

Surgical Expression of an Un-Ruptured 12-Week Interstitial Ectopic Pregnancy

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ABSTRACT

Background: Interstitial pregnancy account for 2-4 % of tubal pregnancies. Interstitial pregnancy can lead to severe hemorrhage and death.

Case: A 35 year old at 12weeks, with history of multiple surgeries and fibroid uterus, presented with intermittent lower back pain without any other symptoms. MRI of pelvis revealed right interstitial ectopic pregnancy with presence of fetal heart activity. The open cornuotomy was performed, expressing an intact sac with live fetus.

Conclusion: When a reproductive aged woman with positive pregnancy test complains lower back pain without other symptoms, one should consider interstitial pregnancy. If ultrasound cannot visualize the presence of a gestational sac due to myomatous uterus, MRI of pelvis should be considered. The cornuostomy is a comparable surgical approach for a patient with prior histories of abdominal surgery.

INTRODUCTION

Interstitial pregnancy refers to an ectopic pregnancy implanted in the interstitial portion of the fallopian tube. The interstitium of the fallopian tube measures approximately 1-2 cm in length and 0.7mm in diameter [1]. It has greater capacity to expand before rupture than distal portion of the tube, which allows the ectopic pregnancy to remain asymptomatic until further along in gestation [1]. Interstitial pregnancies account for 2-4 % of tubal pregnancies [1-4]. Due to diagnostic difficulties, the mortality rate can be as high as 2.5%, which is 7 times greater than that of ectopic pregnancies in general [2]. The interstitial portion of the fallopian tube is highly vascularized, thus rupture can lead to more severe hemorrhage. The gestational age at presentation of interstitial pregnancy ranged from 6.9+/- 0.3 weeks per Tulandi and Al-Jaroudi [3] and 8+/-2weeks per MacRae, et al [4].

CASE PRESENTATION

A 35 year-old woman gravida 4 para 2 at 11 weeks and 5 days by last menstrual period, with history of two cesarean sections and abdominal myomectomy, presented at Level 1 trauma center emergency room complaining of intermittent generalized lower back pain (severity of 8 out of 10) for the past 2 days. Patient denied dysuria, flank pain, fever, chills, nausea, vomiting, diarrhea, constipation, abdominal pain, vaginal bleeding or discharge, rash or recent direct trauma to lower back. Her back pain was completely resolved with intravenous pain medication given in the emergency room. Vital signs included blood pressure of 130/84mmHg, pulse rate of 95 beats per minute, respiratory rate of 16 breaths per minute, temperature of 98.2 F and pulse oximetry of 100% on room air. Physical examination revealed an obese (BMI 36) Hispanic female in no acute distress. Pelvic exam showed no evidence of

vaginal bleeding and the cervical os was closed on palpation. The uterus was 15 weeks gestation in size and globular. A fluctuant mass was palpated on right lateral aspect of her uterus. There was no cervical motion tenderness or adnexal tenderness. Laboratory results showed Rh+ blood type, hematocrit of 39.8%, platelets of $186 \times 10^3/\mu\text{L}$, white cell count of $9.4 \times 10^3/\mu\text{L}$, and beta HCG level of 72,598 mIU/ml. Bedside pelvic sonogram did not show the evidence of intrauterine pregnancy or occult ectopic pregnancy. The patient was admitted for further work up.

On the following day, MRI of pelvis was performed (Figure 1) and a radiology sonogram showed a myomatous uterus with a right interstitial ectopic pregnancy with crown rump length of 4.12cm and the presence of fetal heart activity. The official trans-vaginal ultrasound of pelvis revealed a gestational sac measuring >5cm in diameter, which was surrounded by a thin myometrial layer (4.4mm) (Figure 2).

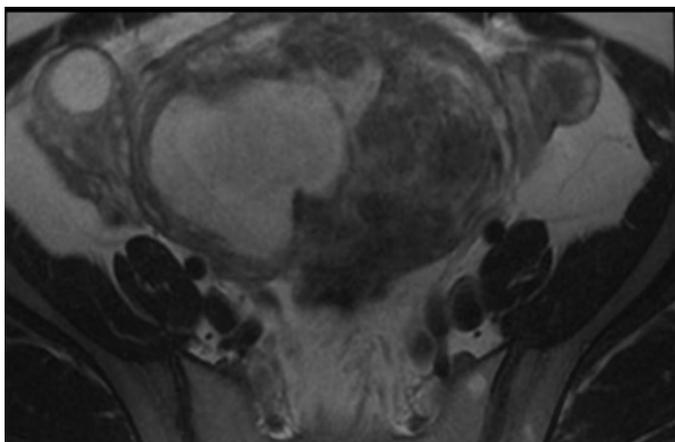


Figure 1: MRI image of interstitial ectopic pregnancy.



Figure 2: Ultrasound image of a right-sided interstitial ectopic pregnancy.

The patient was counseled and consented for laparotomy, removal of ectopic pregnancy via cornuostomy, possible cornual resection and possible hysterectomy after risks, benefits and alternatives discussed with a witness present.

