

A Surgical Technique of Complete Laparoscopic Removal of a Giant Ovarian Cyst - A Case Report

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Abstract

Ovarian cysts management depends on the patient's age, the cyst size, and its histopathological nature. Ovarian cystectomy and salpingo-oophorectomy are adequate for most benign ovarian cysts or tumours. While a giant ovarian cyst is a rare finding nowadays because commonly used imaging can diagnose ovarian cysts at an earlier stage for treatment. While conventional approach like open laparotomy or combined laparoscopy and laparotomy is often used to remove these huge ovarian cysts, complete laparoscopic surgery is still not popular. We report a patient with a giant ovarian cystic tumour treated by complete laparoscopic oophorectomy and discuss our surgical technique with the current status of laparoscopic management. The complete laparoscopic approach is feasible with perfect cosmetic outcomes and shorter hospital stays.

Case report

A 25-year-old single woman presented in September 2021 with gradual abdominal distension and discomfort over three months. She had no related medical or surgical history and no family history of cancers. Abdominal examination and ultrasound examination showed an enlarged abdomen with a large 20 cm pelvic-abdominal cyst. There was no ascites. The uterus was normal in appearance. Blood test CA-125 was 10.4 IU/ml, within the normal range. Computerized tomography (CT) findings revealed a large well-defined, homogeneously cystic lesion measuring 17.7 x 7.1 x 21.4 cm originating from the right ovary. There were no lymphadenopathy and ascites. She was admitted to the hospital and scheduled for a laparoscopic right oophorectomy.

Technique and procedure

The bladder was catheterized. A 5 mm skin incision was made within the umbilical fold and a 5 mm laparoscope was introduced successfully by direct entry into the peritoneal cavity using an optical trocar. Under the direct laparoscopic

vision, the optical trocar was careful inserted into the peritoneal space between the cyst and the anterior abdominal wall. Care was taken not to damage or rupture the ovarian cyst wall to avoid spillage. Pneumoperitoneum was then created by CO₂ insufflation to 12 mm Hg. Once the pneumoperitoneum was established, the abdominal cavity revealed a huge cyst replacing the whole right ovary extending up to the upper abdomen. Another 5 mm trocar was applied in the left lower abdominal quadrant and at the umbilicus (**Figure 1**) next to the first trocar using the technique described by the author previously [1-3]. The peritoneal cavity was inspected to exclude the presence of any suspicious lesion. The cyst wall was then punctured by forceful blunt trocar insertion and drained around 6000 ml of clear and mucinous fluid. After drainage, the right ovarian cyst was wholly identified, and then oophorectomy was performed, avoiding damage to the neighbouring right fallopian tube. Hemostasis was ensured using electrocautery. The third umbilical port was then enlarged to 11 mm using a 10-11 mm trocar, thus allowing the insertion of an endobag. The right ovarian cyst was now much reduced in size and was put into the endobag. The whole cyst was now morcellated

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Figure 1: (A) First port insertion by direct entry at the umbilicus (B) Lateral port at the left lower quadrant of the abdomen (C) Third port 5 mm at the umbilicus lateral to the first port (D) the cosmetic appearance after a complete laparoscopic surgery.

by cold knife cutting at the enlarged umbilical wound and removed within the bag (Figure 2). It was then sent for histopathology. Before ending the procedure, the uterus and the left ovary looked normal, and no other abdominopelvic abnormality was seen. The pelvis was copiously irrigated, and hemostasis was assured. The blood loss was about 20 ml.

The pathology showed mucinous cystadenoma of the right ovary. The operation was uneventful. The patient was well and discharged home on postoperative day two. She returned to her normal daily activity after a week.



Figure 2: (A) The laparoscope entered into the space between a giant cyst and the anterior abdominal wall by optical guided direct entry (B) Suction drainage of the cyst under laparoscopic vision (C) The collapsed ovarian cyst after oophorectomy was placed inside an endobag for removal (D) Cold knife morcellation of the cyst within the endobag via the 10-11 mm umbilical portal wound.

Discussion

Giant ovarian cysts are generally described as more than 10 centimetres in size in their largest diameter [4]. They are rare in occurrence because imaging investigations can diagnose ovarian cysts at an earlier stage for treatment. We presented a 25-year-old female with a giant ovarian cyst of 21 cm in diameter for laparoscopic surgical removal. Ovarian mucinous and serous cystadenomas represent the most common type of benign tumours arising from the ovarian epithelium; furthermore, blood testing, including cancer antigen 125 (CA-125) and human epididymis protein 4 (HE-4), give additional information on the benign nature of the cyst. In addition, the preoperation CT scan of the pelvis did not reveal any suspicious feature of malignancy. Therefore conservative surgical approach becomes popular even for giant ovarian cysts.

