Chapter 12
Vaginal Bleeding in Pregnancy

What can be the source of vaginal bleeding in pregnant women?

- Vaginal bleeding can occur in any stage of pregnancy.
- The source is almost always maternal origin rather than the fetus.
- Bleeding may result from decidua or cervical or vaginal lesions (erosions).
- The clinician makes a preliminary diagnosis based on the gestational age and the character of the bleeding (mild or severe, painful or painless, intermittent etc.). Then uses laboratory and imaging tests to confirm or review the initial diagnosis.

Describe the first trimester hemorrhage in pregnancy and its causes.

- Vaginal bleeding is common in the first trimester (0–13 6/7 weeks), which occurs in 20–40% of pregnant women.
- It may be any combination of mild or severe, intermittent or stable, painless or painful.
- The four major sources of nontraumatic hemorrhage in the early stages of pregnancy are:
  - Ectopic pregnancy
  - Abortus (imminence, inevitable, incomplete, complete)
  - Implantation of blastocyst to endometrium
  - Cervical, vaginal, or uterine pathology (e.g., polyps, inflammation/infection, trophoblastic disease)

What is the most common nontraumatic cause of first trimester bleeding?

- Abortion-related bleeding is the most common nontraumatic cause of first trimester bleeding (abortion prevalence: 15–20% of pregnancies).
- Although bleeding is severe, only 1% of the women would require blood transfusion.
- Ectopic pregnancy is much less frequent (prevalence of ectopic pregnancy: 2–5% of pregnancies).

What is the most serious etiology of first trimester vaginal bleeding?

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- The most serious etiology of first trimester hemorrhage is rupture of ectopic pregnancy and poses a major risk for the pregnant woman. Therefore, this diagnosis should be ruled out in every pregnant woman with bleeding.

Describe the issues that should be considered in the anamnesis of the patient presenting with vaginal bleeding during pregnancy.

- The degree and severity of bleeding should be determined: Does she describe spotting or mild bleeding or more than that? Does she feel tired (fatique), or look pale (consider anemia)? Does she have pelvic pain or cramping? Any bleeding with fetal parts expelled? If yes then other abortus-related conditions such as incomplete abortion should be thought rather than implantation bleeding or cervicovaginal disease (e.g., polyps, cervicitis, and cancer). On the other hand, it is important to remember that the presence of only mild, intermittent, painless bleeding does not exclude the possibility of an underlying life-threatening disorder such as ectopic pregnancy.
- A history of ectopic pregnancy or presence of risk factors for ectopic pregnancy (e.g., history of pelvic inflammatory disease, presence of intrauterine device, history of adnexal surgery, smoking) in the patient's medical history increases the likelihood of ectopic pregnancy.
- A history of two or more consecutive abortions (habitual abortions) or a condition associated with abortion risk (e.g., chromosomal translocation, maternal antiphospholipid syndrome -APS, and uterine anomaly).
- The use of assisted reproductive techniques (ART) increases the risk of heterotopic pregnancy (intrauterine and ectopic pregnancy at the same time).

Describe the important factors that should be considered in the physical examination of pregnant women presenting with vaginal bleeding.

- Orthostatic blood pressure or pulse changes (such as tachycardia) are indicative of severe blood loss; supportive care and prompt treatment should be sought. However, it should be kept in mind that although pregnant has massive bleeding, sometimes especially in young patients anemic symptoms do not appear at first admission to the clinic.
- If there is a tissue expelled vaginally, it should be stored for pathological examination.
- Abdominal examination should be performed first. It is best to first examine the quadrant where the patient is experiencing the least pain. Light palpation is preferred because deep palpation causes pain, irritability and defenses. Pelvic-abdominal midline pain is more compatible with abortion related issues, while lateral pain is more compatible with ectopic pregnancy. Non-gynecological causes of pain should be taken into account, as well (diarrhea, constipation, nausea, vomiting, such as classic abdominal pain questions should be asked, remember that the patient may not have a stool discharge for a week, but it may not be described by the patient, if you do not ask it).
- The clinician should determine whether the uterine size is compatible with the estimated gestational age by palpating it (although this is mostly done by ultrasound measurement today). The uterus remains as a pelvic organ until 12 weeks of gestation and then large enough to be palpated just above the pubis.

- Fetal heart beat: fetal heart beats (>120 per min) should be discriminated from the maternal heart beats.
- Speculum examination may be required in lithotomy position to identify the source of bleeding.
  - Vaginal laceration
  - Vaginal neoplasm
  - Vaginal warts
  - Vaginal discharge
  - Cervical polyps, fibroids, ectropion
  - Mucopurulent cervical discharge or bleeding due to sensitivity to cervical os
- Cervical neoplasm
  - Uterus and adnexa should be evaluated by ultrasound (with β-hCG value)
  - Ectopic pregnancy → if β-hCG level is plateau or increases slightly (less than 35% increase in 48 h)? Missed abort?
  - Rhogam(R) (anti-D Ig) should be performed if there is Rh incompatibility between the pregnant and her partner (if indirect coombs result is negative)

Describe the diagnosis and treatment of ectopic pregnancy, which is one of the causes of first trimester bleeding.

