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Cervical Varix as a Cause of Vaginal Bleeding During Pregnancy – Prenatal Diagnosis by Color Doppler Ultrasound

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Abstract

Vaginal bleeding during pregnancy is a risk factor for adverse pregnancy outcome. Beyond 20 weeks of gestation, the most frequent causes of bleeding associated with maternal and perinatal morbidity and mortality are placenta previa and placental abruption. Cervical varix during pregnancy is a rare condition. To our knowledge, only six cases have been reported in the literature. Most of these cases were associated with preterm birth and high maternal morbidity. The optimal management and mode of delivery remain undetermined. We report a case of cervical varix diagnosed by transvaginal ultrasound at 21 weeks of gestation. The pregnancy was complicated by several episodes of vaginal bleeding and the patient delivered at 32 weeks. Color and power Doppler examination of the cervix played a key role in establishing the diagnosis.

Keywords

Cervical varix; transvaginal ultrasound; vaginal bleeding; color Doppler; maternal morbidity

CASE REPORT

A 26 year-old African-American woman, gravida 3, para 0, with a history of two spontaneous abortions in the first trimester, was admitted at 21 weeks of gestation due to vaginal bleeding, without contractions or abdominal pain. Speculum examination revealed a large blood clot, a closed cervix, and no evidence of active bleeding. Two- and three-dimensional transabdominal ultrasound examinations were performed (Voluson 730 Expert™, GE Healthcare, Kretztechnik, Zipf, Austria; IU-22™, Philips Medical Systems, Bothell, Washington) showing an appropriate for gestational age fetus with a normal heart rate. The amniotic fluid index was normal. The umbilical cord was inserted in the center of the placenta and there was no evidence of a retroplacental clot. Transvaginal ultrasound revealed a posterior marginal placenta previa and a hypoechogenic structure within the endocervical canal (Figure 1A and Video 1). Color Doppler interrogation of this structure indicated its vascular nature (Figure 1B). Spectral Doppler revealed a venous waveform that was modified with the Valsalva's maneuver (Figure 2), suggesting that the vein was of maternal origin.¹ An additional speculum examination was performed on the second day of admission, and a dilated vein was visualized in the cervix.

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During hospitalization, the patient had several episodes of vaginal bleeding that were managed with intermittent vaginal packing. After two severe episodes of bleeding at 23 weeks of gestation (Video 3), the maternal hemoglobin concentration dropped from 10.4 g/dL (at admission) to 7.1 g/dL, requiring transfusion of four units of red blood cells. Indometacin was also administered for 48 hours due to uterine contractions. A complete course of corticosteroids was given at 24 weeks, and gestational diabetes type A₁ was diagnosed at 25 weeks of gestation. The patient remained asymptomatic and was discharged from the hospital. A follow-up transvaginal ultrasound at 29 weeks of gestation showed persistence of the varicose vein in the cervix, and no evidence of placenta previa.

The patient was admitted at 32 weeks due to vaginal bleeding and preterm labor, which did not respond to bed rest and tocolysis with magnesium sulfate. Due to the risk of massive bleeding, a cesarean section was performed without complications. During the surgical procedure, multiple varicosities were observed in the lower uterine segment. A female infant weighing 2160 g was delivered, with Apgar scores of 8 and 9 at 1 and 5 minutes, respectively. Neonatal and radiologic examination revealed an anterior subluxation of both knees. The neonate developed respiratory distress syndrome, which resolved on the third day postpartum.

Ten hours after surgery, the patient developed persistent tachycardia and vaginal bleeding. Clinical and ultrasound examination ruled out hemoperitoneum, uterine atony and retained products of conception. Vaginal examination under anesthesia demonstrated bleeding from the cervical varix. Vaginal packing, placed for 24 hours, prevented further bleeding. Laboratory evaluation showed a drop in the maternal hemoglobin concentration from 11.5 g/dL to 7.7 g/L, and the patient received two units of red blood cells. The patient recovered and was discharged on day three post cesarean section.

