Placenta percreta and uterine rupture at 16 weeks

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ABSTRACT

المشيمة عميقة الانغراس هي أحدى مضاعفات الحمل التي تتسبب العديد من الوفيات والحالات المرضية. تمزق الرحم التلقائي في مرحلة مبكرة من الحمل بسبب المشيمة عميقة الانغراس أمر نادر الحدوث. نحن هنا نستعرض حالة من هذه المضاعفات التي تهدد الحياة حدثت في الأسبوع 16 من الحمل. هذه المريضة حضرت الى المستشفى وهي تعاني من آلام بالبطن مع علامات الصدمة الحادة والنزيف الداخلي. وقد تسببت في بعض الارتباك و كانت هناك معضلة في تشخيص هذه الحالة بسبب ظهور حمل طبيعي حي بالأشعة الصوتية وعدم ظهور أي شيء غير طبيعي بالصورة. جميع الأسباب المختلفة المتعلقة بالحمل والأسباب الجراحية أخذت في الاعتبار. تم أخذ المريضة إلى غرفة العمليات على الفور لعملية فتح البطن الاستكشافية. وقد وجدنا أن هناك تمزق بقاع الرحم، تم علاجه بعملية إصلاح الرحم. كانت هذه المريضة قد تعرضت من قبل لعملية قيصرية وعملية كيورتاج رحمي وهما من العوامل المعروفة التي تؤهب لوجود المشيمة عميقة الانغراس. نحن هنا نركز على أهمية اتخاذ القرار السريع بالتدخل الجراحي لإنقاذ حياة المريضة في حالات تمزق الرحم.

Placenta percreta is a complication of pregnancy with significant morbidity and mortality rates. Spontaneous uterine rupture in early pregnancy due to placenta percreta is rare. We report a case of this life-threatening complication occurring at the sixteenth week of gestation. The patient presented with signs of shock, acute abdomen, and evidence of hemoperitoneum. The pregnancy was viable with a normal ultrasound appearance that created some confusion and there was a dilemma in the diagnosis of this case. Various obstetric and surgical causes were taken into consideration. The patient was taken to the operating room immediately for exploratory laparotomy. She was found to have fundal uterine rupture, which was managed by uterine repair. This patient had prior cesarean section and dilatation and curettage; factors well known to predispose for placenta percreta. Here, we emphasize the importance of a fast decision and surgical intervention to save a patient's life in cases of uterine rupture.

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Spontaneous uterine rupture is a rare, but serious complication of placenta percreta. Abnormal adherence of the placenta to the uterine wall has variable severity depending on the degree of penetration of the placenta through the decidua and uterine wall. Placenta percreta is the worst type where the trophoblast invades the decidua, uterine musculature, and penetrate through the uterine serosa to the surrounding tissues. Fortunately, placenta percreta is rare accounting for only 7% of all the cases of abnormal placentation. A review of the literature suggested incidence of abnormal placentation, including placenta percreta to be varying between one in 540, and one in 93,000 with an average of one in 700. Recently, incidence of placenta accreta is on the rise due to increased number of cesarean section in modern obstetrics.[1] This rare complication of pregnancy assumes significance because of the morbidity and mortality from severe hemorrhage. Here, we emphasize the importance of a fast decision and surgical intervention to save a patient's life in cases of uterine rupture.

Case Report. A 40-year-old Saudi lady, gravida 12 para 10, aborta 1, presented to the Emergency Room at 16 weeks of gestation after collapsing at home with a complaint of dizziness. There was no history of trauma

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or similar episodes in the past. She had generalized abdominal pain of one day duration. There was no history of per vaginal bleeding. Obstetric history: 9 full term normal spontaneous vaginal deliveries; one missed abortion at 8 weeks gestation managed by dilatation and curettage 6 years ago; and during the last delivery 4 years ago she had elective lower segment cesarean section for breech presentation. Medical and surgical histories were insignificant. On physical examination, the patient was conscious with signs of shock; she was very pale with cold extremities, and had a weak pulse of 106 beats per minute. Her blood pressure was 82-77/58-53 millimeters mercury. The abdomen was distended with severe tenderness, guarding, and rigidity. The uterus was 16 weeks size and the fetal heart was detected using the Sonicaid system. Pelvic examination demonstrated no per vaginal bleeding, the cervix was closed, and there was severe tenderness. Initial resuscitation was commenced by starting 2 intravenous lines, and the patient was given one liter of Ringer's lactate, one liter of normal saline, and 250 milliliter of human albumin.