Intraoperatively, extensive adhesions were noted including

dense adhesions of the uterus to the anterior abdominal wall and the bladder to the uterus. The swelling on the right cornuae of the uterus appeared lateral to the round ligament. Once the bladder was dissected free from the uterus, a small incision was created on the right cornuae of the uterus and the intact gestational sac with fetus was easily expressed and sent to pathology. The myometrial defect was closed in 3 layers with absorbable suture (0-Vicryl). Patient received one dose of methotrexate prophylactically after the surgery.

The final pathology reported a 67 grams intact gestational sac measuring 6.0 cm x 4.5 cm x 2.3 cm with attached spongy membranous tissue. The sac contained a clear pale yellow fluid and an intact fetus with a crown rump length of 4.5 cm. As shown in (Figure 3), the fetus had eye spots and the hands and feet with appropriate number of digits. The posterior aspect of the fetus was intact. The beta HCG level dropped appropriately and returned to normal by the 2 months postoperative visit. She resumed her normal menstrual period a month after the procedure and did not experience abnormal bleeding or pelvic pain.

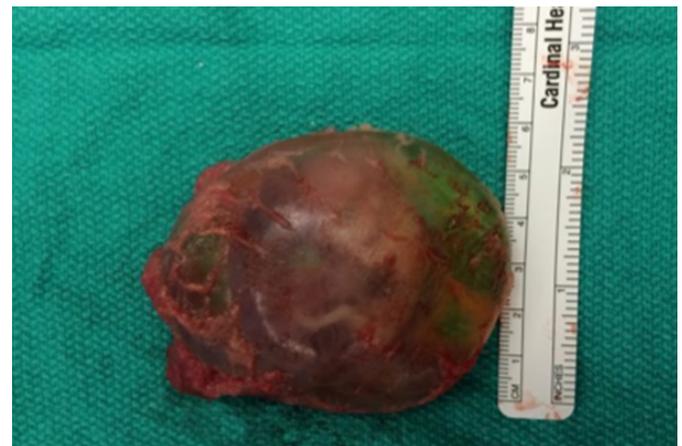


Figure 3: An intact & un-ruptured gestational sac with a fetus.

COMMENTS

Our case was diagnosed at 12 weeks gestation and un-ruptured. To our knowledge, this was further along in gestational age than any other un-ruptured interstitial pregnancy we can find in the literature.

Transvaginal ultrasound is the primary method of diagnosis of interstitial pregnancy. Several studies delineated ultrasonographic criteria for diagnosis. Timor-Tritsch, et al [5] defined three criteria: 1) empty uterine cavity 2) chorionic sac separate and at least 1 cm from the lateral edge of the uterine cavity 3) thin (<5mm) myometrial layer surrounding the gestational sac. Ackerman, et al [6] described the interstitial line sign, which refers to visualization of an echogenic line that runs from the endometrial cavity to the cornua of the

uterus abutting the gestational sac. According to Hamouda, et al [7], these criteria are reproducible only in the first trimester, claiming that MRI may provide additional information in suspected interstitial ectopic pregnancy in hemodynamically stable patients. In addition, Hamouda, et al [7] point out that, in advanced interstitial pregnancy, the eccentrically located gestational sac, surrounded by asymmetric thin myometrium and clear visualization of the adjacent decidua are the diagnostic criteria. In our case, on the initial bedside sonogram, it was difficult to visualize the presence of a gestational sac in the cornuae due to myomatous uterus. However, MRI of pelvis was able to depict the entire uterus and identify the exact site of implantation.

The treatment options for interstitial ectopic pregnancy include medical (Methotrexate therapy) and surgical management. If surgical management was elected, surgeons should consider patient's desire for future pregnancy and extent of uterine wall trauma. There are several surgical approaches for interstitial pregnancies, including transcervical suction evacuation, cornuostomy, corneal resection, cornual wedge resection, minicornual excision or hysterectomy. When Moawad, et al [1] looked at laparoscopic procedures done on interstitial ectopic pregnancies, cornuostomy was the best option for interstitial pregnancies whose gestational sac was less than 4cm. Many studies, including Hwang, et al [8] support that laparoscopic cornual resection or cornuostomy is a safe and less invasive procedure with shorter hospital stay and lower complication rates.

In our case, we decided to start with laparotomy considering history of multiple abdominal surgeries. The patient indeed had extensive adhesions especially in the pelvis which required careful lysis of adhesions. Our patient was counseled about the risks including uterine rupture during subsequent pregnancy and the risk of recurrent interstitial pregnancy. The patient was also counseled on the importance of close antenatal surveillance with planned cesarean delivery at term for future pregnancies.

TEACHING POINTS

1. When a reproductive aged woman with positive pregnancy test complains lower back pain without other common symptoms of ectopic pregnancy, such as vaginal bleeding or abdominal pain, one should consider interstitial ectopic pregnancy.

2. When ultrasound cannot visualize well the presence of a gestational sac in the cornuae due to myomatous uterus, MRI of pelvis is a choice of imaging to depict the entire uterus and identify the exact site of implantation.

3. The open cornuostomy is a comparable surgical approach for a patient with known interstitial ectopic pregnancy and with anticipation of marked adhesion from prior surgeries.

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