

SPONTANEOUS HEMOPERITONEUM IN PREGNANCY FROM A RUPTURED SUPERFICIAL UTERINE VESSEL

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SUMMARY

A 31-year-old multipara woman pregnant at gestational age 32+ weeks with twins encountered hemoperitoneum resulting from superficial uterine vessel rupture during tocolytic course. The initial presentations were unspecific and sonographic examination was negative. Later the aggravated symptoms led to an impression of abruptio placentae and emergent cesarean section was performed. A superficial venous bleeder was located on the posterior uterine wall and the internal bleeding was up to 3 L. Maternal and fetal outcome were good. Hemoperitoneum during pregnancy is rare but life-threatening to both mother and fetus, and it mimics placenta abruption in many ways. However, by careful investigations with cardiotocogram and bedside echo, they are quite distinguishable. Aggressive fluid replacement and immediate surgical intervention after rapid diagnosis provides the best prognosis. [*Taiwanese J Obstet Gynecol* 2007;46(1):77–80]

Key Words: hemoperitoneum, pregnancy, uterine vessel rupture

Introduction

Hemoperitoneum following spontaneous rupture of a uterine vessel is a rare but life-threatening complication during pregnancy. Fewer than 150 cases have been reported so far in the English literature [1–6]. Here, we report the first case of a pregnancy with twins following *in vitro* fertilization pre-embryo transfer (IVF/ET) complicated with hemoperitoneum as a result of spontaneous rupture of a superficial uterine vessel in the third trimester. No neonatal or maternal complications were encountered.

Case Report

A 31-year-old woman, gravida 2 para 1, pregnant at 32⁺⁶ weeks of gestational age with twins, was admitted into our ward due to preterm labor with initial presentation of intermittent lower abdominal discomfort for a few

hours prior to admission. Tracing back her history, she had received laparoscopic ovarian cystectomy because of bilateral chocolate cysts 5 years previously and a cesarean section due to prolonged labor 3 years previously. The current pregnancy was achieved by IVF/ET due to the presence of secondary infertility. Antenatal care was uneventful until this admission. There was no history of vaginal bleeding, rupture of membranes, drug abuse, recent intercourse, or abdominal trauma.

The patient complained of gradually intensifying, intermittent, dull lower-abdominal pain, and a full sensation while at home. Physical examination showed a frequently contracting uterus without obvious blood show. A soft, 2 cm dilated cervical os was found by pelvic examination at admission. Initial cardiotocography showed reassured fetal heart rate and frequent uterine contractions at intervals of 2 to 3 minutes with a duration of 30–40 seconds. Under the impression of preterm labor, tocolytic therapy with Ritodrine was administered. On sonographic evaluation, dichorionic twins both with vertex presentation were observed; estimated body weights were within normal limits without discordance. The patient complained of loss of appetite and denied bowel movement since admission. Even though antiemetics and cathartics were administered, there was no change. Complaints of abdominal

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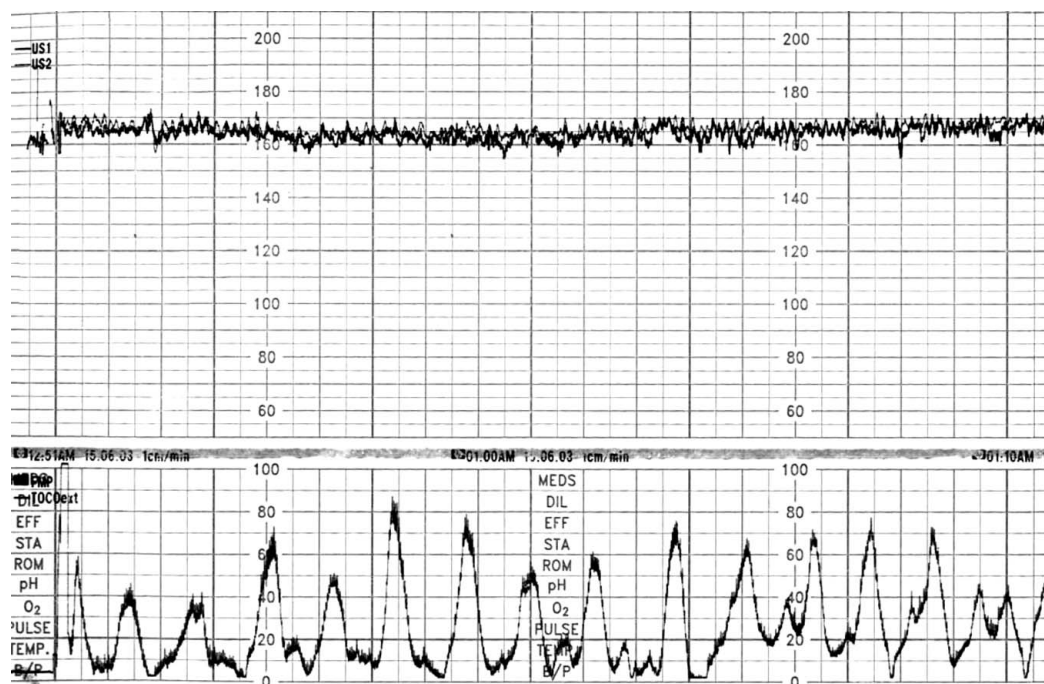


