Ruptured heterotopic interstitial pregnancy: rare case of acute abdomen in a Jehovah’s Witness patient

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Objective: To report a case of ruptured right heterotopic interstitial pregnancy diagnosed and managed laparoscopically by cornual resection.

Design: Case report.

Setting: University tertiary care hospital.

Patient(s): A 29-year-old female Jehovah’s Witness patient with first-trimester acute right lower quadrant abdominal pain.

Intervention(s): Emergency laparoscopy was performed, and the site of bleeding was first clamped with a laparoscopic grasper. The lateral tissue was then coagulated and simultaneously transected with the bipolar-cutting probe for control of hemorrhage.

Main Outcome Measure(s): The early diagnosis of heterotopic interstitial pregnancy should enable a conservative approach, whether medical or surgical, to be undertaken when treating this rare and potentially fatal condition.

Result(s): The treatment of a ruptured heterotopic interstitial pregnancy by laparoscopy was successful with cornual resection.

Conclusion(s): Management of a ruptured interstitial pregnancy by laparoscopy was successful with cornual resection and minimal blood loss, and a coexisting intrauterine pregnancy continued satisfactorily. (Fertil Steril 2008;90:1200.e15–e17. ©2008 by American Society for Reproductive Medicine.)

Key Words: Heterotopic pregnancy, ruptured interstitial pregnancy, laparoscopy, Jehovah’s Witness patient

Heterotopic pregnancy is the simultaneous occurrence of two or more implantation sites. It is most often manifested as concomitant intrauterine pregnancy and ectopic pregnancy. The incidence of heterotopic pregnancy in women with spontaneous fertilization is 1 in 30,000, whereas with various assisted reproductive techniques it increases to 1 in 100. Interstitial pregnancy is very rare, accounting for between 1.1% and 6.8% of all ectopic pregnancies, with a maternal mortality rate of approximately 2% to 2.5% (1).

With routine ultrasound examination, it is difficult to discover an extratine pregnancy when an intrauterine pregnancy is identified. Timely diagnosis of a heterotopic pregnancy is, therefore, difficult (2).

The greatest distensibility of the myometrium and its abundant blood supply from branches of the ovarian and uterine arteries may allow the pregnancy to progress to 16 weeks’ gestation. It usually ruptures between 7 and 16 weeks, potentially resulting in catastrophic bleeding. The laparoscopic approach, with the continuous development of this technology, is very helpful (1). Especially in cases of Jehovah’s Witnesses, who refuse blood products, the surgical approach should be the least traumatic and hemorrhagic while at the same time effective.

CASE REPORT

A 29-year-old female Jehovah’s Witness patient, gravida 3, para 2, with spontaneous conception, presented at 7 weeks’ gestation by last menstrual period complaining of a 4-h history of acute right lower quadrant abdominal pain.

Physical examination revealed a stable patient with mild lower abdominal tenderness. Vaginal examination revealed mild cervical motion tenderness. On transvaginal ultrasound (TVS), an intrauterine pregnancy (IUP) with a fetal heart beat was observed, corresponding with a 6 week 5 day gestational age. A small amount of fluid was also seen in the pouch of Douglas. Her vital signs on presentation were blood pressure (BP) 100/50 mm Hg, pulse rate (PR) 102 beats/min, and temperature 36.3°C. A crystalloid IV fluid bolus was started. Laboratory tests showed hematocrit (Hct) 33.2% and hemoglobin (Hb) 11.3 g/dL. The easy detection of an intrauterine sac on TVS diverted our attention from a possible concurrent ectopic pregnancy.
Three hours after admission, the abdominal pain remained constant and a repeat TVS was performed. An increased amount of peritoneal fluid was noted (Fig. 1), as well as a decrease of Hct to 28.7% and Hb to 9.3 g/dL. The patient was placed on a cardiac monitor and was in normal sinus rhythm, with PR 126 bpm and BP 75/40 mm Hg.

Emergency laparoscopy was performed, and a large amount of hemorrhagic fluid was suctioned (>2 L) from the peritoneal cavity. A ruptured right heterotopic cornual pregnancy was noted (Fig. 2). We should mention here that Institutional Review Board approval in managing this case was not obtained owing to the emergent nature of the presentation and necessity to intervene in a timely manner.

The decision was made to continue laparoscopically. The site of bleeding was first clamped with a laparoscopic grasper, then, using a bipolar cutting probe (BiLAP Bipolar Probe; Everest), the lateral tissue was coagulated and simultaneously transected.

The adjacent mesosalpinx, ascending uterine vessels, and anastomotic branches of the fallopian tube were also coagulated and cut in sequence. The removal of the products of conception (POC) was attempted using laparoscopic forceps but was unsuccessful owing to the degree of trophoblastic myometrial invasion. The right cornu was subsequently repeatedly coagulated and cut. The resected uterine cornu, with the rest of the ectopic POC, was removed through the 10 mm port using an endoscopic bag.

