

Case Report: A Prenatally Diagnosed Case Of Vasa Praevia And Its Subsequent Management

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ABSTRACT

Vasa Praevia is uncommon and often goes undiagnosed, leading to significant foetal morbidity and mortality. Below illustrates that this condition can be diagnosed antenatally and the precautionary measures taken to ensure an a good foetal outcome.

Keywords: foetal exsanguination, intrapartum haemorrhage, placental aberrations

A healthy 33-year-old grandmultiparous housewife (Madam Z) booked in Singapore General Hospital antenatal clinic at 22 weeks gestation. She has previously undergone 6 normal vaginal deliveries, and 1 elective caesarean section for breech. Booking investigations and parameters were normal. Screening scan showed parameters equal to dates and no foetal abnormalities. However, placenta was noted to be lower posterior reaching cervical os. Subsequent growth scan at 26 weeks was satisfactory, but placenta was still low-lying.

At 31 weeks gestation, patient presented to the labour ward for 1 day history of painless, mild antepartum haemorrhage. Foetal movement was satisfactory. Upon admission, blood pressure was 128/68mmHg and pulse rate was 80 beats per minute. Uterus felt soft with no contractions and non-tender. Lie of the foetus was longitudinal and presentation cephalic. Speculum showed a closed cervical os. Foetal well-being was confirmed by a reactive cardiotocograph.

Ultrasound showed a type 3 posterior placenta praevia with tip reaching cervical os. There were small vessels crossing the internal os, raising the suspicion of vasa praevia. There were no retroplacental

clots and estimated foetal weight 1,997gm. Differential diagnosis included vasa praevia and umbilical cord overlying the cervical os. Repeat scan an hour later excluded the possibility of umbilical cord lying above the cervical os, thereby increasing the likelihood of vasa praevia (see Fig. 1, overleaf). Doppler study was used to confirm the presence of vessels.

Haemoglobin was 10.1g/dl and coagulation screen normal. Oral nifedipine for tocolysis and intramuscular betamethasone to improve foetal lung maturity was administered in anticipation of a preterm delivery should a massive antepartum haemorrhage occur. Patient had only minimal per vaginal staining during her 3-day inpatient stay and subsequently discharged against medical advice.

Madam Z defaulted subsequent antenatal follow-up and presented 1 month later at 36 weeks gestation with a second episode of painless antepartum haemorrhage, soaking 3 pads. Cardiotocograph demonstrated a reactive trace and weak irregular uterine contractions. Admission haemoglobin was 11.5g/dl and coagulation screen normal. Patient underwent an emergency caesarean

