Cases report

RUPTURED VASA PREVIA: REPORT OF FOUR CASES

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Abstract The author reported 4 cases of ruptured Previa with a fatal perinatal outcome of two dead fetus in utero, two still births and a neonatal death. No definite prenatal diagnosis could be made in any of them. After experiencing two cases, every risk case needed awareness especially in unexplainable severe fetal distress after small bloody amniotic fluid. However, two more fetal deaths occurred with Ruptured Vasa Previa

Antenatal diagnosis and elective cesarean section may reduce mortality and morbidity. The purpose of this report was to postulate whether some special devices may soon be able to detect this abnormality in a high index of suspicious cases. Chiang Mai Medical J 2007;46(3):107-113.

Keywords: Vasa Previa, fetal mortality, diagnosis

Vasa Previa is an uncommon variant of placental anatomy. The fetal vessels are unsupported by Wharton’s jelly of the umbilical cord or placental mass, and coursing within the membrane running between the cervix and fetal presenting part Vasa Previa occurs in approximately 1:2,000 to 1:5,000 deliveries and is one of the rare causes of antepartal or intrapartal hemorrhage.(1,2) Vasa Previa immediately provokes fetal distress even if it is not ruptured, and only after the vessel compressed by the presenting part may cause 50-60% of fetal mortalities.(3) Hemorrhage after the vessels are torn following spontaneous or artificial membrane rupture would result in a much higher fetal mortality rate ranging from 75 to 100%. (4) Classically, the diagnosis would not be certain until severe fetal distress was detected after a small amount of bloody amniotic fluid flowed out of the vagina. The fetal mortality is potentially preventable if corrected early, with diagnosis and pregnancy treatment being made before the onset of labor or after membrane rupture.

The four cases described here were ante partum and intrapartum hemorrhage from ruptured Vasa Previa, which resulted in 100% fetal mortality. The purpose of this report was to emphasize that although Vasa Previa might be rare, its frequently poor outcome would be
improved if diagnosis and proper management could be made before membrane rupture.

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**Case 1 (P.S.)**

A 34 year old woman of gravida 2, Para 1 at 42 weeks of gestation by last menstrual period (LMP) was referred to Nakornping Hospital from a district hospital in Chiang Mai province with fetal distress. The antenatal course was uncomplicated. However, during the first stage of labor she had bloody leakage of amniotic fluid of about 200-300 cc. The fetal heart rate was suddenly bradycardia at about 60 beats per minute, counted by a portable ultrasound, so she was referred immediately. An hour after membrane leakage in the labor room at Nakornping Hospital a dead fetus in the utero was found by ultrasound. Therefore, vagina delivery was conducted. A still born male fetus of 3,150 grams with Velamentous insertion of the umbilical cord and ruptured Vasa Previa was found and is shown in Fig. 1.

**Case 2**

A 41 year old woman of gravida 3 Para 2 at 32 weeks of gestation, with previous cesarean section and one abortion with curette, was admitted to the labor room from premature rupture of membrane (PROM). She had been bleeding per vagina at about 200 cc for approximately an hour before hard. There was no fetal movement. A dead fetus in the utero was found by ultrasound, with severe oligohydramnios. Vaginal delivery with vacuum extraction was performed to shorten the second stage of labor. A very pale dead fetus of 1,950 grams was still born with Velamentus insertion of the umbilical cord and ruptured Vasa Previa, as shown in Fig. 2.

**Case 3**

A 28 year old woman of gravida 2 Para 2,
Ruptured Vasa Previa 109

with a twin pregnancy in Vertex/vertex position, came to the labor room at 38 weeks of gestation. She was admitted because of continued amniotic fluid leakage half an hour before coming to hospital. In the labor room, she had 200 cc of more vaginal bleeding and a sudden drop to less than 100 beats per minute fetal heart rate. Due to the awareness of a ruptured Vasa Previa, an emergency cesarean section was performed in less than fifteen minutes to save the fetal distress. However, this was not fast enough, and two very pale male twins of 2,900 grams and 2,400 grams were still born with a fused placenta mono-chorion, diamnion type. On careful examination, Velamentous insertion of the umbilical cord and ruptured Vasa Previa were detected, as in Fig. 3.

Case 4
A 23 year old woman of gravida 2 Para 0 in Vertex position at 39 weeks gestation had an indication of fetal distress after vagina bleeding at about 150 cc for half an hour before being admitted to hospital. A suspicion of ruptured Vasa Previa urged an emergency cesarean section. A pale male new born of 3,800 grams, had an apgar scored of 2 at 2 minutes and 2 at 5 minutes. In spite of aggressive neonate resuscitation including an early endotracheal tube intubation and mechanical ventilation as well as blood transfusion he died only one day later. Inspection of the placenta at the operating room revealed Velamentous insertion of the umbilical cord and ruptured Vasa Previa, as in Fig. 4.

