

Peritoneal Pregnancy Missed at Initial Laparoscopy

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Abstract

Ectopic pregnancy accounts for 2% of all first-trimester pregnancies and within the United States it remains as the leading cause for maternal death in the first trimester. Early detection of an ectopic pregnancy is imperative to ensure prompt treatment, which includes possible medical or surgical management to prevent life-threatening complications. Most ectopic pregnancies implant within the fallopian tube, but ectopic pregnancies can occur in the cervix, abdomen, ovary, or uterine cornua. These types of ectopic pregnancies are often harder to detect and have an increased risk for hemorrhage. We present a case of a peritoneal pregnancy which was missed at initial laparoscopy in which operative findings were notable for a bleeding right fallopian tube with no evidence of the gestational tissue. An exploratory laparotomy was performed twenty-four hours later for concerns of an acute abdomen revealed an ectopic implant with active bleeding and peritoneal erosion over the rectum. This case illustrates the ramifications of a ruptured ectopic pregnancy and also highlights the limitations of laparoscopy as a diagnostic modality in evaluating for an ectopic pregnancy.

Keywords: Ectopic pregnancy; Laparoscopy; Secondary abdominal pregnancy; Peritoneal pregnancy

Introduction

In the United States, ectopic pregnancy is the leading cause of maternal death in the first trimester. Ectopic pregnancy accounts for 2% of first-trimester pregnancies and 6% of all pregnancy-related deaths [1]. The most common risk factor for the development of an ectopic pregnancy is a pathologic fallopian tube with causes originating from tubal surgery, genital tract infections, previous ectopic pregnancies, and in utero exposure to diethylstilbestrol [2]. 97% of ectopic pregnancies are implanted in the fallopian tubes, but implantation can occur in other locations such as the ovary, cervix, uterine cornua, and abdomen [1]. Regarding the latter, abdominal pregnancy is both the rarest and most serious type of extrauterine gestation.

The incidence of abdominal pregnancy is believed to be 1 in 7,269 deliveries. Abdominal pregnancies may be either primary or secondary. Most abdominal pregnancies are secondary, which result from early tubal abortion or rupture with secondary implantation into the peritoneal cavity [3]. For an abdominal pregnancy to be considered primary, it must meet three criteria defined by Studdiford in 1942 [4]:

1. The presence of normal bilateral tubes and ovaries with no evidence of recent or past pregnancy
2. No evidence of a uteroperitoneal fistula
3. The presence of pregnancy related exclusively to the peritoneal surface, early peritoneal pregnancy (greater than 20 weeks of gestation) or advanced (less than 20 weeks of gestation).

We present a case of a secondary abdominal pregnancy that was missed at initial laparoscopy which required an exploratory laparotomy to detect and remove the pregnancy.

Case Report

A 38 year-old, gravid 4, para 3-0-0-3, at an unknown gestational age presented to the emergency room complaining of the sudden onset of severe abdominal pain. Her history was notable for three previous spontaneous vaginal deliveries with history revealing no identifiable risk factors for an ectopic pregnancy. On initial presentation the patient was hemodynamically stable. Exam demonstrated findings on abdominal exam consistent with an acute abdomen. Sterile speculum exam revealed a closed cervix with no bleeding and bimanual exam

demonstrated an approximately 7 week sized uterus with significant tenderness over the right adnexa. Human chorionic gonadotropin (hCG) was 4570 with a formal transvaginal ultrasound demonstrating no evidence of an intrauterine pregnancy, small cystic structure in the right adnexa, and complex free fluid in the pelvis.

The patient was immediately brought to the operating room for laparoscopy due to concerns for a possible ruptured ectopic pregnancy given that the patient's hCG was above the discriminatory zone (1,500-2,000) with no evidence of an intrauterine pregnancy on ultrasound in conjunction with an acute abdomen on exam. Laparoscopy revealed approximately 150 mL of blood and clot within the abdomen. The right fallopian tube was bleeding along the ampulla and fimbriae. Upon copiously irrigating and suctioning the pelvis, diagnostic laparoscopy revealed a normal left ovary, left fallopian tube, and uterus. The right ovary demonstrated two 2 cm simple appearing cysts. Thorough examination of the anterior and posterior cul-de-sacs, ovarian fossa, and abdomen revealed no evidence of ectopic tissue. Given bleeding along the right fallopian tube, decision was made to proceed with a laparoscopic right salpingectomy which was performed with cautery to ensure hemostasis. Final inspection revealed no further bleeding within the abdomen. Given the inability to detect gestational tissue on laparoscopy, the surgery was completed with a dilation and curettage.

The patient was admitted for observation and to trend her hCG level. The following morning the patient's hCG decreased from 4551 to 3970 (13% decrease). Her abdominal pain resolved and given a benign abdomen the patient was discharged with return precautions and instructions to return the following day for a repeat hCG for consideration of medical therapy with methotrexate. She presented to the emergency room approximately twelve hours after discharge with the sudden onset of severe abdominal pain. On repeat examination,

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vitals demonstrated mild tachycardia with hypotension. Her abdominal exam again demonstrated findings consistent with an acute abdomen. Given these findings, the patient was counseled on need for laparoscopic evaluation for concerns for intra abdominal bleeding.