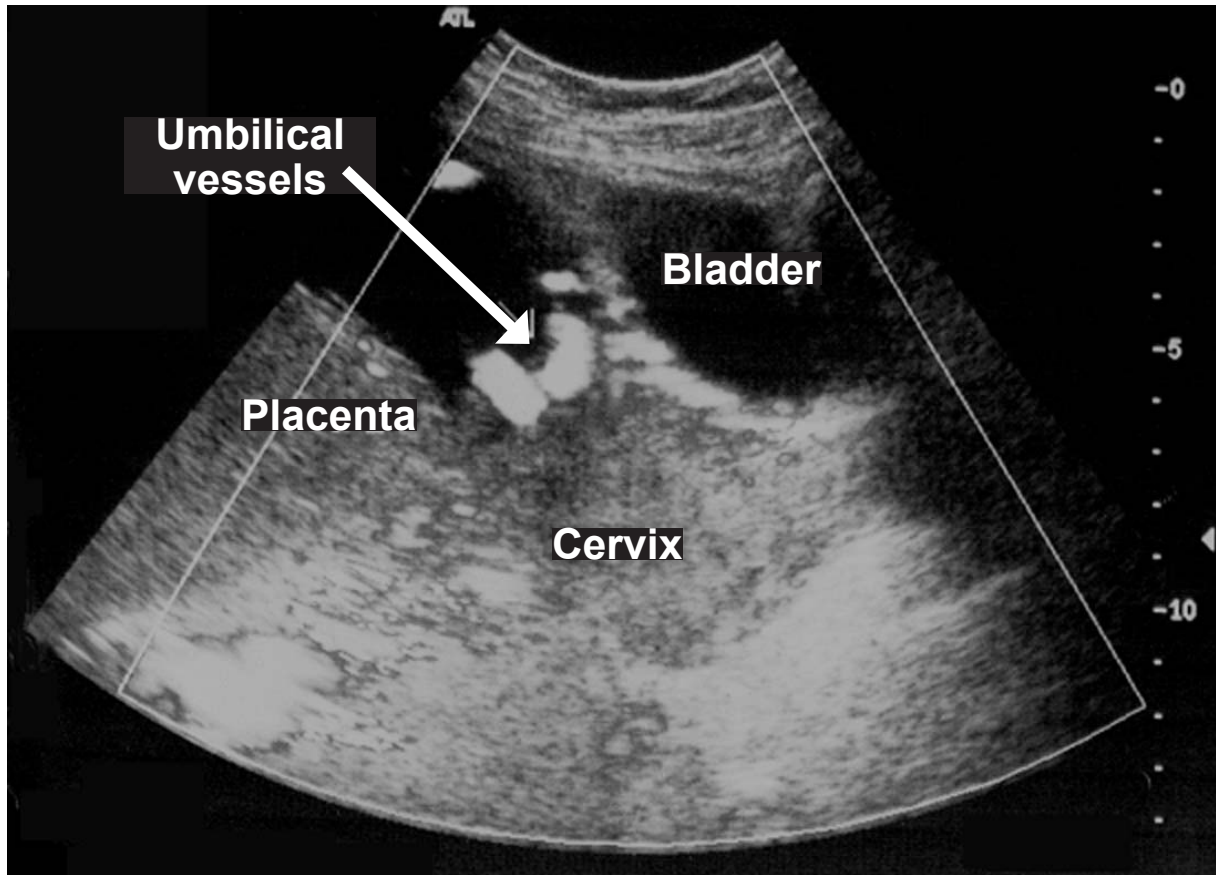


Fig. 1. Ultrasound diagnosis of vasa praevia with Doppler study.

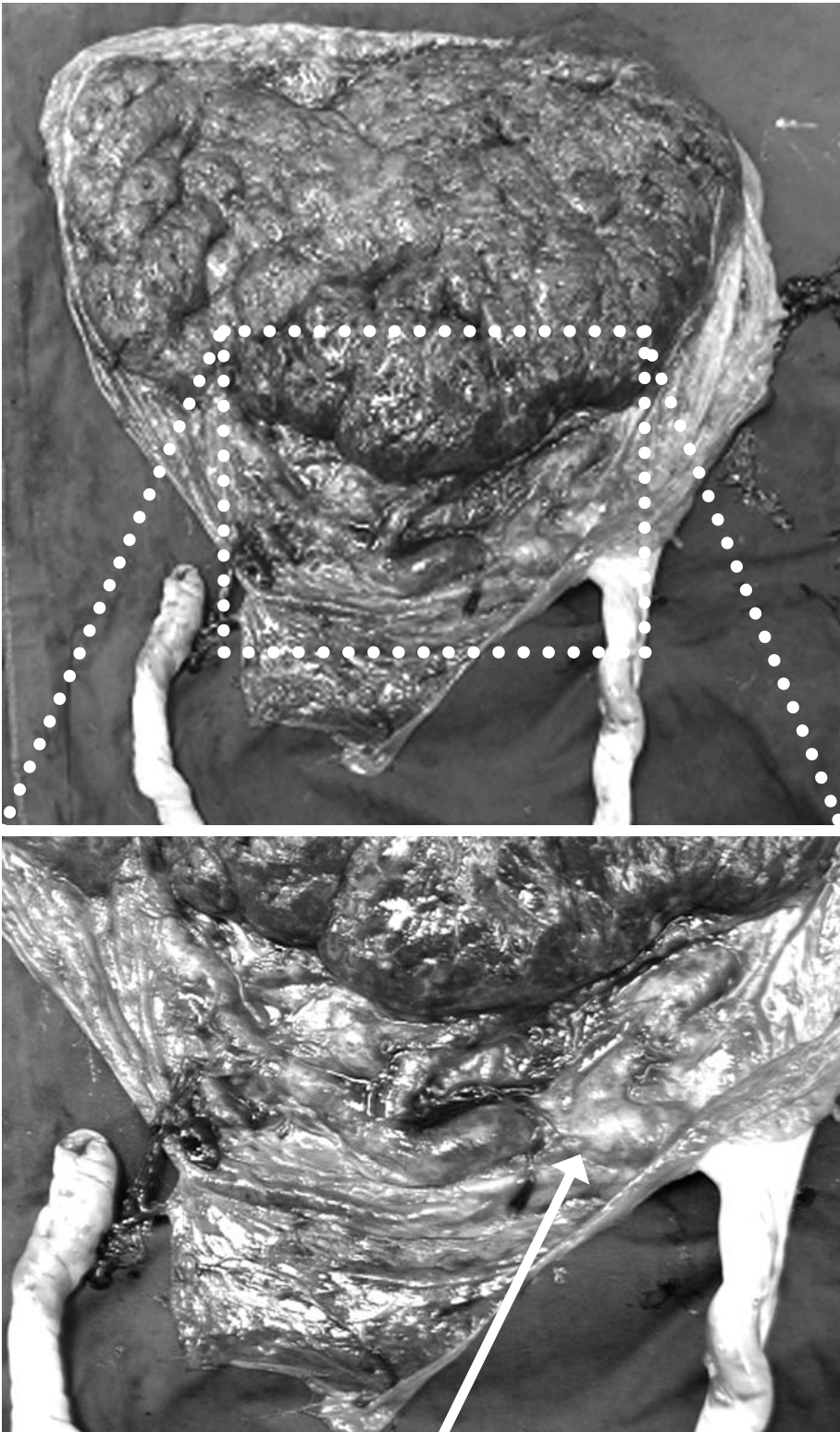
section in view of antepartum haemorrhage with threatened pre-term labour, placenta praevia and vasa praevia. She declined postpartum sterilisation. Intraoperatively, vasa praevia was confirmed (see Fig. 2, overleaf). Placenta was posterior and low-lying. Both tubes and ovaries were normal. Baby was delivered with Apgar score of 8 at 1 minute and 9 at 5 minutes. Birthweight was 3,565gm. Madam Z had an uneventful post-operative recovery and both mother and baby were discharged on the third post-operative day.

