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Pregnancy Following Robotic Myomectomy and Robotic Oophorectomy

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ABSTRACT

We report the case of a 41-year-old woman with multiple comorbidities who underwent two separate robotic surgeries- first for a large mucinous ovarian cyst with adhesions and incidental endometriosis, and later for multiple uterine fibroids. The initial procedure involved robotic right oophorectomy with excision of an endometriotic patch, while the second involved robotic myomectomy to optimize the uterine cavity. Following the surgeries, she underwent in-vitro fertilization with successful embryo transfer, resulting in a healthy cesarean delivery at 37 weeks and 4 days gestational age. This case emphasizes the advantages of robotic-assisted gynecologic surgery in managing large adnexal masses and uterine fibroids, even in complex anatomical and comorbid settings. The patient underwent two successful robotic surgeries, demonstrating favorable outcomes with minimal morbidity. As technology continues to advance, robotic platforms will likely play an increasingly vital role in gynecology, offering patients effective, safe, and fertility-preserving options.

Keywords: Infertility; Robotic Myomectomy; Robotic oophorectomy; Ovarian cyst; Uterine fibroids

INTRODUCTION

Robotic-assisted laparoscopic surgery has emerged as a valuable tool in the management of complex gynecologic pathologies, offering advantages such as enhanced precision, reduced blood loss, and quicker recovery times compared to conventional laparoscopy. We present a unique case in which a patient successfully underwent two major robotic procedures- an oophorectomy for a mucinous cystadenoma with adhesions and an incidental finding of endometriosis, followed by a myomectomy for multiple fibroids prior to achieving pregnancy via frozen embryo transfer, highlighting the role of robotic surgery in staged management of gynecologic disease. This case underscores the versatility and safety of robotic-assisted laparoscopic surgery in managing complex gynecologic pathologies in a fertility-preserving context.

CASE PRESENTATION

A 41-year-old nulliparous patient, known to have diabetes mellitus and hypertension, first presented to our center in July 2019 with complaints of intermittent lower abdominal pain. On examination, she was vitally

stable. Her abdomen was soft and non-tender, with a palpable mass noted in the lower abdomen. An ultrasound scan revealed a right adnexal cystic lesion measuring approximately 13.5 × 10.9 cm, with multiple thin internal septations **(Figure 1).**

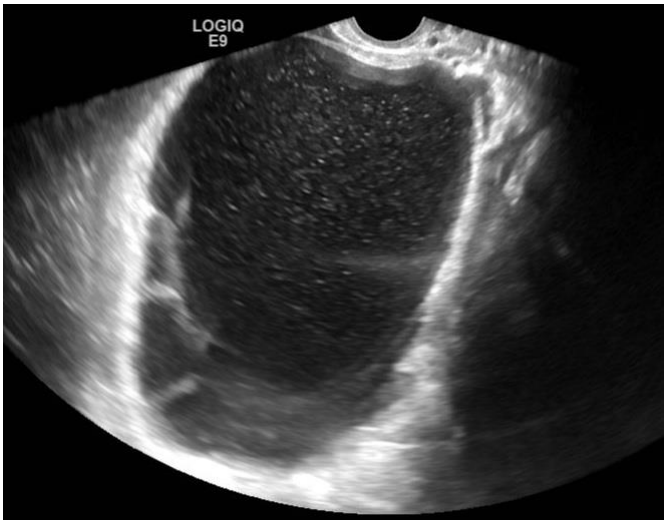

Figure 1: Ultrasound imaging showing right adnexal cystic lesion with internal septations measuring 13.5 x 10.9 cm

Her tumor markers were within normal limits **(Table 1)**.

