www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Short Report

Open Access, Volume 6

Prenatal diagnosis of vasa previa and cervical shortening

***Corresponding Author:**

Miguel A Barber Marrero

Department of Obstetrics and Gynecology, Vithas Las Palmas Universitary Hospital, Atlantico medio University, Spain.

Email: barbermi@vithas.es

Received: Jun 09, 2025

Accepted: Jul 08, 2025

Published: Jul 15, 2025

Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/3686

Abstract

Vasa previa is an uncommon obstetric condition characterized by unprotected fetal vessels traversing the fetal membranes, located within 2 cm of the internal cervical os, anterior to the fetal presenting part. The lack of Wharton's jelly or placental tissue coverage predisposes these vessels to rupture during labor or membrane rupture, with dire fetal outcomes. Known risk factors include velamentous cord insertion, placenta previa, succenturiate placenta, multiple pregnancy, and assisted reproductive technologies. We report a 47 year old G1 patient at 20+3 weeks gestation from oocyte donation, whose transvaginal Doppler ultrasound revealed vasa previa, velamentous cord insertion, placenta previa, and cervical shortening. The patient was hospitalized, received antenatal corticosteroids, and underwent elective cesarean section at 34 weeks. A healthy female newborn weighing 2,420 g with Apgar scores of 10/10 was delivered. Intraoperatively, unprotected fetal vessels and velamentous cord insertion were confirmed. Early prenatal diagnosis allowed timely intervention, ensuring favorable perinatal outcome. Systematic transvaginal Doppler evaluation in at risk pregnancies is essential to detect vasa previa, permitting planned delivery before labor onset and significantly improving neonatal survival.

Keywords: Vasa previa; Velamentous cord insertion; Ultrasound; Cervical assessment

Introduction

Vasa previa (VP) denotes the presence of fetal blood vessels crossing the internal cervical os unprotected by Wharton's jelly or placental tissue [1,2]. The incidence is approximately 1 in 2,500 pregnancies [3]. Two main variants are recognized: Type I (25-62%), associated with velamentous cord insertion; and Type II (33-75%), resulting from bilobed or succenturiate placentas [4-6]. Common risk factors include placenta previa, velamentous insertion, assisted reproductive technologies, multiple pregnancy, and low implantation of the cord [7-11]. Undiagnosed prenatally, VP carries up to 33-100% perinatal mortality and often necessitates neonatal transfusion due to acute hypovolemia from vessel rupture [12]. The classic presentation includes painless vaginal bleeding and fetal bradycardia post-membrane rupture [12]. Early diagnosis enables elective cesarean delivery, which dramatically improves outcomes [12-13].

Case presentation

A 47-year-old primigravid patient achieved pregnancy via oocyte donation. At 20+3 weeks, routine transvaginal ultrasound showed a low-lying placenta with velamentous cord insertion and vessels overlying a cervical length of 14 mm (Figures 1 & 2). Follow-up scans at 30 and 32 weeks confirmed velamentous insertion at 9 mm from the internal os with vessels crossing the lower uterine segment. The patient was admitted for monitoring and received 12 mg intramuscular betamethasone for fetal lung maturation. At 34 weeks, a planned cesarean section was performed, delivering a female infant weighing 2,420 g with Apgar 10/10. Intraoperative findings confirmed the diagnosis (Figures 3 & 4).

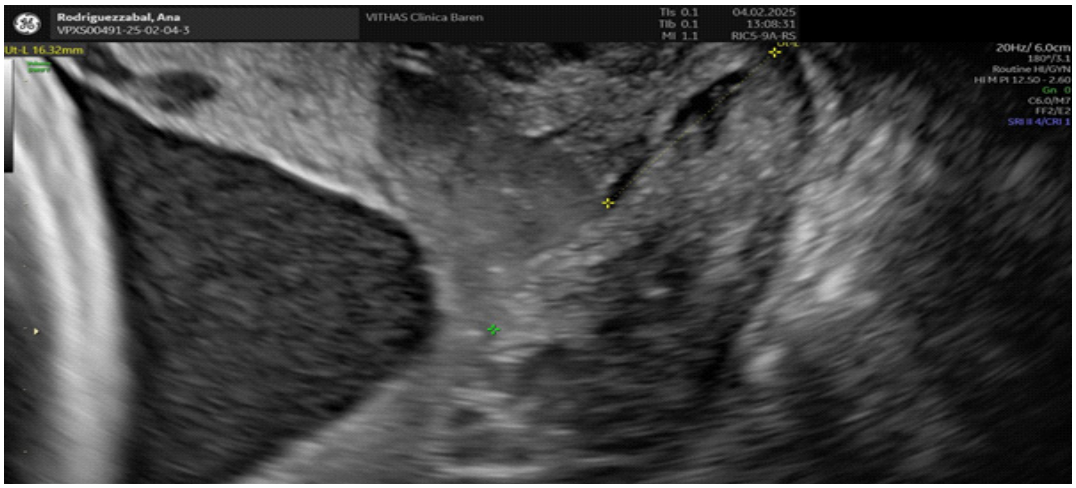

Figure 1: Fetal vessels located in front of the fetal presentation at the internal cervical os.

