

Successful single-port laparoscopic management of abdominal pregnancy in the Douglas pouch

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Summary

Abdominal pregnancy is estimated to account for 1.3% of all ectopic pregnancies. Laparoscopic treatment of intact and even ruptured abdominal pregnancies is becoming more common. Here, the authors report the first single-port laparoscopic resection of an abdominal pregnancy, providing a detailed description of the procedures. At laparoscopy, a dense tissue clot was found implanted in the Douglas pouch with no signs of tubal abortion. The diagnosis of abnormal pregnancy was made and the tissue was removed successfully. In conclusion, we could consider that single-port laparoscopic surgery for an abdominal pregnancy is a feasible surgical technique.

Key words: Abdominal pregnancy; Ectopic pregnancy; Single-port laparoscopy.

Introduction

Ectopic pregnancy, the implantation of a fertilized ovum outside the endometrial cavity, occurs in 1.5–2% of all pregnancies [1]. Abdominal pregnancy is estimated to account for 1.3% of all ectopic pregnancies and has a high associated mortality rate of 5–6% [2]. This rate may be high because early diagnosis is difficult, and the condition is often not discovered until the crisis of internal bleeding occurs. The most common site of implantation in ectopic pregnancies is the fallopian tube, with an incidence of up to 95% [1]. The first case of implantation in the Douglas pouch, which is extremely rare, was described by Galabin in 1896 [3], and most cases are treated by laparotomy.

With the increasing availability of advanced equipment and expertise, laparoscopic treatment of intact and even ruptured abdominal pregnancies is becoming more common. In the past several years, many gynecologic surgeons attempted to improve cosmetic results and reduce postoperative hospital stay after laparoscopic surgery. Transumbilical single-port access laparoscopic surgery is carried out through a small incision in the umbilicus, resulting in a virtually invisible scar. This kind of single-port system has made many gynecological surgeries feasible. Here, the authors report the first single-port laparoscopic resection for an abdominal pregnancy, providing a detailed description of the procedures.

Case Report

A 30-year-old woman, gravid 0, para 0, was referred to the present outpatient clinic with a suspected diagnosis of ectopic pregnancy. Her last menstrual period was five weeks ago. Her initial

β -hCG level was 5474 mIU/ml. Her vital signs were stable at presentation, with a hemoglobin level of 11.7 g/dl. Transvaginal ultrasound showed a sac-like mass (1.7×1.6 cm) located in the posterior Douglas pouch (Figure 1), with no signs of intrauterine pregnancy. An MRI image of the abdomen and pelvis showed the extrauterine gestational sac (1.5×1.5 cm) in the Douglas pouch (Figure 2). The serum β -hCG level increased to 6,800 mIU/ml two days later. After consultation, the patient consented to a laparoscopic examination. A single-port laparoscopic operation was planned to prevent further enlargement of the gestational sac and the risk of rupture.

The operation was completed with the patient under general anesthesia and in the dorsal lithotomy position. After sterile coverage, the authors inserted a uterine manipulator into the uterine cavity and used a single incision laparoscopic surgery (SILS) port. After a 2.5-cm skin incision was made at the umbilicus, the subcutaneous fat tissues were dissected and the peritoneum was opened. A SILS port wound retractor (30 mm) was placed in the peritoneal cavity covering the skin to the peritoneum (Figure 3). The SILS port has three access ports (one 12-mm port and two five-mm ports) as well as a gas inlet. The authors used a rigid, 30°, ten-mm laparoscope, conventional rigid straight instruments, and pre-bent laparoscopic instruments (Figure 4).

At laparoscopy, a dense tissue clot (about two cm) was found implanted in the Douglas pouch, with mild bleeding. Bilateral oviducts and ovaries were intact and grossly normal with no signs of tubal abortion (Figure 5). The tissue was removed using grasping forceps and hydro-dissection. After removal of necrotic tissue, a peritoneal defect (approximately 3×2 cm, and 0.5 cm deep) was seen in the Douglas pouch, with active bleeding. Bipolar electrocauterization was used to achieve hemostasis, and the peritoneal defect was tamponaded with hemostatic material to stop the bleeding.

