Case Report

Interstitial Pregnancy - A Clinico - Sonographic Diagnostic Dilemma

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Abstract
Ectopic pregnancy in the interstitial part of the fallopian tube is a rare event, constituting only 2-4 % of all tubal ectopic pregnancies and is associated with a high rate of complications. While all ectopic pregnancies are associated with a risk of hemorrhage, interstitial pregnancies are associated with the highest risk of massive, uncontrollable bleeding. There is a higher risk of maternal mortality due to delayed diagnosis and high vascularity of the myometrium. It presents a challenge for clinical as well as radiological diagnosis. We are reporting a case where the diagnostic dilemma persisted in a case of an early interstitial pregnancy and the expertise of two different sonologists was sought. The ectopic nature of the pregnancy could be confirmed in the follow up ultrasound after 2 weeks and appropriate management was instituted. Classical interstitial line sign with eccentrically placed gestational sac and thin endometrial mantle around it is diagnostic.

Keywords: Interstitial pregnancy, Ectopic Pregnancy, Cornual Pregnancy

1. Background
Ectopic pregnancy is one of the leading causes of maternal mortality. The majority of ectopic pregnancies are tubal and located within the fallopian tubes. However, implantation in the cervix, interstitial tubal segment, ovary and at various intra-abdominal sites is also known. The diagnosis and management of pregnancies in these unusual implantation sites present dilemmas to the attending physician¹. Ectopic pregnancy in the interstitial part of the fallopian tube is a rare event, constituting only 2-4 % of all tubal ectopic pregnancies and is associated with a high rate of complications. This condition presents a challenge for clinical as well as radiological diagnosis. While all ectopic pregnancies are associated with a risk of hemorrhage, interstitial pregnancies are associated with the highest risk of massive, uncontrollable bleeding². There is a higher risk of maternal mortality due to delayed diagnosis and high vascularity of the myometrium³⁴. The maternal mortality quoted for interstitial pregnancy is 2-2.5 % as compared to 0.14 % for tubal ectopic pregnancies⁵.

In contrast to the common clinical notion that rupture occurs only between 12 and 16 weeks, in interstitial pregnancies, rupture could happen at any time in early pregnancy too. Hence, diagnosing an interstitial pregnancy at an early stage becomes imperative to prevent catastrophic hemorrhage. This should involve expert ultrasonographic assistance and good clinical acumen; otherwise, rupture could happen suddenly⁶. An abdominal ultrasound can be deceptive in evaluating interstitial ectopic pregnancies and transvaginal ultrasonography is more sensitive in its diagnosis⁷. We are reporting a case where the diagnostic dilemma persisted in a case of an early interstitial pregnancy and the expertise of two different sonologists was sought. The pregnancy was allowed to continue with conservative management, however, follow up scans revealed typical sonographic features of a gestational sac in an eccentric position and a thinning myometrial mantle around it. Clinically the woman showed signs of intrauterine bleed which allowed decision for intervention in the form of laparotomy.

2. Case report
A 36 years old primigravida reported to the obstetric outpatient unit of a rural hospital of central India with the history of amenorrhea of 39 days followed by slight vaginal bleeding. She had history of primary infertility for which she was being managed in the infertility clinic. There was past history of pulmonary tuberculosis for which the woman had received 6 months of anti tuberculosis treatment. However, endometrial culture did not reveal mycobacterium and both tubes were found patent on hysterosalphingography. This pregnancy was conceived after 3 cycles of ovulation induction and intrauterine insemination. She was clinically stable with normal vital signs and physical examination revealed no abnormality. Ultrasound examination done by consultant sonologist revealed an empty uterine cavity with the evidence of about 500 ml, a mass of size 5x5 cm was seen at the right cornu of uterus. The uterine end of the right fallopian tube was embedded in the mass and rest of the tube was clearly visible attached to the mass confirming the diagnosis of right interstitial pregnancy. The right ovary had corpus luteum cyst. Cornual excision was done and complete hemostasis was achieved. Left fallopian tube and ovary were found to be normal. The woman recovered well after the surgery.

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3. Discussion

The interstitial part of the fallopian tube is the proximal portion that lies within the muscular wall of the uterus. It is 0.7 mm wide and approximately 1–2 cm long, with a slightly tortuous course, extending obliquely upward and outward from the uterine cavity. Pregnancies implanted in this site are called interstitial pregnancies. 2–4% of ectopic pregnancies are interstitial.

They pose a significant diagnostic and therapeutic challenge and carry a greater maternal mortality risk than ampullary ectopic pregnancy. Because of myometrial distensibility, they tend to present relatively late, at 7–12 weeks of gestation. Significant maternal haemorrhage leading to hypovolaemia and shock can rapidly result from cornual rupture.

