SUCCESSFUL LAPAROSCOPIC MANAGEMENT OF PRIMARY ABDOMINAL PREGNANCY IN THE CUL-DE-SAC

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OBJECTIVE
We report a rare case of primary abdominal pregnancy in the Douglas cul-de-sac that was successfully treated with laparoscopy.

CASE REPORT
A 31-year-old primigravida woman had undergone intrauterine insemination 5 weeks prior to presentation. Ultrasound examination at presentation revealed an ectopic gestational sac in the cul-de-sac without any evidence of intrauterine pregnancy, and serum β-human chorionic gonadotropin (β-hCG) was 46,601 mIU/mL. Laparoscopy was performed and revealed an ectopic mass implanted in the cul-de-sac. The gestational tissue was removed by grasping forceps and hydrodissection. Bipolar electrocauterization and tamponading with Surgicel™ were used for hemostasis at the defect of the peritoneum. Serum β-hCG fell rapidly after surgery. The patient had a term baby delivered successfully 2 years postoperatively.

CONCLUSION: Early diagnosis of abdominal pregnancy enabled successful laparoscopic management.

SUMMARY
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Conclusion: Early diagnosis of abdominal pregnancy enabled successful laparoscopic management.

Key Words: abdominal pregnancy, cul-de-sac, laparoscopy, peritoneal pregnancy

Introduction
Abdominal pregnancy is estimated to account for 1.3–1.6% of all ectopic pregnancies, with a high mortality rate of 5–6% [1,2]. The high mortality rate may be due to difficult early diagnosis, with the condition not being discovered until the crisis of internal bleeding is encountered.

The most common site of implantation of an ectopic pregnancy is the fallopian tube, with an incidence of up to 95% [3]. Implantation in the Douglas cul-de-sac is extremely rare. The first case was described by Galabin in 1896 [4]. Most cases have been treated by laparotomy. The main difficulty at laparoscopy is achieving hemostasis, especially in a large ectopic pregnancy. Early diagnosis of abdominal pregnancy makes successful laparoscopic management more likely.

We report a rare case of primary abdominal pregnancy in the Douglas cul-de-sac and its successful management with laparoscopy. Early diagnosis and treatment for abdominal pregnancy is now possible due to improvements in modern diagnostic and laparoscopic tools.

Case Report
A 31-year-old woman with primary infertility had undergone ovarian stimulation and intrauterine insemination (IUI) 5 weeks prior to presentation. Although her serum β-human chorionic gonadotropin (β-hCG) level was over 40,000 mIU/mL, serial ultrasounds did not find any signs of intrauterine pregnancy. She was thus referred to our hospital on suspicion of ectopic pregnancy.

Her vital signs were stable at presentation, with hemoglobin of 13.3 g/dL. Transvaginal ultrasound
showed a sac-like mass (1.2 x 1.13 cm) located in the posterior cul-de-sac (Figure 1), with no signs of intrauterine pregnancy. Her serum β-hCG had elevated up to 46,601.53 mIU/mL. After consultation, the patient consented to a laparoscopic examination.

At laparoscopy, dense clot tissue (about 2 cm) was found to be implanted in the cul-de-sac, with mild bleeding. Bilateral oviducts and ovaries were intact and grossly normal with no signs of tubal abortion. The tissue was removed by grasping forceps and hydrodissection. After removal of necrotic tissue, there was a peritoneal defect (about 3 x 2 cm, and 1 cm deep) in the cul-de-sac, with active bleeding (Figure 2). Bipolar electrocauterization was used to achieve hemostasis, and the peritoneal defect was tamponaded with a hemostatic material (Surgicel™; Ethicon Inc, a Johnson & Johnson company, Somerville, NJ, USA) to stop the oozing.

The patient recovered rapidly and was discharged on the second postoperative day. Serum β-hCG had fallen to 6,239.69 mIU/mL on the first postoperative day and to 876.79 mIU/mL 1 week later. Two years later, she had a normal term delivery without any complications.

