Case report:

Vasa Previa - With New Technology Now an Avoidable Tragedy

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Case No.1

A twenty five years old pleasant, matriculate female, wife of a carpenter, gravida two, belonging to lower middle class, having regular antenatal care presented at 38 weeks of pregnancy with symptoms of pre-eclamptic toxemia. Two years back she had a normal vaginal delivery after induction of labour at 38 weeks, for impending eclampsia. An alive baby boy, weighing 3.2 kgs. with good Apgar score was born. He is alive and healthy.

This pregnancy was planned and she had regular antenatal care. Her booking blood pressure at 10 weeks of pregnancy was 110/70 and haemoglobin was 12gm/dl. She was 5'-3" tall and weighed 60 kgs. Her blood group was B+ve and urine analysis was normal. Regular 4 weekly antenatal check-up and weekly blood pressure checking was done. Ultra sound scan at 18 and 32 weeks revealed normal growth of the baby. Baby's head was presenting with anterior low lying placenta encroaching on lower segment but clearly away from internal os. Being educated enough she was very conscious of complications in the previous pregnancy and was very regular in her antenatal care. After 28 weeks, fortnightly check-up was done. At 34 weeks of gestation her blood pressure was 150/100 for more than twenty four hours. There was no associated proteinuria and no other symptom. Keeping in view her previous obstetrical history she was put on anti-hypertensive Methylodopa (250 mg three times a day) and blood pressure was controlled. After a week she again presented with 160/110 blood pressure. The dose of methyldopa was increased to 500mg three times a day with twice daily monitoring of blood pressure at home. There was no associated proteinuria and no other symptoms. Uric acid was 5.6μg/ml (in upper normal limits) and coagulation profile was normal. Liver function tests were normal.

At 38 weeks of pregnancy she presented with headache and blood pressure of 160/110. There was no epigastric pain or visual disturbance. On detailed examination she was not anaemic. There was dependent oedema uptill ankles. Knee and ankle reflexes were brisk. On abdominal examination fundal height was consistent with gestitional age. Lie was longitudinal with cephalic presentation. Fetal heart sounds were normal and she was also feeling normal fetal movements. On pelvic examination Bishop's score was 4. The situation was explained, to the patient and admission was advised for monitoring of her blood pressure and other symptoms of pre-eclamptic toxemia. Blood was sent for liver function, renal function tests and clotting profile. Only uric acid was raised (6.2μg/ml). Induction of labour was discussed with the patient. The patient happily agreed. Tab Prostaglandin 3mg was placed vaginally at 12. midnight with close monitoring of the mother and fetus. Six hours later she was again examined. Blood pressure was still 160/110 with persistent headache. Bishop's score had improved to 6 so augmentation with intravenous oxytocin was planned. Artificial rupture of the membrane (ARM) was planned after establishment of regular uterine contractions. Three hours later uterine contractions were good and cervix was central soft and dilation was 4cm with good effacement. She had to undergo artificial rupture of membranes (ARM) for which she was prepared. As soon as ARM was done there was a gush of blood with liqour. A few minutes later she passed two big clots about (200ml). Placental abruption was the first diagnosis but the patient was painless and in between contractions the abdomen was soft. Fetal heart trace was normal. In about 10 minutes, the patient lost about 500cc of blood and the fetal heart trace showed deceleration. Emergency section was planned and the patient was rushed to the theatre.

Everything was arranged quickly and a very pale baby was delivered within 25 minutes of ARM with poor apgar score (2/10). The placenta was anterior but just encroaching on the lower segment. On close examination of the placenta there was marginal insertion of cord with vasa previa. Neonate was shifted to the neonatal unit. His haemoglobin was 7.5gm/dl and weighed 3.2 kg. Transfusion was arranged but the baby expired after 2 hours because of severe anemia and neonatal asphyxia.

There were no intra operative or post-operative complication. Recovery of the mother was good and she was discharged home on 6th post-operative day.

