Vasa Previa in Ramathibodi Hospital : A 10 Years Review

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Abstract

Vasa previa is presented when fetal vessels cross the internal os as a velamentous insertion of the umbilical cord. This retrospective study is to review the diagnosis, the management, and the outcome of this condition over the 10 years period in Ramathibodi Hospital, Bangkok, Thailand. Five cases were diagnosed after the rupture of membranes with only one case diagnosed prior to the rupture of membranes. The fetal mortality was 50 per cent. Despite continued advances in diagnostic procedures, vasa previa still presents considerable risk to the fetus.

Vasa previa, a rare condition, is presented when fetal vessels cross the internal os as a velamentous insertion of the cord with or without a succenturiate lobe. These vessels lie below the presenting part, unprotected by either Wharton's jelly or placenta, and thus prone to tear, resulting in high fetal morbidity and mortality. The diagnosis of this condition has rarely been made prior to the time of membrane rupture or before the intrapartum period. Despite continued advances in diagnostic modalities in obstetrics, vasa previa still remains the only condition that solely causes the most considerable risk to the fetus.

METHOD

A retrospective study was conducted on 76432 consecutive deliveries at Ramathibodi Hospital between January 1988 and December 1997. The records of all patients listed with vasa previa were reviewed in detail and some details of each cases are presented in this report.

Case 1

A 23 year old woman, gravida 2, para 1-0-0-1, was admitted to the labor ward at 40 weeks' gestation with uterine contractions every 5 minutes. Pelvic examination showed the cervix to

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be 4 cm dilated and 70 per cent effaced. The membranes were felt to be bulging and artificial rupture of the membranes was performed. A gush of fresh blood mixed with amniotic fluid was observed. One hour later the fetal heart rate decelerated from 148 beats/min to 80 beats/min. The possibility of rupture of vasa previa was considered and an immediate cesarean section was performed.

A 2.7 kg male infant was delivered with Apgar scores of zero. Immediate resuscitation of the infant by a pediatrician was unsuccessful. The infant was found to be exsanguinated. The placenta was found to be low lying with velamentous insertion of vessels running transversely adjacent to the internal os.

Case 2

A 40 year old woman, gravida 3 para 2-0-0-2, was admitted to the labor ward at 39 weeks' gestation for induction of labor. On examination, the cervix was 3 cm dilated and 70 per cent effaced. The membranes felt thickened with a cord like tissue cross from 7 o'clock to 11 o'clock with pulsation corresponding to fetal heart rate. The diagnosis of vasa previa was made and cesarean section was performed.

The patient was delivered of a viable female infant weighing 3160 g. At the time it was confirmed that velamentous insertion of the umbilical vessels extending across the internal os to the anterior placenta previa marginalis. Both mother and baby were discharged without complications.

Case 3

A 22 year old primigravida with an uneventful antenatal course, was admitted to the hospital at 37 weeks' gestation. The membranes had ruptured spontaneously 1 hour earlier. At the time of admission there was an unusal heavy bloody show with leakage of amniotic fluid, and pelvic examination revealed the cervix to be 3 cm dilated with 100 per cent effaced. The fetal heart rate was 80 beats per minute. Emergency cesarean section was performed for fetal distress.

The patient was delivered of a 2590 g male infant with Apgar score of zero. The infant was markedly pale. Neonatal resuscitation was attempted but failed. Rupture of the velamentous insertion of the umbilical vessels was found. The placental site was posterior and low-lying. The mother was discharged on the fifth day without complication.

Case 4

A 30 year old primigravida was admitted to the labor ward at 39 weeks' gestation with labor pain. On examination, her uterine contractions were every 5 minutes. Pelvic examination revealed the cervix to be 3 cm dilated with 80 per cent effaced. The membranes felt smooth and bulging and artificial rupture of membranes was performed. Blood-stained amniotic fluid was observed and the fetal heart rate was 130 beats per minute. One hour later, the fetal heart rate was detected to be 80 beats per minute and pelvic examination revealed the cervix to be 4 cm dilated with 100 per cent effaced and still with blood-stained amniotic fluid. The diagnosis of vasa previa was made, and emergency cesarean section was performed.

A stillborn male infant was delivered weighing 3530 g. Neonatal resuscitation was attempted but failed. The placenta was posterior and low lying with the velamentous insertion of the umbilical vessels. A punctured tear was found in one of the veins and one of the arteries.

Case 5

A 37 year old woman, gravida 4 para 2-0-1-1, with a previous history of epilepsy under control with dilantin® 300 mg per day. Her last seizure was 6 months ago prior to her last menstrual period. Because of her age, prenatal diagnosis was performed and the result was normal female karyotype. She was admitted to the labor ward at 41 weeks' gestation in labor. The uterine contractions were regular at 5 minute intervals. On pelvic examination, the cervix was 3 cm dilated and 50 per cent effaced. The membranes were ruptured artificially and blood-stained amniotic fluid was observed. The umbilical cord was found to be prolapsed in the vagina. Fetal heart rate was 120 beats per minute. Emergency cesarean section was performed due to prolapsed umbilical cord.

A female infant was delivered weighing 2940 g with an Apgar score of 2 and 4 at 1 and 5 minutes respectively. The infant was markedly pale, hematocrit after birth was 15 per cent. Neonatal resuscitation was started immediately. During the first 24 hours after birth, the baby had one seizure and since then her condition gradually improved.

The placenta showed a velamentous insertion of the umbilical cord of the placenta previa marginalis. The umbilical vein was torn just beneath the point of insertion.

The patient was discharged without complications on the sixth day and her baby was discharged 3 weeks later without neurological deficit.