Laparoscopy revealed 1000 mL of blood within the pelvis and abdomen. Upon suctioning, there was no evidence of bleeding at the original operative site from the previous salpingectomy. Another thorough examination of the abdomen and pelvis was performed with an inability to determine the location of the ectopic pregnancy. During this period another 300 mL of blood began to accumulate in the posterior cul-de-sac with no identification as to the source of bleeding. Decision was made to convert to exploratory laparotomy to determine the location of bleeding and ensure hemostasis.

Exploration of the posterior cul-de-sac showed a probable ectopic implant with active bleeding and peritoneal erosion over the rectum which was unable to be identified on the two previous laparoscopies. This area was resected off the peritoneum and the defect was approximated. There was no further bleeding identified within the pelvis. Pathology later confirmed that this ectopic tissue demonstrated findings consistent with gestational tissue. Pathologic analysis of the right fallopian tube and specimen from the dilation and curettage revealed no gestational tissue. The patient had an uncomplicated postoperative course and was discharged on postoperative day three. At the time of her six week postoperative appointment she reported no postoperative concerns.

Discussion

The prompt diagnosis and treatment of an ectopic pregnancy is imperative as rupture of an ectopic pregnancy is a true obstetric emergency which carries the risk for maternal mortality. Multiple factors have led to the improvement in the diagnosis of an ectopic pregnancy to include advances in ultrasound, rapid and sensitive serum hormone assays, and increased awareness [5]. Early recognition of an ectopic pregnancy reduces the risk of tubal rupture and allows for potential medical treatment of the ectopic pregnancy. An ectopic pregnancy is likely when hCG levels are above the discriminatory zone defined by the American College of Obstetricians and Gynecologists as 1500-2000 and when transvaginal ultrasound is nondiagnostic for an intrauterine pregnancy [6]. Although most gynecologists will not encounter a case of an abdominal pregnancy during their career, this case illustrates the diagnostic challenges and ramifications of an abdominal pregnancy.

Our patient initially presented to the emergency room with an acute abdomen, hCG above the discriminatory zone, and formal transvaginal ultrasound demonstrating no evidence of an intrauterine pregnancies. These findings should be treated as a ruptured ectopic pregnancy until proven otherwise, which is the reason we initially took her for a diagnostic laparoscopy. Diagnostic laparoscopy is believed to be the "gold standard" in diagnosing an ectopic pregnancy [5]. Furthermore, laparoscopy also allows for surgical treatment if indicated and also an opportunity to evaluate other pelvic structures such as condition of the other fallopian tube and presence of adhesions or endometriosis.

Nevertheless, even though laparoscopy is considered the gold standard for ectopic pregnancy, this invasive approach has a false negative of 3-4% and a false positive of 5% [7]. Laparotomy is reserved for patients with extensive intraperitoneal bleeding, intravascular compromise, or poor visualization of the pelvis at the time of laparoscopy [8]. Laparoscopy is preferred as the initial approach as laparoscopic procedures are associated with shorter operative time, shorter hospital stays, lower analgesia requirements, and less intraoperative blood loss [9-11].

Although rare, ectopic pregnancies may occur outside the tube and thus warrant a complete examination of the entire pelvis, adnexa, and abdominal cavity to determine location and possible complications of an ectopic pregnancy. The surgeon must be careful in the setting in which hCG levels are low or when the gestational age is limited as the ectopic tissue may be so small that it may not be seen on laparoscopy. A dilation and curettage may then be useful when performed in conjunction with a negative diagnostic laparoscopy for a suspected ectopic pregnancy. Patients without a definitive diagnosis established at time of laparoscopy should be continued to follow closely.

To our knowledge, this is the first case presented of a secondary abdominal pregnancy missed at initial laparoscopy. We hypothesize that given the bleeding right fallopian tube, the gestation was initially implanted within the right oviduct and was later expelled from the tube where it implanted onto the peritoneum. The patient's initial presentation with abdominal pain may have been secondary to the accumulation of blood from the bleeding tube. Given the inability to identify the gestational tissue on laparoscopy, a dilation and curettage was performed that revealed no gestational tissue. The patient was discharged the following morning with strict return precautions and plans to repeat an hCG level; however, she returned later that day with a hemoperitoneum as a result of the ruptured ectopic. The patient returned to the operating room where another complete diagnostic laparoscopy revealed no identification of the ectopic pregnancy; nevertheless, due to bleeding concerns, an exploratory laparotomy was performed that facilitated the detection and repair of the ruptured ectopic pregnancy.

Conclusion

Clinicians must be cognizant of the signs and symptoms concerning for an ectopic pregnancy and take prompt action to accurately diagnose and treat this condition as it remains the most common cause of maternal death in the first trimester. Although most ectopic pregnancies occur in the oviduct, a small percentage can occur in other locations such as the abdomen, which is a diagnostic challenge and often associated with increased maternal morbidity and mortality. Laparoscopy is considered the "Gold Standard" in diagnosing an ectopic pregnancy. However, this case report illustrates the limitations of laparoscopy and the inherent risk of a false negative. Nevertheless, even when laparoscopy does not diagnose an ectopic pregnancy and when the patient has no indications for a laparotomy, then close follow up with the patient is imperative to prevent possible complications.

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