

Interstitial Pregnancy: Two Case Reports and Review of the Literature

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ABSTRACT: Interstitial pregnancy is a rare form of ectopic pregnancy, but it is associated with the highest risk of morbidity and mortality and needs early diagnosis. Interstitial, angular and cornual pregnancies are mistakenly and frequently confused and need a strict distinction. Interstitial pregnancy refers to an ectopic pregnancy that is implanted in the interstitial portion of the fallopian tube. Its correct diagnosis can be quite difficult; it relies heavily on quantitative beta-hCG assays and ultrasound and potentially on laparoscopic evaluation. The diagnosis by transvaginale ultrasonography is based on multiple criteria. Several effective treatment options for treatment of interstitial pregnancy have been described but the most appropriate technique remains controversial. Managing an interstitial pregnancy is dependent upon whether the ectopic pregnancy has ruptured, the stability of the patient, the gestational age at diagnosis and the patient's desire for future fertility. The greatest risk to patients after successful treatment remains recurrence of interstitial pregnancy and the uterine rupture during subsequent pregnancy this is why a transvaginale ultrasonography should be performed 5-6 weeks after the last menstrual period and a cesarean delivery should be planned at term or performed, if tocolysis fails in cases of preterm labor. To illustrate the particularities of this form of ectopic pregnancy we report two cases with a brief up date.

KEYWORDS: ectopic pregnancy, interstitial pregnancy, cornual pregnancy, angular pregnancy, transvaginale ultrasonography, laparoscopy.

1 INTRODUCTION

Interstitial pregnancy is a rare form of ectopic pregnancy, but it is associated with the highest risk of morbidity and mortality and needs early diagnosis. Interstitial, angular and cornual pregnancies are mistakenly and frequently confused and need a strict distinction because the behavior, management, and outcomes the 3 conditions are different. Compared to the others forms of fallopian pregnancies the interstitial pregnancy has its particularities that must be known for its well managing.

2 CASES REPORT

CASE REPORT 1

A 28-year-old woman, gravida 3 para 2, with uneventful past medical history, presented with amenorrhea, lower pelvic pain and vaginal bleeding started 3 days before presentation. On the general examination the patient appeared to be in fairly general good condition with blood pressure 110/70 mmHg. On the abdominal examination abdominal tenderness is noted, and the pelvic examination showed adnexal tenderness at the right with no bleeding at the time of the examination or adnexal mass. The findings of the ultrasonographic examination (figure 1) were consistent with ruptured ectopic pregnancy; it demonstrated a large amount of free fluid in the abdominal cavity, a 3*2.5 cm right laterouterine heterogeneous image with no intrauterine pregnancy identified. The patient underwent an immediate exploratory laparotomy (figure2). Findings were a massive bleeding in the peritoneal cavity and ruptured and actively bleeding right interstitial pregnancy based on the enlarged angle of the uterus lateral to the round ligament. Right total salpingectomy was performed and hemostasis was achieved. The serum beta- human chorionic hormone level measured 24h after surgery was fallen and the patient had uneventful postoperative recovery.

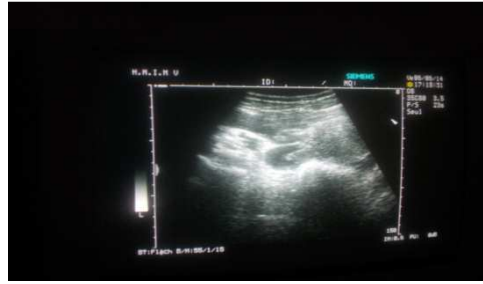


Figure 1: Ultrasonographic image

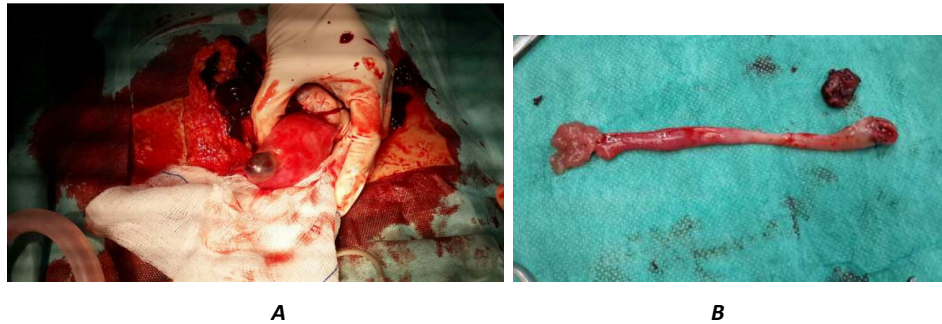


Figure 2: A. Laparotomy of the patient showing heterotopic pregnancy. B. salpingectomy piece and trophoblastic product

