

Uterine rupture in subsequent third trimester pregnancy diagnosed preoperatively by ultrasound: A case report

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Abstract

Introduction

A uterine rupture is serious complication of a subsequent pregnancy that can occur after cornual resection. It is very rare condition and difficult to diagnose, both clinically and sonographically.

Case report

We present a rare case of uterine rupture in subsequent third trimester pregnancy diagnosed by ultrasound. A 30-year-old, gravida 1, para 0 woman who had a history of a laparoscopic left cornual resection visited emergency room with lower abdominal pain at a gestational age of 32 weeks and 2 days. On day 2 of the hospitalization, transabdominal ultrasound examination showed a protruding cystic mass over the left cornual area and no free fluid in the cul-de-sac. It strongly suggested uterine rupture with an unruptured amniotic sac. An emergency Cesarean section carried out, a male newborn was delivered and uterine rupture at the site of a scar from a prior cornual resection was seen. The edge of the defect was sutured. The patient was hospitalized for 5 days and discharged without further incident.

Conclusion

To the best of our knowledge, this is the first report of the uterine rupture that was precisely diagnosed by US examination prior to surgery occurring at a gestational age of 32 weeks and 2 days for which a normal fetus was successfully delivered by Cesarean section. US could be a useful imaging modality for the accurate diagnosis of the uterine rupture by clearly demonstrating defect of myometrium in some cases.

Introduction

A uterine rupture is serious complication of a subsequent pregnancy that can occur after cornual resection. Uterine rupture usually occurs during the first or second trimester gestation period. It is very rare condition and difficult to diagnose, both clinically and sonographically. Although ultrasound (US) has been successful in detecting some indirect sign of uterine rupture, thus far has shown little success in demonstrating the myometrial defects. We report a rare case of uterine rupture in subsequent third trimester pregnancy after laparoscopic cornual resection precisely diagnosed preoperatively by US.

Case Report

A 30-year-old woman (gravida 1, para 0) with complaints of lower abdominal pain over two days at a gestational age of 32 weeks and 2 days was admitted to our hospital. Her past history showed that she had laparoscopic cornual resection two years ago due to cornual pregnancy at private obstetrics and gynecology clinic. Her blood pressure was 100/60 mmHg, pulse rate was 70 beats/min, and axillary temperature was 36.5 °C. Laboratory tests showed no abnormal findings. On physical examination, there was no direct tenderness or rebound tenderness. Pelvic examination revealed relatively intact amniotic membranes. A cardiotocogram showed a normal fetal heart rate pattern with weak uterine contraction of 20 second duration once per hour.

The decision was made to hospitalize the patient for further observation on pain pattern after the patient and the caregivers were informed of the potential of preterm labor and uterine rupture. On day 2 of the hospitalization, the pain in the upper left side of the abdomen got worse abruptly and was radiated over the left shoulder. The blood pressure was 90/60 mmHg and pulse rate was 100 beats/min. Direct tenderness and rebound tenderness were found in the upper left side of the abdomen. Fetal distress was not found on cardiotocogram.

Transabdominal US examination revealed a protruding cystic mass over the Lt. cornual area and there was no free fluid in the cul-de-sac. Cystic mass was considered the amniotic sac protruded through the uterine rupture area in the left of the fundal region of the uterus (Figure 1A-B).

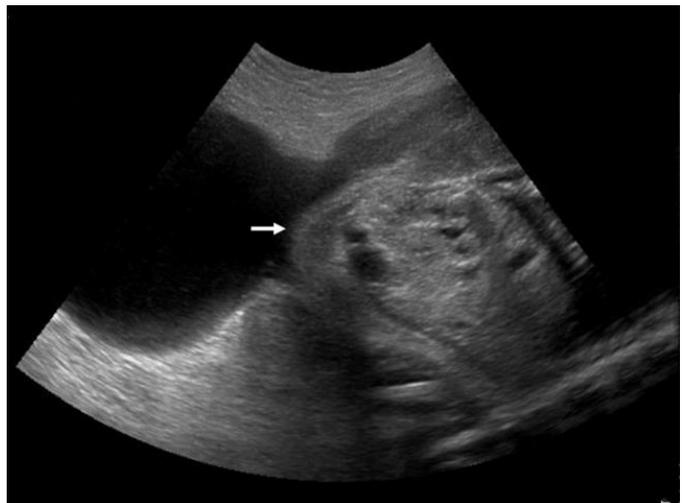


Figure 1A: Longitudinal view of transabdominal sonography demonstrates fetal buttock (arrow) protruding through uterine defect. Large cystic mass represents amniotic sac.