DISCUSSION

Vasa praevia is an uncommon condition (occurring in about 1 in 3,000 births), whereby the foetal blood vessels traverse the lower uterine segment beneath the presenting part of the foetus, with neither the support of the umbilical cord nor the placenta¹. Vasa praevia can result in painless vaginal bleeding in the second and third trimesters of pregnancy at time of spontaneous rupture of membranes, amniotomy or cervical

dilatation. Rapid foetal exsanguination leading to high perinatal morbidity or mortality results if this condition is not recognised prior to the abovementioned events^{2,3}. Even if the foetal blood vessels do not rupture, the baby may suffer from lack of oxygen due to compression on the blood vessels between the baby and the walls of the birth canal⁴.

Risk factors for vasa praevia include placental abnormalities like placental praevia, abnormally shaped placentas (bilobed or succenturiated) or multiple pregnancy. Previous studies have quoted a 32.9% incidence of vasa praevia amongst patients with placental abnormalities, compared to the estimated prevalence in the general population of 4–5%^{5–8}. Studies also suggest that women whose pregnancies result from in vitro fertilisation (IVF) may also be at increased risk. A study of 100 placentas from IVF pregnancies revealed 14 cases of velamentous insertion among them^{9,10}.



Vessels near cord insertion

Fig. 2. Velamentous cord insertion — notice cord insertion away from the placenta bed.

In 1987, Gianopoulos *et al* first described the antepartum ultrasonographic diagnosis of vasa praevia¹¹. Before this, most reports had focused on the universal dismal outcomes with pregnancies complicated by vasa praevia. Since that initial report, several small case series have demonstrated the ability of ultrasonography and colour Doppler to diagnose vasa praevia prenatally and have suggested improved outcomes associated with prenatal diagnosis of the condition^{12,13}.

Vasa praevia can be detected during pregnancy as early as the 16th week of pregnancy with the use of high resolution transvaginal sonography in combination with colour Doppler¹⁴. Checking the placental cord connection for velamentous cord insertion with colour Doppler during all routine obstetrical ultrasounds is recommended. In addition, vasa praevia must be ruled out in all cases of suspected cases of velamentous cord insertion, placenta praevia, abnormally shaped placentas, multiple pregnancies or pregnancies resulting from in vitro fertilisation¹⁵⁻¹⁸. It is important to look for vessels near the cervix. However, not all cases of vasa praevia would necessarily be recognised by sonography, due to body habitus. Besides, vessels that course over the cervix in a transverse rather than an anteroposterior direction may be missed¹⁹.

When diagnosed during the antepartum period, treatment plans include tocolytics to inhibit any threatened pre-term labour and steroid treatment given to develop foetal lung maturity, in anticipation for any pre-term delivery. Patients should be advised to avoid sexual intercourse, vaginal examinations and heavy straining during bowel (use of stool softeners) softeners. Source of per vaginal bleeding (foetal or maternal) should be determined. Good outcomes with vasa praevia depend primarily on prenatal diagnosis and caesarean delivery at 35 weeks of gestation or earlier, should rupture of membranes, labour, or significant bleeding occur²⁰. The mean gestational age for delivery in prenatally diagnosed cases was 34.9, ± 2.5 weeks, with 27.9% requiring emergency cesarean delivery because of bleeding, pre-term labour or premature rupture of membranes. The mild risks associated with prematurity at 35 weeks of gestation are outweighed by the risk of a dismal outcome should the membranes rupture.

