Review Article

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Vasa Previa: Review Article

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Abstract

The umbilical cord is the fetal lifeline and is the vital link between the fetus and placenta. Various abnormalities are observed in morphology and pathology of placenta. Variations in umbilical morphometry leads to neonatal morbidity and mortality. Vasa previa is one of the insertion anomaly of umbilical cord. Antenatal diagnosis is possible using ultrasonography. Diagnosis of vasa previa should be confirmed with colour or power doppler demonstrating pulsatile flow with fetal vascular waveform pattern. Vasa previa is one of the rare cause of antepartum haemorrhage. What differentiates vasa previa from other etiological factors of antepartum haemorrhage is that bleeding is of fetal origin. Although a rare anomaly, Vasa previa has significant mortality rates and therefore should always be looked for with great precision in antenatal ultrasonography.

Keywords: Vasa previa; Antepartum haemorrhage; Fetus; Umbilical vessels.

Introduction

The umbilical cord is called the fetal lifeline, and it is the vital link between the fetus and placenta.1It extends from fetal umbilicus to placenta and carries blood to and from placenta.[2] It is the pathway between mother, placenta and fetus during pregnancy and delivery.[3] During prenatal development, the umbilical cord is physiologically and genetically part of fetus.[4] Various abnormalities are observed in the morphology and pathology of the umbilical cord but knowledge of them is quite poor.[1] The etiology of different abnormalities is not clear.[5] Variations in umbilical morphometry leads to neonatal morbidity and mortality. Vasa previa is one of the insertion anomaly of umbilical cord.[6] In vasa previa umbilical vessels course through the membranes in advance of fetal presenting part characteristically extending across cervical os.[7] Vasa previa can develop in two settings: either with a velamentous cord insertion –connecting the umbilical cord to placenta, or with the succenturiate or bilobed placenta- connecting the two placental lobes.[8]

Risk Factors

- Placental abnormalities including succenturiate or bilobed placenta
- Previa or low-lying placenta
- In vitro fertilization
- Multiple gestations.

The likelihood of vasa previa in the setting of velamentous cord insertion is approximately 1:50.9

Diagnosis

Antenatal diagnosis is possible using ultrasound, most often transvaginally.10Diagnosis of vasa previa should be confirmed with color or power Doppler demonstrating pulsatile flow with fetal vascular waveform pattern.9Vasa previa may occasionally be felt on palpation of unruptured fore-membranes in labour.[11]

Intrapartum diagnosis: In the absence of prenatal diagnosis this includes:-

1. FHR: Vasa previa may be suspected when a relatively minor episode of painless vaginal

bleeding is followed by non-reassuring FHR tracing.

2. Vaginal examination: The vessels may be felt by fingers. The condition may be confused with presentation of umbilical cord.
3. Amnioscopy: The blood vessels may be seen within the membranes.
4. Apt test.[10]

Fetal exsanguination occurs in absence of immediate recognition and abdominal delivery. Fetal mortality can approach 50–100%. In patients diagnosed early, delivery is by caesarean section.7

Discussion

Vasa previa is a rare anomaly of umbilical cord and one of the rare cause of Antepartum haemorrhage. What differentiates Vasa Previa from other etiological factors of antepartum haemorrhage is that bleeding is of fetal origin. The amount of bleeding will be small, but more detrimental to the fetus since it will be a fetal blood loss.[12] The clinical significance lies if the vessels are traversing the bag of water in the lower pole. The vessels will rupture with rupture of bag of water and lead to fetal haemorrhage and death.

The small amount of bleeding can exsanguinate the fetus therefore the origin of bleeding must be differentiated by following Alkali denaturation test:-

- Loendersloot test
- Apt test[13]

Historical aspect

Before ultrasonography became a part of routine antenatal care, Vasa previa was rarely diagnosed antenatally and patient presented with severe bleeding with fetal exsanguination. Diagnosis of Vasa previa was first reported in 1980's to 1990's using Gray scale and Doppler sonographic imaging. Both transabdominal as well as transvaginal approach were used. The current trend includes targeted screening for vasa previa using transvaginal sonography in patients with risk factors like placenta previa, low lying placenta, multiple placental lobes, velamentous cord insertion. In cases of velamentous cord insertion, comprehensive examination for vasa previa should be performed.

Pregnancy Risk Associated with Vasa Previa

1. Fetal and neonatal morbidity and mortality.
2. Vessel compression or rupture can result in fetal hypoxia and death.
3. In the surviving neonates, perinatal morbidity, low Apgar scores, and need for transfusion was common.

Monitoring of Vasa Previa

1. Patients diagnosed with vasa previa should be closely monitored for signs and symptoms of labour, vaginal bleeding or fetal distress.
2. Betamethasone may be administered between 28 and 32 weeks considering the high risk of preterm delivery.
3. Hospitalization is offered as it gives opportunity of continued antepartum surveillance and patient can be posted for emergency caesarean section if any signs of fetal distress encountered.[9]

Management

- *Antepartum:* When diagnosed antenatally vasa previa should be managed like placenta previa. Some recommend twice weekly non stress test to assess cord compression. Hospitalization is recommended in third trimester with administration of antenatal steroids. Caesarean delivery is recommended at 34 to 36 weeks of gestation.[14]
- *Intrapartum:* Patients with vasa previa present with painless vaginal bleeding at the time of spontaneous rupture of membranes or amniotomy. When the membranes rupture a small amount of continuous bright red bleeding occurs. If the cervix is almost fully dilated the fetus can be delivered vaginally. If cervix is not completely dilated, an emergency caesarean section must be done to save fetus.[15]

Conclusion

Although a rare anomaly, Vasa Previa has significant mortality rates and therefore should always be looked for with great precision in antenatal ultrasound as a part of routine screening

and specially in cases of velamentous cord insertion. Obstetricians should have high level of suspicion in any case of antepartum hemorrhage as vasa previa is rarely diagnosed antenatally. In diagnosed cases the delivery should always be performed in institutions capable of higher level newborn care including availability of neonatal transfusion.

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