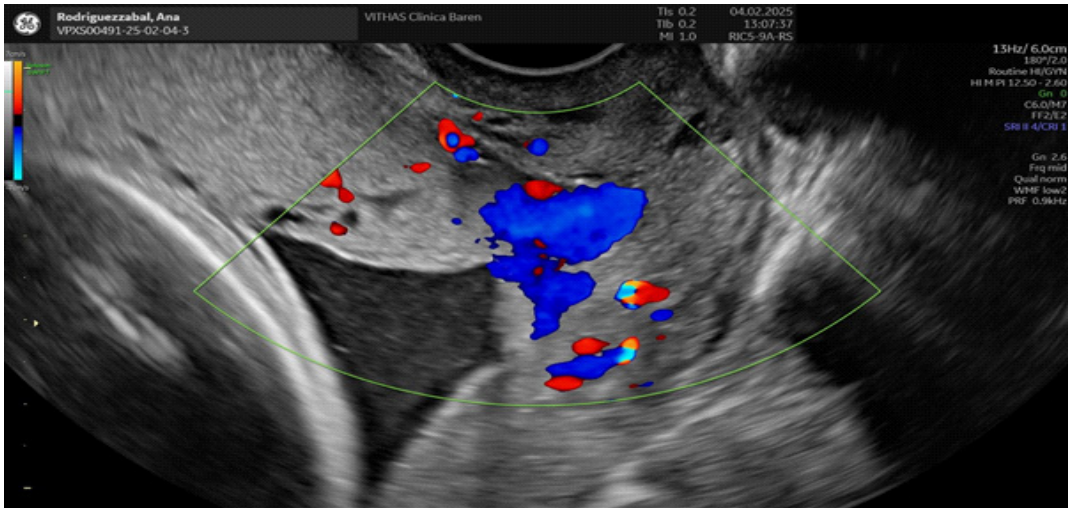

Figure 2: Vascular-like structure in front of the internal cervical os, showing umbilical flow in Doppler study.

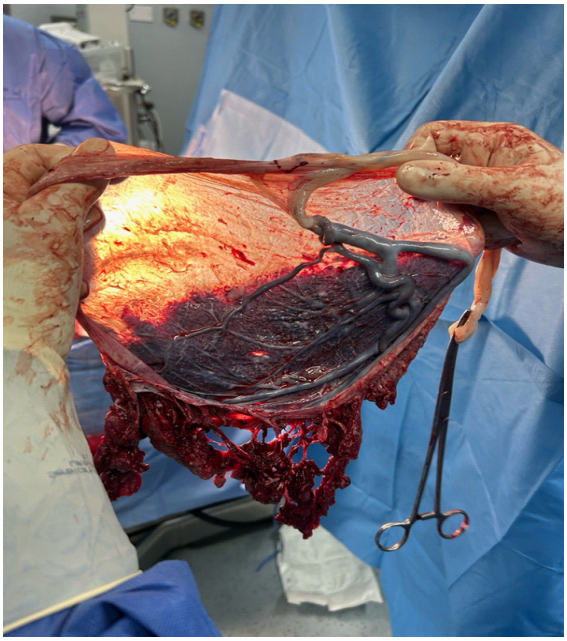

Figure 3: Unprotected fetal vessels from the placenta.

Figure 4: Velamentous insertion of the umbilical cord.

Discussion

VP is rare but potentially fatal. Incidence ranges from 0.17 to 2.2 per 1,000 pregnancies [3,13], with many cases undetected. Velamentous cord insertion and bilobed or succenturiate placenta are primary risk factors, with approximately 2% of velamentous insertions complicated by VP [14]. Up to 95% of cases present at least one risk factor [14,15]. Doppler-enhanced transvaginal ultrasound offers near-perfect diagnostic accuracy (sensitivity 100%, specificity 99%) in high-risk pregnancies [17-19]. Systematic cord insertion assessment during second- or third-trimester ultrasound—including orthogonal approaches and maternal positioning when needed—is advocated [12-20]. Color and pulsed Doppler help distinguish VP from marginal sinuses, amniotic bands, or free cord loops, reducing the false-positive rate (10-16%) [12,13,17-20].

Diagnostic criteria include the sonographic visualization of linear vessels overlying the internal os within 2 cm, lacking protection, and demonstrating fetal flow on Doppler [21]. Prenatal detection boosts neonatal survival to 97-100%, compared to 40-44% without [3,4]; neonatal transfusion requirements drop from 58% to 3.4%.

Clinical guidelines recommend hospitalization by 30-32 weeks, corticosteroids between 28-32 weeks, and elective cesarean delivery at 34-36 weeks prior to labor [21-24]. In cases of antepartum bleeding, urgent cesarean delivery with immediate access to O negative blood is essential [21-24]. Research also supports early first-trimester assessment of cord insertion to facilitate earlier VP identification [25].

