

Case Report

Spontaneous umbilical cord vascular rupture before labor for congenital defects with a live birth: a case report

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Summary

Spontaneous intrauterine umbilical cord vascular rupture is an uncommon, unpreventable, and dangerous event. Once it occurs, there is little chance to intervene, and often with a poor perinatal outcome. A 32-year-old primiparous woman at 40 weeks of gestation with a normal pregnancy presented to the emergency room because of vaginal fluid. During induction of labor with oxytocin, the fetal heart rate declined. An emergency cesarean delivery was carried out. Breach of branch of umbilical vein was noted. The neonate underwent urgent treatment, and was discharged on day 10 without apparent sequelae. It is a rare case of a spontaneous umbilical cord vascular rupture with a viable birth because of congenital defects of umbilical cord. When an unexpected drop in the fetal heart is observed, umbilical cord vascular rupture must be suspected, and emergency correct intervention can lead to a live birth.

Key words: Umbilical cord vascular rupture; Normal insertion; Congenital defects; Live birth; Emergency cesarean section; Neonatal intensive care unit.

Introduction

Intrauterine umbilical cord vascular rupture is a rare, unpreventable, and dramatic complication, often resulting in poor perinatal outcome. Once it occurs, the fetus will suffer from a rapid severe blood loss and have a high risk of mortality. Fortunately, the incidence of umbilical cord vascular rupture is very low. Dauglas [1] first reported a case of spontaneous umbilical cord rupture in 1929. In 2009, Welker [2] reported a case of intrapartum umbilical cord rupture. In 2012, Kumar *et al.* [3] reported a case with intact newborn survival after spontaneous umbilical cord vascular rupture before labor. Most of previously reported cases occurred during labor with an abnormal cord insertion and with a poor outcome. Here, the authors report a

rare case of pre-delivery spontaneous umbilical cord vascular rupture.

Case Report

A 32-year-old primiparous woman at 40 weeks of gestation presented to the emergency room because of vaginal fluid for one hour. The patient had undergone weekly antenatal examination and no abnormalities had been found before. After admission, the authors assessed maternal and fetal conditions. There was no contraindication for vaginal delivery with an amniotic fluid index of 9.2 cm. The patient had a strong desire for vaginal delivery. Therefore, 12 hours after admission, the patient was still not ready to give birth. The authors performed induction of labor with oxytocin. Shortly after the input of oxytocin, the fetal heart began to decline to 80 beats per minute minimum and no bloody am-

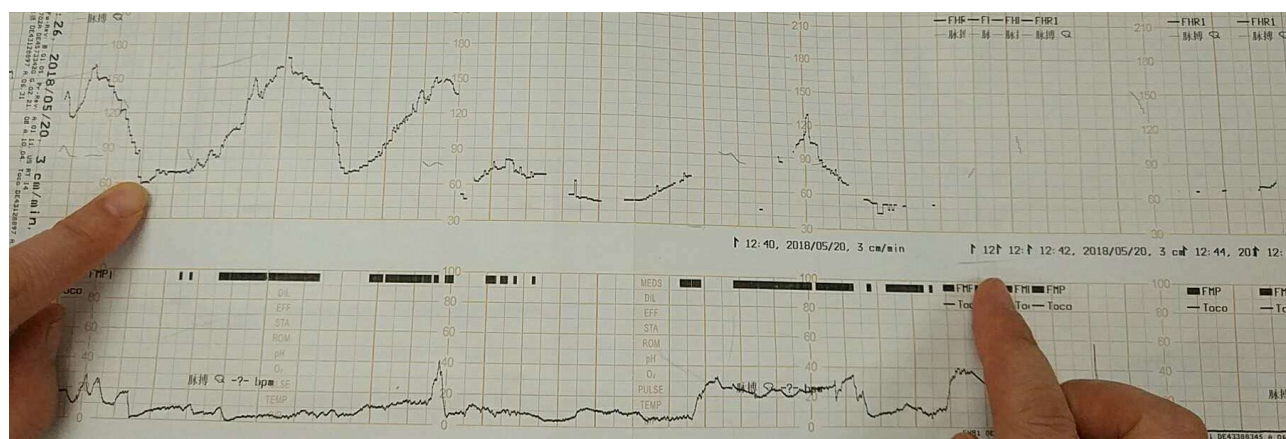


Figure 1. — Fetal heart rate drop, frequent deceleration, and final lost is observed.

