

Vasa Previa: A Case Report from Tiom General Medical Hospital Lanny Jaya Regency, Papua-Indonesia

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ABSTRACT

Vasa previa refers to the state of fetal vasculature running within the membranes covering the cervix and under the presenting region of the fetus without being shielded by the placenta or umbilical cord. Due to its membranous vessels, the risk of compression or rupture could result in fetal demise, exsanguination, or even death. The cause is unknown, although risk factors include placenta previa, velamentous cord insertion, bilobed or succenturiate-lobed placentas, multiple pregnancies, and IVF-related pregnancies. In this article, we'll present a single instance of vasa previa discovered after an ultrasound and physical examination performed on a patient 39 weeks pregnant who came with complaints of bleeding from the birth canal-like signs of labor.

KEYWORDS: Vasa Previa, Pregnancy, Velamentous Cord Insertion, Bleeding, Fetal Demise

range from 60 to 70%. In roughly 1 in 2500 deliveries, vasa previa is thought to occur. Given the risk of poor fetal outcomes, a prenatal diagnosis of vasa previa is extremely important and has a considerable therapeutic impact.^{(1),(2)}

Additionally, because it happens in 5% of individuals, a low-lying placenta is allegedly a risk factor for vasa previa. Therefore, a precise diagnosis of vasa previa is essential. With the advent of obstetric ultrasound, the diagnosis can be made during pregnancy as early as the second trimester. The risk to the fetus can be significantly decreased by having a cesarean section performed before the membranes rupture.^{(2),(3)} Here, we describe a vasa previa that was unintentionally discovered during a physical examination and ultrasound while the patient was 39 weeks pregnant and exhibiting labor symptoms.

I. INTRODUCTION

Vasa previa is a rare pregnancy caused by fetal blood veins between the presenting part and the cervix. A low-lying placenta or placenta previa can cause it. Those vessels are at significant risk of rupture due to membrane rupture. Fetal bleeding and death can occur within minutes following the rupture of the membranes due to the artery's attachment to the chorion. Vasa previa is frequently overlooked until fetal impairment occurs due to membrane rupture. When vasa previa is not diagnosed, fetal mortality rates

II. CASE PRESENTATION

We report cases from the Tiom Regional General Hospital, Lanny Jaya Regency, a Regional General Hospital with many limitations and no obstetricians, which is located in a remote area of the mountains of Papua, Indonesia. A 26-year-old woman, G4P3003, at 39 weeks of gestation. She had intermittent abdominal pain the day before visiting Tiom General Hospital. Four hours before arriving at the hospital, the mother noticed she was bleeding from the birth canal, and she felt the fetus moving. Her

vital signs were stable when she was admitted. Her blood pressure was 110/70 mm Hg, her pulse rate was 81, her respiratory rate was 21, her axillary temperature was 36.5°C, and she did not have a pallor. She was 157 cm tall and weighed 60 kg when she arrived at the hospital. Her medical history was clear of allergies, pre-eclampsia, post-partum haemorrhage, and surgical histories from prior pregnancies. Routine anomaly scans that have never been performed. Throughout this pregnancy, she underwent no antenatal care.

She has had four pregnancies in her obstetric history. First pregnancy in 2011, spontaneous birth of a baby boy at Wamena General Hospital in Papua, weighing 2900 grams, a newborn alive. During the second pregnancy, in 2014, a baby girl, spontaneous home delivery assisted by a village shaman, the stillborn child with unknown cause. The third pregnancy in 2017, a baby girl, spontaneous home delivery assisted by a village shaman, a kid born alive and this pregnancy is the fourth. Since her previous pregnancy, she has had a poor antenatal care history.

A routine physical examination was found. On examination of obstetrical status, it was found that Leopold I was 36cm fundus of uterine, Leopold II felt hard flat with an impression of the right back, Leopold III felt hard with an impression of the position of the head, and Leopold 4 was convergent.

The fetal heart rate was 134 beats per minute. HIS was about 1x10¹⁵", and Admission NST was reactive. Intact membranes, a 1-cm-wide cervical opening, a thick portion, and no mucus or blood discharge were all visible during a vaginal examination. There were no abnormalities in the laboratory results of this patient, with WBC 6,2X 10³/uL, HGB 13,3 g/dL, PLT 112X10³/uL, HCT 37,9%, HBsAg non-reactive, Anti-HIV Non-reactive, TPHA non-reactive and blood type O rhesus positive.

