Gynecology and Minimally Invasive Therapy 2 (2013) 137–139

Contents lists available at ScienceDirect

Gynecology and Minimally Invasive Therapy

journal homepage: www.e-gmit.com

Case report

Single-port laparoscopic ovarian cystectomy of teratoma during pregnancy

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ARTICLE INFO

Article history:
Received 12 June 2013
Received in revised form
14 July 2013
Accepted 23 July 2013
Available online 1 October 2013

Keywords:
Laparoscopic ovarian cystectomy
Pregnancy
Single port

ABSTRACT

A 31-year-old pregnant woman complained of occasional abdominal pain with a gradually enlarging ovarian cyst at 14 weeks of gestation. Follow-up sonography confirmed the right ovarian cyst, 8.5 cm in size, with regional diffuse bright echoes and hyperechoic lines and dots. Mature cystic teratoma was diagnosed. Single-port laparoscopic surgery was scheduled to prevent cyst enlargement or torsion during pregnancy. Enucleation of the cyst was conducted smoothly without intra-abdominal spilling and removed through the transumbilical port. The overall blood loss was 50 mL. The operative time was 2 hours, and there were no intraoperative complications. Histology of the cyst confirmed a mature cystic teratoma. There was no preterm labor during follow-up. We successfully performed single-port laparoscopic ovarian cystectomy during pregnancy, which was followed by an unremarkable antenatal course. The benefit and safety of single-port laparoscopic cystectomy make it a good alternative choice for surgical intervention during pregnancy.

Introduction

Ovarian cysts detected in early pregnancy are mostly physiological and tend to resolve spontaneously.[1] Serous cystadenoma and dermoid cyst are the two most common pathologies found during pregnancy.[2] However, because ovarian cysts persist beyond the first trimester and enlarge gradually, surgical intervention would prevent ovarian cyst torsion and spontaneous rupture during pregnancy or possible obstruction during labor.[3,4]

Laparoscopic surgery in pregnancy has been demonstrated to be safe, involve little postoperative pain, and cause no adverse impact on the overall obstetric outcome.[5] The most pressing concern is how to reduce the invasiveness of conventional laparoscopy, thereby decreasing postoperative pain and analgesic use. Based on this premise, transumbilical single-port laparoscopic surgery has become popular.[6] Several studies reveal that single-port laparoscopic surgery can reduce the invasiveness and decrease the postoperative pain involved by minimizing the length of the skin incision and avoiding abdominal muscle injury.[7,8] Due to promising technological innovations, the single-port system now allows laparoscopic surgeons to perform complex surgery, such as laparoscopic cystectomy, total laparoscopic hysterectomy, appendectomy, cholecystectomy, and fertility-sparing staging surgery for borderline ovarian tumors.[7] However, with regard to the enlarged gravid uterus, the safety and possibility of single-port laparoscopic surgery during pregnancy are still unknown.

Here, we report the first case of single-port transumbilical laparoscopic ovarian cystectomy during pregnancy.

Case report

A 31-year-old pregnant woman, gravid 5, para 0, without any systemic disease, was referred to our outpatient clinic at 14 weeks of gestation with an enlarging right ovarian cyst found by a prenatal ultrasound scan. She became pregnant naturally, and the current pregnancy subsequently displayed no major fetal defect in regular antenatal examinations. However, a right ovarian cyst, 7 cm in size, was noted by an ultrasound scan at 10 weeks of gestation. Later, she complained of occasional abdominal pain and fullness. Follow-up sonography at 14 weeks of gestation confirmed a right ovarian cyst, 8.5 cm in size, growing gradually with regional diffuse bright echoes and hyperechoic lines and dots (Fig. 1). Mature cystic

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2213-3070/$ – see front matter
http://dx.doi.org/10.1016/j.gmit.2013.07.006

