

Uterine rupture during labor in women with twice successful vaginal births after cesarean delivery

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Summary

Uterine rupture during labor is a serious complication resulting in maternal and neonatal morbidity and mortality. We present the extremely rare case of a 38-year-old gravid woman admitted with labor pain at term, about to experience a uterine rupture during labor. She had previously twice delivered vaginally, and during her third pregnancy had a low transverse Cesarean section. Prior to arriving at the hospital with labor pains, she had routine prenatal care with normal prenatal laboratory tests. One day the woman reported to having sudden epigastric pain, and 40 minutes after her admission a pelvic exam was completed. The unborn baby had a persistent fetal bradycardia of 60 beats/min and after 14 minutes, an emergency Cesarean section was performed. A complete uterine rupture was revealed, and a live neonate was promptly delivered with an Apgar score of 1 at one minute and 5 at five minutes. On the fifth postoperative day the woman and her baby were discharged home with no maternal and neonatal complications.

Key words: Uterine rupture; Labor; Vaginal birth after cesarean section (VBAC).

Introduction

Rupture of the uterus during labor is a serious complication resulting in maternal and neonatal morbidity and mortality [1]. However, successful trials of labor following vaginal birth after a cesarean section (VBAC) results in decreased maternal morbidity in terms of blood transfusion, hysterectomy, and febrile morbidity, when compared with repeated cesarean sections [2]. For this reason, the American College of Obstetricians and Gynecologists has recommended that a woman with one previous transverse low-segment cesarean section should be offered a trial of labor after an appropriate thorough explanation of maternal and perinatal risks and benefits [3]. However, currently there is no guideline regarding trials of labor in women with more than one previous successful VBAC. Furthermore, uterine rupture during labor has been rarely reported in women with multiple successful VBACs. Hence, the authors present an extremely rare case of a uterine rupture during labor in a gravid woman who had two successful vaginal deliveries after low transverse cesarean section.

Case Report

A 38-year-old, gravida 4, para 3 was admitted at 40 weeks + 1 days with spontaneous labor. Nine years earlier, she had delivered her first baby, a male, weighing 2,970 grams by low-transverse cesarean section due to breech presentation. Two years later, she had her second baby, female, weighing 2,680 grams through the first successful trial of VBAC. Three years later, her third baby was born by a second trial of VBAC, male, weighing 3,070 grams. Dur-

ing the current pregnancy, she had routine prenatal care with normal prenatal laboratory tests including ultrasound, fetal echo, and glucose challenge test. On admission to the hospital at 11:00 a.m., the fetal position was vertex and its heart rate was normal (147 beats/minute) with variability moderately detected. Sonographic examination showed a singleton fetus in the uterine cavity with no abnormalities. The patient was hemodynamically stable. Vaginal examination revealed a cervix of four cm dilated, at 50% effacement, and there was no bleeding or amniotic fluid leakage. However, 40 minutes later, she had sudden epigastric pain associated with persistent fetal bradycardia at 60 beats/minute (Figure 1). The fetal heart rate failed to show recovery on left lateral positioning and hydration with normal saline fluids, the woman was given 15 L/minute of oxygen with a reservoir bag mask. Upon pelvic examination the fetal head was impalpable and the woman complained of constant epigastric pain. A uterine scar rupture was suspected, and an emergency cesarean section was carried out in less than 14 minutes after fetal distress. Upon entering the abdominal cavity, a large amount of bloody fluid was encountered. A large defect in the lower uterine segment was also observed at the site of the previous cesarean scar. The fetal head was expelled via the ruptured uterine wall. Within 14 minutes of the situation the decision to delivery by cesarean section was made, and a live male neonate was promptly delivered and handed to the neonatal invasive care unit team. Initially the neonate had no respiratory effort and maintained a heart rate of less than 100 beats/minute. He required immediate intubation and Ambu-bagging. Apgar scores were 1 at one minute and 5 at five minutes. The birth weight was 3,200 grams. After three hours, intubation was removed and the baby's oxygen saturation level was higher than 95 percent during spontaneous respiration. For evaluation of birth asphyxia, brain ultrasonography was done after five days from birth, showing normal neurosonography. The mother was discharged home with her baby on the fifth postoperative day and no maternal and neonatal complications were observed within 3 months after discharge.

