

Acute hemoperitoneum in third trimester: two case reports

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Summary

Acute hemoperitoneum is rare in pregnant women. The authors present two cases, the first with a history of salpingectomy and the second, with a history of cesarean section. The first case, but not the second, was associated with rupture of a gravid uterus, an obstetric emergency. These cases of third trimester hemoperitoneum were unusual because the first case involved uterine rupture after a history of laparoscopic salpingectomy (a relatively minor surgery), but the second case did not involve uterine rupture after a history of cesarean section (a relatively major surgery)

Key words: Acute hemoperitoneum; Uterine rupture; Uterine didelphys.

Introduction

Acute hemoperitoneum in the third trimester is very rare; uterine rupture in late pregnancy is an obstetric emergency, and one of the most serious complications in pregnant women. Uterine rupture in less developed countries is more prevalent than in developed countries [1]. The risk of uterine rupture is related to uterine scars caused by previous surgery, such as cesarean section, myomectomy, curettage, and hysteroscopic procedures. Usually, there is minimal vaginal bleeding, but more internal bleeding detectable on ultrasound examination.

The authors present two cases. The first occurred at a gestational age of 37 weeks in a 25-year-old patient with a history of laparoscopic fallopian tube surgery for an interstitial pregnancy. The second occurred at a gestational age of 33 weeks in a 22-year-old patient with a didelphic uterus and a history of a cesarean section one year prior to presentation. In both cases, acute hemoperitoneum in the third trimester was diagnosed by ultrasonography and an emergency laparotomy was performed. Acute hemoperitoneum in the third trimester with a history of cesarean section is often associated with uterine rupture. However, a laparotomy revealed no rupture of the uterus in the second case. In the first case, a laparotomy revealed an 8-cm full-thickness rupture on the left cornual portion of the uterus. An appropriate treatment of uterine rupture is early surgical intervention to reduce maternal and fetal mortality [2].

Case Report

Case 1

A 25-year-old woman (gravida 2, para 0) was admitted to the present hospital because of slight uterine contractions and nausea

and vomiting at 37 weeks of gestation. One year before presentation, her left fallopian tube had been partially resected laparoscopically with an interstitial pregnancy. The patient was pale, drowsy, and irritable. Her blood pressure was 100/65 mmHg and her pulse 140 beats per minute. She had abdominal tenderness and muscle tension. Uterine contractions were occurring once per three to five minutes, and fetal heart sounds could not be heard. She had signs of hemodynamic instability, with anemia (hemoglobin 7.4 g/dl) and hypovolemic shock.

An emergency ultrasound examination at admission revealed uterine gestation of 37 weeks with fetal demise and free fluid in the peritoneal cavity. An abdominocentesis drew 10 ml blood that did not clot. Therefore, emergency exploratory laparotomy was performed and the amount of blood in enterocoelia during surgery was 1,500 ml. Abdominal exploration revealed an 8-cm, full-thickness rupture on the left cornual portion of uterus. The abdominal cavity was filled with blood and clots. During surgery, 4 units of packed red cells and 400 ml of plasma were transfused. A dead female fetus was delivered by cesarean section, weighing 2,600 grams, and measuring 48 cm in length. The authors resected a 1-cm margin of full-thickness tissue around the tear and used a double-layer suture to close the uterine cornual breach. The postoperative course was uneventful and the patient was discharged on postoperative day 7.

Case 2

A 22-year-old woman (gravida 2, para 1) was transferred to the present hospital because of slight uterine contractions at 33 weeks of gestation. She has a didelphic uterus and a history of a cesarean section one year prior to transfer.

The patient had initially presented with sudden-onset of severe abdominal pain. She appeared pale. Her blood pressure was 110/60 mmHg and her pulse, 110 beats per minute. The abdomen was tender, with slight uterine contractions, the fetal heart sounds were 170 beats per minute. There was complete non-fusion of the cervix. Her laboratory studies indicated a hemoglobin of 7.8 g/dl. An emergency ultrasound examination revealed a didelphic uterus, with a fetus of 33 weeks gestation in the right uterus and free fluid in the peritoneal cavity. An abdominocentesis drew 10

ml blood that did not clot. Uterine rupture was suspected, since the patient had a history of a cesarean section. An emergency exploratory laparotomy was performed. The amount of blood loss during surgery was 1,000 ml. To the authors' surprise, they observed a didelphic uterus without rupture and blood streaming from the artery between the isthmi of the two horns. After they ligated the artery, the gross bleeding stopped. During surgery, 4 units of packed red cells and 400 ml of plasma were transfused. A fetus weighing 1,800 grams and 36 cm in length was delivered by cesarean section with Apgar scores of 4 and 7 at one and five minutes, respectively. The patient had an uneventful recovery and was discharged on postoperative day 5. The baby was transferred to the neonatology department and discharged on postoperative day 7 without any problems.

