Vasa praevia; case report

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Figure 1

Figure 2
Vasa praevia; case report

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Abstract

Vasa praevia is an uncommon condition that may lead to profound fetal distress or fetal death. We report a case of vasa praevia. Seen with rupture of membranes, vaginal bleeding and severe fetal bradycardia. Patient underwent caesarian section. Both mother and baby discharged in good condition. This confirms the importance of prenatal detection of patients with vasa praevia.

Introduction

Vasa praevia is a condition in which the cord inserts into the membranes through which vessels run, unprotected, until they insert into the placenta [1-3]. These vessels run between the fetal presenting part above and the cervix below. When the membranes rupture, these vessels almost invariably rupture also, with resulting severe fetal hemorrhage and a high likelihood of fetal death from exsanguination [2-5]. It is an uncommon variant of placental anatomy, occurring in 1:1200 to 1:5000 pregnancies [6-8]. The 2 main causes of vasa praevia are velamentous insertions, where the cord inserts directly into the membranes, leaving unprotected vessels running to the placenta (25-62%) and vessels crossing between lobes of the placenta such as in succenturiate or bilobate placentae (33-75%) [2, 5, 6, 8]. Less commonly, a vessel that courses over the edge of a marginal placenta or a placenta praevia may become a vasa praevia after extension of the placenta over better vascularised area (trophotropism) and involution of the cotyledons that were praevia [2, 6, 8]. There for, these vessels are prone to compression during labor and may tear when the membranes rupture. The classic presentation is rupture of membranes followed by painless, dark vaginal bleeding associated with profound fetal distress or fetal death. Vasa praevia can cause abnormal intrapartum fetal heart rate patterns including sinusoidal tracings and severe variable decelerations [1-4, 6, 8].

Risk factors for vasa praevia include all the conditions associated with vessels that run close to the cervix, such as low-lying placenta, placenta praevia, multiple pregnancies, and of course multi-lobate placentas and velamentous insertion which is 1% of singleton pregnancies, 10% in multifetal pregnancies. About 2% of velamentous insertions are associated with a vasa praevia [2, 3, 6, 8]. Placenta membranacea is also a risk factor [2, 8]. It is less clear why, but in-vitro fertilization increases the risk of vasa praevia, about 1:300 pregnancies [2, 6, 8]. Many of these conditions present with vaginal bleeding which should be considered a possible alert symptom for vasa praevia [2, 3, 5, 6, 8]. Fetal anomalies that may be associated with increased risk include renal tract anomalies, spina bifida, single umbilical artery, exomphalos, and, to a lesser extent, prematurity, antepartum hemorrhage, and fetal growth restriction [4, 5, 7, 9-11].

The diagnosis is occasionally made based on the palpation of fetal vessels within the intact membranes at the time of vaginal examination and can also be made by amnioscopy. Sonographic diagnosis is the golden standard [1-3, 5-7, 9]. Although vasa praevia can be recognized in grey-scale as linear structures in front of the inner os, the diagnosis is considerably simpler by putting a flash of color Doppler, color or power, over the cervix. Arterial flow but also venous flow can be recognized. Although, some have obtained the diagnosis by vaginal scan. Transvaginal image is clearly superior to an abdominal scan [1, 2, 5, 7, 10]. Yet, the diagnosis of vasa praevia is easy to miss, even postnatally [2, 9-12]. Magnetic resonance imaging (MRI) has been used to diagnose vasa praevia but is often impractical for diagnosis, especially in the emergent setting [1, 6, 7].

The major complication from vasa praevia is the rupture of the vessels carrying fetal blood. This occurs at or near delivery if the condition is undetected. These results in a perinatal mortality of 56% in undiagnosed cases, and 3% in those diagnosed prenatally. The median Apgar score [3, 6, 7, 11, 13] is 8 and 9 when detected prenatally versus only 1 and 4 for survivors of undetected cases. Furthermore, transfusion is required in 58% of newborn without prenatal diagnosis, versus only 3% of those diagnosed prenatally [2-5, 9, 10, 12]. The Kleihauer Betke, Ogita, and Apt tests and hemoglobin electrophoresis can be used to detect the presence of fetal hemoglobin when patients present with vaginal bleeding; however, time often does not allow for this to be completed in an emergent situation [3, 6, 7, 11, 13].

A less well quantified complication is the compression
of the vasa praevia by the presenting part resulting in decreased flow to the fetus and possibly hypoxia. Postnatal complications are related to either prematurity (due to early cesarean section) and include bronchopulmonary dysplasia, transient tachypnea, respiratory distress syndrome, or to partial exsanguination and complications related to anemia, hypovolemic shock or complications of transfusions [2-4, 6].