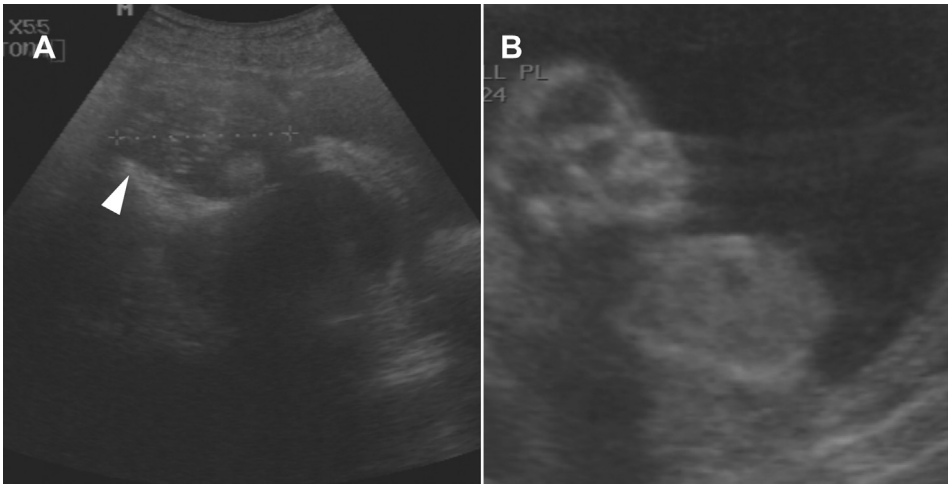

Fig. 1. (A) Transvaginal ultrasonography shows a right ovarian cystic tumor, 7 cm in size, with multiple thin echogenic bands in the cyst cavity (arrowhead). (B) Postoperative ultrasonographic image of an intrauterine pregnancy with a regular fetal heartbeat.

teratoma was diagnosed according to the morphological features. Single-port laparoscopic surgery was scheduled to prevent cyst enlargement or torsion during pregnancy.

We established the following single-port system (Fig. 2): a 1.5-cm horizontal intraumbilical skin incision, a 2-cm rectus fasciotomy to open the peritoneal cavity, and the insertion of an Alexis small-wound retractor (Applied Medical, Rancho Santa Margarita, CA, USA).[8] The wrist portion of a size-6.5 surgical glove was fixed to the outer ring of the wound retractor. A 12-mm trocar was inserted through a small hole made in one of the fingertip areas of the glove and advanced into the abdominal cavity. Two additional holes for the accessory channels were made in another two fingertips of the glove, and two conventional 5-mm trocars were inserted through the hole. The operation was performed under pressure of 12 mmHg with carbon dioxide. The operative devices used included triangular graspers (Covidien, Mansfield, MA, USA), scissors, suction/irrigation, and a 5-mm LigaSure Advanced instrument (Covidien).

At the time of laparoscopy, pelvic exploration revealed a right ovarian cyst with a smooth surface and the absence of any other malignant macroscopic features. We first took time to perform the adhesion lysis between the ovarian tumor and the omentum. Prior to enucleation, the ovarian cyst was positioned within an Endobag (Covidien). We performed the ovarian cystectomy by dissecting the cyst wall away from the ovarian tissue through the use of stripping, sharp-scissor dissection, and a 5-mm LigaSure Advanced (Covidien). Enucleation of the cyst was conducted smoothly without intra-abdominal spilling and removed through the transumbilical access (Fig. 3). Bleeding was controlled by continuous sutures using a 3-0 V-Loc 180 (Covidien). Blood loss was 50 mL. The operative time was 2 hours, and there were no intraoperative complications. The fetal heart was auscultated prior to and after the operation.