Case No.2

A twenty five years old uneducated primigravida belonging to poor socio-economic class presented at 37 weeks of gestation with painless vaginal bleeding in the emergency department. She had poor health and looked anaemic. Her antenatal period was uneventful and she had antenatal care with traditional birth attendant (TBA) at her village. She was sent by her TBA for an ultrasound scan. On examination, blood pressure was normal and pulse was 80 per minute. There was no dependant oedema, urine analysis was normal and her haemoglobin was 9.5 gm/dl., the blood group was O+ve. On abdominal examination, fundal height corresponded with gestational age of 36

weeks. Presenting part was breech and was not engaged, fetal movements were good and abdomen was soft and non-tender.

Urgent ultrasound scan revealed Type-II anterior placenta previa with breech presentation. There was no congenital anomoly. Fetus was about 37 weeks of gestation. Admission was advised and expectant management started. Three pints of blood were arranged and she was also given injectable iron to improve her anemia.

At 38 weeks of pregnancy she had an elective caesarean section. An alive baby boy was born weighing 3.5 kg. with good apgar score and no congenital anomoly. The placenta was type-II anterior with marginal insertion of cord and vasa previa. Due to elective caesarean section the complications of vasa previa were avoided.

Case No.3

A thirty four years old educated multi-gravida, Gravida 5 and Para-4 had regular antenatal care in the hospital. She had previous four normal vaginal deliveries without any complication, all were alive and healthy. This pregnancy was not planned but the patient carried it happily and had regular antenatal care. Ultrasound scan at 18 and 32 weeks showed normally growing fetus with posterior upper segment placenta. Presenting part was cephalic with an average size baby. At 39 weeks she was admitted with irregular uterine contractions. In the next few hours contractions were still irregular so labour was augmented with intravenus oxytocin. Four hours later the patient was in active labour. Uterine contractions were three to four in ten minutes and lasting for nearly fifty to sixty seconds. The membranes ruptured spontaneously with a gush of blood. Fetal heart rate and patients vital signs were normal. On pelvic examination cervix was 6cm dilated with vertex presenting anteriorly and at station zero. The membranes were absent. The liqour was blood stained. After few minutes fetal heart rate started showing early and later on late deceleration. On examination cervix was 8cm with the presenting part below zero station. There was a choice of operative versus vacuum or forceps delivery. Partogram was showing 2cm dilatation in the last thirty minutes. Arrangements were made for both operative and instrumental delivery. In the next twenty minutes, the patient was fully dilated. Forceps were applied with quick delivery of the baby. An alive 3.7 kg female baby with poor apgar score was born. However, she was resusitated in time and 5 min apgar score was good. Post delivery examination of the placenta showed vasa previa with velamentous insertion of the cord, which explained bleeding after the rupture of membranes. The patient delivered within 30 minutes after the rupture of membranes and timely paedriatic help saved the baby.

Discussion

Vasa previa is a rarely reported condition in which fetal blood vessels unsupported by either umbilical cord or placental tissue traverse the fetal membranes of the lower segment of the uterus below the presenting part. It is a cause of sudden unanticipated fetal death, with a fetal mortality of 33-100%[1]. This condition has high fetal mortality due to fetal exsanguination resulting from fetal vessel tearing when the membranes rupture. Sadly despite improvements in medical technology VASA PREVIA often remains unsuspected until fetal vessel rupture occurs and even with regular antenatal care in the best hands, perinatal mortality is high as happened in Case No.1.

In the three cases described above vasa previa was never anticipated. In the first case labour was induced for maternal reasons, but despite crash emergency caesarean section for heavy bleeding per vaginum, ended in neonatal death for loss of excessive fetal blood. In the second case elective caesarean section for placenta previa saved the baby. In the third case the patient was multi-gravida and delivered very quickly after the rupture of membranes and timely emergency help saved the neonate.

Vasa previa is a very rare condition and exact incidence is difficult to assess. If it is anticipated in cases of bleeding in antepartum and intrapartum period, precaution should be taken and all placentas should be examined thoroughly after delivery by a senior as the junior staff is generally not aware of the above condition and can misdiagnose. In nearly all causes of obstetric haemorrhage as placenta previa, abruption, post partum haemorrhage of atonic uterus, maternal blood is lost. Vasa previa is the only cause of pure fetal haemorrhage. If fetal bleeding is suspected, presence of nucleated red blood cells in vaginal blood should be investigated. The presence of fetal haemoglobin may be confirmed by elution or electrophoretic techniques.