The outcome is markedly improved (97% survival versus 44%) when a prenatal diagnosis is followed by elective cesarean section is performed at 35 weeks or earlier if signs of labor or membrane rupture occurs. There are no strategies for primary prevention of vasa praevia. However, hemorrhage theoretically is preventable with antenatal screening for women at high risk and cesarean delivery at 37 to 38 weeks when vasa praevia is present [2, 3, 6, 7]. Screening has been suggested for women at increased risk, there is no evidence that screening in a general population changes outcomes, and because the condition is rare (one diagnosis per 5,000 screenings) and this approach is cost prohibitive [1, 6, 12, 13].

Case Report

24 years old Saudi woman presented to emergency room in Madinah Maternity and Children Hospital as primigravida (PG) 41 weeks and 2 days. Her last menstrual period (LMP) 26/3/2013, expected date of delivery (EDD) 2/1/2014. She was complaining of labour pain with antenatal follow up in private hospital. Her past medical and surgical history unremarkable, apart from history of previous appendectomy 4 years earlier.

On examination she was vitally stable term size pregnancy cephalic presentation not engaged 5/5 and cervix was closed. She was admitted as PG postdated for possible induction of labour (IOL).

Ultrasound (US) done and reported a single viable cephalic foetus. BPD =39 weeks, AC =38+ weeks, FL =39 weeks, Foetal heart +ve, Foetal movement +ve, Expected foetal weight 3095g +/- 500g, and AFI =9.9cm. Placenta fundoposterior, Doppler studies normal, PI =0.7 and RI =0.5.

All investigations were within normal range. Patient was started on IOL by Prostin E2 vaginal tablets every 8 hours for 3 doses only.

Six hours post first dose of Prostin E2, patient experienced severe abdominal pain followed by sudden vaginal gush of blood and blood clots. Foetal heart could not be heard by sonic-aid and on US sever fetal bradycardia seen, with patient vitally stable and soft lax not tender abdomen. Within 15 minutes from the gush of blood lower segment caesarean section was done, outcome was baby boy 2.8 kg. Baby was shocked, resuscitated, intubated and admitted to neonatal intensive care unit (NICU).

Placental examination showed velamentous insertion of the umbilical cord with short cord 12 cm long (Figure 1, 2). Post LSCS was uneventful and patient was discharged on third day post operative in good condition.

After admission to NICU baby was found to be anaemic, haemoglobin (Hb) was 11.9g/dl baby transfused 160 ml of blood over 5 days and baby was discharged in good condition after 15 days of admission with Hb 14.9g/dl.

Discussion

Vasa praevia has traditionally been associated with a high prevalence of perinatal mortality [2, 6]. Sonography has made it possible to diagnose the condition prenatally, with the potential for excellent prenatal outcomes. When ultrasound is done in the second or third trimester, identification of a velamentous or marginal cord insertion may identify patients at risk for vasa praevia. If the placental cord insertion cannot be identified, color flow Doppler may be useful [1-3, 6, 10, 13]. The accuracy of color flow Doppler for diagnosing vasa praevia is neither known, nor the true incidence of this condition. A prospective study of the accuracy of ultrasound and color flow Doppler and their effect on the outcome of pregnancies screened is needed to answer these questions and to determine the extent of benefit of antenatal diagnosis.

Elective cesarean section is the preferred method of delivery when vasa praevia has been identified antenatally, usually at 37 to 38 weeks, or when fetal lung maturation has been confirmed [2, 3, 6]. In cases in which serial ultrasound examinations show a regression of a velamentous vessel away from the os, some Obstetricians would consider an attempt at a vaginal delivery with preparations for immediate operative delivery. Others would not allow a trial of labor because a vessel remote from the os might tear and result in fetal hemorrhage or demise [1-3, 6, 9, 11]. Physicians must be vigilant whenever amniotomy is performed or occurred spontaneously because majority of cases of vasa praevia cannot be identified antenatally. In this case, a high index of suspicion and
immediate delivery followed by aggressive resuscitation were necessary to avoid fetal shock or death when vaginal bleeding occurred during labor. These usually carry a high risk of perinatal mortality, and more than 50% requires neonatal blood transfusions [2, 6].

Conclusion

Until proven otherwise, a substantial improvement in outcome will depend only on prenatal detection. This implies a greater awareness of the condition and an effort at detecting it. The purpose of this report is to help alert those who do prenatal examination that vasa praevia are not difficult to recognize when sought and that they are common enough to be worth seeking.

References

Illustrations

Illustration 1

Figure 1: Picture of the placenta and umbilical vessels
Illustration 2

Figure 2: Picture of the placenta and umbilical vessels