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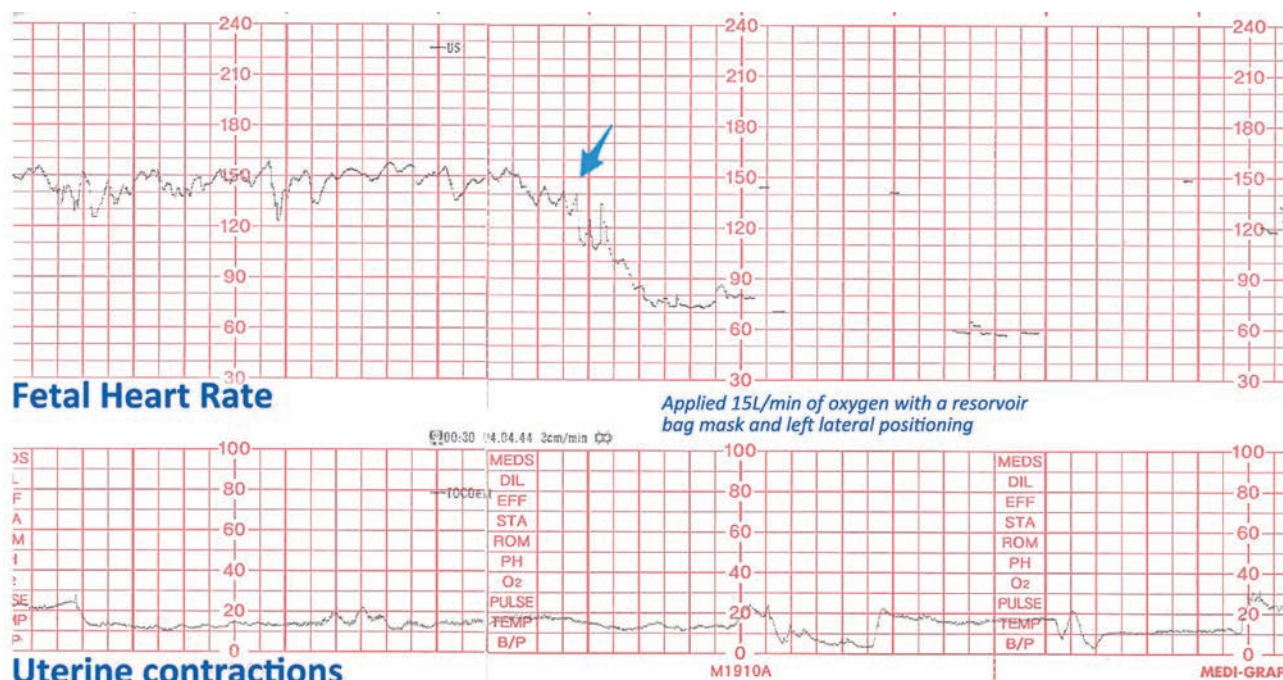


Figure 1. — Cardiotocographic monitoring during labor. Persistent fetal bradycardia to 60 beats/minute developed with sudden epigastric pain and loss of presenting part on pelvic exam at 40 minutes from admission. The fetal heart rate failed to show recovery even after applying 15 L/minute of oxygen with a reservoir bag mask and left lateral positioning.

Discussion

In this case, the authors report a uterine rupture during labor in a woman with two successful VBACs. The case presented here emphasizes the possibility of uterine rupture, even in women who successfully delivered vaginally after cesarean section. To the best of the authors' knowledge, this is the first report of uterine rupture during labor in a Korean woman with two successful VBACs.

Uterine rupture is defined as a complete separation of the myometrium, with or without extrusion of the fetal parts, into the maternal peritoneal cavity and requires emergency cesarean section or postpartum laparotomy. This is the ultimate complication that can occur during a trial of labor. The risk of uterine rupture during delivery is known to be slightly higher than in elective repeated cesarean section (7% vs. 1%; $p = 0.034$) [4]. Abnormalities in fetal cardiotocography are associated with 55-87% of uterine ruptures. Other recognized signs of uterine rupture include loss of station of presenting part and new inefficient contractility [5]. In this case, the authors also found that a uterine rupture during labor was accompanied with loss of presenting part and persistent fetal bradycardia to an average of 60 beats/minute.

The most serious complications of uterine rupture include neonatal death and fetal hypoxic brain injury. Guise *et al.* [5] calculated a rate of 0.14 additional neonatal deaths per 1,000 trials of labor were related to uterine rupture. This figure is similar to that in the National Institute of Child

Health and Human Development-Maternal and Fetal Medicine Unit Network study, in which two neonatal deaths occurred among every 124 ruptures, for an overall rate of rupture-related perinatal death of 0.11 per 1,000 trials of labor [1]. However, the authors did not encounter neonatal mortality and morbidity in this case. They attribute this fortunate outcome to the relatively short decision time of less than 14 minutes. According to a study by Holmgren *et al.*, there is a correlation between the decision-to-delivery time and neonatal outcome in women who experience uterine rupture during trial of labor following VBAC [6]. Neonates delivered within 18 minutes after a suspected uterine rupture had normal umbilical pH levels or five-minute Apgar scores greater than 7. Poor long-term outcome occurred in three neonates with a decision-to-delivery time longer than 30 minutes [6].

In this present case, the patient was a multiparous woman consisting of one cesarean section, followed by two vaginal deliveries. It is possible that multiparity in itself resulted in a uterine rupture during labor, and found this was consistent with previous studies. Zeteroglu *et al.* reported that the occurrence of a uterine rupture was significantly associated with grand multiparity, scarred uterus, lack of antenatal care, unsupervised labor at home, and low socioeconomic status of the patients [7]. Ofir *et al.* also reported that multiparity was one of the major risk factors for uterine rupture during labor [8].

In conclusion, rupture of the uterus after multiple VBACs is rare, but still may be a life-threatening event. Women who have a past history of two successful VBACs seem to choose trial of labor instead of an elective repeated cesarean section due to successful previous VBACs. However, because multiparity is one of the major risk factors for uterine rupture during labor, physicians should inform the risk of uterine rupture to women with previous multiple VBAC who choose a trial of labor. Prompt decision-making and careful surveillance during labor is the key for reducing maternal and neonatal morbidity and mortality in these women.

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