The patient recovered rapidly and was discharged on the second postoperative day. Her serum β -hCG levels reduced to 2,107 mIU/ml on the first postoperative day and to 522 mIU/ml two days later. On the 15th postoperative day, this level reduced to nor-

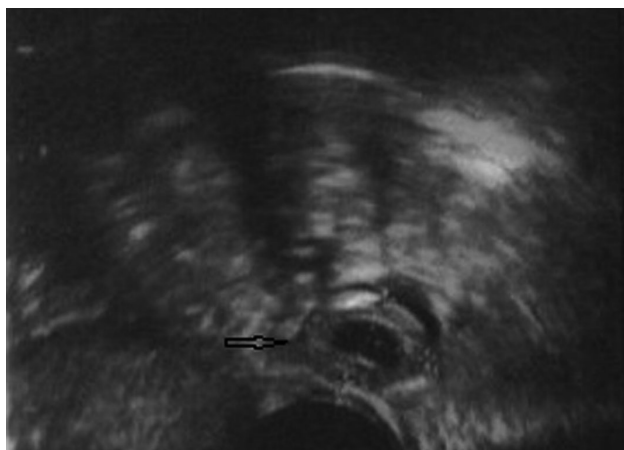


Figure 1. — Transvaginal ultrasound showing a gestational sac-like mass in the Douglas cul-de-sac (black arrow).

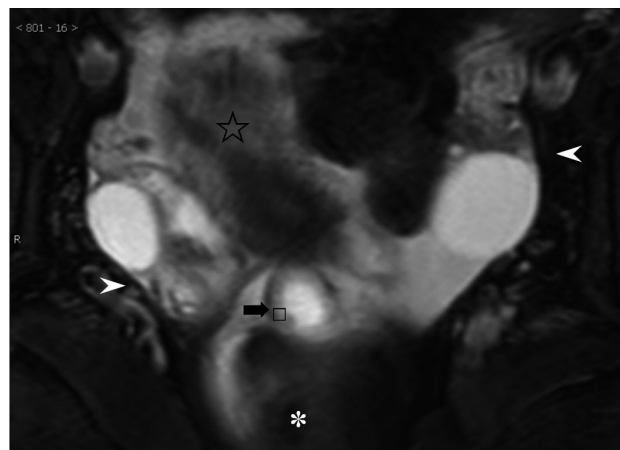


Figure 2. — Axial MRI of the abdomen and pelvis obtained using the True FISP sequence showing the extrauterine gestational sac (black arrow), empty uterus (asterisk), and bilateral ovaries (white arrows).

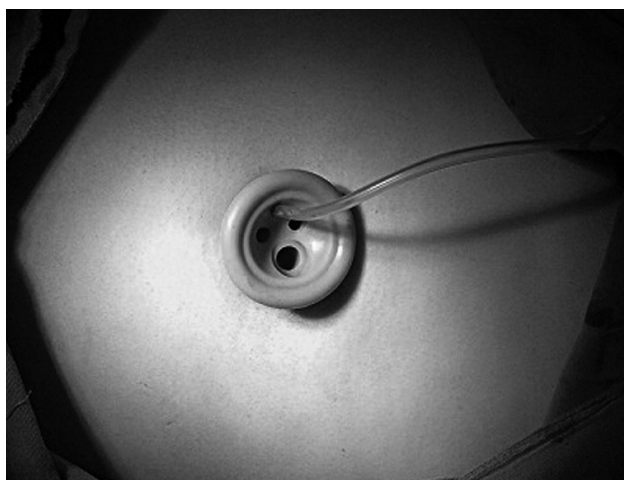


Figure 3. — The SILS port was inserted through the incision.



Figure 4. — External view during single-port access transumbilical surgery.

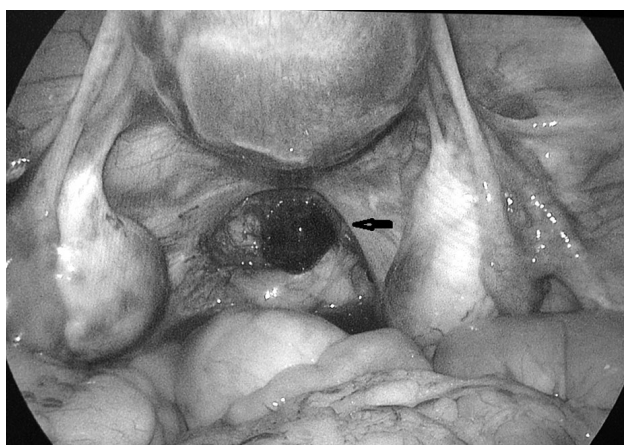


Figure 5. — Laparoscopic view of abdominal pregnancy. The mass containing the ectopic pregnancy can be seen in the Douglas pouch (black arrow).