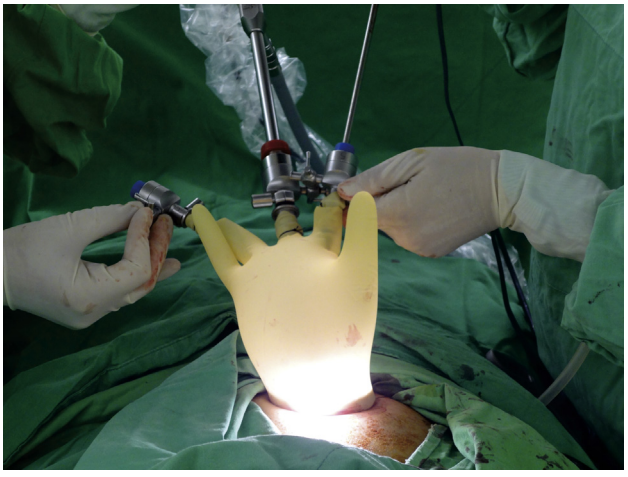

Fig. 2. Homemade single-port system.

The patient's postoperative recovery was uneventful, and she was able to eat food on postoperative Day 2. She felt minimal postoperative pain with analgesic treatment for only 1 day and was discharged from the hospital on postoperative Day 7. Histology of the cyst confirmed a mature cystic teratoma. Her subsequent antenatal course was uncomplicated. There was no preterm labor, and there was no recurrence during follow-up. The patient spontaneously delivered a healthy male baby, weighing 3.2 kg, at 38 weeks gestation.

Discussion

This is believed to be the first report of treatment of benign ovarian dermoid cyst during pregnancy by single-port laparoscopy. Here, we demonstrate the feasibility and efficacy of this approach. Postoperative pain decreased because the reduced invasiveness of the technique minimized the chances of abdominal muscle injury. A surgical scar hidden within the umbilicus can avoid the discomfort of stretching and distention of the laparotomy scar due to the rapidly growing uterus, which results in improved satisfaction with the cosmetic results.[2] Moreover, open cannulation laparoscopy or Palmer's point entry performed with single-port laparoscopy during pregnancy can avoid the risk of penetrating injury to the pregnant uterus.[9] Our results confirm these advantages and safety compared with standard laparoscopic surgery and laparotomy.

With promising innovations in technology, single-port laparoscopy has become increasingly popular.[7,10] Compared with conventional laparoscopy, single-port laparoscopic surgery is advantageous, especially for a pregnant woman with an enlarging uterus. First, open cannulation or Palmer's point entry performed with single-port laparoscopy can avoid the risk of penetrating injury to the enlarging uterus during pregnancy.[9] Second, use of the transumbilical single port can reduce the invasiveness of conventional laparoscopy compared to the conventional approach, which

