications and recovery was rapid. She was doing well and disease-free at 8 months of follow-up.

Keywords: Laparoscopy, Salpingo-oophorectomy, Adult granulosa cell tumor, Ovarian tumor, Elderly patient, Gynecology

Introduction

Sex cord-stromal tumors of the ovary account for about 5% to 8% of all ovarian malignancies [1]. Granulosa-stromal cell tumors (GCTs) account for the majority of sex cord-stromal tumors and adult granulosa cell tumors (AGCTs) account for about 95% of all granulosa cell tumors. They occur more commonly in the postmenopausal patient and are the most common tumors that produce estrogen [2]. AGCTs are usually stage I and have a relatively good prognosis. Surgery is the mainstay of primary therapy. GCTs range from a few millimeters to 20 cm or more in diameter [1].

Laparoscopic management in patients with early-stage GCTs is not popular due to the solid nature and relatively large size of these tumors. However, patients with early-

stage GCTs tend to favor laparoscopic surgery because of cosmetic factors, fast recovery times, and early discharge after the operation. A recent European Society for Medical Oncology (ESMO) Guidelines Committee report showed that a minimally invasive laparoscopic approach is an option for selected patients with AGCTs [3]. Previous retrospective studies reported that laparoscopic surgery for early-stage GCTs could be a safe therapeutic option [4,5]. We report the case of a 91-year-old woman with an 18-cm solid AGCT treated with laparoscopic bilateral salpingo-oophorectomy.

Case Presentation

A 91-year-old Gravida 2 Para 2 (G2P2) woman presented to our department in Minoh City hospital with pelvic discomfort. Past medical history included polio

affecting her left leg, and two femoral implant surgeries for trochanteric fractures. She used a cane or wheelchair. She was prescribed a long-acting angiotensin receptor blocker, a calcium-channel blocker, an antiplatelet drug, and a medication for overactive bladder. Physical examination revealed a mobile solid pelvic mass of nearly 13 cm in diameter. A cystic and solid adnexal tumor measuring 13 × 6 × 8 cm was found on pelvic magnetic resonance imaging (MRI). Laparotomy was planned but the patient and her family was concerned about postoperative weakness and impairment of activities of daily living (ADLs). Laparotomy was cancelled because of the risk associated with her age and fragility.

However, her pelvic discomfort gradually worsened, and pelvic ultrasonography showed further enlargement of the adnexal tumor. By 6 months after her first visit, the solid adnexal tumor grew measured 18 × 10 × 10 cm on pelvic MRI (Figure 1).

Figure 1: Cystic and solid adnexal tumor measuring 13×6×8cm is shown on pelvic magnetic resonance imaging.

Her laboratory data was nearly normal and tumor makers (CEA, CA 125, CA 19-9, HE 4) were in normal range. The sex hormone levels were abnormal for her age: luteinizing hormone, 23.8 mIU/ml; follicle-stimulating hormone, 8.12 mIU/ml; estradiol 21 pg/ml. The tumor was expected to be an early-stage sex cord-stromal tumor, such as GCT or thecoma because of the MRI findings and

abnormal hormonal blood tests.

The gynecologist and anesthesiologist assessed her ability to tolerate a pneumoperitoneum and obtained an echocardiogram and respiratory function tests. The patient was given sufficient explanation and consented to laparoscopic surgery. Laparoscopic bilateral salpingo-oophorectomy was scheduled in our hospital.

Procedures Done

The operation was performed under general anesthesia in supine position. Abdominal access was achieved with an open method at the umbilicus. The umbilical incision length was about 3 cm. EZ Access and Lap Protector devices (Hakko Medical Co. Ltd, Japan) were positioned at the umbilicus. Two 5-mm trocars were positioned at the EZ Access site. Two other 5-mm trocars in left and right low abdominal position were introduced after induction of pneumoperitoneum of ≤ 10 mmHg. An 18 cm right ovarian tumor occupied the entire lower abdominal cavity. The right infundibulopelvic ligament was ligated and cut, and the right utero-ovarian ligament and Fallopian tube were cut with bipolar and Sono-Surge devices (OLYMPUS Co. Ltd, Japan). The 18 cm solid right ovarian tumor was inserted into a Vagi-Bag, shredded with a surgical scalpel inside the Vagi-Bag, and removed through the umbilical incision (Figures 2 and 3).

Figure 2: The Vagi-Bag (Hakko Medical Co. Ltd, Japan) has a 35×25 cm fan shape. The tumor capacity of the Vagi-Bag is about 850 ml.

The operating time from incision to closure was 2 hours 11 minutes, with no intraoperative complications. Total weight of the tumor was 818 g. Postoperative recovery was uneventful, and the patient was discharged on the seventh postoperative day. There were no postoperative complications. The histopathologic diagnosis was AGCT.

The peritoneal cytology was negative. She was alive and disease-free at 8 months of follow-up.

Figure 3: An 18 cm solid right ovarian tumor was inserted into the Vagi-Bag (Hakko Medical Co. Ltd., Japan), shredded with a surgical scalpel inside the Vagi-Bag, and removed through the umbilical incision.

Discussion

We successfully removed an 18 cm solid right ovarian tumor in an elderly patient with a laparoscopic approach using a Vagi-Bag.