The hospital's grayscale transabdominal sonography showed an intrauterine singleton fetus with a cephalic presentation. It demonstrated a posterior, low-lying placenta and fetal vessels between the fetal head and cervix, characteristic vasa previa. Active fetal movement, sufficient amniotic fluid and estimated fetal weight of 3154 grams. A colour doppler scan was performed for confirmation. The results suggested vasa previa since they revealed numerous blood veins along the placental edge, crossing them and rising to the succenturiate lobe. We did not perform a transvaginal sonographic examination. By using colour-coded Doppler sonography in addition, the diagnosis of vasa previa was made transabdominal. Cito's caesarean section was initially scheduled by referring the patient to a hospital in a nearby district because no obstetricians were available at our facility.



Figure 1: Fetal vessels presenting between fetal head and cervix (transabdominal with colour-coded Doppler ultrasound)

This patient received 20 drops of physiological fluids per minute, 1 liter of

oxygen per minute using a nasal cannula, and tocolytics as treatment. As well as refer

to a hospital with excellent facilities and an obstetrician for Cito Cesarean Section. We assessed the mother's and the baby's conditions at the hospital to which we were referred, but the baby died before the cesarean section. Because the travel conditions when referring the patient were poor, blood vessels that crossed between the infant's head and the birth canal were suppressed, resulting in hypoxic conditions in the baby until the baby died. Informed consent has been made to the patient and the patient's family for all possible risks during the referral process.

DISCUSSION

Following normal physiology, two coiling arteries in the umbilical cord carry fetal blood toward the placenta. These coiling arteries on the placenta's surface divide into chorionic arteries, further into terminal arterioles. The formation of up to four capillary loops by these arterioles, in turn, allows for the optimal exchange of maternal and fetal blood. These capillary loops' venous ends combine to generate more prominent veins that move toward the umbilical cord's attachment site. The fetus's umbilical vein, which receives blood from these veins, is where the veins eventually empty. When fetal blood arteries are discovered outside of the placenta or umbilical cord, it is known as vasa previa. As the blood arteries traverse the cervical opening and amniotic membranes, they are not adequately protected. Therefore, antepartum bleeding is the typical symptom of a ruptured vasa previa concerning maternal outcomes. Vasa previa can be asymptomatic, but it can also manifest as a sudden beginning of heavy bleeding or modest amounts of painless vaginal bleeding. This bleeding occurs in the second or third trimester. ^{(1),(4),(5)} In this case, the mother noticed she was bleeding from the birth canal four hours before coming to the hospital. However, this does not show symptoms of vasa previa because the mother comes to the hospital with a full-

term pregnancy of 39 weeks. These could be signs of normal labour.

Vasa Previa comes in two varieties. Type 1 relates to a velamentous umbilical cord insertion when fetal blood vessels cross over the uterine OS. Type 2, in which fetal blood arteries are present in the same region as type 1 but instead run between the placenta's lobes (bilobed or succenturiate lobed), as in the situation at hand. ^{(1),(3),(5),(6)} According to theory, during an ultrasound examination (transabdominal with colour-coded Doppler ultrasound), fetal vessels are present between the fetal head and cervix. This case is classified as vasa previa type 1 because of a velamentous cord insertion.

The estimated prevalence of Vasa Previa is around 0.05%, and risk factors for Vasa Previa include twin pregnancy, low-lying placenta, auxiliary lobe of the placenta, assisted reproductive technology (ART), and velamentous cord insertion (VCI). According to a systematic evaluation of these risk variables as vasa previa predictions, 83% of cases showed mothers to have at least one risk factor. ^{(1),(5),(6),(7)} In this case, she have low-lying placenta. Grayscale transabdominal sonography showed an intrauterine singleton fetus with a cephalic presentation. It demonstrated a posterior, low-lying placenta and fetal vessels between the fetal head and cervix, characteristic vasa previa.