The pelvic ultrasound showed a single, viable intrauterine pregnancy, biparietal diameter, femur length, and abdominal circumference were all equivalent to 16 weeks of gestational age, fundal placenta, and normal amniotic fluid. There was a small hypoechoic area at the anterior uterine wall. A huge amount of intra-peritoneal fluid in the upper abdomen was detected; the liver was seen floating in fluid, which was most likely hemoperitoneum. There was no fluid in the pouch of Douglas. The ovaries were normal, and the upper abdominal ultrasound was normal. Laboratory tests revealed that her hemoglobin was 6.4 gm/dl; hematocrit - 20.8, platelets - 41,2000/ml, white blood cells - 21.400/ml, and urea and electrolytes were normal. Liver function tests and coagulation profile were normal. Urinalysis showed white blood cells (15), protein (trace), and no red blood cells.

The patient's condition was unstable as she demonstrated labile blood pressure; blood transfusion with packed red blood cells (PRBC) was started. She was evaluated by the general surgeon on call to rule out the possibility of surgical problems. She was also evaluated by the vascular surgeon for the possibility of ruptured aneurysm. Since there was no clear diagnosis in mind, the decision was taken for exploratory laparotomy by the physicians from all 3 specialties: obstetricians, general surgeons, and vascular surgeons. Laparotomy revealed hemoperitoneum of approximately 3 liters. There was rupture at the fundoposterior surface of the uterus 2-3 cm away from the left tube that was actively bleeding. Membranes of the gestational sac were bulging through the ruptured area (**Figure 1**). Tubes and ovaries were normal. Other abdominal organs were normal. The fetus and placenta were removed through the ruptured area (**Figure 2 and Figure 3**). The uterine wall was repaired and bilateral tubal ligation was performed.

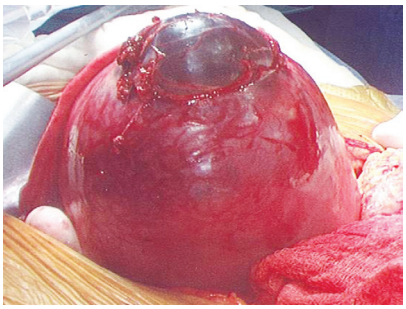

Figure 1 - Amniotic membranes seen bulging through the ruptured part of the uterus.

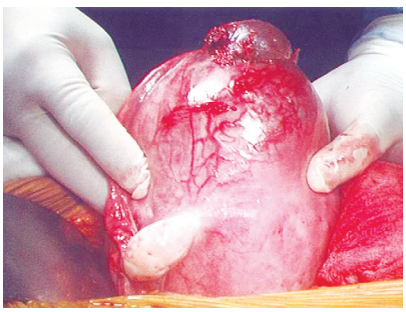

Figure 2 - Uterine rupture at left fundoposterior surface, 2 cm from the cornual end of the fallopian tube.

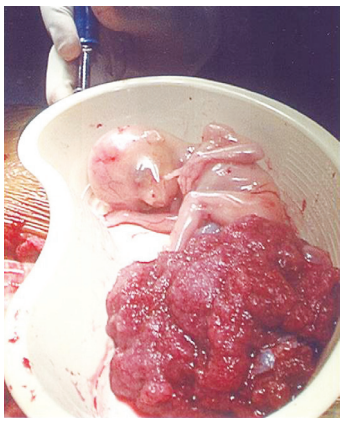

Figure 3 - Fetus and placenta after extraction through the ruptured area.

The postoperative course was uneventful; she received a total of 7 units of PRBC and 6 units of fresh frozen plasma. Her hemoglobin at discharge was 8 grams/deciliter. The histopathology report indicated placenta percreta. The final diagnosis was ruptured uterus due to placenta percreta at 16 weeks of gestation.

Discussion. Uterine rupture due to abnormal placentation usually occurs in labor, or in the third trimester. However, there are case reports of spontaneous uterine rupture occurring in the first or second trimester of pregnancy. The true incidence of such complication is not known, although it is thought to be rare as the prevalence of uterine rupture at delivery has been recently estimated at less than 1 in 2500 deliveries. Although reports on placenta percreta in early pregnancy leading to a spontaneous rupture of the uterus are rare, on performing a literature review, we found a few such cases. One recent case was reported to have multiple perforations of an unscarred uterus due to placenta percreta. She was a 33-year-old gravida 2 para 1 who presented at 22 weeks of gestation with hemoperitoneum. Emergency total hysterectomy was performed.[2] In another case report, a 33-year-old patient had a ruptured uterus in the twenty-first week of gestation. Therapeutic management was performed by laparoscopy, and consecutive laparotomy and hysterectomy. Pathology results showed a placenta percreta.[3]

Prompt management of cases of uterine rupture is life saving as death can occur due to severe hemorrhage. One such case died due to hypovolemic shock and severe generalized coagulopathy. The pregnancy had been obtained via an in vitro fertilization techniques. She presented at 18 weeks of gestation with sudden abdominal pain and severe hemoperitoneum. She was found to have a uterine rupture and an urgent obstetric hysterectomy was carried out. The patient did not have any risk factor. The pathology result showed a fundal uterine rupture caused by placenta percreta.[4] This case is similar to our patient, in which the rupture also occurred at an unusual site in the fundus of the uterus, and not the previous section scar as expected, probably there was another uterine scar due to the previous curettage.