**Discussion**

The incidence of abdominal pregnancy is 1.3–1.6% of all ectopic pregnancies. Known risk factors for abdominal pregnancy include previous history of ectopic pregnancy, pelvic infection, congenital anomalies, endometriosis, and use of artificial reproductive techniques (ART) [1]. An elevated incidence has been reported in women who conceive after ART. However, most case reports reveal that abdominal pregnancy is more common in those who have undergone in vitro fertilization and embryo transfer than IUI. Our patient had a history of IUI; further study on the link between IUI and abdominal pregnancy is needed.

It may be difficult to differentiate between primary and secondary abdominal pregnancy, especially in advanced cases, because the original site of nidation 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; presence of a pregnancy related exclusively to the peritoneal surface and young enough to eliminate the possibility of secondary implantation following a primary nidation in the tube [5]. As the original site of nidation may be hard to determine, it has been suggested that the diagnosis of true primary abdominal pregnancy can be made only when gestational age is less than 10 weeks [6]. Studdiford’s criteria were later modified by Friedrich and Rankin as follows: the presence of a pregnancy of less than 12 weeks’ histologic gestation, whose trophoblastic attachments are related solely to a peritoneal surface; grossly normal tubes and ovaries; absence of uteroperitoneal fistula [7,8]. Our case fulfills both the original and modified criteria for primary abdominal pregnancy in the cul-de-sac, and the pathology report confirmed intact trophoblasts without the degenerational changes that are found in the tissues of tubal abortion.

In most cases of abdominal pregnancies, surgical management is laparotomy because of delays in diagnosis and the risk of massive preoperative or intraoperative hemorrhage. Transvaginal sonography and β-hCG can aid in early diagnosis, and improvements in laparoscopy have made less invasive operations feasible. Laparoscopic management of abdominal

![Figure 1. Transvaginal ultrasound shows a gestational sac-like mass (arrow) in the Douglas cul-de-sac.](image1)

![Figure 2. After removal of the gestational tissue, there is a peritoneal defect 3 x 2 cm in size (UL = uterosacral ligament; PD = peritoneal defect).](image2)
pregnancies at unusual sites, such as the uterovesical fold and cesarean section scar, has been reported, with the advantages of lower blood loss and surgical morbidity, and faster recovery [9–12]. The decision for laparoscopic management in our case was made because the patient was hemodynamically stable and it was feasible to immediately convert to laparotomy if necessary.

If the blood supply to the placenta can be safely secured, complete removal of the placenta usually results in uncomplicated postoperative recovery. In a series of 101 cases, the placenta was completely removed in 60% [13], and most authors now agree that removal of the placenta, if straightforward, should be the optimal approach. If the placenta cannot be removed safely, other options include ligation of the cord close to the placenta and leaving it in situ, or ligation of the placental blood supply and removal of the pelvic organ upon which implantation has occurred (e.g. hysterectomy or salpingo-oophorectomy). Partial removal of the placenta when its whole blood supply cannot be ligated may result in massive hemorrhage, shock and death. In such situations, the placenta should be left in situ, but this option is often accompanied by ileus, peritonitis, abscess formation and prolonged hospital stay.

Hemostasis at surgery can be achieved with the use of vasopressin, bipolar electrodes and monopolar scissors. We used bipolar electrocauterization and tamponaded with a hemostatic material (Surgicel™, Ethicon Inc) to achieve complete hemostasis in the peritoneal defect after the removal of the placenta. It can be an alternative choice for hemostasis at laparoscopy, and this laparoscopic technique has been reported in the management of interstitial pregnancies.

Abdominal pregnancy can be life-threatening even when surgical intervention with laparotomy is performed. Early diagnosis of ectopic pregnancy by ultrasonography can aid in the successful laparoscopic management of early abdominal pregnancy.

References