- If intrauterine sac cannot be observed with transvaginal ultrasound despite β-hCG > 2000 mIU/ml, ectopic pregnancy should be suspected, but the sac may not be clearly visualized in multiple pregnancies with these β-hCG values.
- β-hCG values that draw a plateau in a week is a more precise finding in ectopic pregnancy diagnosis.
- Methotrexate (MTX) (dose is calculated according to the body surface area-intramuscular 50 mg/m^2) (hemodynamically stable patient, no fetal heart beat in the ectopic sac, renal functions are normal) or surgery (hemodynamic instability, acute abdomen, etc.) is applied. If endometrial thickness is >6 mm, then curettage is also applied not to miss heterotopic pregnancy and avoid MTX teratogenicity.
- If MTX is applied (day 0 is accepted on day of administration), β-hCG values on day 4 and day 7 are checked. MTX is repeated if there is a decrease of less than 15%. Two-dose regimen is also possible. In this regimen, β-hCG values between days 0 and 4 are examined, if there is no clear limit in different sources, if more than 15% increase is present, second dose MTX (IM 50 mg/m^2) is administered, again on day 4 and 7 β-hCG values are compared, and MTX is repeated at the same dose if there is a decrease of less than 15%.
- Surgery: salpingostomy, salpingectomy, milking.

Describe the threatened abortion (abortus imminence).

- The cervical os is closed, positive fetal heartbeat, positive uterine bleeding. If fetal heart beat is present, 90–96% does not result in abortion (7–11 weeks). Mostly, it is caused by the vessels on the maternal placental side and decidual part, these separations are not usually seen by ultrasound, but sometimes it is observed as subchorionic hematoma (accumulation of blood within the folds of

the chorion). When the expectant management is applied, progesterone can also be administered, but there is no clear evidence in improving outcomes. Tranexamic acid is also effective in limiting hematoma in subchorionic hematoma.

Explain the inevitable abortion (abortus incipiens).

- The cervical os is dilated, uterine bleeding increases, accompanying with painful uterine cramps. Gestational tissue may protrude from the cervical os, resulting in abortion in a short period of time. Expectant approach or abortion-inducing approaches (medical or surgery namely curettage) can be applied.

Describe complete and incomplete abortion.

- Complete abortion: If abortion occurs before 12 weeks of age, all contents are usually expelled out of the uterus. With ultrasound, the endometrial thickness appears thin, the uterus is contracted, the cervix is usually closed, and there is little bleeding (because the event is already completed). Observation of chorion in abortion material proves that intrauterine pregnancy has been terminated, β-hCG monitoring should be observed if chorion is not observed (ectopic).
- Incomplete abortion: More frequent at the end of the first trimester or at the beginning of the second trimester. Membranes rupture, and the fetus may be expelled completely, albeit placenta may remain. The cervical os is dilated. Gestational tissues may be observed from the cervix. The uterus is reduced in size, but not fully contracted, as in complete abortion, the patient feels pain since the cervical os is dilated. Bleeding may even be critical to cause hypovolemic shock. Intrauterine tissues are visualized by ultrasound. Medical treatment or curettage is required.

Explain Missed abortion.

- In utero ex embryo or fetus (<20 weeks) has waited for a while, missed. Vaginal spotting may accompany. The cervix is usually closed. By the ultrasound, intrauterine gestational sac (with or without embryonic/fetal pole) and no fetal heart beat observed. Medical or surgical abortion is applied for management of missed abortion.

Explain the vanishing twin.

- While one of the fetus of multiple pregnancy is resorbed and as a result singleton pregnancy is observed (early twin disappearance). It appears more in ART and may manifest itself with bleeding. It continues as a single pregnancy.

Describe the causes of vaginal bleeding in pregnancy other than obstetrical issues.

- Vaginitis, trauma, tumor, warts, polyps, fibroids—Physical examination, speculum, ultrasound.
- Ectropion—Cervical ectropion (columnar epithelium of the endocervix grows towards the ectocervix). No treatment is required.
- Physiological/implantation bleeding—Diagnosis is made by excluding other conditions. Little amount of vaginal spotting is observed. It occurs 10–14 days after fertilization. No intervention is required.

What is the prognosis of first trimester bleeding?

- Prognosis—Studies showed a relationship between first trimester bleeding and pregnancy complications (abortion, preterm delivery, premature rupture of membranes, IUGR, etc.). Prognosis is good if the vaginal bleeding is mild. However, if the bleeding is too much and encountered in the second trimester, its prognosis is worse.
- Also the risk of preterm labor, ablation placenta, and premature rupture of membranes may increase, and the risk of vaginal bleeding also increase in subsequent pregnancy.

What are the causes of second and third trimester bleeding?

- Birth-related (bloody show namely blood-tinged mucus)
- Placenta previa
- Ablation placenta
- Uterine rupture (rare)
- Vasa previa (rare)
- Cervical, vaginal, or uterine pathology (polyps, inflammation/infection, trophoblastic disease) and non-tubal ectopic pregnancies are other causes.