Table 1: Tumor markers

Laboratory Investigation	Value	Reference Range
CA 19-9	22.82 U/mL	<37.0 U/mL
CA 125	11.1 U/mL	<35.0 U/mL
AFP	4.1 IU/mL	<5.8 IU/mL
B-hCG	<1 mIU/mL	<5 mIU/mL

Due to the large size of the ovarian mass, she was advised to undergo an oophorectomy to reduce the risk of rupture or ovarian torsion. She subsequently underwent a robotic right-sided oophorectomy. Intraoperatively, a right ovarian cyst measuring up to 18 cm was found, embedded in adhesions to the uterus, with the appendix attached to it. An endometriotic patch was also incidentally noted on the fundus of the uterus, which was excised and sent for histopathological analysis along with the excised cyst. In view of the endometriotic patch, she was prescribed monthly goserelin injections for three months. Histopathology confirmed endometriosis in the uterine fundal patch, while the right adnexal mass was identified as a mucinous cystadenoma. Her postoperative period was uneventful, and she was discharged home.

Approximately nine months later at the age of 42 years, the patient presented to the outpatient department with complaints of difficulty in conceiving. She was advised to seek assisted reproductive services for possible in-vitro fertilization in view of her age and previous surgery. Hormonal analysis from a different facility revealed elevated prolactin, high thyroid-stimulating hormone (TSH), and a low anti-Müllerian hormone (AMH) level. She was treated with cabergoline for three months to address hyperprolactinemia, after which it was discontinued. The patient underwent one cycle of ovulation induction with clomiphene citrate.

Six months later, she presented with a three-month history of heavy menstrual bleeding. An ultrasound scan was performed and it revealed a retroverted uterus with two large fibroids: a posterior intramural fibroid approximately 4 cm in length and an anterior serosal fibroid measuring 6 x 5.3 x 5 cm **(Figure 2).**

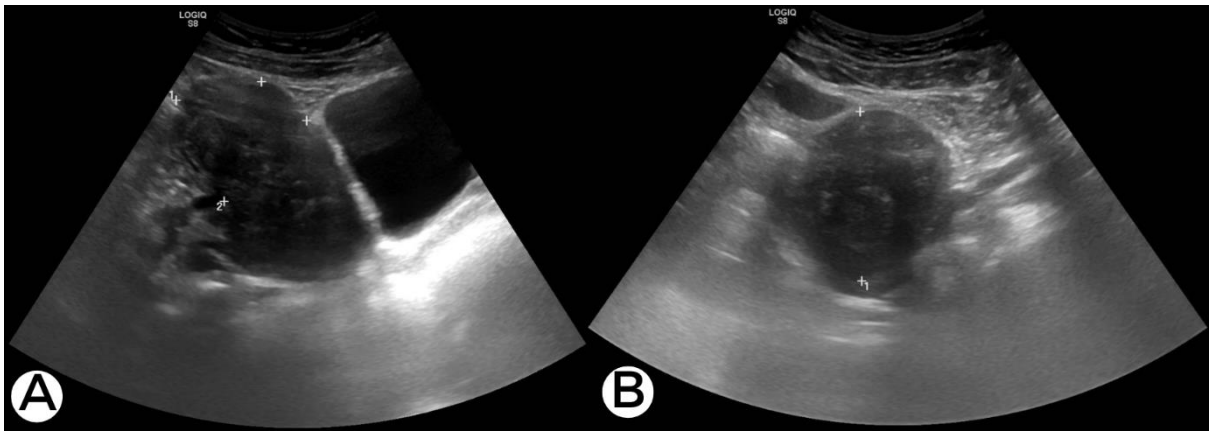

Figure 2: Ultrasound imaging showing anterior wall fundal myoma, measuring 6x5.3x5cm

A follow-up ultrasound showed two developing follicles, one measuring 18 x 15 mm and the other 17 x 14 mm. In view of an AMH level of less than 0.05 ng/mL she was counseled on the very low likelihood of successful egg retrieval for in-vitro fertilization (IVF). Her fertility specialist advised for her to undergo myomectomy to improve her chances of conception. The patient wanted the same as she was extremely keen on improving her chances of a successful pregnancy and opted to undergo the procedure accepting the risks associated with major surgery. She underwent a robotic myomectomy in February 2022. Intraoperatively, an enlarged uterus was noted, with an anterior wall intramural fibroid impinging on the endometrial cavity. The right adnexa was completely embedded in adhesions, and the pouch of Douglas was obliterated with bowel adhesions. The left fallopian tube and ovary were normal. A total of three fibroids were removed by bag morcellation: the largest measured 7 × 5 cm, and the other two were 3 cm and 1.5 cm in size. Her recovery was uneventful, and she was discharged home on postoperative day three. She received 2 doses of triptorelin postoperatively- immediately after surgery and the other 3 months later.