Third trimester haemorrhage continues to be one of the most omnious complication of pregnancy. Bleeding in late pregancy is common and it requires medical evaluation in 5-10% of pregnancies. The seriousness and frequency of obstetric haemorrhage makes it one of the three leading causes of maternal death and also a major cause of perinatal morbidity and mortality throughout the world.

Reduction in fetal mortality depends on a high index of suspicion leading to antenatal diagnosis and elective delivery by caesarean section. If membranes are allowed to rupture in labour, fetal death from exsanguination would occur. Transvaginal ultrasound scan in combination with colour doppler is the most effective tool in the diagnosis of vasa previa and should be utilized in the patients at risk[2]. These high risk patients include:

1. Patients having bilobed, succenturiate lobed and low lying placenta. A low lying placenta at 20 weeks may be a risk factor of vasa previa.

2. In pregnancies resulting from invitro fertilization and multiple pregnancies.
3. When there is antepartum and intrapartum haemorrhage especially when associated with fetal heart rate anomolies.

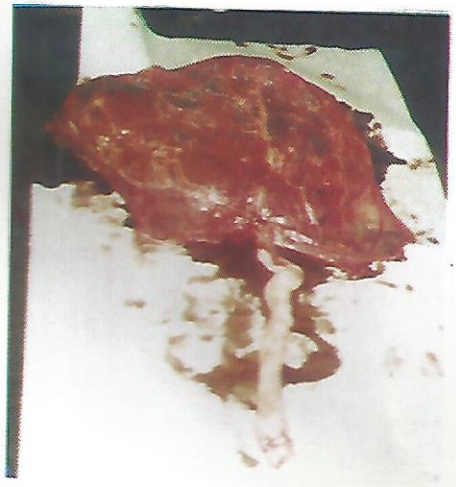
M'egier and his colleagues[3] studied cases of placenta previa in the third trimester for signs of placenta accreta/percreta and vasa previa. They tried to find evidence of vasa previa in color and pulsed Doppler. The positively of one sign in grey scale ultrasonography or in color and and pulsed Doppler led them to believe the patient was affected by an anomoly. A fetal vessel was seen above the lower segment of the uterus and below the fetal heart and there was no change in the location of the vessels despite positional changes in both the mother and the fetus. Color and pulsed Doppler had 100% positive predictive value for diagnosis of vasa previa. Study of the lower segment of the uterus should be thorough as abnormal zones may be small sized. Color Doppler is the reference technique of sighting vasa previa and grey scale ultrasonography for abnormal adherence of the placenta.

During routine ultrasound examination a request should be made to the sonologist to take additional time to image the placental cord insertion with colour doppler imaging and classify it as normal, velamentous and "not seen". If insertion is velamentous then further investigations should be done, to see whether it is associated with vasa previa[4]. Hertzberg B.S.[5] recommends transperinal sonography with Doppler evaluation. Fung Ty[6] in their literature review of all reported cases since 1980 report that antenatal diagnosis was significantly associated with decreased fetal mortality (P = 0.233). A low lying placenta is a risk factor for vasa previa and it occurred in 81% of the patients. These patients are mostly diagnosed after the rupture of membranes. Jaovisidha A.[7]. Reports that in their series only one case was diagnosed prior to the rupture of membranes and four cases after the rupture of membranes.

Amnioscopy before amniotomy may be of help to diagnose this condition. Caesarean delivery is the method of choice for delivery and aggressive resusitation of the affected neonate may be life saving.

In patients with major degree of placenta previa, delivery is always indicated by abdominal route so the baby is not at risk as was in case No.2. When vasa previa is suspected, a test to exclude fetal blood in vaginal blood should be carried out.

Despite continued advances in diagnostic procedures, vasa previa still presents considerable risk to the fetus. Closer scrutiny of the ultrasound scan reports is required and if bilobed or low lying placenta is seen at twenty weeks, transvaginal ultrasound scan and dopplers should be requested for cord insertion.



Placenta showing marginal insertion of cord and vasa previa in Case No.1.

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