Figure 1. Cardiotocogram before cesarean section demonstrates frequent contractions with loss of fetal heart rate variability in both twins.

fullness, constipation, and right abdominal pain continued for 2 days after admission. Repeat transabdominal ultrasonographic examination did not conclude more than maternal right hydronephrosis and no free peritoneal fluid was detected.

Six days after admission, the patient complained of intolerable abdominal tenderness, accompanied by severe general malaise. Vital signs remained stable. Pelvic examination presented a 3 cm dilated cervix. Cardiotocography showed frequent contractions in intervals of 1–1.5 minutes and loss of fetal heart beats variability (Figure 1). Physical examination revealed a distended and tender abdomen with dull percussion sound and absent bowel sounds. Abruptio placentae was suspected and an emergency cesarean section was arranged without preoperative ultrasonographic evaluation.

Hemoperitoneum instead of abruptio placentae was observed during surgery. The amniotic fluid was clear and no abruptio placentae was noted. Two healthy babies were delivered without complication. After the myometrium and visceral peritoneum were closed and the uterus exteriorized, 3 L of dark-colored blood with many clots, a result of internal bleeding, was removed by suction. No visible or palpable defect in the uterine body was noted but an active venous bleed on the posterior serosal surface of the uterus was found (Figure 2A). The bleeding was stopped by chromic catgut suture and ligation (Figure 2B). In addition, some filmy adhesion was noted between the bilateral adnexa and uterus, and between the parietal peritoneum and colon. A rubber

drain was placed into the cul-de-sac and the wound was closed layer by layer after a thorough check for further bleeding. The estimated blood loss was up to 4,000 mL. Due to unstable blood pressure, a fluid/blood component transfusion with packed red blood cells 6U and fresh frozen plasma 8U was performed perioperatively. The patient's postoperative course was uneventful and she was discharged 5 days after the operation.

Discussion

Hemoperitoneum during pregnancy as a result of ruptured uterine vessels is a rare but life-threatening condition. Owing to recent advances in improved anesthetic, resuscitative, and operative techniques, maternal mortality has been lowered from 49 to 3.6% [1,2]. Perinatal mortality, however, remains high at 31% [1]. Of cases reported in the literature, 61% occurred before labor, 19% were intrapartum, and 21% were puerperal.

In symptomatic cases, rupture of an utero-ovarian vessel leads to intraperitoneal bleeding or retroperitoneal hematoma, or both. In either case, the presenting symptoms/signs are sudden abdominal pain and hypovolemic shock without revealed bleeding. A marked drop in hemoglobin is a common finding. The diagnosis of this condition is rarely made before exploratory laparotomy and is most frequently misdiagnosed as abruptio placentae, especially when lacking ultrasonographic evaluation. Other differential diagnoses