Ten months postoperatively, the patient remained unable to conceive spontaneously. She subsequently opted for frozen embryo transfer at a specialized IVF center. The embryo transfer, performed two months later, resulted in a successful pregnancy. During the first trimester, she experienced a few episodes of vaginal bleeding, which resolved with vaginal progesterone. In view of her high-risk pregnancy, she was started on low-dose aspirin and thromboprophylaxis early in gestation. She later developed gestational diabetes mellitus, which was managed

with metformin. At 37 weeks and 4 days of gestation, she delivered a healthy female infant weighing 3145 g via cesarean section. Her postoperative course was uneventful, and she was discharged home on the third day.

DISCUSSION

This case highlights the important role of robotic-assisted surgery in managing complex benign gynecologic pathologies, particularly when future fertility preservation is a consideration—especially in younger patients. The patient underwent two separate robotic procedures, each addressing distinct but interrelated pelvic conditions. The first surgery was performed to treat a large right ovarian mucinous cystadenoma with extensive adhesions involving the uterus and appendix. Notably, the enhanced visualization afforded by the robotic platform also facilitated the incidental diagnosis of endometriosis, which may have been missed with less precise techniques. The second procedure addressed multiple uterine fibroids, including an intramural fibroid impinging upon the endometrial cavity, as well as dense pelvic adhesions. Although the patient had only one functional ovary and markedly diminished ovarian reserve—as indicated by a low AMH level—her fertility was optimally managed. Oocyte retrieval was performed prior to the second surgery, and following the robotic myomectomy, she was given Triptorelin to improve uterine recovery. The successful implantation and resulting pregnancy may, in part, be attributed to the restoration of normal pelvic anatomy and improved endometrial healing following the robotic myomectomy.

Robotic-assisted laparoscopy provided significant advantages in this case. The enhanced visualization and instrument dexterity allowed the surgical team to perform precise dissection in a complex anatomic field, where conventional laparoscopy might have posed greater technical challenges [1,2]. Dense adhesions involving the bowel, adnexa, and uterus were successfully lysed, while key structures such as the fallopian tubes and ovaries were preserved. The minimally invasive nature of the robotic approach may have also contributed to reduced blood loss, faster postoperative recovery, and shorter hospital stays, which are particularly beneficial in patients with comorbidities such as diabetes mellitus and hypertension [3].

In addition to the surgical outcomes, this case underscores the potential cumulative benefit of addressing multiple pelvic pathologies through a staged surgical approach. Although the patient had severely diminished ovarian reserve, as indicated by a markedly low AMH level, the removal of fibroids by robotic technology which allowed for better healing and bleeding control was likely instrumental in facilitating embryo implantation and the eventual successful pregnancy [4].

Robotic surgery has gained increasing acceptance in gynecology, particularly for procedures requiring complex tissue handling and intracorporeal suturing. Multiple studies have demonstrated its efficacy and safety in managing both adnexal and uterine pathology, including large fibroids, deep infiltrating endometriosis, and adnexal masses [1,5]. However, there remains limited literature describing sequential robotic surgeries in the same patient for different benign gynecologic indications. This case contributes to the growing body of evidence supporting the use of robotic platforms in multi-staged, fertility-preserving interventions.

CONCLUSION

Robotic-assisted surgery offers a safe, efficient, and fertility-preserving approach in the management of complex gynecologic conditions involving extensive adhesions, large adnexal masses, and uterine fibroids even in

complex comorbid settings. This case demonstrates the feasibility of performing two separate robotic procedures in a single patient, resulting in favorable surgical and reproductive outcomes. Robotic technology should be considered a valuable tool in the armamentarium for managing multi-focal benign pelvic disease.

As technology continues to advance, robotic platforms will likely play an increasingly vital role in gynecology, offering patients effective, safe, and fertility-preserving options.

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