CASE REPORT 2

27 years-old woman, gravida 2 para 2, with uneventful past medical history, 8 weeks' pregnant by last menstrual period, presented with lower pelvic pain and vaginal bleeding started one few hours before presentation. The physical examination noted only an abdominal tenderness and an adnexal tenderness at the left with no bleeding or adnexal mass. The ultrasonographic examination demonstrated a free fluid in the abdominal cavity with no intrauterine pregnancy identified. The patient underwent an immediate exploratory laparotomy. Findings were a bleeding in the peritoneal cavity and ruptured left interstitial pregnancy based on the enlarged angle of the uterus lateral to the round ligament. Right total salpingectomy was performed and hemostasis was achieved. The serum beta- human chorionic hormone level measured 24h after surgery was fallen and the patient had uneventful postoperative recovery.

3 DISCUSSION

Interstitial pregnancies accounts for up to 1–3% of all ectopic pregnancies [1] and for only 2-4% of tubal pregnancies [2] but the mortality rate is 2.5%, it is 7 times greater than that of ectopic pregnancies in general [3]. While all ectopic pregnancies are associated with a risk of hemorrhage, interstitial pregnancies are associated with the highest risk of massive and uncontrollable bleeding [4]. Early diagnosis is crucial to reducing its morbidity and mortality [2].

Interstitial pregnancy refers to an ectopic pregnancy that is implanted in the interstitial portion of the fallopian tube [1][2][4]. It is mistakenly and frequently confused with cornual pregnancy and angular pregnancy [2][4]. The interchangeable use of these terms in clinical practice can create problems for clinicians [3]. A strict distinction among the 3 conditions is clinically important because their behavior, management, and outcomes are different. In contrast to interstitial pregnancy, an angular pregnancy refers to an intrauterine pregnancy that is implanted in one of the lateral angles of the uterine cavity, medial to the uterotubal junction[2][4][5]. Cornual pregnancy refers to a pregnancy which occur in a bicornuate uterus horn [2][4][5], rudimentary uterine horn, a unicornuate uterus, the cornual region of a septate uterus or a uterus didelphys [3].

Factors that increase the risk of interstitial pregnancy are similar to those for ectopic pregnancy located in the more distal tube [2][4].

Contrary to common belief, current evidence dispels a long-standing myth that interstitial pregnancies present and rupture at a much later gestational age than other forms of ectopic pregnancy. The most common symptoms of interstitial pregnancy are abdominal pain and vaginal bleeding in the first trimester of pregnancy. Vaginal bleeding appears to be less common in interstitial pregnancy than in other forms of ectopic pregnancy. On physical examination, the classic signs of a

tender adnexal mass and cervical motion tenderness may be elicited. An asymmetric uterine enlargement may be palpable. Signs of acute abdomen may be elicited in cases of cornual rupture and hemoperitoneum; in severe cases, tachycardia and subsequent hypotension may be evident [2]

Correct diagnosis of ectopic pregnancy can be quite difficult. It requires accurate ultrasound interpretation. The diagnosis relies heavily on ultrasound and potentially on laparoscopic evaluation [1]. Since the introduction of high-resolution transvaginal ultrasonography (TVUS) and the highly sensitive quantitative beta-hCG assays, early and accurate diagnosis has become possible. The TVUS is the primary method of diagnosis. Three-dimensional TVUS may offer an advantage over conventional 2-dimensional sonography. Multiple TVUS criteria for diagnosing interstitial pregnancy were reported such as an eccentric gestational sac surrounded by an asymmetric myometrial mantle and an empty uterine cavity, an empty uterine cavity, a chorionic sac separate and at least 1 cm from the lateral edge of the uterine cavity, and a thin (5 mm) myometrial layer surrounding the gestational sac. The interstitial line sign, which refers to the visualization of an echogenic line that runs from the endometrial cavity to the cornual region, abutting the interstitial mass or gestational sac (80% sensitive and 98% specific) [2][4]. Magnetic resonance imaging may be used if ultrasound is inconclusive [2][4]. The same criteria should be used for an MRI diagnosis as with an ultrasonographic diagnosis [3]. At the time of laparoscopy or laparotomy, an unruptured interstitial pregnancy will appear as an asymmetric bulge in the cornual region. During laparoscopy, angular pregnancy appears as an asymmetric bulge in one of the uterine angles, medial to the round ligament and displacing its reflection laterally. On the other hand, interstitial pregnancy appears lateral to the round ligament [2][4].