Case 6

A 36 year old woman, gravida 3 para 1-0-1-1, presented to the labor ward for induction due to post date 41 weeks' gestation. Her antenatal period was uneventful except one episode of painless vaginal bleeding at 30 weeks of gestation and low lying placenta was diagnosed with ultrasound. The pelvic examination showed the cervix to be 2 cm dilated and 50 per cent effaced. The membranes were ruptured with blood-stained amniotic fluid and the fetal heart rate was found to be 70 beats per minute on auscultation. The diagnosis of ruptured vasa previa was made and emergency cesarean section was performed. A 3,100 g live male infant was delivered with an Apgar score of 1 and 7 at 1 and 5 minutes respectively.

The placenta was low lying and bipartite with velamentous insertion of the vessels running between the two lobes. The vein was torn. Both mother and her baby were discharged without complications on the fifth day after operation.

RESULT

Six cases of vasa previa were collected from January 1988 to December 1997. The incidence was about 1:13,000 deliveries. Four cases were diagnosed after the rupture of the membranes. One case was diagnosed with intact membranes. One case had a prolapsed umbilical cord after artificial rupture of the membranes and vasa previa tear was diagnosed postoperatively. Cesarean section was performed in all cases. There were three stillbirths. The fetal mortality was 50 per cent.

DISCUSSION

The incidence of velamentous insertion of the cord has been variously stated to be 0.2 and 1.8 per cent of all deliveries[1]. That of vasa previa is very difficult to determine because the condition is often not recognised and is rarely reported. This condition exists when the umbilical vessels of a velamentous insertion traverse the fetal membranes in front of the presenting fetal part and occurs in approximately 1 in 50 cases of velamentous insertion of the umbilical cord[1] or about 1 in 5000 deliveries[2]. The incidence of vasa previa in Ramathibodi Hospital was about 1 in 13,000 deliveries. This is double the usual quote and this shows the difficulty in detecting vasa previa clinically. It carries an extreme risk to the fetus with perinatal mortality of 50-70 per cent, almost all due to stillbirths[2,3]. Fortunately, it carries little or no risk for the mother in the absence of associated placental complication.

The diagnosis of vasa previa remains difficult. In this report the diagnosis could be made prior to membrane rupture in only one case, thus, the fetal mortality in this study was 50 per cent. Various methods have been proposed to aid intrapratum diagnosis. The simplest method is to be highly suspicious of thickened cord like membranes which can have vessels running on them as demonstrated in one of the cases. In cases of membranes rupture, all had blood-stained amniotic fluid with irregular fetal heart rate soon after. Cesarean section was performed in all cases with the indication of vasa previa except one in which casarean section was performed for prolapsed umbilical cord. Many of the tests for fetal blood are described as a simple test to do based on resistance of fetal haemoglobin to alkali denaturation. However, there is no evidence that these tests are accurate in all clinical situations. A recent survey about the standard care in the United States does not require such testing to be done[4].

Diagnosis of vasa previa with ultrasonography is now the best chance of improving fetal survival[5-9]. Lewis reported a case where transvaginal and color flow doppler ultrasound facilitated the diagnosis[10]. Harding suggested the benefit of transvaginal color flow doppler ultrasound to evaluate patients suspected of having vasa previa[11]. Most of the reports have shown that the use of the ultrasound in suspected term pregnancy with a history of antepartum hemorrhage particularly that of placenta previa can detect vasa previa. In case of uneventful antepartum period vasa previa associated with velamentous insertion still remains the cause of high perinatal mortality[10]. This is because small vessels may be difficult to visualise by ultrasound alone.

A few authors have succeeded in delivering live babies vaginally after having made the diagnosis intrapartum, however, cesarean section

remains the proper method of delivery[2,12]. In our series, cesarean section was performed in all cases and even with immediate cesarean section fetal mortality was still 50 per cent.

It is clear that infants have a good chance of survival only when the condition is discovered by palpation of the previa vessels through the cervix or detected in antepartum using transvaginal color flow doppler ultrasonography. There was no prior ultrasonographic detection in this study and the previa vessel was palpated antepartum in only one case. Apart from the antepartum diagnosis of vasa previa, the intrapartum diagnosis with immediate cesarean section and blood replacement for the infant was the only way to improve perinatal outcome.

In the foreseeable future, the advanced technology of ultrasonography may be the instrument that is able to detect vasa previa in cases of screening ultrasound revealing placenta previa. Then, cesarean section can be performed before the deadly condition sets in.

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ภาวะหลอดเลือดทารกเกาะต่ำขวางทางคลอดในโรงพยาบาลรามาธิบดี : การศึกษาย้อนหลัง 10 ปี

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รายงานการศึกษาภาวะหลอดเลือดทารกเกาะต่ำขวางทางคลอดย้อนหลัง 10 ปี ในโรงพยาบาลรามาธิบดี ระหว่าง พ.ศ. 2531–2540 โดยศึกษาในรายละเอียดของผู้ป่วยแต่ละราย รวมถึงการวินิจฉัย, การดูแลรักษา และผลลัพธ์ของการคลอด

พบผู้ป่วยจำนวน 6 ราย ที่ได้รับการวินิจฉัยภาวะดังกล่าว และทั้ง 6 รายได้รับการวินิจฉัยเมื่อเจ็บครรภ์คลอด มีเพียง 1 รายเท่านั้นสามารถวินิจฉัยได้ก่อนที่จะมีการแตกของถุงน้ำคร่ำ พบว่าอัตราทารกเสียชีวิตสูงถึงร้อยละ 50

ถึงแม้ว่าปัจจุบันจะมีวิทยาการและเครื่องมือทันสมัยช่วยในการวินิจฉัย ภาวะต่าง ๆ ทางสูติกรรมภาวะหลอดเลือดทารกเกาะต่ำขวางทางคลอดยังคงเป็นภาวะที่มีอันตรายอย่างสูงต่อทารกอยู่

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