En caul vaginal delivery with vasa previa diagnosed intrapartum

Abstract

Background: Vasa previa is a condition fraught with severe morbidity when undiagnosed at time of delivery.

Case: A 25-year-old G4P2012 presented with preterm labor at 27 weeks. She was fully dilated and with the first push two independent vessels were coursing over the membranes; vasa previa was diagnosed. The patient pushed through two contractions to deliver a vigorous fetus en caul. The neonate did well, not requiring any blood transfusions during its neonatal stay for prematurity, and was seen for a well-child examination 4 months later, doing well.

Conclusion: The mode of delivery for a known vasa previa is a planned Cesarean section (C-section), however if vasa previa is encountered in the labor room with quick progression of the second stage an en caul delivery could be considered.

Keywords: En caul; prematurity; vasa previa; velamentous cord.

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Presentation of the case

The patient is a 25-year-old G4P2012 who presented with preterm labor at 27 weeks and 4 days, dated by an 11-week ultrasound, with lower abdominal pain and pelvic pressure. Upon evaluation, she was noted to be fully dilated with bulging membranes. Her pregnancy course was significant for a velamentous cord insertion, which was being followed with serial ultrasounds. Ultrasound screening at 22 weeks revealed a velamentous placental cord insertion, the placenta was noted to be posterior and the umbilical cord inserted into the membranes in the anterior fundal portion of the uterus with the vasa previa screening; with a Doppler-flow study using a vaginal probe, no vessels were visualized near the cervix or lower uterine segment. She had a fetal echocardiogram at 22 weeks, which was normal. Repeat obstetric ultrasound was done at 26 weeks where velamentous insertion was noted again (see Figure 1), and again without vessels visualized in the area of the cervix and lower uterine segment (see Figure 2); but it was noted on this scan that the course of the vessels was difficult to follow. Her cervical length was measured to be 3.5 cm without funneling or dynamic changes noted.

At 27 weeks and 4 days, on her arrival in labor and delivery, she was found to be fully dilated and with bulging membranes. Fetal heart tracing was reactive and reassuring. She was monitored for <8 min as she pushed while the NICU team came into the room. During pushing, independent pulsating vessels were noted to course over the amnion presenting past the introitus, consistent with a vasa previa diagnosis. With intact membranes, she delivered quickly with two pushes, over an intact perineum, a live baby girl en caul with independent fetal vessels without Wharton’s jelly coursing across the amnion surface. The amnion bag was ruptured after delivery, and the umbilical cord was clamped after 30 s without evidence of bleeding from the umbilical or placental vessels.

The female neonate, weighing 950 g, was handed over to the pediatricians for further assessment and management by the NICU team. The neonatal APGAR scores were 5 and 7 at 5 and 10 min postpartum, with a cord gas pH of 7.33 and base excess of –3. An initial hemoglobin and
hematocrit were 12.2 and 36.5, respectively, and no blood transfusions were indicated during her hospital stay for prematurity. The neonate had an uncomplicated neonatal course, and was discharged from the hospital after 6 weeks and 3 days; she was seen at 4 months of age with normal development and no evidence of anemia.

The placenta delivered spontaneously and a velamentous cord was confirmed. On the initial survey in the labor room it was determined that the placenta was not intact and the ultrasound confirmed the presence of retained placental products. With IV ketamine sedation given to the mother the rest of the placenta was manually extracted. A <1 cm endometrial stripe was then visible on the sono-gram. She was discharged home after 2 days of postpartum care with normal lochia, however she presented 2 days later, when retained placental products were noted at the cervical os and removed with a ring forceps with a resolution of the bleeding and cramping.

The pathology report confirmed a three-vessel umbilical cord with a velamentous insertion that was 5 cm from
placental insertion. It showed large umbilical vessels coursing along the surface of the fetal membrane.

Discussion

This case report presents the nightmare of obstetricians: vasa previa. A vasa previa is diagnosed when fetal vessels, distal to the Wharton’s jelly of the umbilical cord but proximal to insertion of the placenta, are below the presenting fetal part [6]. This is more common in placentas with a velamentous cord insertion or if vessels are running between lobes of a succenturiate-lobed placenta. Rapid fetal exsanguination is possible with vessel disturbance, and is the cause of high fetal mortality in this setting. The true incidence of vasa previa is difficult to measure, but is estimated at 1:2500 deliveries [8], and potentially 1:50 pregnancies with a velamentous cord insertion [4]. Causes of vasa previa have been suggested including limited intramniotic space, placenta growth toward a better perfused decidua in early pregnancy, or abnormal fetal abdominal pedicle growth in the decidua capsularis instead of the normal decidua basalis [7]. Risk factors include twin pregnancy, bilobed placenta, low-lying placenta in second or third trimester, steroid use, IVF pregnancy, and antepartum hemorrhage [5].

Vasa previa can be diagnosed antenatally with ultrasonographic imaging, or might be suspected by a velamentous or low cord insertion [3]. Transvaginal ultrasound as a screening tool for vasa previa has a reported sensitivity of between 83% and 93% [1]. As a missed antenatal diagnosis, it may present with vaginal bleeding that leads to rapid fetal deterioration or intrauterine death. Oyelese et al. [7] reported the largest case series on vasa previa of 155 neonates, with 28 patients who had delivered vaginally, of which 20 neonates died. Of those 28 vaginal deliveries, two were known or suspected vasa previa, however, 26 were unknown cases prior to delivery. Compared to cases of antenatally-diagnosed vasa previa in that study, the knowledge of a vasa previa was associated with significantly improved fetal survival, likely based on the ability to have a prophylactic C-section delivery and avoiding the potential catastrophe of a vaginal delivery. Expert opinion recommends timing delivery for vasa previa by C-section delivery is at 35–36 weeks [6] to avoid labor and potential rapid exsanguination. Furthermore, steroids at 28 weeks are suggested based on the higher rate of preterm delivery with vasa previa as well as hospitalization from 32 weeks onwards for quick delivery in case of vaginal bleeding [2].

Unfortunately, in the setting of a velamentous cord or with succenturate placental lobes, occult vasa previa may be a significant possibility. It has been investigated that screening for a vasa previa in selective cases, such as IVF, accessory placental lobes, or a velamentous cord insertion, has been found to be cost-effective with $15,764 per QALY-gained [1]. However, even when screening a high-risk population as in this case, it is possible that transvaginal ultrasound may not successfully diagnose vasa previa. With imperfect screening, management in the labor suite may encounter such a situation with an occult vasa previa. Antenatal diagnosis of vasa previa can facilitate appropriate caution and management with early delivery, and if vasa previa can be diagnosed intrapartum with the ability to consider safe C-section delivery, it should be performed. In the rare case when vasa previa is encountered in the urgent setting of the second stage of labor where vaginal delivery is imminent and inevitable, particularly in the premature infant, one might consider avoiding rupture of membranes and attempting an en caul delivery.

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References


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