

Successful laparoscopic management of ovarian cyst torsion in the third trimester

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To the Editor: With the advancement of laparoscopic techniques, minimally invasive surgery is more widely applied in various conditions. The guidelines, published by the Society of American Gastrointestinal Endoscopic Surgeons (SAGES) in 2017, considered that laparoscopic surgery could be safely performed at any stage of pregnancy, although best in mid-term.^[1] Since 2004, our team has carried out more than 150 laparoscopic procedures in pregnant patients who wanted to preserve their pregnancy. However, only six of these cases were in the late-term. Here we report a case of right ovarian cyst torsion successfully treated by laparoscopic oophorectomy in a patient at 35 weeks gestation. Following this operation, a healthy female of 3000 g was delivered at 40⁺² weeks gestation.

A 28-year-old nulliparous woman at 35 weeks gestation was admitted to Peking University First Hospital on March 20, 2019, with a history of acute severe right lower abdominal pain for eight hours. Initial ultrasound at 5⁺⁴ weeks gestation revealed an early intrauterine pregnancy and a 5.9 cm × 3.9 cm right posterior cyst. As the patient did not have lower abdominal pain or distension, she was regularly followed-up. A repeat ultrasound at 22 weeks demonstrated a healthy fetus with no cyst visualized. The rest of the patient's medical history was unremarkable. The patient presented with severe intermittent right lower abdominal pain that woke her from sleep. She was afebrile and had no nausea, vomiting, or vaginal bleeding. Abdominal ultrasound revealed a single live fetus, a normal appendix without free fluid, and a right ovarian cyst (8.9 cm × 5.1 cm × 6.0 cm). She refused emergency laparotomy and cesarean delivery as recommended by her local doctor and was transferred to our hospital.

On arrival, she appeared to be in pain; she had restricted movement but was hemodynamically stable. On examination, the uterine fundus was four horizontal fingers below

the xiphoid process, and the upper abdomen was soft. She reported mild tenderness and rebound pain in the right lower abdomen, without a palpable mass. A repeat ultrasound showed a living fetus and a well-circumscribed cystic mass (9.3 cm × 8.4 cm × 4.6 cm) with an echogenic pedicle (3.1 cm × 2.6 cm × 2.2 cm) on the right of the uterus. Adnexal cyst torsion was suspected, and after a thorough discussion with the patient, we performed emergency laparoscopic surgery under general anesthesia. Although the patient was eager for full-term delivery, she was aware that a cesarean section during the operation was possible and a premature infant at 35 weeks of pregnancy had a high probability of survival.

After emptying the bladder, a modified lithotomy position (head-down 30° and inclined 15°–30° to the left side) was selected, and we achieved general anesthesia under the guidance of a visual laryngoscope. An open approach was adopted for the first 11 mm port for the laparoscope placement, which was 5 cm below the xiphoid process. A 30° laparoscope was used for convenience, and 12 mmHg (1 mmHg = 0.133 kPa) of CO₂ pneumoperitoneum was achieved. Two 5.5 mm trocars were placed at the right ventral avascular zone. An ovarian cyst (approximately 10 cm × 9 cm × 6 cm), was seen at the right rear of the uterus. It had a smooth surface and 360-degree pedicle torsion. The cyst appeared slightly ischemic with no evidence of tissue necrosis [Figure 1].

A right oophorectomy was carefully performed in a very narrow space. The procedure lasted 51 min with little bleeding, successfully preserving the ovarian tissue. Monitored by a 5 mm laparoscope through an auxiliary port, the specimen was removed entirely via the first port. The fascia of the first port was strengthened by a double-strand suture to prevent the formation of an incisional hernia. The patient developed regular uterine contractions immediately after the operation. Since the contractions were caused by surgical stimulation, we intravenously