Yet, many giant ovarian cysts are still managed by open abdominal surgery like abdominal laparotomy or open minilaparotomy, which are invasive procedures with surgical complications including wound infection, haematoma and incisional hernia [3]. Even laparoscopy was performed, minilaparotomy was often used to decompress and remove the large ovarian cyst [4, 5]. All reported open abdominal techniques include decompression of the cyst, surgical manipulation of the cyst and ovary, and avoiding uncontrolled perforation and spillage. With the availability of advanced techniques and expertise in minimally invasive surgery, complete laparoscopic excision should be preferred in managing giant ovarian cysts.

Yet despite its least invasiveness, better cosmesis, and shorter hospital stay, only a few cases of complete laparoscopic surgery to remove giant ovarian cysts have been reported [6]. In most cases, laparoscopic removal of a giant tumour involved cyst drainage, either preoperative or during the operation. They seemed to be the most common laparoscopic approach. Postma et al. 2002 described the cyst drainage by paracentesis for a patient of giant ovarian cyst 21 cm during diagnostic laparoscopy, followed by laparoscopic removal of the cyst and left adnexa [7]. Eltabbakh et al. 2000 performed prelaparoscopic cyst drainage with a suprapubic catheter, followed by laparoscopic cystectomy [8]. At present, there appear no guidelines regarding the maximal size of the cyst, which can be considered unsuitable for laparoscopic surgery. We also found no case report in the literature describing the same entry technique in the management of giant ovarian cysts. With proper patient selection and skills, laparoscopic surgery

can be safely applied to any patient with large, benign ovarian cysts. Our main goal to treat a young lady with a giant ovarian cyst is to preserve her reproductive and hormonal functions and prevent a recurrence.

This paper described a new surgical technique used for the complete laparoscopic removal of a giant ovarian tumour. This technique involves

1. Direct entry technique using an optical trocar - pneumoperitoneum by the Verres needle at the umbilicus is not feasible due to easy puncture to the large size of the cyst. Thus it will lead to uncontrolled spillage of the cyst content. On the other hand, optical guided direct entry can avoid accidental rupture of the cyst.
2. Direct puncture and suction drainage of the cyst under laparoscopic vision is preferable. If the drainage to decompress a large ovarian cyst was done before introducing laparoscopy, it may lead to uncontrollable spillage, which is undesirable. In our case, the drainage is controlled under direct vision of a laparoscopy.
3. We use a large endobag to facilitate the morcellation to remove the giant ovarian cyst via a 10-11 mm portal wound, thus avoiding using a minilaparotomy wound.
4. It is the best cosmetic appearance after this laparoscopic surgery to remove a giant ovarian cyst.

In the management of a giant ovarian cyst, the preoperative diagnostic process is crucial to exclude malignancy. To avoid the recurrence or borderline malignancy risk, removing the whole ovary of a giant ovarian cyst and preventing the cyst content's spillage seems safer. The major concerns to remove a giant ovarian cyst are the risk of cyst rupture, limited visualization, and unexpected malignancies. Fortunately, data indicates that the spillage of a malignant cyst content at the time of operation does not worsen the prognosis [9,10]. The latest development of single port laparoscopic surgery can also achieve the complete laparoscopic removal of a giant ovarian cyst using a large cutdown wound at the umbilicus. Once the single-port device is inserted, the oophorectomy procedure can proceed as the technique mentioned above in this paper.

Conclusion

The complete laparoscopic removal of a giant ovarian cyst is a feasible treatment when the nature of the cyst is confirmed

with a normal tumour marker profile and benign imaging appearance. This complete laparoscopic surgery showed the advantages of less invasive, minimal blood loss and shorter hospital stays, which can also be applied to ovarian cysts of various sizes and pathology [10]. Different laparoscopic surgical techniques to remove a giant ovarian cyst might not be reported because of its rarity. Therefore, this paper highlights a cosmetic complete laparoscopic surgery for a giant ovarian cyst that can be removed without open laparotomy. The perfect cosmetic outcome is particularly welcomed by young women who require laparoscopic removal of their ovarian cysts, whatever the sizes of the cyst.

Disclosure

The authors declare no conflicts of interest.

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