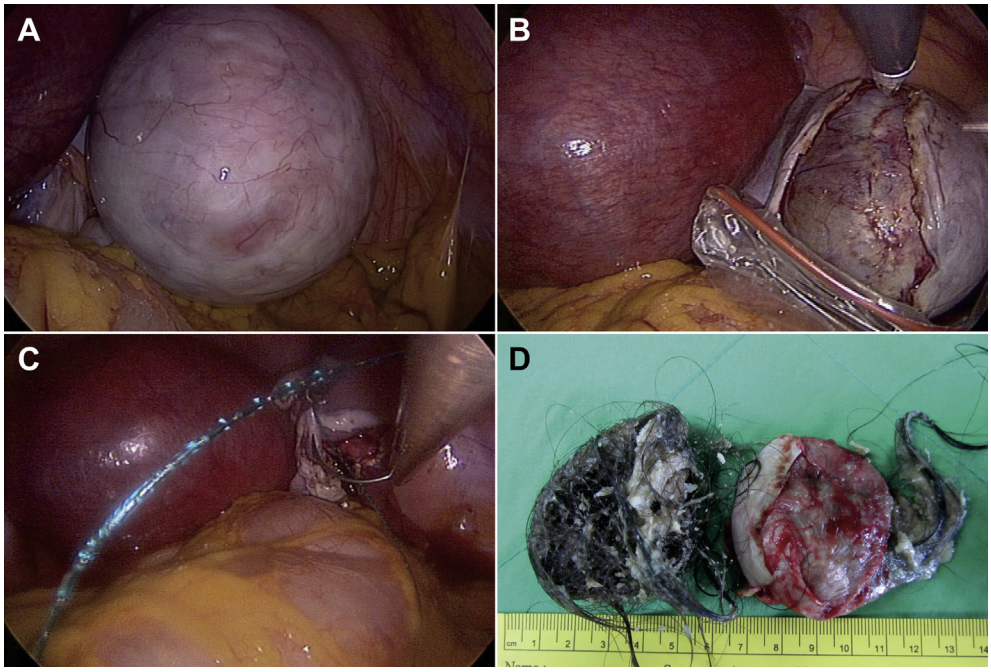

Fig. 3. (A) Laparoscopic finding showing a right ovarian cyst. (B) Enucleation of the cyst was conducted smoothly without intra-abdominal spilling in the Endobag. (C) Suturing was performed by V-lock under single-port laparoscopy. (D) Gross view of the cystic ovary showing adipose tissue and hair.

involves one main trocar scar and at least two additional trocar scars.[7] The minimized surgical incision and reduced likelihood of abdominal muscle injury could reduce the extent of postoperative pain. Moreover, the enlarged transumbilical single-port wound can help in the removal of teratoma specimens with teeth or cartilage tissues. The improved cosmetic satisfaction in patients with a surgical scar hidden within the umbilicus can also prevent stretching and distention of the laparotomy scar due to rapid growth of the uterus.[2] All of these points highlight the benefit of single-port laparoscopic surgery in pregnancy. However, handling of the single-port system is not a simple task. The limited range of motion due to the possibility of collisions between laparoscopic instruments and the disadvantages of two-dimensional visualization can be overcome by an experienced expert surgeon and the use of specialized flexible endoscopes or devices.[7]

In the present case, a single-port laparoscopic ovarian cystectomy during pregnancy was performed successfully, resulting in an unremarkable antenatal course. This technique would be even more feasible and effective when performed by an expert laparoscopic surgeon. The benefit and safety of single-port laparoscopic surgery highlight this approach as an alternative for surgical intervention during pregnancy.

References

1. Aggarwal P, Kehoe S. Ovarian tumours in pregnancy: a literature review. *Eur J Obstet Gynecol Reprod Biol*. 2011;155:119–124.
2. Bunyavejchevin S, Phupong V. Laparoscopic surgery for presumed benign ovarian tumor during pregnancy. *Cochrane Database Syst Rev*. 2006;18: CD005459.
3. Yuen PM, Chang AM. Laparoscopic management of adnexal mass during pregnancy. *Acta Obstet Gynecol Scand*. 1997;76:173–176.
4. Chohan L, Kilpatrick CC. Laparoscopy in pregnancy: a literature review. *Clin Obstet Gynecol*. Dec 2009;52:557–569.
5. Leiserowitz GS. Managing ovarian masses during pregnancy. *Obstet Gynecol Surv*. 2006;61:463–470.
6. Koo YJ, Park JY, Kim DY, et al. Laparoscopic versus open surgery for adnexal tumor in pregnant women. *Gynecol Minim Invasive Ther*. 2013;2:57–60.
7. Chen YJ, Wang PH, Ocampo EJ, Twu NF, Yen MS, Chao KC. Single-port compared with conventional laparoscopic-assisted vaginal hysterectomy: a randomized controlled trial. *Obstet Gynecol*. 2011;117:906–912.
8. Kim WC, Kwon YS. Laparoendoscopic single-site surgery for exteriorization and cystectomy of an ovarian tumor during pregnancy. *J Minim Invasive Gynecol*. May-Jun 2010;17:386–389.
9. Sadot E, Telem DA, Arora M, Butala P, Nguyen SQ, Divino CM. Laparoscopy: a safe approach to appendicitis during pregnancy. *Surg Endosc*. 2010;24:383–389.
10. Su H, Wu KY, Kuo HH, Han CM, Lee CL, Yen CF. Transumbilical single-site laparoscopy takes the advantage of ultraminilaparotomy in manag ing an extremely large ovarian cyst. *Gynecol Minim Invasive Ther*. 2012;1: 37–39.