Morbidly adherent placenta in a nulliparous woman is a rare phenomenon. An unusual case of a 20-year-old primigravida presented to the emergency room with abdominal pain and unstable hemodynamic condition at 17 weeks of gestation. She was found to have complete placental invasion and hemoperitoneum on laparotomy.[5] Our patient presented in the early second trimester with spontaneous rupture, which is very rare particularly at this gestational age. Similarly, there is another case report of placenta percreta resulting in a rupture uterus in the fourteenth week of pregnancy. The patient had no risk factor apart of manual extraction of the placenta during a previous delivery. An emergency laparotomy, and hysterectomy was performed. This case demonstrates the importance of risk factors in this case a history of manual extraction of the placenta, to alert the obstetrician to the possibility of placenta percreta.[6] Our patient had multiple risk factors, which include grand multiparity, uterine curettage, and previous cesarean section, which are well known to predispose for placenta percreta. Other risk factors (not in our case) include in vitro fertilization, or previous uterine infections. At laparotomy, the membranes were bulging through the rupture area and the placenta came out easily, however there is no explanation for fundal uterine rupture except due to placenta percreta, which was also confirmed by histopathological diagnosis. The antenatal diagnosis of placenta percreta may be possible, and this would allow modification of the approach to delivery to conserve blood loss and avoid major complications. However, obstetricians should anticipate the problem and look for it, if the patient has any of the known risk factors such as placenta previa, previous cesarean section, and previous dilatation and curettage, or uterine scarring due to previous uterine surgery.

Recent advances in biology could allow a prenatal screening of placenta accreta with the identification of biological markers in maternal blood including cell-free fetal DNA, placental ribonucleic acid (mRNA), and DNA microarray. These promising technologies can detect the presence of anomalies, and should play a future role in developing a better understanding of placental invasion. Most of the imaging literature confines itself to patients who are at risk due to previous surgery and a placenta previa. In these patients, the most reliable sign of placenta accreta is the presence of irregular vascular spaces with arterial flow. In almost all patients, the signs needed for the diagnosis are present at the time of the screening examination at 18 weeks. Ultrasound is quite accurate in predicting severe placenta accreta in at risk patients, however less severe cases may not have any ultrasound findings.[7] Placenta percreta were traditionally managed by cesarean hysterectomy. Particularly in cases of rupture uterus due to placenta percreta, most of the case reports that were mentioned earlier were managed by hysterectomy. However, in our patient the rupture occurred in a relatively early gestational age (16 weeks), we opted for uterine repair as the placenta came out through the ruptured area, it was not attached to any surrounding structures, and the bleeding was controlled easily with suturing. In addition, hysterectomy carries its own risks and complications. However in patients diagnosed antenatally to have placenta percreta (not presenting with acute abdomen like our patient) the plan can be made for conservative management if the patient wishes to maintain her fertility, or in cases of bladder involvement where partial cystectomy with

significant morbidity is anticipated. In such cases, the placenta can be left in situ, and treated with uterine artery embolization and/or methotrexate.

The management of placenta percreta presents a challenging obstetric problem. Recent reports have suggested that a conservative approach to the treatment of this condition may be an attractive alternative, but careful patient selection and individualization is needed. It should be undertaken with caution and the patient should be warned regarding the risks and complications. In some case reports, conservative management was complicated by deep vein thrombosis and disseminated intravascular coagulation, or severe hemorrhage requiring uterine artery embolization and hysterectomy.[8] Uterine artery embolization (UAE), a type of non-surgical intervention, seems to be a promising novel treatment that has been proven to be safe and effective in the conservative management of placenta percreta. It helps to decrease placental perfusion and augment placental resorption. Repeat UAE may be beneficial in reducing the risk of unpredictable delayed hemorrhage requiring emergency intervention in women with placenta previa accreta, or percreta managed conservatively.[9,10]

In conclusion, the diagnosis of spontaneous uterine rupture in early pregnancy requires a high index of suspicion due to the relative rarity of the condition. Obstetricians must keep this diagnosis in mind, particularly in high-risk patients, and we should try to reach an early antenatal diagnosis with the help of sensitive high resolution imaging techniques, using either ultrasonography or MRI. In such cases, a fast decision and surgical intervention is life saving. Conservative management if the case is diagnosed before rupture occurs is feasible but requires a multidisciplinary approach with the help of an interventional radiologist for uterine artery embolization, and a hematologist to help in blood and blood products replacement in the management of severe hemorrhage. Obstetricians might also need the help of a urologist in cases of placenta percreta involving the bladder.

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