Vasa Praevia, Types, Signs and Symptoms, Diagnosis and Management

Vasa praevia is a condition where a fetal blood vessel lies over the cervical os, in front of the presenting part.

This occurs when fetal vessels from a **velamentous** cord insertion or to a **succenturiate** placental lobe cross the internal os to the placenta.

The fetal life is at risk owing to the possibility of rupture of the vessels leading to exsanguination unless birth occurs within minutes.
Vasa praevia is rare but it may result in a catastrophic hemorrhage in the fetus.

Normally, the blood vessels between the fetus and placenta are usually contained in the umbilical cord. However, in this condition, some of these umbilical vessels are instead located outside of the umbilical cord in the membranes that surround the fetus, near the cervical opening.

Following either spontaneous or artificial rupture of the membranes, these delicate vessels may tear, potentially causing fetal exsanguination.

In the velamentous cord, a portion of the umbilical cord lacks the protective Wharton's jelly near the placental insertion site, making the cord prone to rupture.

Types of vasa praevia

There are two types of vasa praevia:

Type one occurs when the fetal blood vessel is connected to a velamentous umbilical cord with the main body of the placenta.

Type two occurs when the fetal blood vessel connects portions of a bilobed placenta with a succenturiate lobe.

Vasa Previa needs to be excluded in patients with variant placental morphology

These vessels are unsupported by Wharton jelly or placental tissue and are at risk of rupture during labor.

Epidemiology

Although published statistics seem to vary quite widely, It is estimated that the incidence of patients with vasa praevia is approximately 6 to 11 cases per 10 000 pregnancies.

These statistics are tragically high and point to the need to detect vasa praevia before the onset of labor, allowing time for an elective cesarean birth to be arranged.

1% of singleton gestations

Up to 15% of monochorionic twin gestations

Risk factors:

Approximately 85% of cases of vasa praevia have one or more identifiable risk factors, including:

Multiple gestations
Low lying placenta
Bilobed placenta
Succenturiate lobe
Velamentous cord insertion.
IVF(in vitro fertilization) pregnancy

Signs and symptoms

The classical presentation of vasa praevia is painless vaginal bleeding, rupture of membranes, and fetal bradycardia.

Prior to rupture of the amniotic membrane during labor, compression of the vulnerable fetal blood vessels by the presenting part may lead to fetal heart decelerations and bradycardia.

However once ruptured, vasa previa will result in brisk vaginal bleeding with rapid fetal exsanguination.

Diagnosis

Early diagnosis of vasa praevia is essential.

The majority of the cases of vasa praevia (85%) can be detected and recognized early through the presence of velamentous cord insertion or a low-lying placenta.
Vasa praevia may be diagnosed antenatally using an ultrasound scan. Sometimes vasa praevia will be palpated on vaginal examination when the membranes are still intact.

If it is suspected, a speculum examination should be made.

Fresh vaginal bleeding, particularly if it commences at the same time as rupture of the membranes, may be due to ruptured vasa praevia. Fetal distress disproportionate to blood loss may be suggestive of vasa praevia

Radiographic features

Sonographic features are considered generally specific (~90%).

The diagnosis is often made with transabdominal color Doppler sonography demonstrating flow within vessels which are seen overlying the internal cervical os.
Non-Doppler (greyscale) images may suggest the diagnosis if there are echogenic parallel or circular lines within the placenta near the cervix.

Occasionally a transvaginal scan is required to better visualize aberrant vessels. Transvaginal ultrasound has a reported sensitivity of 100% and specificity of 99-99.8% when performed with color Doppler.

Transvaginal ultrasound with Doppler demonstrates fetal vessels traversing the internal cervical os.

Assessing the umbilical cord vessels and insertion site at around 20 weeks is a recommended element of routine prenatal care.

Avoid digital exams on a woman with vasa previa.

Clinical significance:

A digital exam may rupture these vessels, causing fetal exsanguination within minutes.

Rupture of membranes may rupture the vessels.

These vessels may also become compressed by the fetal head

Treatment and prognosis

If recognized antenatally, vasa previa usually requires an elective cesarean section to avoid the risk of complications during vaginal delivery.

If recognized intrapartum, an emergency cesarean section is usually performed

The key to improving fetal survival is avoiding either artificial or spontaneous rupture of the membranes. This is extremely important because the entire fetal cardiac output passes through the umbilical cord and it can take less than 10 minutes for total exsanguination of the fetus to occur

Study shows that once the membranes have ruptured, the fetal mortality rate is at least 60% even if an emergency cesarean birth is initiated. In comparison, a survival rate of over 95% was found in cases where ultrasound diagnosis was made antenatally, allowing time to plan an elective cesarean birth.

In other words, prenatal diagnosis is the key to improved fetal survival.

Universal Screening v Targeted Screening
vasa praevia doppler ultrasound
Vasa praevia can be diagnosed prenatally using doppler ultrasound.

Routine obstetric ultrasound normally includes an assessment of the placental site and number of placental lobes, as well as an evaluation of the placental cord insertion site.
For patients with a low-lying placenta, further screening can then be offered with follow-up in the third trimester to either confirm or exclude a low-lying placenta.

The midwife should call for urgent medical assistance.

The fetal heart rate should be monitored via cardiotocograph CTG). If the mother is in the first stage of labor and the fetus is still alive, an emergency cesarean section is carried out.

If she is in the second stage of labor, the birth should be expedited such that the baby may be born vaginally.

Cesarean section may be carried out but the mode of birth will be dependent on parity and fetal condition.

For midwives, confident and rapid diagnosis can increase the chances of a successful outcome. For example, if initial fetal heart rate tracings are concerning, steps should be taken to prepare for an emergency cesarean birth with appropriate neonatal resuscitation immediately available.

Hospitalization in the third trimester is generally recommended for patients with vasa praevia as it allows access to emergency cesarean birth in the case of unexpected rupture of the membranes.

Most patients then go on to deliver by elective cesarean birth between 34 and 36 weeks gestation.

In an ideal situation, delivery should be delayed if it’s safe to do so (before rupture of the membranes) in order to minimize the impact of iatrogenic prematurity. Generally, this is achieved with the administration of corticosteroids for fetal lung maturity from 32 weeks gestation, with delivery planned for 34 to 36 weeks gestation.