Discussion
By 2005, only one case of Vasa Previa had been found among 2,323 deliveries in Nakornping Hospital. Then, 3 cases out of 2,283 deliveries (1:761) were found in 2006. All of them were Velamentous insertion of the umbilical cord and had not been prenatally
diagnosed. It was known that the average incidence of this abnormality was about 1%, which may increase 10 fold in twin pregnancies or in vitro fertilization. The incidence may be underestimated from undiagnosed Vasa Previa because in some cases the deliveries
were uneventful, or bleedings too small to stop spontaneously, when the injured vessel was sealed by thrombosis. However, most cases of ruptured Vasa Previa lead to fetal death, since the total fetal blood volume is only 250-300 cc. Rapid loss of only 50-150 cc causes serious hypovolemic shock of the fetus. Vasa Previa is a rare condition, but lack of awareness or concern always causes fatal complications. All, except the last case, had antenatal care from another hospital. From the experience of the first two dead cases, obstetricians at Nakornping Hospital became fully aware of Vasa Previa when small vaginal bleeding generated fetal distress. However, no fetus could be saved when prehospital ruptured Vasa Previa cases were operated on as soon as possible after admission (less than half an hour). Therefore, the only effective way to significantly reduce this fatal condition is to set a high index of suspicion in every pregnancy, with risk factors of Vasa Previa. These are Velamentus insertion of a cord, marginal insertion of a cord, low-lying placenta, placenta previa, bilobed and succenturiated placenta, multiple pregnancies, pregnancies resulting from in vitro fertilization, palpable vessel or suspected amniotic band on vaginal examination. A good fetal outcome may be expected if this condition is diagnosed and the fetus delivered before the onset of bleeding or severe birth asphyxia. Various methods have been applied for effective diagnosis. Introduction of serial real time Ultrasonography has been successfully reported. There was no successful report of direct visualization by amniocentesis or endoscopy. Apt tests for fetal nucleated red cell sampling from vaginal blood, and the Loendersloot test, which is based on resistance to alkali denaturation, gave poor sensitivity, and the Olgita test was recommended for routine tests of perinatal vaginal fluid. However, the time consumption and false negativity of such testings had not been acceptable in the standard care of the United States of America of many years. Ultrasound seemed to be the only practical noninvasive method and its specificity was reported to be 91%. The first case in which a diagnosis used a combination of transvaginal Ultrasonography and color flow Doppler was reported in 1990. There have been many more reports of accurate use of the transvaginal color Doppler ultrasound, and its sensitivity and specificity may bring about a strategy to reduce mortality from Vasa Previa. A recent study indicated that prenatal detection of velamentous insertion of the umbilical cord had potential and it was recommended for second and third trimester abdominal ultrasound screening in high risk pregnancy, followed by the color Doppler. Three-dimensional ultrasound may offer an additional imaging adjunct to two-dimensional ultrasound. With lessons learned from these four reported cases, the author’s opinion may postulate the following. Firstly, if possible, a second trimester routine Ultrasound examination for placenta abnormality should be done. If low insertion of placenta is found, the umbilical cord should have a closer follow up for serial sonographic examination for the exact site of cord insertion. Secondly, all the latest special techniques such as three dimensional Ultrasonography and transvaginal color Doppler should be implemented in all cases, with multiple pregnancy or pregnancy resulting from in vitro fertilization. If Vasa Previa was found by any means, elective cesarean at 36 to 38 weeks would be the best management to save the fetal life. Most importantly, Vasa Previa must be excluded by immediate ultrasound in every case of ante partum vagi-
nal hemorrhage and fetal distress. If Vasa Previa is highly suspected from severe fetal distress after intrapartum small vaginal bleeding, then an immediate cesarean section should be performed, even if it results in poor outcome, and the neonate’s survival chances from Vasa Previa, with aggressive resuscitation and blood transfusions, has little chance of improve.

**Conclusion**

The true incidence of Vasa Previa is difficult to estimate because the condition is likely to be under reported. Since it causes high fetal mortality, pregnancy with risk factors for this condition should be of concerned. Any pregnancy with ante partum or intrapartum hemorrhage as well as fetal distress should be kept in mind. With a high index of suspicion, antenatal diagnosis using transvaginal sonography and color Doppler is suggested. Delivery by elective Cesarean section at 35-38 weeks gestations and aggressive neonatal resuscitation, may reduce fetal mortality.

**References**

เสน่ห์เลือดภาวะปรีเวียแตก: รายงานผู้ป่วย 4 ราย

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กลุ่มงานสุขภาพเวช โรงพยาบาลนครินทิศ จังหวัดเชียงใหม่

บทคัดย่อ รายงานผู้ป่วยหญิงตั้งครรภ์ 4 ราย ในหนึ่งรายคลอดเป็นเด็กแฝด ซึ่งทั้งหมดปรากฏว่า เส้นเลือดวาซาปรีเวียแตก กระจายเลือดสู่ทารก ทำให้ทารกมีการเส้นเลือดขาดเลือดที่ทำให้ตาย 2 รายในครรภ์ 1 รายตายคลอด และ 1 รายเสียชีวิตในระยะหลังคลอด ภาวะเส้นเลือดภาวะปรีเวียแตกพบได้ในรายประมาณ 1 ใน 2,000 ถึง 5,000 ของการคลอด แต่ผลที่เกิดมักจะรุนแรงทำให้ทารกเสียชีวิตได้มากถึงร้อยละ 75 ถึง 100 ภาวะนี้มีการระลึกถึงที่มีความเสี่ยง เช่น การมีน้ำคร่ำปนเลือดออกจำนวนน้อย แต่ทารกพบในภาวะวิกฤต การสืบค้นให้ได้วินิจฉัยได้ก่อนคลอด เพื่อการนัดหมายทันที สามารถจะช่วยลดความเสี่ยงให้ต่ำและดีกว่า การให้เลือดทารกแรกคลอดอาจช่วยลดความรุนแรงของภาวะแทรกซ้อนได้ จากการพบผู้ป่วยในรายงานนี้ ได้เสนอแนวทางในการที่มีการจัดการและควบคุมอาการ การรักษา เตรียมมือ และเทคนิคพิเศษในการทำงานให้ความปลอดภัยของทารก ที่จะเกิดและเกิดอันตราย เช่น ไทยเวชสาร 2550;46(3):107-113.

คำสำคัญ: การระสอการวินิจฉัย การสืบค้น