

Vasa Previa: Maternal and Fetal Near Miss

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ABSTRACT

Vasa previa is a very rare condition which results in high perinatal mortality during labor when membranes rupture due to quick fetal exsanguination. A 31-year-old primigravida was hospitalized at 37 weeks due to COVID-19 with gestational Diabetes. Her first and second trimester USG were reported normal but posterior low-lying placenta was diagnosed at 30 weeks and at 37 weeks. She underwent induction of labor at 38 weeks. Ripening of cervix was done by introduction of foley catheter and inflation of its bulb with 60 cc saline. As the Bishop score was 5. Oxytocins were started at 50% effacement and 2 cms dilatation. Artificial rupture of membranes (ARM) was performed at 5 cms of dilatation in active labor. She developed prolonged fetal bradycardia up to 60 beats /min and passed blood clots after 10 min of ARM. She was suspected to have abruption and was delivered by emergency LSCS immediately. Baby was alive with an APGAR Score of 5 at one minute and looked very pale required resuscitation. Placental examination revealed velamentous insertion of cord with evidence of ruptured vessel in the membrane at which time Vasa previa was diagnosed. The neonate did not require blood transfusion and mother and baby were discharged on 5th post-operative day.

Keywords: Posterior low-lying placenta, USG, Vasa previa, ARM, Hemorrhage, Abruption, Prolonged fetal bradycardia, Pale neonate

INTRODUCTION

Vasa previa is a very rare condition and prenatal or intra natal diagnosis is missed always and this results in perinatal mortality. There are no definite risk factors for Vasa previa except that Velamentous insertion of umbilical cord and bilobed placenta are more often associated with the condition. The risk is high when the placenta is low lying with velamentous insertion of the cord. Multiple pregnancies, pregnancies following assisted reproductive techniques were reported to be at high risk. Perinatal mortality is reported to be high, 56% in undiagnosed cases when compared to those where diagnosis was known prior to delivery [1]. Emergency caesarean section during labor or planned caesarean section in prenatally diagnosed cases can improve fetal survival. We report a case of near miss Vasa previa which was postnatally confirmed following emergency Caesarean section for fetal distress with suspected abruption placenta.

CASE

A 31-year-old primigravida at 37 weeks of gestation with gestational diabetes mellitus on insulin was hospitalized with the complaints of fever and cold for 1 day. She tested positive for COVID-19. This pregnancy was spontaneous conception and she received antenatal care in private

hospital. Her first and second trimesters were unremarkable. There were no contributing factors from her past medical, surgical and familial history. Routine antenatal investigations including virological markers were normal. Her first and second trimester USG reports were normal. Her USG at 30 weeks reported posterior low-lying placenta the lowermost edge of which was 4 cms from internal Os. She was diagnosed as gestational diabetes (GDM) at 32 weeks of pregnancy and was on insulin and medical nutrition therapy. During admission her sugar profile was normal, and she was not dyspneic. Hence, she was conservatively managed for COVID -19 infection. Her USG at 37 weeks reported posterior low-lying placenta with a fetal weight of 2.7 kg and adequate liquor. She underwent induction of labor at 38 weeks of gestation for GDMA2. Cervical ripening was done with foley catheter followed by sublingual misoprostol.

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Low dose Oxytocin protocol was initiated following misoprostol when her cervix was 50% effaced, 2cm dilatation and station at -3 cms. Artificial rupture of membrane (ARM) was performed after 4 h of oxytocin at 5cm of cervical dilation vertex station at -3cms and liquor was clear. Immediately following ARM fetal heart rate was normal but after 10 min of post procedure, fetal heart rate started decelerating up to 60 bpm which did not pick up measures of intrauterine resuscitation. She started having fresh bleeding per vaginum and passed a clot of 30-50 gms and per vaginal examination was repeated and cervix was 5 cm dilated, vertex at 0 station. Hence was taken up for emergency LSCS under GA in view of persistent fetal

bradycardia due to suspicion of abruptio placentae. Intraoperatively umbilical cord was present below the presenting part, liquor was clear and there was no evidence of abruption. An alive male baby delivered with Apgar score of 5 at 1 min and 9 at 10 min, but looked very pale (**Figure 1A**). There was no postpartum hemorrhage. During delivery of placenta velamentous insertion of cord was noted and further examination after removal showed torn umbilical artery, and blood vessels passing across the amniotic membrane (**Figure 1B**). Baby was pale and hemoglobin was 12 gm %. On 4th day of post LSCS, the mother and baby were discharged.