Describe the causes of vaginal bleeding in pregnancies before 20 weeks, second trimester.

- The evaluation is similar to that in the first trimester, but this time the diagnosis of ectopic pregnancy is less likely. The pain is accompanied.
- Only mild, transient, painless bleeding could be observed in cervical insufficiency, small marginal placental separation, or cervicovaginal lesions (polyp, infection, cancer). Excessive bleeding, if accompanied by pain, may indicate risk of abortion or ablation. Hgb/Htc, coagulation values should be evaluated.
- In abdominal examination, pain perception, uterine size, and tenderness are evaluated. At 16th gestational weeks, uterine fundus is palpable in the middle of the umbilicus and pubis and rises to the level of umbilicus in the 20th gestational week.
- In the lithotomy position, external genitals are examined, and the speculum is placed to visualize vagina and cervix. Cervical ectropion, vaginal laceration, and cervical polyps are examined to see if there are gynecological causes for vaginal bleeding. Dilated cervix and gestational parts may be observed and cervical insufficiency is diagnosed if pain and uterine contractions do not accompany to the vaginal bleeding. In the next pregnancy, cervical cerclage is applied after first trimestery Down syndrome screening test is applied, if cervical insufficiency is diagnosed previously.
- Transvaginal ultrasound, the relationship between the placenta and cervical internal os is visualized (bladder should be empty to make that relationship clearly observed) (placenta previa-actual diagnosis → after 20th gestational weeks), or placenta could be detached because of ablation. Cervical length is measured by ultrasound (should be >25 mm; between 16 and 24th gestational weeks; if not then it is called short cervix and correlated with the increasing risk of preterm birth, in those patients it is prudent to advise vaginal progesterone,

which significantly lowers the preterm birth rate and composite neonatal morbidity).

Describe the causes of vaginal bleeding in pregnancies over 20 weeks.

- Bloody show: Mucous plaque occluding the cervical os with mild bleeding may be observed within 72 h before delivery.
- Placenta previa (20%).
- Abruptio placenta (30%).
- Uterine rupture (rare).
- Vasa previa (rare).
- In other cases where there is no cause, marginal bleeding from the placenta, which does not appear on the ultrasound, could be the reason.

What are the important and risky situations that should be taken into account in pelvic examination of pregnant women with vaginal bleeding?

- Manual cervical examination should be avoided. The diagnosis of placenta previa should be ruled out first to perform manual vaginal-cervical examination. In case of accidentally digital examination of the patient with placenta previa; it is a severe malpractice that causes sudden, severe bleeding.

What are the differential diagnoses in third trimester vaginal bleeding?

- Placenta previa—Should be considered in the third trimester bleeding, with out pelvic pain. Classically, distinguished from ablation with the absence of pain and contractions, tetanic and contracted uterus is observed in ablation, though. However, in case of labor contractions in placenta previa hemorrhage, pain could accompany as well. Ultrasound is the most important diagnostic tool (transvaginal ultrasound with empty bladder).
- Abruption placenta (detachment-ablation)—A premature prenatal separation of normally implanted placenta. The most common risk factors are history of ablation in previous pregnancy, trauma, smoking, cocaine, hypertension, and premature rupture of membranes. Ablation is manifested clinically by 80% of cases by vaginal bleeding, 70% by uterine tenderness, and 35% is accompanied by uterine contractions. Uterine tenderness is caused by extravasation of blood from the veins to the myometrium; this appearance (purple uterus) is called the Couvelaire uterus. In severe cases, the blood extends to the peritoneal cavity. The amount of vaginal bleeding may not be an indication of the severity of bleeding, since bleeding may remain in the uterine cavity. Ultrasound may diagnose placental separation as retroplacental hematoma, but <60 percent of ablation cases could be observed on ultrasound. Ablation may be ranged from mild to severe (life-threatening) and may also be chronic-acute (mostly acute). The risk of ablation in trauma patients should be kept in mind, as well.
- Uterine rupture—A rare cause of vaginal bleeding. This possibility should be taken into consideration in patients with hemorrhage with a history of cesarean and myometrial surgery. It usually occurs during labor or with trauma, but it can rarely occur without a specific cause.

- Vasa previa—Observation of fetal blood vessels in membranes covering internal cervical os. Membraneous vessels may be associated with the valementous umbilical cord or caused by the vessel between the bilobulated placenta, and the placenta of the succenturiate lobe. Rupture of vasa previa rupture is an obstetric emergency, which can lead to sudden fetal loss (because bleeding is caused by fetal vessels). Generally because of that risk, cesarean is planned at about 34–35th gestational weeks of the pregnancy.

What is the prognosis of second and third trimester bleeding?

- Like first trimester hemorrhages, second and third trimester bleedings may be associated with pregnancy complications, especially preterm labor.
- In general, these complications are directly proportional to the severity of bleeding, and the cause is also important (in cases without previa, the outcome of pregnancy is worse). Bleeding from unknown origin of the second and third trimesters increases the risk of preterm birth by two to three times.

Suggested Reading

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