Discussion

Acute hemoperitoneum is very rare in late pregnancy, but the condition may be fatal for the mother and fetus [3, 4]. The hemorrhage is often caused by uterine rupture. Uterine rupture is defined as a full-thickness separation of the uterine wall and the overlying serosa. Uterine rupture is a life threatening condition for the mother and fetus. The most common signs of uterine rupture are a fetal heart rate pattern with variable decelerations, late decelerations, bradycardia, and fetal death. Uterine rupture can occur in the second or third trimester but is more likely in the latter. The most common risk factor for a uterine rupture is prior cesarean delivery [5-7]. In a review of all cases of uterine rupture in Nova Scotia between 1988 and 1997, 92% were in women with prior cesarean births [8]. Usta *et al.* reported on 37 women with complete uterine ruptures delivered over 25 years in Lebanon. Hysterectomy was performed in 11, and the rupture was repaired in the remaining 26 women. Twelve of these women had 24 subsequent pregnancies, and one-third of the pregnancies involved recurrent uterine ruptures [9]. Other predisposing factors to uterine rupture are previous traumatizing operations such as curettage, perforation, or myomectomy. In the present first case, the patient had a history of a laparoscopic salpingectomy for an interstitial pregnancy. Third-trimester uterine rupture secondary to a history of laparoscopic salpingectomy for an interstitial pregnancy is very rare.

Resection of the cornual portion of the uterus for interstitial pregnancy may leave the patient at risk for uterine rupture in subsequent pregnancies, especially if the resection is performed laparoscopically. Healing and scar strength after laparoscopic cornual resection may be inferior to that after open surgery with manual suturing. During a laparotomy, hemostasis is achieved by layered suturing. During laparoscopy, bleeding from the uterine incision is mostly controlled with bipolar coagulation forceps and the uterine incision is usually closed in only one or two layers. The difficulty of laparoscopic suturing and the use of bipolar coagulation forceps lead to a weak scar [10].

A didelphic uterus is defined as two separated uterine horns, each with an endometrial cavity and uterine cervix.

Usually the blood supply of a didelphic uterus is provided via collateral connections between the two horns. The uterus is formed by the fusion of the two Müllerian ducts at about the 10th week of gestation. Fusion anomalies may cause many kinds of reproductive tract abnormalities. The complete lack of fusion results in two entirely separate uteri, cervixes, and vaginas. In the present second case, the third trimester hemoperitoneum was not due to a uterine rupture of uterine. The cause of the hemoperitoneum remained unclear, but bleeding was apparent from an artery between the isthmi of the two uteri.

Heinonen [11] reviewed uterus didelphys in 36 women and found their fertility was not notably impaired. He found that 34 of 36 women (94%) had at least one pregnancy, and, in total, they had 71 pregnancies. Of these pregnancies, 21% miscarried and 2% were ectopic. The fetal survival rate was 75%, prematurity 24%, fetal growth restriction 11%, perinatal mortality 5%, and cesarean delivery 84%.

Spontaneous uterine rupture did not occur in the present second case, in which the patient had a history of a cesarean section. Similar cases have seldom been reported. Muraoka *et al.* [12] reported on a pregnant women with obstructed hemivagina and ipsilateral renal anomaly syndrome (OHVIRA). In the first case, the uterine rupture was possibly due to a uterine scar from the previous salpingectomy for an interstitial pregnancy.

