Vasa Praevia : A Diagnostic Algorithm

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Purpose: To propose a simple diagnostic algorithm for the routine second-trimester diagnosis of vasa praevia by ultrasound (see Figure 2).

Definition: Vasa praevia (*previa*) are fetal vessels crossing or running in close proximity to the inner cervical os. These vessels course within the membranes and are at risk of rupture when the supporting membranes rupture.

Risk factors: Conditions associated with vasa praevia include; low-lying placenta or placenta praevia, multiple pregnancies, multi-lobed placentas, velamentous insertion, placenta membranacea, in-vitro fertilization (about 1:300); patients with vaginal bleeding should also be considered at risk.

Prevalence: 1.5 - 4:10,000. A recent study found a prevalence of 7:10,000. About 10% of vasa praevia occur in twins. It is likely that the condition is under diagnosed and under reported. In cases involving in-vitro fertilization cases the prevalence is 1:300.

History: The first ultrasound description of vasa praevia was made in 1987.

Pathogenesis: The 2 main causes of vasa praevia are; velamentous insertions and succenturiate or bilobed placentas. Less commonly, a vessel that courses over the edge of a marginal placenta or a placenta praevia may become a vasa praevia after involution of its marginal or praevia portion and development over a better vascularised area (trophotropism).

Diagnosis: Antenatally diagnosis is made by ultrasound using colour (power) Doppler. The characteristic image is that of a vessel coursing over the inner os (see Figure 1):
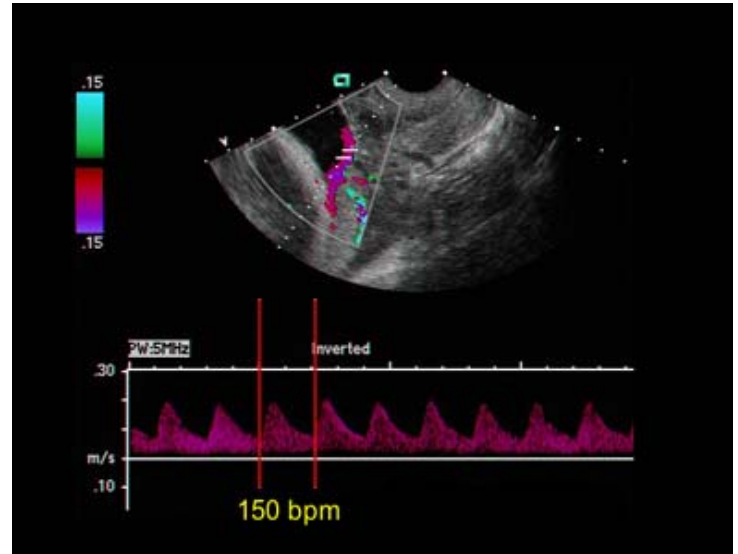

Figure 1. TVS ultrasound using colour Doppler confirming the diagnosis of vasa praevia – note also the high frequency fetal heart rate at the level of vasa praevia. This helps to distinguish vasa praevia from maternal cervical vessels.

Prognosis: In cases diagnosed antenatally the infant survival rate is 97 – 100%. Without antenatal diagnosis the mortality rate is overall 56% and complications which result from the rupture of the vessels at or near delivery if the condition is undetected include; rapid fetal exsanguination and death of the infant. Transfusion is required in 58% of newborns without prenatal diagnosis, versus only 3% in diagnosed cases.

Figure 2. Proposed diagnostic algorithm for the second-trimester detection of vasa praevia.

1. If the placental cord insertion and the lower margin of the placenta are clearly far from the inner os then there is essentially no risk of vasa praevia and no further assessment is required.

2. If the woman falls into the risk groups (see above) then an abdominal scan of the cervix with colour Doppler is suggested. If it is clearly normal, then the woman will fall into the "no risk" category.

3. If the exam is **not** obviously normal, then a transvaginal colour Doppler ultrasound scan should be performed.

4. If the TV scan is normal, then the patient would also fall into the "no or low risk" category.

5. If the transvaginal colour Doppler is "Suspicious or abnormal", then manage the patient as having a vasa praevia.

6. If, during the initial abdominal exam, there is any additional reason to perform a transvaginal examination, it is advisable to perform one and, if it is strictly normal, the patient will be classified in the "no or low risk" category. Otherwise you should manage the patient as having a vasa praevia.

This should cover most clinical situations but exceptions are bound to occur and these should be judged as they arise.
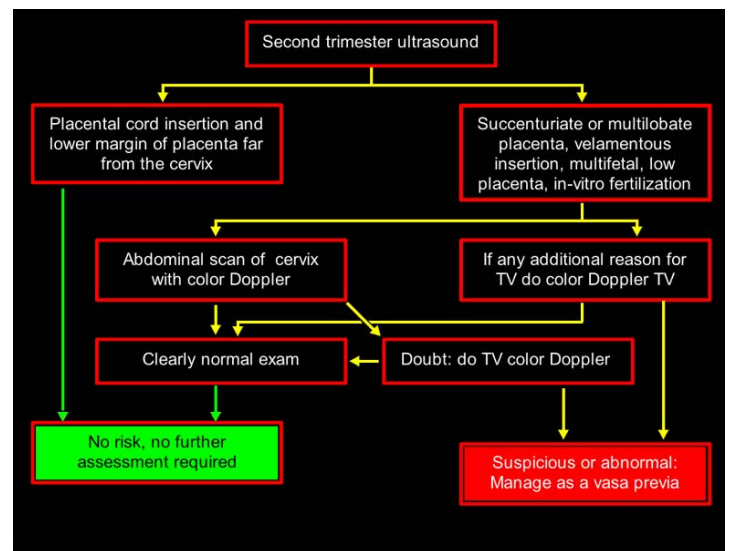
Conclusion: Adherence to the above algorithm should enable the sonographer to antenatally detect most, if not all, cases of vasa praevia and thus avoid an obstetric emergency. It should also have an impact on the high perinatal mortality rates associated with the condition

For a detailed presentation on vasa praevia, diagnosis and management please visit [lectures]: http://thefetus.net/index.php