Electrosurgical resection of the cornual bulge was undertaken with minimal blood loss. Owing to the coexisting IUP, we modified prior techniques by using only bipolar diathermy and excising only a minimal portion of the uterus, about 0.5 cm around the cornu. The defect was closed using two 2-0 Ethibond sutures tied intracorporeally to provide greater reassurance against a uterine rupture during the developing pregnancy. Uterine manipulation was avoided during surgery owing to the presence of an IUP, and the uterine cavity was not entered. The estimated blood loss was minimal. Hemostasis was achieved with bipolar coagulation.

Pathology of the obtained specimen confirmed a cornual pregnancy. A postoperative ultrasound detected fetal heart function in the IUP. Recovery was uneventful and the patient was discharged 2 days after surgery. The management of a ruptured interstitial pregnancy by laparoscopy was successful with cornual resection. The intrauterine pregnancy continued uneventfully. We counseled the patient that an elective cesarean section seemed the wisest method of delivery because of the risk of uterine rupture, and that close antenatal follow-up is mandatory. Progesterone support was administered. We also advised bedrest in the immediate postoperative period, along with close follow-up every 3 weeks throughout the pregnancy. During the first month of postoperative follow-up at our center, there were no complications and the IUP continued satisfactorily. The patient delivered by elective cesarean section at 37 weeks at another center, resulting in a live birth without complications.

**DISCUSSION**

The preoperative diagnosis of a heterotopic interstitial pregnancy is difficult. Identification of an IUP can divert attention from the possibility of a concurrent ectopic pregnancy. In the case of an IUP with acute lower abdominal pain, the possibility of a heterotopic pregnancy should, therefore, be considered. This condition is very rare in a natural cycle.

More specifically, in Jehovah’s Witness patients, who on religious grounds refuse transfusion of blood or blood products, the surgical technique should be minimally invasive with minimal blood loss. Should these patients become...
unstable during surgery, volume expanders, hemodilution, and intraoperative autologous blood transfusion could be used.

The traditional treatment for interstitial pregnancy has been cornual resection by laparotomy or hysterectomy (1). The feasibility of early diagnosis allows a more conservative approach to management. Early diagnosis of interstitial pregnancy is difficult, but can be made by transabdominal/transvaginal ultrasound according to three sonographic criteria: 1) an empty uterine cavity; 2) a chorionic sac seen separately and <1 cm from the most lateral edge of the uterine cavity; and 3) a thin myometrial layer surrounding the chorionic sac (3). These criteria are not useful in the case of a heterotopic pregnancy. The use of color and pulsed Doppler ultrasonography and magnetic resonance imaging may increase diagnostic sensitivity and improve diagnostic accuracy in such cases (4).

When interstitial pregnancy is detected early and unruptured, treatment options include expectant management with aspiration and installation of potassium chloride or prostaglandin into the gestational sac. Systemic methotrexate (MTX) or local injection of MTX cannot be used in a heterotopic pregnancy owing to its toxicity, although some authors have used instillation of a small dose (5). Local administration includes injection under ultrasound guidance or under direct vision via laparoscopy or hysteroscopy. This is not without risk, because puncturing a large interstitial pregnancy may precipitate hemorrhage or even cornual rupture. Surgical intervention by hysteroscopic removal or cornual excision/cornuostomy via laparotomy can be used in the case of failed medical management of advanced pregnancy, but not in heterotopic pregnancy (1).

The laparoscopic approach, with the continual development of technology, is technically feasible without disrupting the course of an IUP. The continued development of operative endoscopic techniques has afforded a range of surgical options in the management of interstitial pregnancy. For an accessible gestation, removal with forceps using an operative hysteroscope under laparoscopic guidance has been described (6).

The first operative laparoscopic treatment of interstitial pregnancy was described by Reich et al. in 1988, performing a cornual resection (7). Cornuostomy can be an effective technique when the interstitial pregnancy is small. After injection of vasopressin, a longitudinal incision is made electrosurgically through the myometrium into the gestational sac and the contents are removed with forceps or hydrodissection. Closure of the incision is optional. Cornual resection has been recommended for interstitial pregnancies greater than 4 cm in size, because of increased myometrial invasion (6).

The integrity of the cornu following an interstitial pregnancy may be compromised, regardless of the method of treatment. Although pregnancy is not contraindicated, this information is important when counseling and managing patients. Delivery after laparoscopic management of a cornual pregnancy can be either vaginal or by cesarean section before labor (8). A large study is required to evaluate the long-term consequences of the procedure and to decide the best mode for a subsequent delivery.

The surgical management in the present patient was a laparoscopic cornuostomy. The early diagnosis of interstitial pregnancy should enable a conservative approach, whether medical or surgical, to be undertaken when treating this rare and potentially fatal condition, reducing the need for laparotomy. It is important to remember that the detection of an IUP does not exclude the existence of an accompanying ectopic pregnancy. For more advanced pregnancies, minimally invasive techniques can be employed by experienced surgeons.

REFERENCES