

Velamentous insertion of the umbilical cord: intrapartum diagnosis

Inserção velamentosa do cordão umbilical: diagnóstico intraparto

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ABSTRACT

A report of velamentous insertion of the umbilical cord diagnosed during a normal twin delivery, a rare event with higher incidence in multiple pregnancies. Because it is generally asymptomatic, when the mother does not go into labor, pregnancy must be interrupted by performing a caesarean delivery. Previous vasa is a rare complication and can be lethal. Ultrasound is crucial for diagnosis.

Key words: Umbilical Cord; Vasa Previa; Prenatal Diagnosis; Pregnancy Complications; Pregnancy, Multiple; Ultrasonography, Doppler, Color.

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RESUMO

Relata-se a inserção velamentosa do cordão umbilical diagnosticada durante o parto gemelar normal, evento raro e com mais incidência em gestações múltiplas. É, em geral, assintomático, quando a paciente não entra em trabalho de parto, devendo a gestação ser interrompida por cesariana. A vasa prévia constitui-se em sua complicação rara, podendo ser letal. A ultrassonografia é fundamental para a realização de seu diagnóstico.

Palavras-chave: Cordão Umbilical; Vasa Previa; Complicações na Gravidez; Diagnóstico Pré-natal; Gravidez Múltipla; Ultrassonografia Doppler em Cores.

INTRODUCTION

Velamentous cord insertion (VCI) occurs when the umbilical vessels, unsupported by the umbilical cord or Wharton's jelly, cross the fetal membranes between the amnion and the chorion before its insertion in the placenta. The incidence rate for this event is of 0.2-1.8%. Vasa previa, a rare and serious complication of VCI, is caused by the passage of unprotected vessels between the lower segment of the uterus and the fetal region, exposing large fetal vessels to risk of compression and rupture, especially during labor.¹⁻⁴ Vasa previa has high rates of neonatal mortality, about 50 and 60% or 70 and 100% depending on whether the membranes are intact or ruptured, respectively.^{3,4}

Insertion of the umbilical cord occurs in approximately 99% of singleton pregnancies, directly in the placental tissues or in its margins, at the placental edges. VCI affects 1% of cases.⁴ Twin pregnancies are important risk factors for velamentous insertion, occurring at a rate of 10% of the abnormal insertions of the umbilical cord^{2,4}.

In the face of the negative repercussions associated with VCI, such as a major increase in intrauterine and neonatal morbidity and mortality, this report warns to the pos-

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sibility and importance of having an early diagnosis. To this end, color Doppler ultrasound can be used, a tried and tested method used in common risk prenatal care.

CASE REPORT

IISR, 32 years old, G3P2A0 (vaginal deliveries) with 37 gestational weeks, diamniotic twin pregnancy, was admitted at the Odete Valadares, Maternity Hospital in Belo Horizonte-MG, with rupture of membranes identified a few hours previously. She had a previous urinary tract infection, successfully treated. Her physical examination showed that both fetuses - 1 and 2 - presented 144 bpm heart sounds, normal uterine tone, fetal movement, uterine dynamics of 3/25/10". Dilation was 8 cm to the touch, cervix 90% effaced, amniotic sac ruptured releasing clear fluid and fetus 1 in the Delee vertex position 1. The patient progressed to normal delivery with no incidents. The ruptured sac belonged to fetus 1 (cephalic) and fetus 2 was in breech position, with intact membranes. No reduction of fetal heart rate was observed in either of them. After the placenta was spontaneously delivered, it was seen to be intact and have a velamentous cord insertion (Image 1). After delivery, the newborns progressed well and without complications in the Kangaroo Ward of the same hospital.

DISCUSSION

Several important changes have already been related to VCI, such as low birth weight, preterm birth, low Apgar scores from 1 to 5 minutes, intrauterine growth restriction (IUGR), congenital anomalies, retained placenta, and abnormal heart rate during labor. Its most severe complication is fetal exsanguination secondary to the vulnerable vessels being ruptured.^{2,4} Vasa previa is rare but severe, and possibly lethal.

Good results can be obtained with use of color Doppler ultrasound in the study and detection of VCI, with sensitivity and specificity between 69 and 100 and 95 and 100%, respectively.^{2,3} Sepulveda et al.⁶ (2003) have identified 832 cases of VCI in singleton pregnancies through routine obstetric ultrasound exams (transabdominal ultrasound and color Doppler), in pregnancies of at least 16 weeks and amniotic fluid volume appropriate for gestational age. The insertion site was found in 825 (99%) cases and unidentified in seven pregnancies with posterior placenta. Of the eight

cases suspected VCI, seven were confirmed in the immediate post-partum.⁶



Figure 1 - Macroscopic view of the placenta in the immediate postpartum.

VCI can be reliably detected in prenatal care by means of three-dimensional (3D) fetal US associated with multi-planar vision (in grayscale or color Doppler US) of the chord's surface at the point of placental insertion. The 3D images are of limited value in assessing the chord's insertion site.⁶

Nomiyama et al.² (1998) conducted a study with 857 pregnant women between 18 and 20 gestational weeks using obstetric transabdominal Doppler US. The pregnant women who presented VCI returned for a new US with 30 to 36 gestational weeks. Whenever the insertion site of the umbilical cord was not visualized, a serial study of transvaginal Doppler US was used. In this study, 20 additional seconds were needed during the third quarter routine transabdominal exam to perform the Doppler study of the umbilical cord insertion site, and possibly detect the VCI. This research showed 100% (5/5) sensitivity, 99.8% (580/581) specificity, positive predictive value of 83%

(5/6) and negative predictive value of 100% (580/580) for the finding of CVI²

CONCLUSION

The early diagnosis of VCI during prenatal care is crucial in helping choose the best mode of delivery in advance. The termination of pregnancy by cesarean section should be performed electively (scheduled in advance), to prevent patients from going into labor. Thus, when risk factors such as vasa previa are identified, possible complications including increased neonatal mortality can be avoided^{3,5}

VCI has not been investigated in singleton pregnancies with routine US in low obstetric risk prenatal care.⁴ Several judicious studies suggest that VCI should be also analyzed in singleton pregnancies.⁶ Color Doppler obstetric US can efficiently detect abnormalities at the insertion site of the umbilical cord. It is therefore important to adopt identification of umbilical cord insertion site in routine obstetric US, and not only in high-risk pregnancies such as twin pregnancies.⁵ Transvaginal Doppler US should be used to study the cervix region and lower uterine segments for detecting vasa previa.^{2,5} With regard to using 3D US, several studies have shown that assessing the cord's placental insertion can be difficult when carried out in the third quarter, in comparison to the same evaluation in the second quarter. Moreover, 3D US entailed additional exam time of 10 to 20 minutes.⁴

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