

Clotting disorders and thrombophilia in pregnancy



Why pregnancy increases clotting risk

Pregnancy produces a carefully balanced shift in hemostasis. Levels of several clotting factors rise, natural anticoagulant activity changes, fibrinolysis is reduced, and venous blood flow from the legs can slow as the uterus enlarges. Together with vessel wall changes and reduced mobility in some pregnancies, these factors fit Virchow's triad: hypercoagulability, venous stasis, and vascular injury. This physiologic shift is protective against hemorrhage at delivery, but it increases the risk of venous thromboembolism. Venous thromboembolism includes deep vein thrombosis, usually a clot in the deep veins of the leg or pelvis, and pulmonary embolism, when part of a clot travels to the lungs. The risk is elevated throughout pregnancy and is especially high in the first weeks after birth, when delivery-related tissue injury, inflammation, cesarean birth, immobility, and ongoing coagulation changes may overlap.

What thrombophilia means

Thrombophilia is a predisposition to forming blood clots. It can be inherited through genetic variants affecting coagulation proteins, or acquired through immune-mediated conditions. Having a thrombophilia does not mean a clot will definitely occur, and many people with an inherited thrombophilia have

uncomplicated pregnancies. The clinical importance depends on the specific condition, whether the person has had a prior clot, the presence of strong family history, and additional risk factors such as obesity, surgery, prolonged immobility, severe infection, smoking, dehydration, hyperemesis, or cesarean delivery. Clinicians usually think about thrombophilia in two related but distinct contexts: maternal venous thromboembolism risk and obstetric complications. The strongest and most consistent link is between thrombophilia and venous thromboembolism. Links with recurrent pregnancy loss, fetal growth restriction, preeclampsia, placental abruption, and stillbirth are more complex and vary by thrombophilia type; antiphospholipid syndrome has the clearest established relationship with pregnancy morbidity.

Inherited thrombophilias seen in pregnancy

The inherited thrombophilias most often discussed in pregnancy include:

Factor V Leiden mutation: the most common inherited thrombophilia in many populations. Heterozygous carriers generally have lower risk than homozygous carriers or those with a previous clot.

Prothrombin G20210A mutation: associated with increased thrombin generation and venous clot risk, with higher concern in homozygous or combined thrombophilia states.

Antithrombin deficiency: less common but often considered high risk, particularly if there is a personal or strong family history of thrombosis.

Protein C deficiency and protein S deficiency: natural anticoagulant deficiencies that may raise venous thromboembolism risk. Protein S levels normally fall in pregnancy, so interpretation of testing can be difficult.

Acquired thrombophilia: antiphospholipid syndrome

Antiphospholipid syndrome is an acquired autoimmune thrombophilia characterized by specific antiphospholipid antibodies plus clinical events such as thrombosis or defined pregnancy morbidity. The laboratory antibodies commonly assessed include lupus anticoagulant, anticardiolipin antibodies, and anti-beta-2 glycoprotein I antibodies, typically confirmed on repeat testing at least 12 weeks apart. In pregnancy, antiphospholipid syndrome is important because it is associated not only with venous and arterial thrombosis but also with recurrent pregnancy loss and placental complications. Management often differs from

inherited thrombophilia and may involve coordinated care among obstetrics, maternal-fetal medicine, hematology, and sometimes rheumatology. Treatment decisions are individualized and should not be started or stopped without professional guidance.

Possible pregnancy complications

The most urgent maternal complication is venous thromboembolism. A deep vein thrombosis may cause one-sided leg swelling, pain, warmth, or redness, although symptoms can be subtle. A pulmonary embolism may cause sudden shortness of breath, chest pain, rapid heartbeat, fainting, or coughing blood. These symptoms require emergency assessment because pulmonary embolism can be life-threatening. Thrombophilia may also be considered in the evaluation of recurrent pregnancy loss or certain placental complications. Placental dysfunction can contribute to fetal growth restriction, stillbirth, preeclampsia, or placental abruption. However, these conditions have many possible causes, including hypertension, autoimmune disease, infection, chromosomal abnormalities, uterine factors, and placental development issues. A clotting disorder is only one part of a broader clinical assessment. For example, a person with hypertension and abnormal liver enzymes may need evaluation for HELLP syndrome and hypertension in pregnancy, while painful bleeding in later pregnancy may raise concern for placenta previa and placental abruption explained.