Speculum examination was performed three weeks after delivery and the cervical varix was not observed. A vascular structure was visualized by three-dimensional transvaginal ultrasound close to the internal cervical os. This structure was located in the area where the cervical varix was seen during pregnancy, and was connected to convoluted vessels located in the posterior wall of the uterus (Figure 3).

DISCUSSION

We report a case of an unusual finding (cervical varix) associated with a common clinical problem (vaginal bleeding during pregnancy). The diagnosis was suspected by close examination of the cervical canal by transvaginal ultrasonography with color and pulsed Doppler.

Bleeding beyond 20 weeks of gestation complicates about 6% of all pregnancies,² and is one of the leading causes of maternal death in the United States.^{3,4} Placenta previa and placental abruption account for most of the maternal and perinatal morbidity and mortality associated with bleeding during pregnancy.^{5,6}

The pregnant state is associated with a higher prevalence of varicose veins than the non-pregnant state.⁷ The physiological changes that have been proposed to contribute to the development of varices during pregnancy include: 1) venous distension due to plasma volume expansion;⁸ 2) hormonal changes;⁹ 3) increased intra-abdominal pressure;¹⁰ and 4) compression of the inferior vena cava and pelvic veins by the pregnant uterus.¹¹ The most common venous territories affected are the hemorrhoidal plexus, the long saphenous vein, as well as the vulvar and perivulvar veins.^{7,12}

Cervical varix during pregnancy is a rare condition. To our knowledge, only six cases have been reported in the literature.^{13–16} In most patients, the diagnosis of a cervical vascular

malformation was made after an episode of vaginal bleeding early in the second trimester. In four of these cases, the patients had a history of maternal exposure to diethylstilbestrol (DES) *in utero*. Therefore, an association between prenatal exposure to DES and vascular malformations in the female genital tract has been proposed.^{13,14} Five cases were delivered prematurely by cesarean section,^{13–16} and one required a hysterectomy, due to massive bleeding.¹⁵ Only one case delivered vaginally at term without complications.¹⁴

The conventional approach to cervical varices during pregnancy is expectant management and bed rest.^{13–15} Vaginal packing has been used in an attempt to control bleeding episodes.^{14–16} The placement of a cerclage in two patients with cervical varices and a history of DES exposure has been associated with the absence of vaginal bleeding during pregnancy,^{13,14} suggesting that this prophylactic intervention may reduce the risk of hemorrhage during pregnancy. Uterine artery embolization during pregnancy has been used for the management of cervical pregnancies.^{17,18} In our case, the option of cervical varix embolization was considered. However, since the patient was asymptomatic at the time, it was determined that the potential risks involved in this procedure outweighed the possible benefits.

In summary, although the prevalence of cervical varices is rare, this entity should be considered as part of the differential diagnosis of vaginal bleeding during pregnancy due to the risk of preterm delivery and severe maternal morbidity associated with it. The optimal management of this pregnancy complication remains to be determined.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.

a) Transvaginal ultrasonography of the cervix at 21 weeks of gestation shows marginal placenta previa (P) and a hypoechoic structure in the endocervical canal (white arrows). **b)** Color Doppler interrogation of the cervix indicates that this structure is vascular in nature. B, bladder.

Figure 2.

a) Spectral Doppler interrogation of the vascular structure in the endocervical canal shows venous blood flow. Please note that the Doppler sample is wide and encompasses the two vascular structures. Venous blood flow is observed in both the upper and lower channel, suggesting that this is the same vessel looping in the endocervical canal. **b)** The venous waveform was modified with the Valsalva's maneuver (white arrows), suggesting maternal origin.

Figure 3.
a) Transvaginal ultrasound examination at 19 days postpartum revealed a hypoechoic image in the posterior wall of the uterus (white arrows). **b)** Color Doppler interrogation indicates that this image corresponded to convoluted vessels. **c)** These vessels appear to be connected (white arrows) to the vascular structure in the endocervical canal (asterisk).