

Delicate threads: A case study on velamentous placenta and its clinical significance



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ABSTRACT

Velamentous placenta insertion is a rare and potentially serious pregnancy complication involving the abnormal attachment of the umbilical cord to the fetal membranes rather than to the placenta. This case report details the management of a 23-year-old primigravida at 38 weeks of gestation who presented to the labor room in spontaneous labor. Initial examination revealed a term-size uterus, vertex presentation, and moderate contractions, with a fetal heart rate of 144/min. Despite an unremarkable start to labor, persistent fetal heart decelerations post-amniotomy led to the discovery of velamentous insertion of the placental cord. This case discusses the challenges, decision-making process, and outcomes associated with this rare condition, ultimately resulting in an uneventful postoperative period and successful discharge on the 5th day for both mother and baby.

Key words: Velamentous; Placenta; Vasa previa; Cord abnormalities

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INTRODUCTION

Velamentous placental cord insertion is a rare obstetric complication characterized by the umbilical cord attaching to the membranes rather than directly into the placenta.¹ This case highlights the importance of recognizing and managing velamentous insertion during labor, emphasizing the need for timely interventions to ensure optimal maternal and neonatal outcomes. The prevalence of velamentous placenta is relatively low, estimated to occur in approximately 1% of all pregnancies. However, its significance lies in the potential complications it introduces, such as vasa previa and fetal vessels vulnerability to compression during labor.² This condition is often associated with pregnancies involving a single umbilical artery, multiple gestations, advanced maternal age, and assisted reproductive technologies.³ Understanding the velamentous placenta is essential for health-care professionals involved in obstetric

care to facilitate early detection, timely interventions, and appropriate management strategies.⁴ In this context, this article provides an in-depth exploration of a specific case with velamentous placenta during labor, emphasizing the challenges faced, the decision-making process, and the favorable outcomes achieved through meticulous medical care.

CASE REPORT

A 23-year-old primigravida at 38 weeks of gestation presented in spontaneous labor with a term-size uterus, vertex presentation, and moderate contractions. Fetal heart rate was recorded at 144/min. Vaginal examination revealed a cervix at 4 cm dilation, 40% effacement, station at -1, and intact membranes. In an attempt to progress labor, an amniotomy was performed, resulting in persistent fetal heart decelerations. Due to the patient being remote for

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vaginal delivery (cervix at 6 cm dilation), a decision was made for a cesarean section. The discovery of velamentous insertion during the perioperative examination highlighted the challenges of diagnosing this condition during labor. As shown in Figure 1 approximately 4 cm of the cord traversed through the membranes, and some vessels were identified in the lower uterine segment, though unruptured. This finding underscored the need for careful pre-operative assessments. The post-operative period was uneventful, emphasizing the success of the chosen intervention. Both the mother and the baby were discharged on the 5th day, showcasing the effectiveness of timely decision-making and comprehensive post-operative care.

DISCUSSION

In a normal pregnancy, the umbilical cord is attached directly to the placenta, ensuring a secure and protected connection. In velamentous insertion, the umbilical cord inserts into the fetal membranes, and blood vessels travel through the membranes before reaching the placenta. Velamentous insertion is associated with certain risk factors, including multiple pregnancies, advanced maternal age, and a history of uterine surgery or abnormalities.⁵ One of the primary concerns with velamentous placenta is the increased risk of vasa previa. This occurs when the unprotected blood vessels in the membranes are situated over the cervix. If these vessels rupture, it can lead to rapid and life-threatening fetal hemorrhage during labor.⁶

Velamentous placenta insertion is often diagnosed through prenatal ultrasound. It allows health-care providers to visualize the location of the umbilical cord and identify any abnormalities in its attachment. Management depends on the severity of the condition. Close monitoring through regular ultrasounds is crucial to assess the fetal well-being and identify any potential complications. In severe cases, early delivery may be recommended to reduce the risk of vasa previa-related complications.⁷

