

Is it possible to early diagnose uterine rupture by ultrasound without common clinical signs during pregnancy following laparoscopic myomectomy?

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Summary

Although spontaneous uterine rupture following laparoscopic myomectomy is rare, it can lead to life-threatening complications for both mother and fetus. The authors report a case of a nulliparous woman at gestation of 30 weeks and four days who was referred from local clinic because of diffused abdominal pain. She conceived spontaneously 1.8 years after myomectomy. The fetal heart pattern was reassuring, there were no regular uterine contractions or vaginal bleeding, and her vital signs were stable. A critical clue to diagnosis of uterine rupture was an abrupt defect of uterine wall without fluid or fetal part in pelvic cavity on ultrasound. An emergency cesarean section was performed, uterine rupture was found, and the neonate was delivered in good condition. For timely surgical intervention to yield a favorable outcome, evaluation of myometrium continuity by ultrasound is valuable in pregnancy following laparoscopic myomectomy in the absence of typical clinical signs.

Key words: Pregnancy; Uterine rupture; Ultrasonography; Laparoscopy; Uterine myomectomy.

Introduction

Uterine rupture should be suspected in women undergoing uterine surgery with certain signs and symptoms, as it is a dangerous obstetric complication with a risk of maternal and fetal mortality and morbidity. The most common sign of uterine rupture is a non-reassuring fetal heart pattern [1]. In addition, there can be hemodynamic instability, sudden or worsening abdominal pain, decreasing uterine contractions, loss of fetal station, vaginal bleeding, and hematuria. Spontaneous symptomatic second or early third trimester uterine rupture in non-laboring women is a very rare obstetric emergency that is difficult to diagnose.

Ultrasonography is used frequently to measure the thickness of uterine wall to predict the risk for uterine dehiscence or rupture in pregnancy prior to cesarean section. It is also useful to evaluate the uterine wall in pregnancy where there was a prior myomectomy to establish the risk of uterine dehiscence or rupture.

The authors report a case of spontaneous uterine rupture at gestation of 30 weeks and four days diagnosed by ultrasound evaluation without common clinical signs of uterine rupture.

Case Report

A 37-year-old nulliparous woman at gestation of 30 weeks and four days was referred from a local clinic with sudden onset of irregular abdominal pain. The pain was located diffusely in her abdomen, there were no regular uterine contractions or vaginal bleeding, and her vital signs were stable. The patient had a 1.8-year interval between laparoscopic myomectomy and conception. The myomectomy was performed at another institution for a subserosal myoma located in the anterior wall.

There were no signs of fetal distress in cardiotocogram, although the pain intensified during the bedside ultrasound evaluation. Ultrasound demonstrated that fetal growth, amniotic fluid volume, placenta, cervical length, and fetal heart rate were normal, while the uterine myometrium was disrupted. Myometrium had lost continuity without protruding amniotic membrane or fetal parts seen in peritoneal cavity (Figure 1).

Under general anesthesia, an emergency cesarean section was performed by low-midline incision. There was a 100-cc hemoperitoneum, and a 6-cm longitudinal complete rupture, with 3-cm incomplete rupture of uterine on the left side anterior wall covered by the amniotic sac, which was seen without protruding (Figure 2). The neonate was 1,760 grams female delivered with a 5-minute Apgar score of 7 via typical incision in the lower segment of the uterus and entrusted to pediatricians. The uterine rupture site was repaired with three layers of sutures and the uterus incision was repaired with single layer.

The patient had an uncomplicated postoperative recovery and was discharged after four days. The neonate was admitted to the neonatal intensive care unit and had an uncomplicated course. The patient was advised of the increased risk of uterine rupture in future pregnancies.

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Figure 1. — Sonographic imaging of disrupted uterine wall

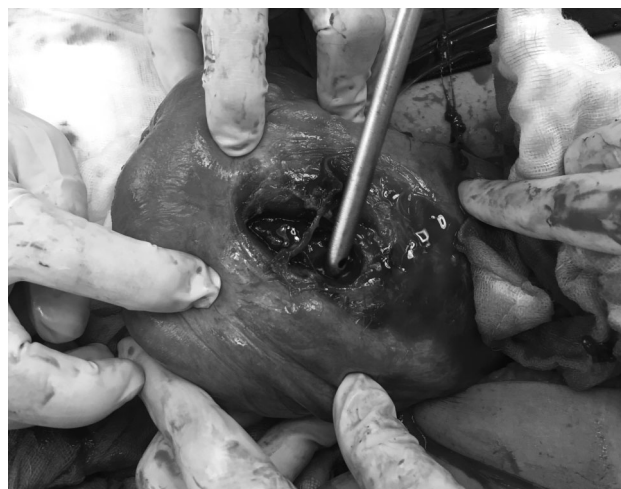


Figure 2. — Uterine rupture.

Discussion

Laparoscopic myomectomy is a surgical technique used broadly to treat uterine myoma. It offers lower risk of side effects and uterine rupture during pregnancy and delivery compared to laparotomy. Only one spontaneous uterine rupture was reported associated with laparoscopic myomectomy scar among 386 pregnancies [2]. Reviews of uterine rupture in pregnancy following laparoscopic myomectomy suggest that the highest risk is after the 32nd week of gestation [2-6]. Such ruptures seem unpredictable, not only during labor but during pregnancy at any gestational age, regardless of the interval between the myomectomy and conception. A history of uterine surgery and scarring is the most important risk factor for uterine rupture. From 12 to 24 weeks are needed to stabilize myometrium scars after myomectomy [7], the recommended interval to conception. Excessive desiccation can be limited by electro-surgery, and multi-layered suturing of the myometrium strengthens the wound, but individual healing ability of wound may affect the risk of uterine rupture [8]. Women with myomectomy history are recommended for cesarean delivery between the 37th and 38th weeks of gestation by the American College of Obstetricians and Gynecologists [9].

Uterine rupture most commonly presents intrapartum and is clinically diagnosed based on alterations in the fetal heart rate pattern, maternal hypovolemic shock, vaginal bleeding, and abdominal pain [10]. Non-reassuring fetal heart rate with variable decelerations that may worsen to late decelerations and bradycardia is the most common sign [11]. Pregnancy complicates the diagnosis of abdominal pain, which can mimic clinical features because of physiologic and anatomic changes associated with pregnancy. As delay in diagnosis can increase morbidity and mortality, diagnostic imaging and appropriate interventions should be carried out [12, 13].

Ultrasonography is the standard tool to evaluate the uterine wall and assess the risk for uterine dehiscence or rupture. Echogenic pelvic fluid may be most obvious finding, and fetal parts seen in the peritoneal cavity. Other signs often observed are decreased amniotic fluid, bleeding into the broad ligament, and disrupted myometrium [14]. In other cases, the fetal membrane protruded from a defect initially, a later ultrasound showed the fetus' leg stretching through the defect [15] and the right fetal arm was seen intra-abdominally with anhydramnios [5]. Protruding fetal parts were edematous and bruised.

Abdominal pain is the crucial symptom for early diagnosis of uterine rupture in pregnancy following laparoscopic myomectomy. Before hypovolemic shock develops, symptoms may appear so bizarre that ultrasound evaluation of myometrial wall continuity becomes useful to confirm diagnosis. Serial and frequent evaluation of the myometrium on prenatal ultrasonography is important to prevent adverse maternal and perinatal outcomes.

Conclusions

Obstetricians should consider uterine rupture, with awareness of clinical signs and symptoms, and precise evaluation of ultrasound so that timely surgical intervention can improve maternal and neonatal outcomes.

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