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Figure 2. — The umbilical cord is shriveled with a normal insertion.

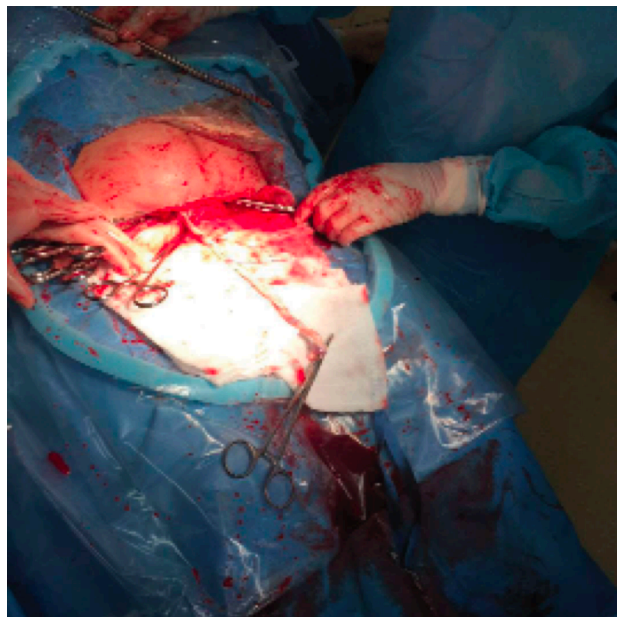


Figure 3. — A fracture of the umbilical vein branch about 4 cm away from the umbilical cord insertion into the placenta can be seen.

niotic fluid was seen from vagina. As soon as the authors stopped using oxytocin, the fetal heart recovered. When they intravenously used oxytocin again, the fetal heart dropped again, and five minutes later, the electronic fetal monitoring tracing detected a loss of fetal heart rate (Figure 1). Emergency bedside B-scan ultrasonic revealed a fetal heart of 76 beats per minute. The authors urgently implemented cesarean delivery. At delivery, bloody amniotic fluid was seen, the umbilical cord with a normal insertion was shriveled (Figure 2), and fresh blood sprayed from breach of umbilical cord. After a gross examination, fracture of branch of umbilical vein in the position about 4 cm away from the position where the umbilical cord was inserted into the placenta was noted (Figure 3). The newborn was pale with an Apgar score of 1, 4, and 6 and a blood gas analysis from artery showed pH 7.06, HB 102 g/L, and base excess of -22.00. The neonate underwent urgent treatment by the neonatal intensive care team with blood transfusions and intravenous fluids, and was taken to the neonatal intensive care unit for further treatment. The woman was discharged on day of 10 with no pathological findings on a MRI of the brain. Final pathology of the placenta revealed a ruptured branch vein of 0.3 cm in diameter about 4 cm away from the position where the umbilical cord was inserted into the placenta, with a vessel wall smooth muscle loss and fibrinous necrosis in foci.

Discussion

As it was reported, intrauterine umbilical cord vascular rupture is associated with abnormal cord insertion, short cord [3], infection [4, 5], midwifery, and dysplasia of umbilical cord which was the root cause in this case.

When umbilical cord vascular rupture occurs, the main manifestations are fetal anemia, bradycardia, fetal heart sounds disappear, bloody amniotic fluid after rupture of membrane, etc. In this case, the umbilical cord vascular rupture occurred before the onset of labor, so it was dif-

ficult for the authors to control it. Fortunately, during induction, the fetal heart rate was being monitored, and with rapid obstetrical and neonatal intensive care team intervention, a timely caesarean section was performed, and early correct treatment from neonatal intensive care team was received. The authors avoided a catastrophic event and obtained a live birth without apparent sequelae. From this case, it can be conclude that when an unexpected drop in the fetal heart is observed, besides conventional management, there must be a high clinical suspicion of umbilical cord vascular rupture and emergency intervention must be executed.

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