This case report presents a nuanced clinical scenario involving a primigravida with velamentous placental cord insertion at 38 weeks of gestation. The multidisciplinary approach involving obstetricians, anesthesiologists, and neonatal specialists played a crucial role in the successful management of this rare complication. The decision for cesarean section, based on persistent fetal heart decelerations and the identified velamentous insertion, exemplified the importance of adapting the delivery plan to the unique circumstances of each case. During the cesarean section, particular attention was given to the velamentous insertion of the placental cord. Careful dissection was performed to avoid trauma to the vessels



Figure 1: Velamentous placenta insertion

traversing through the membranes. The unruptured state of the vessels in the lower uterine segment contributed to the success of the surgery, allowing for a controlled and meticulous procedure. The decision for cesarean section in this case not only addressed the persistent fetal heart decelerations but also prioritized maternal and neonatal safety. By opting for surgical delivery, potential complications associated with velamentous insertion, such as vasa previa, were mitigated, ensuring the well-being of both the mother and the baby.⁸

The post-operative period was closely monitored to ensure optimal recovery for both the mother and the newborn. Comprehensive post-operative care included pain management, surveillance for signs of infection or bleeding, and support for breastfeeding initiation. The absence of post-operative complications underscored the success of the surgical intervention and the importance of diligent post-operative care.

CONCLUSION

The favorable post-operative period and timely discharge signify the positive outcome achieved through vigilant monitoring, prompt decision-making, and comprehensive post-operative care. Further research and continued medical education are imperative to enhance awareness and understanding of velamentous insertion, contributing to improved management strategies and outcomes for both mothers and infants facing this rare obstetric challenge.

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REFERENCES

1. Hasegawa J, Matsuoka R, Ichizuka K, Sekizawa A, Farina A and Okai T. Velamentous cord insertion into the lower third of the uterus is associated with intrapartum fetal heart rate abnormalities. *Ultrasound Obstet Gynecol.* 2006;27(4):425-429. <https://doi.org/10.1002/uog.2645>
2. Oyelese Y. Placenta previa and vasa previa: Time to leave the dark ages. *Ultrasound Obstet Gynecol.* 2001;18(2):96-99. <https://doi.org/10.1046/j.1469-0705.2001.00511.x>
3. Pinar H and Carpenter M. Placenta and umbilical cord abnormalities seen with stillbirth. *Clin Obstet Gynecol.* 2010;53(3):656-672. <https://doi.org/10.1097/GRF.0b013e3181eb68fe>
4. Ranzini AC and Oyelese Y. How to screen for vasa previa. *Ultrasound Obstet Gynecol.* 2021;57(5):720-725. <https://doi.org/10.1002/uog.23520>
5. Westcott JM, Simpson S, Chasen S, Vieira L, Stone J, Doulaveris G, et al. Prenatally diagnosed vasa previa: Association with adverse obstetrical and neonatal outcomes. *Am J Obstet Gynecol MFM.* 2020;2(4):100206. <https://doi.org/10.1016/j.ajogmf.2020.100206>
6. Buchanan-Hughes A, Bobrowska A, Visintin C, Attilakos G and Marshall J. Velamentous cord insertion: Results from a rapid review of incidence, risk factors, adverse outcomes and screening. *Syst Rev.* 2020;9(1):147. <https://doi.org/10.1186/s13643-020-01355-0>
7. Zhang W, Geris S, Al-Emara N, Ramadan G, Sotiriadis A and Akolekar R. Perinatal outcome of pregnancies with prenatal diagnosis of vasa previa: Systematic review and meta-analysis. *Ultrasound Obstet Gynecol.* 2021;57(5):710-719. <https://doi.org/10.1002/uog.22166>
8. Mitchell SJ, Ngo G, Maurel KA, Hasegawa J, Arakaki T, Melcer Y, et al. Timing of birth and adverse pregnancy outcomes in cases of prenatally diagnosed vasa previa: A systematic review and meta-analysis. *Am J Obstet Gynecol.* 2022;227(2):173-181.e24. <https://doi.org/10.1016/j.ajog.2022.03.006>

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