Several effective treatment options for treatment of interstitial pregnancy have been described but the most appropriate technique remains controversial. Managing an interstitial pregnancy is dependent upon whether the ectopic pregnancy has ruptured, the stability of the patient, the gestational age at diagnosis and the patient's desire for future fertility [2][3]. A ruptured interstitial pregnancy is a surgical emergency that requires surgical intervention with either laparoscopy or laparotomy, depending on the patient's condition and available surgical assets [2][4]. If the diagnosis is made before rupture, conservative treatment options are possible. These options include minimally invasive surgery and nonsurgical treatment [2].

Medical treatment including methotrexate administration (local and systemic) is contraindicated in patient with intra-abdominal bleeding or a concomitant intrauterine pregnancy [3], but it is particularly attractive for patients who desire future fertility and the interstitial pregnancy is medium-sized (<5 cm) [2][3]. Its success can yield up to 94% success rate without surgery. Local methotrexate injection appears to be as effective as systemic administration but requires the expertise of ultrasound guided needle placement [4].

Surgical treatment, however, remains the cornerstone of treatment in women with more advanced interstitial pregnancies, particularly when medical treatment has failed, uterine rupture is suspected, patient adherence with follow up is in question, or recurrent ipsilateral interstitial pregnancy is found or in patients who would not accept transfusion of blood products in case of uterine rupture [2]. In the past, surgical management by laparotomy with cornual resection or cornuostomy has been a method of choice and actually minimally invasive surgery has revolutionized the treatment options. Laparoscopic cornuotomy with salpingostomy and laparoscopic cornual excision or corneal wedge resection for small ectopics can also be successful but with the required laparoscopic skills to do so [2][4]. Surgical methods that minimize potential blood loss must be used diligently and proactively. A wide variety of hemostatic techniques have been used laparoscopically, including intramyometrial injection of diluted pitressin, tourniquet, purse string suture or endloop or stay sutures, electrocauterization, ultrasonic cutting and coagulating surgical device (harmonic scalpel) and fibrin glue [2][3].

Transcervical hysteroscopic suction evacuation with laparoscopic or ultrasonographic guidance has been reported with success [3][4]. Success with selective uterine artery embolization has been reported but required the expertise of experienced interventional radiology [4]. In the case of heterotopic pregnancy, local injection of potassium chloride, have been used [3]. If the ectopic pregnancy is small, solid and nonviable, it can be managed expectantly because of the decreased risk of bleeding and rupture [3]

Patients who receive expectant or medical treatment and conservative surgical treatment are at increased risk of persistent interstitial pregnancy and should be followed for serial beta-hCG levels until resolution. If the serum beta-hCG level plateaus or rises, additional treatments should be used. Asymptomatic women may receive systemic methotrexate therapy and symptomatic patients may be best approached surgically.

Long-term, the greatest risk to patients after successful treatment remains recurrence of interstitial pregnancy and the uterine rupture during subsequent pregnancy. The incidence of recurrent interstitial pregnancy at the same site after non excisional treatment due to the persistence of the same tubal pathologic condition that has led to the cornual implantation in the first place remains unknown. Patients with a history of interstitial pregnancy are at increased risk of recurrent ectopic pregnancy. TVUS should be performed 5-6 weeks after the last menstrual period. Absence of a demonstrable intrauterine pregnancy raises the possibility of a recurrent ectopic pregnancy, and appropriate follow-up evaluation is required. Typically,

a cesarean delivery should be planned at term (≥ 37 weeks of gestation) before the onset of labor or performed, if tocolysis fails in cases of preterm labor, to avoid the catastrophic uterine rupture [2][4].

4 CONCLUSION

Interstitial pregnancy refers to an ectopic pregnancy that is implanted in the interstitial portion of the fallopian tube it must not be confused with angular and cornual pregnancies. Compared to the aother forms of tubal pregnancies it is rare but is associated with the highest risk of morbidity and mortality and needs early diagnosis. The diagnosis is based on quantitative beta-hCG assays and transvaginale ultrasonography using diagnostic criteria and potentially on exploratory laparoscopy. The options treatment are dependent upon whether the ectopic pregnancy has ruptured, the stability of the patient, the gestational age at diagnosis and the patient's desire for future fertility. The greatest risk to patients after successful treatment remains recurrence of interstitial pregnancy and the uterine rupture during subsequent pregnancy this is why a transvaginale ultrasonography should be performed 5-6 weeks after the last menstrual period and a cesarean delivery should be planned at term or performed, if tocolysis fails in cases of preterm labor.

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