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Case Reports

Abnormal bending of the umbilical cord due to adhesion of the cord to the placenta

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Summary

Background: Although cord abnormalities can cause fetal distress, there are many cases of fetal distress caused by unknown factors. *Case:* The mother was a 27-year-old Japanese woman. The umbilical cord was attached to nearly the center of the placenta, which was smoothly delivered. Macroscopically, at the site of cord attachment to the placenta, the cord appeared partially flattened and adhered to the placenta, resulting in abnormal bending of the cord. Pathological examination of the cord and placenta, including the site of adhesion, did not show any remarkable findings. Therefore, the adhesion might have caused temporary bending of the cord, which resulted in fetal distress. *Conclusion:* The authors encountered a rare case of abnormal adhesion of the umbilical cord to the placenta that caused fetal distress. The presence of abnormalities of the placenta and umbilical cord should be macroscopically examined immediately after delivery, even when only mild fetal distress is noted.

Ker words: Umbilical cord bending; Fetal distress.

Introduction

Nuchal cord, cord strictures, and velamentous insertion are some of the major cord abnormalities that can cause fetal distress, and there are many cases of fetal distress caused by unknown factors [1]. Ultrasonography during pregnancy can detect many abnormalities of the umbilical cord and the placenta, such as placental hematoma, lake, and cyst [1-4]. The early detection of these abnormalities allows for appropriate management during pregnancy to minimize the risk of life-threatening complications in the mother and fetus. The authors encountered a unique case of abnormal adhesion of the umbilical cord to the placenta that caused fetal distress after the first stage of labor.

Case Report

A 27-year-old Japanese woman (primigravida) visited the present clinic at 32 weeks of gestation. She was spontaneously pregnant and no remarkable abnormalities were noted during pregnancy at previous hospitals in the United States and Japan. Routine ultrasonography did not detect any abnormality of the fetus, umbilical cord, or placenta. At 40 weeks of gestation, she was admitted to the present clinic owing to onset of labor. However, after 36 hours, an ecbolic was used and oxytocin was administered because of feeble labor pain. At the first stage of labor, cardiotocography showed that the fetal heartbeat had a mild variable deceleration pattern with a minimum heartbeat of 90 beats/min; however, the heartbeat recovered. Subsequently, at the second stage of labor, a severe variable deceleration pattern with a minimum heartbeat of 70 beats/minute was noted. Using vacuum extraction, a female baby was delivered. Her birth weight was 3,025 grams, and Apgar scores were 8 points at one minute and 9 points at five minutes. In the umbilical artery, the pH was 7.255, the base excess was -5.1 mmol/l, and the hemoglobin concentration was 16.8 g/dl

The oval meconium-stained yellow placenta measured 20×16.5 ×1.5 cm, with a weight of 510 grams. The umbilical cord, which measured 52 cm in length and 1.2 cm in diameter without abnormal cord coiling, was attached to nearly the center of the placenta, which was smoothly delivered. Macroscopically, at the site of cord attachment to the placenta, the cord appeared partially flattened and adhered to the placenta, resulting in abnormal bending of the cord (Figure 1). The flat part of the cord was easily detached from the placenta. Pathological examination of the cord and placenta, including the site of adhesion, showed chorioamnionitis of Grade 3, funisitis of Grade 2, and narrowing of the intervillious space without massive infarction; the umbilical cord had normal Wharton's jelly around three umbilical blood vessels. Therefore, the adhesion might have caused temporary bending and compression of the cord, which was enhanced by uterine contraction; this event resulted in fetal distress.

Discussion

Fetal distress due to cord abnormalities is commonly encountered during pregnancy. Cord abnormalities related to morphology, coiling, placental insertion, number of vessels, and diameter can be associated with perinatal compli-

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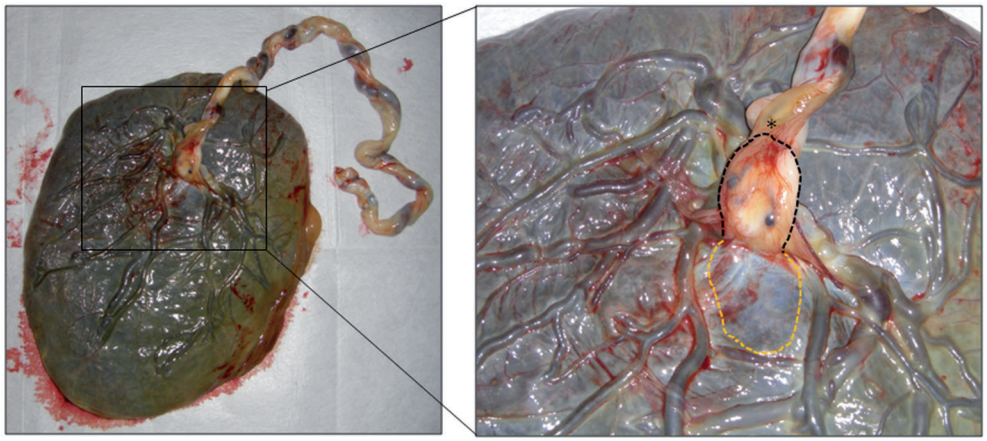

Figure 1. — Macroscopic image of the placenta and umbilical cord. The flat surface of the umbilical cord (black dotted line) adheres to the surface of the placenta (yellow dotted line). The asterisk indicates the site at which bending of the cord was noted.

cations [5]. A unique mucopolysaccharide-rich membrane known as Wharton's jelly cushions the umbilical blood vessels, preventing disruption of the flow due to compression or bending caused by fetal movements and uterine contraction [6]. The reduction of this jelly leads to fetal growth retardation due to hypoplasia of the umbilical vessels, and a lean umbilical cord is associated with fetal distress [1, 6].

In most pregnant cases, the umbilical cord inserts to near the center of the placenta. Abnormal cord insertion including marginal cord and velamentous cord insertion, is associated with fetal growth retardation, intrauterine fetal demise, and neonatal demise [1]. In the present case, unique abnormal adhesion of the umbilical cord to the placenta was found after delivery. Unfortunately, the cause and mechanism of this adhesion was unclear because the pathological examination showed only chorioamnionitis and funisitis. To the present authors' knowledge, no similar cases have been reported so far. Nevertheless, a healthy baby without intrauterine growth restriction was born because of only temporal cord bending during labor.

The detection of abnormal adhesion of the umbilical cord to the placenta during pregnancy, as in the present case, is difficult, even with the use of high-performance ultrasonography. The presence of abnormalities of the placenta and umbilical cord should be macroscopically examined immediately after delivery, even when only mild fetal distress is noted.

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