

Rare disease

Twin pregnancy complicated by vasa previa

Cátia Carnide,¹ Mónica Jerónimo,¹ Dolores Faria,^{1,2} Isabel Santos Silva³¹Maternidade Bissaya Barreto, Coimbra, Portugal²Department of Neonatal Intensive Care Unit, Bissaya Barreto Maternity Hospital, Coimbra, Portugal³Department of Obstetrics, Bissaya Barreto Maternity Hospital, Coimbra, Portugal

Correspondence to Dr Isabel Santos, Silva3mariaisabelsantossilva@gmail.com

Summary

Perinatal morbidity and mortality rates for vasa previa are high when it is not diagnosed antenatally. In this report, a case of vasa previa in a twin pregnancy was diagnosed postnatally, which leads to complications with the first twin. Serial ultrasound during pregnancy did not diagnose a bilobed placenta, a velamentous insertion of the umbilical cord or vasa previa. At 37 weeks, vaginal bleeding was detected in the expulsive stage and vaginal-assisted delivery of both fetuses was undertaken. The first fetus was born pale and anaemic, and required a blood transfusion and therapeutic hypothermia. A high risk of vasa previa is associated with placentas with low-lying insertion, bilobed placentas, velamentous insertions of the umbilical cord, multiple pregnancy and pregnancies conceived after the use of assisted reproductive technologies. Transvaginal ultrasound screening with colour flow Doppler can allow antenatal diagnoses of vasa previa and an improved outcome.

BACKGROUND

Vasa previa is a rare condition with a reported incidence varying from 1 in 1275 to 1 in 5000.^{1 2} In these cases, umbilical vessels are unsupported by either the umbilical cord or the placental tissue and transverse the fetal membranes of the lower uterine segment below the presenting part. The unprotected vessels are predisposed to rupture at any point of time during pregnancy, particularly during labour. The rupture of membranes may result in a pure fetal haemorrhage (Benckiser's haemorrhage), which is associated with 75–100% of neonatal mortality.^{3 4 5} The frequency of this complication has been estimated at 1:2000 to 1:5000 deliveries.⁴

Vasa previa usually occurs in association with a low-lying placenta, which often presents at the routine second trimester ultrasound screenings, a bilobate or succenturiate placenta, a velamentous insertion of the umbilical cord, multiple pregnancy and pregnancies conceived after the use of assisted reproductive technologies.^{3 4 6}

New advancements in imaging can improve the diagnosis of vasa previa.

CASE PRESENTATION

A 34-year-old, primigravida woman achieved a dizygotic twin pregnancy after using assisted reproductive technology (intracytoplasmic sperm injection). Ultrasound during the 20th week of pregnancy showed a placenta situated on the upper anterior uterine wall and a normal morphology of both twins. Cervical length, which was assessed from the 22nd week onwards, was normal.

She was admitted to our hospital at 37 weeks of gestation with regular, painful contractions. During the obstetric observation, the membranes were intact and there was a cephalic presentation of both fetuses. Spontaneous amniotomy occurred at 5 cm of cervical dilatation, which revealed clear amniotic fluid. Vaginal bleeding with clots was detected during the expulsive stage, which is associated

with variable decelerations in the cardiotocography of the first fetus. Because of inadequate maternal expulsive efforts, assisted vaginal delivery with a vacuum extractor was performed for both twins. The first twin (male) was born pale with blood in the airways and had an Apgar score of 6 and 8 at 1 and 5 mins, respectively. He had a haemoglobin concentration of 10.2 g/dl, and the umbilical cord blood pH was 6.8. He was admitted to the neonatal intensive care unit. The second twin (female) was born healthy, with an Apgar score of 9 and 10 at 1 and 5 mins, respectively. Birth weights were adequate for gestational age: 2210 g for the first twin and 2745 g for the second one.

Examination of the placenta of the first twin showed a bilobate placenta with blood vessels connecting both lobes. The placenta of the second twin was separated from the other and was normal.

The pathologist confirmed that the cord in the placenta of the first fetus had a velamentous insertion with indirect signs of laceration of the fetal vessels.

OUTCOME AND FOLLOW-UP

The first twin required a blood transfusion after delivery and had therapeutic hypothermia for 72 h, which began within the first 6 h of life. He was ventilated for 4 days in the neonatal intensive care unit. He was discharged home after 5 days of admission. Cerebral magnetic resonance images and EEG on the 22nd and 32nd days of life were normal.

His progress is currently being followed by the neurodevelopmental clinic.

DISCUSSION

Vasa previa can be an obstetrical catastrophe. The diagnosis is often made from bleeding at the time of the membrane rupture⁷ or from fetal bradycardia when the velamentous vessels are compressed by the presenting part.⁸

In cases of variable-type fetal heart rate decelerations with intact membranes during labour, careful vaginal examination and palpation of the membranes to rule out pulsating fetal vessels are suggested.

To prevent further complications and reduce fetal morbidity and mortality due to this condition, one must have a high index of suspicion leading to antenatal diagnosis. Transvaginal ultrasound in combination with colour Doppler is the most effective tool in the antenatal diagnosis of vasa previa⁹ and should be utilised in second or third trimesters in high-risk groups (bilobate or succenturiate and low-lying placentas, multiple pregnancy and pregnancies resulting from assisted reproductive technologies) because it can improve the outcome. The routine transabdominal colour sweep across the lower uterine segment will not always show vasa previa because detection of fetal vessels within the membranes may be limited by the maternal size, the status of the maternal bladder and the direction of the velamentous vessels.¹⁰ The differential diagnosis of vasa previa on ultrasound includes chorioamniotic membrane separation, normal cord loop, marginal placental vascular sinus and amniotic band; all of which can give an appearance similar to vasa previa.¹¹ Colour flow Doppler helps to differentiate between these conditions.

Physicians need a high index of suspicion during amniotomy in the presence of pregnancies with risk factors because vasa previa cannot always be identified antenatally. In a tertiary facility, elective delivery by caesarean and aggressive resuscitation of the neonate when fetal vessel rupture has occurred leads to a considerable reduction in mortality from this complication.

Each year, the diagnosis of vasa previa goes undetected in 0.04% of affected twin pregnancies, even when all risk factors are used to indicate screening.¹³ Our patient presented with risk factors for vasa previa; however, serial transvaginal ultrasound examination of the cervix did not show any evidence of abnormality of the cord or placenta. Because the amniotic fluid was clear and there was a normal fetal heart rate during labour, the diagnosis was suspected only after the first fetus was born and was only confirmed after the examination of the placenta by the pathologist.

Learning points

- ▶ Vasa previa is an uncommon obstetrical complication and is associated with a high risk of fetal morbidity and mortality.
- ▶ When there are associated risk factors, it is important that obstetric providers diagnose this condition by looking at the cord insertion during the routine first trimester ultrasound scan because this is an easy-to-perform and secure procedure. This information must be well documented in the patient's file.
- ▶ When clinical presentation does have a high index of suspicion of vasa previa, vaginal ultrasound and colour Doppler can be an unnecessary waste of time, and an emergency caesarean or prompt assisted vaginal delivery should be provided.
- ▶ The diagnosis may be missed in the antenatal period or during labour because there may be false negative cases upon the Doppler flow examination, and the clinical presentation can be limited, too late or unspecific.

Competing interests None.

Patient consent Obtained.

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