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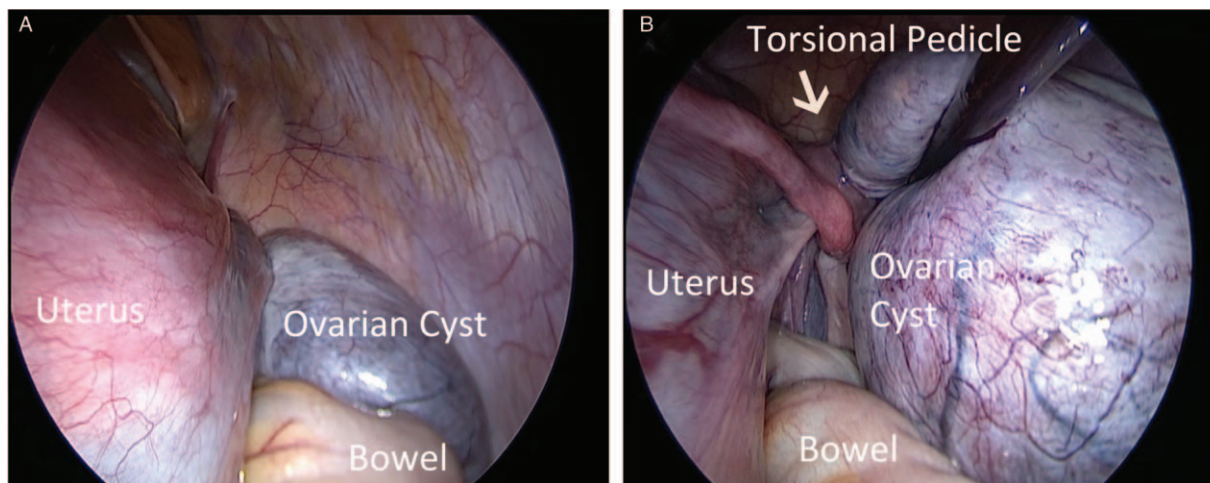


Figure 1: The gravid uterus and ovarian cyst (A); The torsional pedicle (indicated by the arrow) of ovarian cyst (B).

infused magnesium sulfate, and successfully inhibited the contractions. Postoperative prophylactic intravenous antibiotics were administered to protect against possible infection. She fully recovered and was discharged eight days after the operation. Histopathology indicated a benign ovarian mucinous cystadenoma. She continued her regular maternity check-ups, and a 3000 g female was born at 40⁺² weeks. The mother and infant were healthy at the 9-month follow-up appointment.

The differential diagnosis for acute abdominal pain during pregnancy includes adnexal cyst torsion or rupture, uterine myoma red degeneration or torsion, or tubo-ovarian abscess. Ovarian cyst torsion is the most common, with an incidence of 2 to 3 times higher during pregnancy.^[2] Delayed management may lead to adverse obstetric outcomes, especially in late-term pregnancies. For adnexal cysts in late-term pregnancies, conservative management is recommended if there are no acute emergencies or suspected malignancies, only adopting laparotomy if it is needed. Our patient had acute abdominal pain at 35 weeks and was eager to have a full-term natural delivery. She refused a laparotomy with premature cesarean delivery, so minimally invasive surgery was the best course of action. In the end, a successful laparoscopic procedure gave her a good obstetric outcome. However, this kind of operation is challenging for surgeons, requiring the most experienced surgical team.

To maximize the safety of the mother and fetus in such emergencies, a multidisciplinary team including obstetricians, gynecologists, anesthesiologists, neonatologists, surgeons, and pathologists is required. Such a team could thoroughly evaluate the condition and formulate a reasonable management plan. The principles of surgery are the same as those in non-pregnant women, as the operation should not be delayed because of pregnancy. Laparoscopic surgery is not known to complicate pregnancy,^[3] but there are few reports of this procedure in late-term pregnancy. However, for patients who are not suitable for laparoscopic surgery, such as patients with severe intra-abdominal adhesions or other medical and surgery complications, laparotomy is preferred.

In this case, after evaluating the consequent risk of prolonged operating time and uncontrolled bleeding, we chose to preserve the right ovary. However, an oophorectomy may also be a suitable option in some more challenging situations. Moreover, some researchers believe that there is a higher risk of recurrent adnexal torsion in pregnant women compared to non-pregnant women, resultingly, an oophorectomy is often suggested for shortening the utero-ovarian ligament or suturing the ovary to the round ligament.^[2]