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Thus, sonographic findings suggested uterine rupture with an intact amniotic membrane. Under the suspicion of uterine rupture, an emergency Cesarean section was promptly performed. Findings at the operation were consistent with ultrasonic images (Figure 1C). A male newborn was born weighing 1530 g with Apgar scores of 3 at 1 minute and 6 at 5 minutes, respectively. The edges of the defect were sutured. The patient was hospitalized for 5 days and discharged without further incident. This work conforms to the values laid down in the Declaration of Helsinki (1964). The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study.

Discussion

Uterine rupture in pregnancy is rare and delayed diagnosis may result in high morbidity and mortality¹.

The incidence of the uterine rupture is extremely rare as approximately¹ in 2,000 labors; however it is an obstetrically emergency disease that can be fatal for both the mother and the fetus². In the uterine rupture, the body of uterus is more susceptible for rupture than the lower uterine segment, and the rupture may cause more severe side effect when occur prior to the initiation of the labor³.

Uterine ruptures are divided into complete and incomplete rupture⁴. In the former, the uterine serosa together with the uterine muscular layer is perforated and thus amniotic cavity directly communicates with the abdominal cavity. In the latter, the uterine muscular layer is lost but the uterine serosa is preserved. Incomplete rupture is also referred to as uterine dehiscence. It can occur either when the forces acting on myometrium are disproportionate or when weakened uterine myometrium exists due to a variety of causes. This disorder usually occurs in a scarred uterus, which is caused previous uterine surgery, congenital uterine anomaly, placental abnormalities, labor, or use of oxytocin and/or prostaglandin⁵. In present case, prior corneal resection is considered as the underlying risk factor for uterine rupture.

Clinical symptoms and findings on physical examination of the uterine rupture typically include sudden development of abdominal pain and loss of uterine contraction, hypovolemic shock, and fetal distress during the third quarter of the pregnancy in case of the complete uterine rupture. On the other hand, most cases of the incomplete uterine rupture were diagnosed as rupture of the uterine incision scar found during cesarean section without any symptoms. Although the scar resulted by the transverse incision of the lower uterine segment can be evaluated by measuring the thickness of the lower uterine segment through transvaginal sonography, there are some limitations on sonographic diagnosis of scars in the body of the uterus⁶. In case of this patient, she reported that she was never informed of the potential of the uterine rupture or need for labor through cesarean section following to the corneal resection. Prompt diagnosis and treatment are



Figure 1B: Axial view of transabdominal sonography demonstrates uterine defect (arrow). Continuity between myometrium and extrauterine sac is well demonstrated.



Figure 1C: Gross findings of uterine rupture due to left cornual defect at 32nd week of gestation.

essential when symptoms and signs indicating uterine rupture are observed since the mortality rate of the mother and fetus for uterine rupture depends on the timing of the diagnosis and the prompt performance of surgery^{7,8}. Despite of the normal findings found on all findings including clinical manifestation, laboratory finding, and sonographic finding on uterine rupture at initial onset of the abdominal pain, the authors decided to monitor the patient while hospitalization with the consideration of the potential of uterine rupture since the surgery for cornual pregnancy was confirmed from the operation record obtained from the private clinic

When signs and symptoms lead to suspicion of a uterine rupture, prior cornual resection should be considered as the relevant risk factor. Uterine rupture of a subsequent pregnancy after cornual resection has been reported in the second trimester^{9,10}. Our case demonstrates two clinically relevant issues. Firstly, the uterine rupture during pregnancy could occur in the third trimester. Our case is the first documented case of uterine rupture occurring at

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thirty-second weeks' gestation for which a normal fetus was successfully delivered by cesarean section. Secondly, sonographic examination may be useful to detect uterine rupture as well as predict its causative factor as sonography demonstrating the dehiscence in the uterine wall as well as continuity between uterine wall and extrauterine amniotic sac. In women planning to have children in the future, cornual resection should be avoided as possible. It would be clinically important to facilitate early diagnosis of cornual pregnancy as it is associated with the medical approach treatment and prevention of a subsequent uterine rupture. Also, a careful history of prior cornual resection must be elicited and warning for a possibility of uterine rupture during prenatal care to the patient with cornual resection history is required.

For surgical treatment for the uterine rupture, simple suture can be performed in case that the patient is expecting pregnancy in future, or hysterectomy may be another option depending on the case¹¹. In this case, conservative surgery was performed since the patient had been expecting another pregnancy in future and the bleeding was corrected after the primary suture. In addition, more precise prenatal follow up and birth plan are thought to be required for next pregnancy.

To the best of our knowledge, this is the first report of the uterine rupture that was precisely diagnosed by US examination prior to surgery occurring at a gestational age of 32 weeks and 2 days for which a normal fetus was successfully delivered by Cesarean section. In conclusion, US could be a useful imaging modality for the accurate diagnosis of the uterine rupture by clearly demonstrating defect of myometrium in some cases.

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