Who may be offered thrombophilia testing

Routine thrombophilia screening for every pregnant person is not recommended. Testing can create anxiety, may be difficult to interpret during pregnancy, and does not always change management. Clinicians are more likely to consider testing when results would influence care. Testing may be discussed in situations such as a personal history of unprovoked venous thromboembolism, a prior clot associated with pregnancy or estrogen exposure, a strong family history of high-risk thrombophilia, or specific patterns of pregnancy loss or placental morbidity. Testing for antiphospholipid syndrome is often considered in people with recurrent pregnancy loss or certain later pregnancy complications. The timing matters: some assays are affected by pregnancy, acute thrombosis, anticoagulant therapy, liver disease, and inflammation. For this reason, hematology input can be helpful before ordering or interpreting a panel.

General management principles

Management aims to prevent dangerous clots while minimizing bleeding risk for the pregnant person and baby. The plan is based on the person's prior thrombosis history, thrombophilia type, family history, gestational age, planned mode of birth, anesthesia preferences, kidney function, bleeding risk, and postpartum needs. When anticoagulation is indicated, low-molecular-weight heparin is commonly used in pregnancy because it does not cross the placenta. Unfractionated heparin may be used in selected circumstances, especially around delivery or when rapid reversal is important. Warfarin is generally avoided during pregnancy because of fetal risks, although it may have a role postpartum in some patients. Direct oral anticoagulants are generally not used in pregnancy due to limited safety data. These are broad principles, not a treatment recommendation; the right medication, dose, and duration must come from the treating clinician. Some people need therapeutic anticoagulation because they have an active clot or a very high recurrence risk. Others may receive prophylactic dosing during pregnancy, postpartum, or both. Some low-risk inherited thrombophilias without prior thrombosis may be managed with surveillance rather than routine anticoagulation. Postpartum prophylaxis is frequently considered because the weeks after delivery carry substantial clot risk.

Delivery and postpartum planning

A written delivery plan is especially valuable for anyone taking anticoagulation. It typically addresses when to pause medication, whether induction is being considered for timing control, neuraxial anesthesia safety windows for epidural or spinal anesthesia, and when anticoagulation can be restarted after birth. The plan may change if labor begins spontaneously, bleeding occurs, preeclampsia develops, or urgent cesarean delivery is needed. After birth, clinicians reassess clot and bleeding risk. Early mobilization, adequate hydration, compression devices in hospital, and postpartum anticoagulation when indicated can reduce risk. Breastfeeding plans should be discussed because some anticoagulants are considered more compatible with lactation than others. The postpartum period can be physically and emotionally intense; having medication instructions, emergency contact numbers, and follow-up appointments arranged before discharge can reduce uncertainty.

Living with a clotting disorder in pregnancy

It is understandable to feel anxious after being told you have thrombophilia or after experiencing a clot or pregnancy loss. Many people do well with a coordinated plan, but the plan should be specific to you rather than based on a laboratory result alone. Bring a concise history to appointments: prior clots, provoking factors, miscarriages or stillbirths, preeclampsia or fetal growth restriction, family history, test results, and previous anticoagulant reactions. Ask your care team which symptoms should prompt emergency care, who manages anticoagulation refills, what to do if you miss a dose, and how delivery timing will be handled. If you develop bleeding, severe headache, chest symptoms, or concerning abdominal pain, do not try to balance risks at home; seek urgent advice. For broader context, heavy or persistent vaginal bleeding may be evaluated differently depending on gestational age, including bleeding in early and second trimester causes or bleeding in third trimester and emergency warning signs.