Conclusion

In pregnancies with placental anomalies or risk factors—such as low-lying placenta, multiple gestation, or assisted reproduction—transvaginal ultrasound with color Doppler should be used to carefully assess cord insertion and the internal cervical os. Prompt detection of vasa previa allows elective delivery planning and drastically reduces fetal morbidity and mortality.

References

1. Gagnon R. No.231- Guidelines for the Management of Vasa Previa. J Obstet Gynecol Can. 2017; 39: e415-21.
2. Sullivan EA, Javid N, Duncombe G, et al. Vasa Previa Diagnosis, Clinical Practice, and Outcomes in Australia. Obstet Gynecol. 2017; 130: 591-598.
3. Oyelese Y, Catanzarite V, Prefumo F, et al. Vasa previa: the impact of prenatal diagnosis on outcomes. Obstet Gynecol. 2004; 103: 937-942.
4. Catanzarite V, Maida C, Thomas W, et al. Prenatal sonographic diagnosis of vasa previa: ultrasound findings and obstetric outcome in ten cases. Ultrasound Obstet Gynecol. 2001; 18: 109-115.
5. Robert JA, Sepulveda W. Fetal exsanguination from ruptured vasa previa: still a catastrophic event in modern obstetrics. J Obstet Gynaecol. 2003; 23: 574.
6. Stafford IP, Neumann DE, Jarrell H. Abnormal placental structure and vasa previa. Confirmed relationship. J Ultrasound Med. 2004; 23: 1521-1522.
7. Ruiter L, Kok N, Limpens J, et al. Incidence of and risk indicators for vasa praevia: a systematic review. BJOG. 2016; 123: 1278-1287.
8. Bohîltea RE, Cîrstoiu MM, Ciuvica A, et al. Velamentous insertion of umbilical cord with vasa praevia: case series and literature review. J Med Life. 2016; 9: 126-129.
9. Fung TY, Lau TK. Poor perinatal outcome associated with vasa previa: is it preventable? Ultrasound Obstet Gynecol. 1998; 12: 430-433.
10. François K, Mayer S, Harris C, Perlow JH. Association of vasa previa at delivery with a history of second-trimester placenta previa. J Reprod Med. 2003; 48: 771-774.
11. Spellacy WN. Vasa previa, multiple pregnancies, and in vitro fertilization clarification. Fertil Steril. 2003; 79: 1254-1255.
12. Pérez Rodríguez MJ, de Frutos Moneo E, Nieto Llanos S, Clemente Pollán J. Rupture of vasa previa with velamentous cord insertion: importance of prenatal diagnosis. An Pediatr (Barc). 2014; 81: 393-395.
13. Ferrero Viñas A, Cortejoso Hernández J, de Miguel Manso S, et al. Vasa previa, prenatal diagnosis and obstetric management. Clin Invest Ginecol Obstet. 2020; 47(1): 18-21.
14. Toivonen S, Heinonen S, Anttila M, Kosma VM, Saarikoski S. Reproductive risk factors, Doppler findings, and outcomes in placental abruption: population-based study. Am J Perinatol. 2002; 19: 451-460.
15. Naeye RL. Disorders of the placenta, fetus and neonate: diagnosis and clinical significance. Mosby-Year Book; 1991.
16. Nomiyama M, Toyota Y, Kawano H. Antenatal diagnosis of velamentous cord insertion and vasa previa with color Doppler. Ultrasound Obstet Gynecol. 1998; 12: 426-429.
17. Canterino JC, Mondestin Sorrentino M, Muench MV, et al. Vasa previa: prenatal diagnosis and evaluation with 3 dimensional sonography and power angiography. J Ultrasound Med. 2005; 24: 721-724.
18. Sauerbrei EE, Davies GL. Diagnosis of vasa previa with endovaginal color and power Doppler: two cases. J Ultrasound Med. 1998; 17: 393-398.
19. Oyelese Y, Jha RC, Moxley MD, et al. Magnetic resonance imaging of vasa previa. BJOG. 2003; 110: 1127-1128.
20. Devesa R, Muñoz A, Torrents M, Carrera JM. Prenatal diagnosis of vasa previa with transvaginal color Doppler. Ultrasound Obstet Gynecol. 1996; 8: 139-141.
21. Sepulveda W, Rojas I, Robert JA, Schnapp C, Alcalde JL. Prenatal detection of velamentous cord insertion: prospective Doppler study. Ultrasound Obstet Gynecol. 2003; 21: 564-569.
22. Daly Jones E, John A, Leahy A, McKenna C, Sepulveda W. Vasa praevia; a preventable tragedy. Ultrasound. 2008; 16: 8-14.
23. Nomiyama M, Toyota Y, H. Kawano H. Antenatal diagnosis of velamentous umbilical cord insertion and vasa previa with color Doppler imaging. Ultrasound Obstet Gynecol,1998; 18: 426-429.
24. Baulies S, Maiz N, Muñoz A, et al. Prenatal ultrasound diagnosis of vasa previa and risk factor analysis. Prenat Diagn. 2007; 27: 595-599.
25. Derbala Y, Grochal F, Jeanty P. Vasa previa. J Prenat Med. 2007; 1: 2-13.