We had two main challenges in this case. First, we selected laparoscopic surgery for a huge solid ovarian tumor that was expected to be an early-stage sex cord-stromal tumor, such as GCT or thecoma. Minimally invasive laparoscopic approaches in gynecological oncology have become increasingly more common and convenient because of reduced bleeding and morbidity, and shortened recovery time and length of hospitalization [6]. Followed by the ESMO Clinical Practice Guidelines published in 2018 [3], a recent retrospective study showed that the oncologic outcome showed no difference between laparoscopic and open surgery in stage I AGCT adult granulosa cell tumors treated within the Multicenter Italian Trials in Ovarian cancer (MITO-9) Group.

The retrospective study of the MITO-9 group included 223 patients with stage I AGCTs as follows: Stage IA, IB, and IC accounted for 61.5%, 1.3% and 29.6%, respectively, and 7.6% were apparently stage I. A laparoscopic surgical approach was used in 93 patients (41.7%), with open

surgery in 130 (58.3%). No significant difference was found to affect 5-year disease-free survival and 10-year overall survival (5-year disease-free rate: 84% vs. 82%, $P = 0.6$; 10-year rate: 98% vs. 97%, $P = 0.8$) in the laparoscopic versus open group [5].

Another previous retrospective study also reported that laparoscopic management for early malignant of non-epithelial ovarian tumors seemed safe. The study included 20 sex cord-stromal tumors (18 granulosa cell and 2 Sertoli-Leydig cell tumors) and 8 malignant germ cell tumors. All patients with GCTs had International Federation of Gynecology and Obstetrics (FIGO) stage I disease (IA, 17 patients; IC, 1 patient). No intraoperative complications or conversion to laparotomy was observed. None of the GCT patients had recurrence [4]. These studies suggested that laparoscopic surgery for early-stage granulosa cell tumors could be safe [4,5]. Other case reports also suggested the safety of early-stage GCTs treated with laparoscopic surgery [7-9].

On the other hand, laparoscopy-related tumor implantations were reported in various gynecological malignancies [10-12]. It is not yet clear which mechanisms play a role in laparoscopy-related tumor implantations. Direct implantation may occur through forced retrieval of the tumor or by instruments that had contact with tumor cells during dissection. One possible way to minimize the risk of tumor seeding is the use of a protective bag for removal of all tissues [10].

In this case, we used the protective Vagi-Bag for retrieval and dissection of the tumor. The Vagi-Bag has a 35 × 25-cm fan shape. The capacity of the bag for a tumor is about 850 ml. Huge ovarian tumors usually occupy the pelvic cavity, making it difficult to store the tumor in the laparoscopic retrieval bag (Figure 2). With the pneumoperitoneum established, the tip of the fan is directed to the pelvic floor, the arc portion of the entrance is directed to the upper abdomen, and the large bag entrance makes it easier to insert a huge tumor compared to that using a laparoscopic bag with a square shape. By using this laparoscopic bag, we successfully dissected and retrieved an 18-cm solid ovarian tumor without scattering and spillage.

As the second challenge, we planned minimally invasive laparoscopic surgery in an elderly patient. Our previous retrospective study showed the safety of laparoscopic salpingo-oophorectomy for ovarian tumors in women aged > 75 years [13]. Ghezzi et al. reported that elderly

women who undergo laparoscopy have a significantly shorter hospitalization and fewer complications compared with those who undergo open surgery in the age groups of 70-74 years, 75-79 years, and older than 80 years. These data suggest that when elderly persons have benign ovarian tumors and require surgery, they should be treated with laparoscopic surgery if possible [14].

Weber et al. reported that laparoscopic surgeries in elderly patients were superior for prevention of postoperative complications because of quick recovery and shorter hospitalization [15]. In this case, the patient underwent laparoscopic treatment for a huge ovarian tumor because she and her family strongly hoped to maintain her ADLs after the operation. She had no perioperative complications and recovery was rapid. She was doing well and disease-free at 8 months of follow-up.

We had some concerns in this case. AGCTs may recur 5 to 30 years after initial diagnosis. Low-grade endometrial cancers occur in association with granulosa cell tumors in at least 5% of cases because of estrogen secretion from the tumor. If an early-stage granulosa cell tumor is identified by frozen section, a hysterectomy and bilateral salpingo-oophorectomy should be performed in perimenopausal and postmenopausal women [1]. In this case, our follow-up duration is still short.

The patient declined a hysterectomy because she and her family strongly hoped for a short operative time and minimally invasive surgery. Obvious endometrial hyperplasia and cancer was not detected on transvaginal sonography and endometrial biopsy before the operation.

Conclusion

We successfully performed laparoscopic surgery in an elderly patient with an 18 cm solid AGCT. As described above, there is a risk of scattering tumor cells when a huge ovarian tumor is removed in laparoscopic surgery. Use of a protective bag, such as the Vagi-Bag, for the retrieval and dissection of the tumor can minimize the risk. Elderly patients requiring surgery for ovarian tumors should undergo laparoscopic surgery if possible because of quick recovery, short duration of hospitalization, and maintenance of ADLs.

Our case report is significant for the management of an elderly patient with a huge early-stage AGCT. For selected cases, surgeons may consider minimally invasive surgery for an early-stage AGCT using a laparoscopic protective bag.

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Declarations

The authors declare no conflict of interest.

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