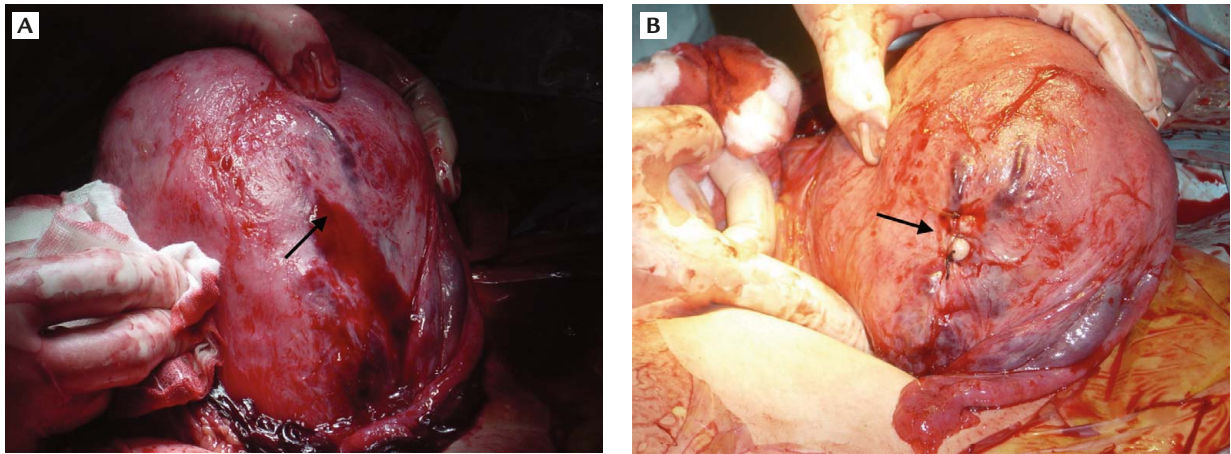


Figure 2. (A) A ruptured superficial vein (arrow) on the posterior wall of the uterus. (B) The bleeding vessel is ligated with chromic catgut (arrow).

include uterine rupture, rupture of the spleen or liver, abdominal pregnancy, ruptured appendix, and HELLP syndrome.

The etiology is, as yet, poorly understood and subject to speculation. Hodgkinson and Christiansen [2] suggested the possible cause was dilated utero-ovarian vessels resulting from the increased physiological demands of pregnancy and muscular activities, such as coughing, defecation, coitus, or pushing during the second-stage of labor, which cause a sudden rise in venous pressure. The tortuous nature, lack of valves, and repeated distension of these vessels during pregnancy are thought to make them predisposed to rupture. However, these tortuous, dilated vessels are quite commonly observed in many other pregnancies during cesarean section. Thus, the possible existence of additional vascular defects is suspected. Recent case reports support this idea and suggest a possible origin from decidualized endometriosis on the utero-ovarian vessel wall [3–5].

Upon presentation, the amount of internal bleeding is extensive in most cases and emergent laparotomy is required. Though preoperative evaluation often does little in this condition, ultrasonography may be helpful in detecting free peritoneal fluid. The situation can be even more serious after the onset of labor as the contraction pain may mask the peritoneal irritation from internal bleeding and the pushing force of the second stage of labor may increase the risk of venous rupture.

If diagnosis is clear, maintenance of adequate circulating intravascular volume, by means of aggressive fluid and blood replacement, and rapid surgical intervention are the treatments of choice. Although pregnancy can be safely continued and vaginal delivery undertaken at term in some cases that are diagnosed preoperatively [6], often immediate cesarean delivery is needed to identify and deal with the bleeding.

In our case, the presumed diagnosis of abruptio placentae, that was made after physical examination, resulted in the following precipitate laparotomy without preoperative evaluation by bedside ultrasonography, which is considered to be important for obstetric cases with acute abdominal symptoms. Reviewing the cardiotocogram of this patient, it does not fully match the classical pattern observed in abruptio placentae cases, which present as persistent hypertonus demonstrated by an elevated baseline pressure of 20–25 mm Hg. If the difference had been noticed and ultrasonography performed preoperatively, we might have avoided the misdiagnosis but not the laparotomy. This case also reminds us that before application of tocolytic agents for preterm symptoms, it is mandatory to exclude other abnormal pathologic causes. However, the normally existing small number of ascites during pregnancy may be confusing in distinguishing early minimal internal bleeding and hence decrease the specificity of the ultrasonographic findings.

We admit the favorable maternal and neonatal outcome do not justify the misdiagnosis. However, for a uterus at 33 weeks of gestational age with twins, as in our situation, the location of the bleeding may not have been visible without cesarean delivery. Hence, the decision to perform a cesarean delivery seems acceptable. Thankfully, both babies suffered no sequelae of prematurity and this may be partially due to steroid use during the tocolysis course. As to the maternal prognosis, the misdiagnosis seemed to have no effect on the outcome.

Concerning the risk of further venous rupture with unstoppable bleeding and, in fact, unawareness of the pathogenesis of this complication, we were not encouraged to perform a biopsy of the ruptured vessel for further examination of endometriosis. It is a pity that we are

therefore unable to address the role of endometriosis on this disease.

In conclusion, rapid diagnosis and aggressive fluid replacement, together with prompt surgical intervention, may be the only chance for a favorable outcome for both mother and child when encountering such a rare complication [6].

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