The term cornual ectopic pregnancy is often used interchangeably with interstitial pregnancy by clinicians. However, the identification of a cornual ectopic pregnancy should only be used for pregnancies which occur in a rudimentary uterine horn, a unicornuate uterus, the cornual region of a septate uterus, a bicornuate uterus or a uterus didelphys. The interchangeable use of these terms in clinical practice can create problems for clinicians interpreting ultrasound reports, as the clinical course and management differs markedly between intrauterine cornual gestations and ectopic interstitial gestations.

Because of its location, early diagnosis of interstitial pregnancy has historically been difficult. The eccentric position of the gestational sac and thinning of the myometrial mantle means that differentiation between eccentric intrauterine and interstitial ectopic pregnancy is often difficult (as in the present case). The rate of diagnosis can be improved, however, with transvaginal ultrasound using three criteria: 1) an empty uterus; 2) a gestational sac seen separately and <1 cm from the most lateral edge of the uterine cavity and 3) a thin myometrial layer surrounding the sac.

The presence of an eccentrically located gestation sac with incomplete or asymmetric myometrial tissue, < 5 mm in thickness, is a highly suggestive but nonspecific indicator of interstitial pregnancy. The presence of an echogenic line between the gestation sac and the endometrial cavity, also known as the interstitial line sign, is however a highly sensitive and specific indicator.

Care must be exercised to avoid misinterpreting a normal intrauterine pregnancy in an anomaly (bicornuate or septate) uterus as an interstitial pregnancy. With 2-dimensional scanning in a sagittal plane, the endometrial cavity will appear shorter and then longer for a bicornuate uterus, but will remain the same length for cornual ectopic pregnancy. The 3D scans are very useful in obtaining the coronal scans of the fundal region of the uterus, giving a better overview of the cornual regions of the uterus. The eccentric location and superior and lateral myometrial stripes are better and easily visualized on coronal scans generated through 3D TVS, as compared to 2D scans.

Managing an interstitial pregnancy is dependent upon whether the ectopic pregnancy has ruptured and the stability of the patient. Treatment options for interstitial ectopic pregnancy include local injection or systemic therapy with methotrexate, local injection of potassium chloride, conservative laparoscopic surgery and uterine artery embolism and in emergency situations, cornuectomy or hysterectomy. Evidence of a hemorrhagic ectopic pregnancy is an indication for laparotomy.

However, traditionally, the treatment of cornual pregnancy has been hysterectomy or cornual resection at laparotomy especially in a rural setup where laparoscopic expertise is not available.

As all surgical management has been associated with morbidity and unfavorable effects on fertility, more conservative approaches have been introduced into clinical practice. Medical treatment (as with other types of tubal pregnancy) has been introduced with generally satisfactory results. Ultrasoundography and a high index of suspicion have allowed for early diagnosis and increased success of conservative management for the interstitial ectopic pregnancy.

If the ectopic pregnancy is small, solid and nonviable, it can be managed expectantly because of the decreased risk of bleeding and rupture. In the event the interstitial pregnancy is medium-sized (<5 cm), surgical treatment has been associated with a 9–65% failure rate. If the patient has intra-abdominal bleeding and a concomitant intrauterine pregnancy, medical treatment is contraindicated.

For a large interstitial ectopic pregnancy (>5 cm in size), surgery should be the first treatment of choice due to the increased risk of rupture. Laparoscopic management frequently has been used. In general, laparoscopic techniques involve cornual resection, cornuostomy, salpingectomy or salpingo-oophorectomy. Rarely, hysterectomy is used. A wide variety of hemostatic techniques have been used laparoscopically, including intramyometrial injection of diluted pitressin, tourniquet purse string suture or endoloop or stay sutures, electrocauterization, ultrasonic cutting and coagulating surgical device (harmonic scalpel) and fibrin glue.

One of the concerns of future pregnancy is rupture of the interstitial portion of the tube (uterine rupture). The postulated mechanism is through a deficient area of uterine wall. It appears generally accepted that a Cesarean section delivery should be used with subsequent pregnancies after conservative surgery.

In the present case the diagnostic dilemma persisted inspite of two sonologists doing the examination. As the gestation was early, the diagnosis was more difficult. However, once we could see free fluid in the abdomen there was no delay in doing the laparotomy. There is a possibility that rupture in this case may be because of the evacuation procedure done as the clinical signs of hemoperitoneum were evident after the evacuation procedure. Thus, close monitoring in these cases is imperative.

Figure 1: 2D ultrasound image showing eccentrically placed gestational sac (marked by black arrow) with thinning myometrium laterally

Figure 2: Follow up image showing mass at right cornu of uterus marked by yellow arrows (Right interstitial ectopic pregnancy)
References