Figure 6. — Postoperative wound on the umbilicus is an incision of approximately 18 mm (one month after surgery).

mal (< 5 mIU/ml). The pathology report confirmed intact trophoblasts. Transvaginal ultrasound showed slight pelvic effusion in the Douglas pouch one month after surgery and the postoperative wound on the umbilicus was only a skin incision of approximately 18 mm (Figure 6).

Discussion

Most ectopic pregnancies occur in the ampullary segment of the fallopian tube. However, they may also occur within the interstitial portion of the fallopian tube, in the uterine cervical canal, between the leaves of the broad ligament, in the ovary, within a scar from a cesarean section, or in the abdomen. These unusual ectopic pregnancies are difficult to diagnose and are associated with significant morbidity and mortality [1, 4].

Abdominal pregnancy is the rarest form of ectopic pregnancy, occurring in 1.3% cases, and its associated mortality rate is seven times higher than that in non-abdominal cases [2]. The reported sites of abdominal pregnancy are the Douglas pouch, posterior uterine wall, uterine fundus, infundibulopelvic ligaments, anterior abdominal wall, omentum, liver, spleen, lesser sac, and diaphragm [4, 5].

Abdominal pregnancies are classified as either primary or secondary. It may be difficult to differentiate between these classes, because the original site of implantation cannot be accurately determined. Studdiford set forth the following criteria for the diagnosis of primary abdominal pregnancy: both tubes and ovaries are normal, with no evidence of recent or remote injury; absence of any uteroperitoneal fistula; and presence of a pregnancy related exclusively to the peritoneal surface and young enough to eliminate the possibility of secondary implantation following primary implantation in the tube [6]. As the original site of implantation may be difficult to determine, it has been suggested that a true primary abdominal pregnancy can be diagnosed only when the gestational age is less than ten weeks [7]. Studdiford's criteria were later modified by Friedrich and Rankin as follows: a pregnancy of less than 12 weeks' histologic gestation, whose trophoblastic attachments are related solely to a peritoneal surface; grossly normal tubes and ovaries; and absence of any uteroperitoneal fistula [8, 9]. The present case fulfills both the original and modified criteria for primary abdominal pregnancy in the Douglas pouch, and the pathology report confirmed intact trophoblasts without the degenerative changes that are found in the tissues of tubal abortion.

The traditional management of abdominal pregnancy involves laparotomy with removal of the embryo with or without placental tissue. Laparoscopic management has not been used often, because controlling hemorrhagia can be difficult because of trophoblastic invasion of the retroperitoneal vasculature. The reported instances of laparoscopic management are associated with a shorter operative time

and reduced blood loss [5]. This approach is cost effective and should be the treatment of choice, except in cases of extensive intraperitoneal bleeding, intravascular compromise, or poor visualization of the pelvis at the time of laparoscopy, for which laparotomy cannot be avoided.

Recently, gynecologic surgeons have attempted to perform single-port transumbilical laparoscopic surgery, and this is rapidly evolving and under active investigation as a routine surgery. In the present clinic as well, the authors have performed many single-port laparoscopic operations, including adnexectomy and cystectomy for adnexal cysts and salpingectomy for tubal pregnancies. To our knowledge, this is the first report of successful single-port laparoscopic resection for an early abdominal pregnancy. Although abdominal pregnancy is an exceptional condition, in a patient with clinical findings suggesting ectopic pregnancy, if both the uterus and adnexa are found to be normal during laparoscopic exploration, unusual locations such as the Douglas pouch or retroperitoneum should be carefully examined. The authors used bipolar electrocauterization and tamponading with a hemostatic material to achieve complete hemostasis in the peritoneal defect after removal of the placenta. However, hemostasis at surgery may also be achieved with the use of vasopressin, bipolar electrodes, and monopolar scissors.

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