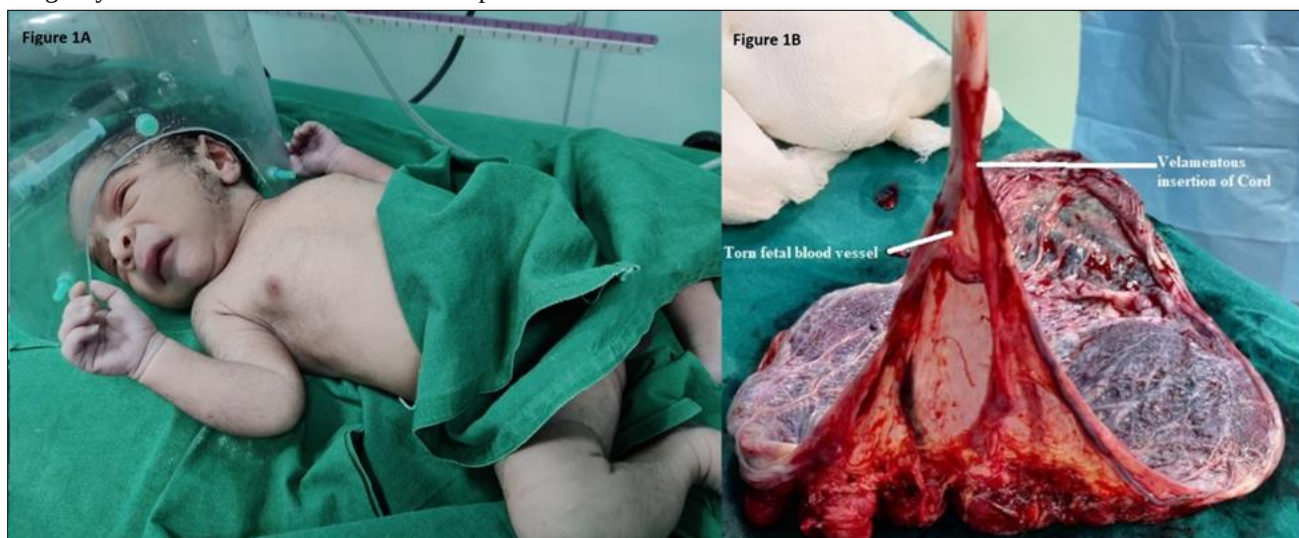


Figure 1. A: An alive male baby delivered with Apgar score of 5 at 1 min and 9 at 10 min, but looked very pale. B: During delivery of placenta velamentous insertion of cord was noted and further examination after removal showed torn umbilical artery, and blood vessels passing across the amniotic membrane.

DISCUSSION

Vasa previa is an abnormal condition in which fetal vessels are unsupported in the amniotic membrane and run across the lower segment of the uterus just above the internal Os. They are predisposed to rupture when amniotic membranes rupture and cause fetal exsanguination resulting in still birth or birth of deeply asphyxiated fetus. Fetal mortality is reported to range from 22-100% [2]. This condition was recognized in pre-Ultrasound era by the triad of rupture of membranes, painless vaginal bleeding and fetal distress or fetal death. In the current era usually, the diagnosis is possible during antenatal period as early as second trimester by USG [3]. But still 10-16 % of cases are missed in spite of undergoing USG as it happened in this lady [4]. Dutta and colleagues reported a similar case where APH with fetal distress was diagnosed due to fresh bleeding per vaginum after spontaneous rupture of membranes in labor. Delivery was carried out by emergency LSCS and the baby looked pale and the placental examination showed velamentous insertion of cord with rupture of vessel [5]. The neonate's

hemoglobin was 12 gm % and did not require transfusion and this is because the delivery could be affected within 15 min of onset of bleeding. Jantarsaengaram [6] and colleagues reported a similar case at 34 weeks of pregnancy which was referred to them as APH and USG showed low lying placenta with suspicion of vasa previa and NST revealed decreased FHR variability with normal FHR. The fetus was delivered by emergency LSCS and the neonate required blood transfusion. Placental examination after delivery revealed velamentous insertion of cord with rupture of vein [6]. In the current case also, Vasa previa could be diagnosed after Caesarean delivery for suspected abruption.

The emergency of the condition has profound effect on the mental status of women and a study which explored women's perception when diagnosed with vas previa revealed feelings of uncertainty of the fetal outcomes, stress, considering it as inconsistent and inadequate information during labor and feeling like time-bomb when diagnosed antenatally [7]. Antenatal diagnosis of velamentous insertion of cord and vasa previa can be done with 2D scan combined

with color Doppler and Pulsed Doppler. On 2D scan the vessels appear as immobile linear structures close to uterine wall and on color Doppler the separation of vessels in the amniotic membrane away from placental edge can be visualize. With the help of Power Doppler, the vessels can be differentiated whether they are of maternal or fetal origin [8]. Guidelines are in place for diagnosis and management of Vasa previa. The SOGC guidelines state that when placenta was found to be low-lying on routine second trimester scan further evaluation to be carried out to see cord insertion site. Transvaginal USG with Color Doppler to be undertaken for all women with risk factors for vasa previa and diagnosis is possible with combination of Transvaginal and transabdominal USG. Women with antenatally diagnosed Vasa previa are to be delivered by Caesarean section before the onset of labor for good fetal outcomes [9]. Recent Greentop guidelines also confirm that USG accuracy in diagnosing Vasa previa is high and caesarean delivery should occur between 32-34 weeks after administration of corticosteroids for fetal lung maturity [10]. The neonatal survival rates were reported to be 97% and 44% respectively for those diagnosed antenatally and not diagnosed antenatally and the neonatal blood transfusion rates were high 58.4% for those not diagnosed antenatally [11]. Vasa previa when suspected clinically after rupture of membranes (spontaneous or artificial) needs urgent delivery foregoing confirmation by USG as the amount of blood lost may appear small but may be fatal as fetal blood volume is 80-100ml/kg at term [10].

The risk factors for vasa previa identified were bilobed and succenturiate placentas, low-lying placentas Multiple pregnancies resulting from IVF Marginal insertion of the cord Velamentous insertion of the cord Palpable vessel or a suspected amniotic band is felt on vaginal exam. A high index of suspicion for vasa previa is required before amniotomy as missing the diagnosis is common [12]. Cases are under reported the prevalence ranges from 1in 200 to 1in 5000 pregnancies [10] and the meta-analysis reports 0.46 cases per 100 deliveries [13]. Vasa previa is also known as Benckiser's hemorrhage and it should be suspected during labor with onset of dark bleeding following rupture of membranes.

CONCLUSION

It is easy to miss Vasa previa by 2D-USG. Risk factors for vasa previa are well defined and every effort should be made to rule out Vasa previa especially in low lying placentas as in this case. Decision to delivery interval is important to avoid still birth or severe fetal asphyxia.

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