In the past, vasa previa was typically identified by palpating the fetal vasculature inside the membranes during labor or based on acute-onset vaginal haemorrhage followed by fetal bradycardia and/or death after membrane rupture. But now, most cases are identified antenatally, and the main methods of diagnosis are transvaginal ultrasonography and real-time color Doppler ultrasonography. Unfortunately, in our situation, comprehensive ultrasonography was not conducted in the second trimester to screen for vasa previa and detect the cord insertion, making it challenging to diagnose vasa previa. If bleeding occurs along with membrane rupture, especially if fetal heart

rate decelerations and bradycardia occur, vasa previa should be evaluated.^{(7),(8)}

According to theory, this patient can be diagnosed with vasa previa during an ultrasound examination. The perinatal outcome may be significantly improved by sonographic prenatal diagnosis. Before routine sonography testing, the diagnosis was made on clinical symptoms or a digital vaginal examination in which the examiner palpated the pulsing fetal vascular. The Apt or Kleihauer-Betke test may help identify vasa previa, but not in acute profuse bleeding with fetal distress requiring immediate delivery. Following birth, the diagnosis is verified by examining the placenta. As a result, fetal mortality is primarily high.⁽²⁾

The perinatal mortality and morbidity associated with vasa previa have significantly decreased because of the use of ultrasound throughout pregnancy. Identification of the vessels covering the internal OS is one of the sonographic hints, albeit the cord presentation may be to blame. A 20-week anomaly scan may reveal a low placenta. This is a significant risk factor for vasa previa. Hence it should be tried to rule it out. Vasa previa may accidentally be mistaken for a heavy show when it manifests clinically as vaginal bleeding at spontaneous or induced membrane rupture. One should suspect vasa previa whenever there are concomitant fetal heart problems. Labor, digital pressure, or pressure from the presenting part can cause vessel compression, resulting in severe Cardiotocography (CTG) abnormalities like fetal heart decelerations, bradycardia, and sinusoidal heart rate pattern typically indicate fetal haemorrhage and may cause fetal death.^{(5),(7),(8),(9)}

The goal of managing known vasa previa is to keep the pregnancy safe while preventing membrane rupture and the start of labor. If an urgent preterm birth is required, it is wise to consider giving prenatal corticosteroids between 28 and 32 weeks gestation. When vasa previa is detected early, and delivery happens after 35 gestational weeks, there is

a 97% chance that the fetus will survive. An elective cesarean section is best performed between 34 and 37 weeks of pregnancy. Undiagnosed vasa previa could lead to fetal mortality rate of at least 60%, despite urgent C-sections.^{(2),(10),(11),(12)} According to theory, this patient was well as refers to a hospital with excellent facilities and an obstetrician for Cito Cesarean Section. But we did not give corticosteroids as therapy because the patient had a term pregnancy.

Cases shouldn't be handled proactively as soon as labor starts because the presenting part of the fetus may compress these vessels during labor or rip when the membranes burst, resulting in fetal exsanguination and death.^{(12),(13)} It was previously recognized that early prenatal diagnosis could increase survival rates by more than 95%. Because inadequate maternal education remains a major issue in underdeveloped and developing countries, education to promote knowledge of routine prenatal care is the first step toward early identification. Prenatal ultrasound screening is often performed between 18 and 28 weeks of gestation, and 20% of placenta previa or low-lying placenta cases were generally cured but still related to vasa previa. In this case, the patient lives in an underdeveloped area, has never had antenatal care, and has a prior poor obstetric history. This impacts the incidence of vasa previa, which is identified too late.^{(2),(14),(15)}

CONCLUSION

Obstetrical disasters like vasa previa are rare but can be fatal and unpredictable. Prenatal sonographic diagnosis can alleviate or avoid the adverse obstetric and neonatal outcomes linked to it. Due to the mother's history of poor antenatal care, this case falls under those diagnosed late. But utilizing trans-vaginal ultrasound, it is possible to identify and rule out vasa previa, which is crucial for ensuring the proper treatment at the right time. Vasa previa is a significant yet uncommon illness that, if left untreated, could be fatal to the newborn when the membranes rupture, haemorrhage, and

exsanguination might result from the aberrant attachment of fetal blood veins onto the placenta.

Delivery between 34 and 37 weeks is advised for women with prenatal diagnoses. Delivery should occur in tertiary care facilities prepared to handle perinatal emergencies effectively. The capabilities of tertiary facilities include continuous fetal cardiac monitoring, a quick biomedical test for fetal haemoglobin, and readily available harmful blood components for an urgent newborn transfusion. Early detection allows for optimal planning and the availability of resources for safe patient care. An elective cesarean section is the safest delivery method for women with this problem. This case report has many shortcomings because of everything limited facilities and infrastructure in existing hospitals in the remote areas of Papua Indonesia. We do not have the resources of an obstetrician to treat this case on the operating table immediately. This makes inspection and therapy limited and harms reducing the mortality rate of vasa previa. This is a challenge for health services in remote areas.

Declaration by Authors

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