CONCLUSION

The learning point of this article is that every case of placenta praevia should be screened on high resolution ultrasound machine with Doppler study for vasa praevia. In addition, there is a case for routine screening for vasa praevia especially since the condition, though rare, is catastrophic.

A point to note is that not all cases of vasa praevia can be diagnosed prenatally. Hence, a high index of suspicion is still needed at the time of amniotomy is required, should there be foetal deceleration or vaginal bleeding. However, the foetal outcome in clinically diagnosed vasa praevia is almost invariably poor.

REFERENCES

1. Cunningham FG, et al. Abnormalities of the umbilical cord, in Williams Obstetrics, 21st edition, New York, McGraw-Hill Medical Publishing Division, 2001, 831–835.
2. Vago T, Caspi E. Antepartum bleeding due to injury of velamentous placental vessels. *Obstet Gynecol* 1962; 20:671-5.
3. Oyelese KO, Turner M, Lees C, Campbell S. Vasa Previa: An Avoidable Obstetric Tragedy. *Obstet and Gynec Survey* 1999; Volume 54, Number 2:138–144.
4. International Vasa Previa Foundation. Vasa previa. *Moline, IL*, 6/20/02.
5. Evans GM. Vasa praevia. *Br Med J* 1952;2:1243.
6. McAfee CHG. Placenta praevia — A study of 174 cases. *J Obstet Gynaecol Br Emp* 1945; 52:313.
7. Schachter M, Tovbin Y, Arieli S, Friedler S, Ron-El R, Sherman D, Benson RC, Driscoll SG. The bipartite placenta and its clinical features. *Am J Obstet Gynecol* 1970; 107:1013–7.
8. Bernischke K, Kaufmann P. Placental shape aberrations. In: Benirschke K, Kaufmann P, editors. *Pathology of the human placenta*. 4th ed. New York (NY): Springer, 2000; 399–418.
9. In vitro-fertilization is a risk factor for vasa previa. *Fertil Steril* 2002; 78:642–3.
10. Englert Y, Imbert MC, Van Rosendaal E, Belaisch J, Segal L, Feichtinger W, et al. Morphological anomalies in the placentae of IVF pregnancies: preliminary report of a multicentric study. *Hum Reprod* 1987; 2:155.
11. Gianopoulos J, Carver T, Tomich P et al. Diagnosis of vasa previa with ultrasonography. *Obstet Gynecol* 1987; 69 (3 Pt 2):488–491.
12. Meyer WJ, Blumenthal L, Cadkin A et al. Vasa previa: Prenatal diagnosis with transvaginal color Doppler flow imaging. *Am J Obstet Gynecol* 1993; 169:1627–1629.
13. Hata K, Hata T, Fujiwaki R, Ariyuki Y, Manabe A, Kitao M. An accurate antenatal diagnosis of vasa previa with transvaginal color Doppler ultrasonography. *Am J Obstet Gynecol* 1994; 171:265–7.
14. Catanzarite V, Maida C, Thomas W, Mendoza A, Stanco L, Piacquadio KM. Prenatal sonographic diagnosis of vasa previa: ultrasound findings and obstetric outcome in ten cases. *Ultrasound Obstet Gynecol* 2001; 17: 109–15.
15. Daly-Jones E, Hollingsworth J, Sepulveda W. Vasa praevia: second trimester diagnosis using colour flow imaging. *Br J Obstet Gynaecol* 1996; 103:284–.
16. Vasa praevia: second trimester diagnosis using colour flow imaging. *Br J Obstet Gynaecol* 1996; 103:284.

17. Sepulveda W, Rojas I, Robert JA, Schnapp C, Alcalde JL. Prenatal detection of velamentous insertion of the umbilical cord: a prospective color Doppler ultrasound study. *Ultrasound Obstet Gynecol* 2003; 21:564–9.
18. Daly-Jones E, Hollingsworth J, Sepul Francois 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: 771–4.
19. Oyelese Y, Spong C, Fernandez MA, McLaren RA. Second trimester low-lying placenta and in-vitro fertilization? Exclude vasa previa. *J Matern Fetal Med.* 2000; 9:370–2.
20. Oyelese KO, Schwärzler P, Coates S, Sanusi FA, Hamid R, Campbell S. A strategy for reducing the mortality rate from vasa previa using transvaginal sonography and color Doppler. *Ultrasound Obstet Gynecol* 1998; 12:434–.