The difficulty of the surgery was increased due to the limited view of the surgical field from an enlarged uterus in the pelvic and abdominal cavity, a lack of uterine lifter, a narrow space, and a higher risk during puncture. For our patient, the first port was 5 cm below the xiphoid process due to the gravid uterus. Putting the first 11 mm trocar by open approach is suitable to decrease the opportunity of injuries. In order to facilitate the operation, other auxiliary ports can be placed on the same side of the cyst under direct visualization. During the operation, the patient was placed in a modified lithotomy position and inclined 15° to 30° to the left side. The pneumoperitoneum pressure was set slightly lower than usual, as the literature suggested 10 to 15 mmHg as a safe range that will not increase adverse outcomes,^[1] to prevent the compression of inferior vena cava, improve venous return and cardiac output, and reduce the incidence of fetal distress, hypoxia, and acidosis, especially in late-term pregnancies. Ultra-incision and bipolar coagulation are recommended, and prolonged electro-excision and electrocoagulation should be avoided.^[4] Instruments were replaced under laparoscopic guidance and paid more attention to the uterus in the whole surgery. Due to the high tension of the abdominal wall in late pregnancy, it is important to suture the fascia layer tightly to prevent trocar-site hernia. It is reported that the incidence of trocar-site hernia in nonpregnant women under 60 years old is 0.011% (6/52,558),^[5] while there is no report on the incidence in pregnancy. Laryngoscope-guided endotracheal intubation is necessary and also gastrointestinal decompression in some situations.

Postoperative care is critical, including fetal heart monitoring. Tocolysis should be used if premature delivery

symptoms appeared.^[1] Low flow oxygen inhalation, liquid, and diet management should be emphasized for better recovery. Early mobilization is encouraged to promote the recovery of gastrointestinal function and reduce the risk of thrombosis. Vaginal delivery could be the best mode according to the situation during labor, which does not influence the outcome of pregnancy.^[6] The present patient underwent a natural delivery 5 weeks after surgery, maintaining outstanding results at 9 months follow-up.

In summary, the laparoscopic procedure is an option for late-term pregnancy women with gynecological acute abdomen. Perioperative preparation is just as crucial as postoperative care, and the surgical team should be experienced to ensure patient safety. There are 5 key points from our experiences. First, endotracheal intubation should be handled by an experienced anesthesiologist under the guidance of a visual laryngoscope, and gastrointestinal decompression should be used to prevent the expanded stomach from occupying the surgical field, if necessary. Second, the location of the first port should be as far away from the fundus of the uterus as possible, and the open approach is recommended to reduce puncture risk. Third, auxiliary ports can be placed on the same side of the cyst at a proper space between each other to avoid the “chopsticks effect”. Fourth, it is best to remove the specimen from the 11 mm telescope port under the guidance of the 5 mm laparoscope at the auxiliary port. Fifth, during the procedure, teamwork is necessary to guide the instruments in and out of the ports under laparoscopic guidance.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her

consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

None.

References

1. Pearl JP, Price RR, Tonkin AE, Richardson WS, Stefanidis D. SAGES guidelines for the use of laparoscopy during pregnancy. *Surg Endosc* 2017;31:3767–3782. doi: 10.1007/s00464-017-5637-3.
2. Hasson J, Tsafrir Z, Azem F, Bar-On S, Almog B, Mashiach R, *et al.* Comparison of adnexal torsion between pregnant and nonpregnant women. *Am J Obstet Gynecol* 2010;202:536.e1–6. doi: 10.1016/j.ajog.2009.11.028.
3. Kurihara K, Minagawa M, Masuda M, Fukuyama M, Tanigaki K, Yamamoto A, *et al.* The evaluation of laparoscopic surgery on pregnant patients with ovarian cysts and its effects on pregnancy over the past 5 years. *Gynecol Minim Invasive Ther* 2018;7:1–5. doi: 10.4103/GMIT.GMIT_12_17.
4. Leng J, Lin H. Application of laparoscopic surgery in pregnancy (in Chinese). *J Laparosc Surg* 2013;18:561–563. doi: 10.13499/j.cnki.fqjwkzz.2013.08.020.
5. Zhu Y, Liang S, Zhu L, Sun Z, Lang J. Trocar-site hernia after gynecological laparoscopic surgery: a 20-year, single-center experience. *Chin Med J* 2019;132:2677–2683. doi: 10.1097/CM9.0000000000000510.
6. Duan Y, Shi Y, Zhan R, Yin L. Laparoscopy in the gynecological acute abdomen in pregnancy (in Chinese). *Chin J Perinat Med* 2020;23:52–55. doi: 10.3760/cma.j.issn.1007-9408.2020.01.010.

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