Rupture of a gravid uterus is known to carry a high risk of death for the mother and the fetus. Ravasia *et al.* reported that 8% of patients with a Müllerian anomaly and scarred uterus experienced a uterine rupture during a trial of labor [13]. In the present case, the authors prospectively diagnosed a uterine rupture based on abdominocentesis with 10 ml blood that did not clot. However, surgery revealed that there was not a uterine rupture but bleeding from the artery between the isthmi of the two uteri. A didelphic uterus probably has a greater than normal blood supply through collateral connections between the two horns—a variation of the uterine artery. This structure is easy to overlook in surgery and may cause postoperative hemoperitoneum. Muraoka *et al.* reported a case of OHVIRA presenting with acute hemoperitoneum, thought to be caused by endometriosis [12]. Didelphic uterus has been reported to be a risk factor for endometriosis. In the present second case, rupture of the gravid uterus was suspected, but the artery between the isthmi rather than a uterine rupture was the source of bleeding.

In summary, hemoperitoneum in the third trimester is extremely rare, however, requires urgent care for both the mother and fetus. Every sudden hemoperitoneum in a pregnant woman with a uterine scar should be examined carefully and promptly to exclude rupture of the gravid uterus. The first case reported here involved uterine rupture, and this diagnosis should be considered in pregnant women who present with acute hemoperitoneum with a history of salpingectomy. In contrast, the second case presented with

acute hemoperitoneum and a history of cesarean section but did not have uterine rupture, suggesting that all such presentations are not due to uterine rupture.

References

- [1] Syed S., Noreen H., Kahloon L.E., Chaudhri R.: "Uterine rupture associated with the use of intra-vaginal misoprostol during second-trimester pregnancy termination". *J. Pak. Med. Assoc.*, 2011, 61, 399.
- [2] Bujold E., Gauthier R.J.: "Risk of uterine rupture associated with an interdelivery interval between 18 and 24 months". *Obstet. Gynecol.*, 2010, 115, 1003.
- [3] Lawani L.O., Iyoke C.A., Nkwo P.O., Onoh R.C., Ezeonu P.O., Ibrahim I.A.: "Obstetric morbidity and socio-cultural predictors of ruptured uterus among women in Southeast Nigeria". *J. Obstet. Gynaecol.*, 2016, 36, 1031.
- [4] Vernekar M., Rajib R.: "Unscarred Uterine Rupture: A Retrospective Analysis". *J. Obstet. Gynaecol. India*, 2016, 66, 51.
- [5] Hudic I., Fatusic Z., Kamic L., Misic M., Serak I., Latifagic A.: "Vaginal delivery after Misgav-Ladach cesarean section—is the risk of uterine rupture acceptable?". *J. Matern. Fetal. Neonatal. Med.*, 2010, 23, 1156.
- [6] Smith D., Stringer E., Vladutiu C.J., Zink A.H., Strauss R.: "Risk of uterine rupture among women attempting vaginal birth after cesarean with an unknown uterine scar". *Am. J. Obstet. Gynecol.*, 2015, 213, 80.
- [7] Lannon S.M., Guthrie K.A., Vanderhoeven J.P., Gammill H.S.: "Uterine rupture risk after periviable cesarean delivery". *Obstet. Gynecol.*, 2015, 125, 1095.
- [8] Kieser K.E., Baskett T.F.: "A 10-year population-based study of uterine rupture". *Obstet. Gynecol.*, 2002, 100, 749.
- [9] Usta I.M., Hamdi M.A., Musa A.A., Nassar A.H.: "Pregnancy outcome in patients with previous uterine rupture". *Acta Obstet. Gynecol. Scand.*, 2007, 86, 172.
- [10] Kacperczyk J., Bartnik P., Romejko-Wolniewicz E., Dobrowolska-Redo A.: "Postmyomectomy Uterine Rupture Despite Cesarean Section". *Anticancer. Res.*, 2016, 36, 1011.
- [11] Heinonen P.K.: "Clinical implications of the didelphic uterus: long-term follow-up of 49 cases". *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 2000, 91, 183.
- [12] Muraoka A., Tsuda H., Kotani T., Kikkawa F.: "Severe Hemoperitoneum During Pregnancy with Obstructed Hemivagina and Ipsilateral Renal Anomaly Syndrome: A Case Report". *J. Reprod. Med.*, 2016, 61, 290.
- [13] Ravasia D.J., Brain P.H., Pollard J.K.: "Incidence of uterine rupture among women with mullerian duct anomalies who attempt vaginal birth after cesarean delivery". *Am. J. Obstet. Gynecol.*, 1999, 181, 877.

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