What Caused the Bleed - Placenta Accreta in the Setting of Factor V Leiden

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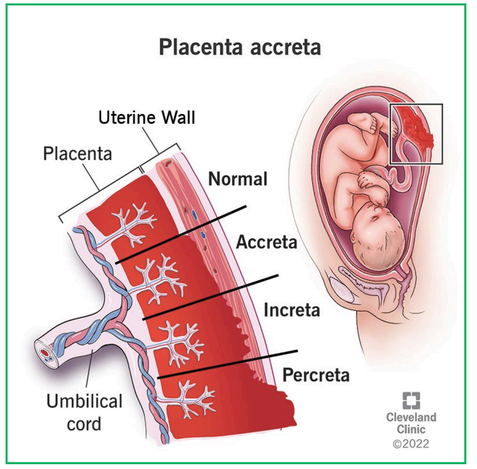
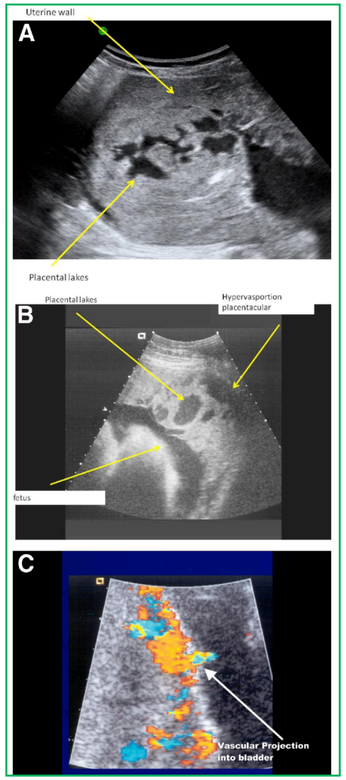
BACKGROUND

- Placenta accreta encompasses a spectrum of pathologies, each defined on the degree of placental invasion into the myometrium
  - Accreta: chorionic villi *attach to* the myometrium
  - Increta: chorionic villi *invade* the myometrium
  - Percreta: chorionic villi *invade through* the myometrium
- **Etiology**: defective endometrial-myometrial interface leading to abnormal decidualization → placental anchoring villi and trophoblast infiltration
- **Incidence**: between 1 in 2510 and 1 in 4017 (1970/80s) → 1 in 272 (2016)
  - Multifactorial, though the increasing # of cesarean deliveries likely is a large contributor
- **Diagnosis**: typically on ultrasound during the second and third trimesters (SN 90.7%, SP 96.9%)
- **Risk Factors**:
  - Placenta previa - *particularly in the presence of a low uterine scar**
  - Prior cesarean delivery
  - Hematologic disorders: hemophilias, vWD, Factor V Leiden
    - Exacerbates the already well-known hypercoaguable state of pregnancy
    - Most common cause of primary and recurrent venous thromboembolism in pregnancy
    - Increased risk of stillbirth, early onset pre-eclampsia, severe placental abruption, fetal growth restriction
  - Others: Maternal age, multi-parity, smoking, hypertensive disorders
- Hemorrhage risk is high at time of placental delivery, and often, hysterectomy and transfusion of blood products is required
- **Other complications**: damage to local organs and neuromuscular structures, postoperative bleeding requiring repeat surgeries, AFE, hematologic-related (*i.e. dilution and consumptive coagulopathies, acute transfusion reactions, TRALI, ARDS*), electrolyte derangements, postoperative thromboembolism, infection, maternal death
- Antepartum care and surveillance becomes increasingly important to avoid further, potentially fatal, outcomes



Cesarean delivery	Placenta previa	No placenta previa
First (primary)	3.3	0.03
Second	11	0.2
Third	40	0.1
Fourth	61	0.8
Fifth	67	0.8
≥Sixth	67	4.7



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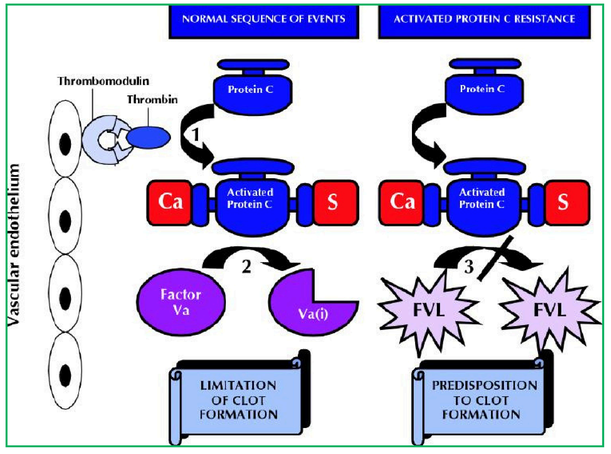
CASE PRESENTATION

- 38-year-old G3P1011 female with significant PMH of Factor V Leiden heterozygosity, scoliosis, GERD, and fibromyalgia admitted at 34 weeks after IOL in the setting of PPROM
  - Obstetric history: **miscarriage** at only a few weeks' gestation with subsequent conception one month later
  - Underwent **LTCS** secondary to development of chorioamnionitis with Category II tracings and fetal tachycardia
  - Less than one month after this delivery, patient was found to have a **right great saphenous vein thrombus** and was treated with **LMWH for six weeks**
    - Diagnosed with **Factor V Leiden**
- Maintained on *prophylactic* LMWH through 26 weeks gestation for FVL, and notably, prior **placenta previa** had resolved 1 month prior to delivery

- Induced for TOLAC with uncomplicated placement of epidural
- FHR tracing progressed to **Category III with deep decelerations** and a decision was made to proceed with an **emergent cesarean section**
  - No adhesions, though a suspected **right lateral uterine rupture** with **significant extensions** was found following fetal delivery
- **Conversion to GA** with ETT and invasive monitoring via arterial line placement
- GYN-ONC called for assistance due to persistent bleeding (2000cc → **final EBL >4000cc**)
- MTP initiated and TAH / bilateral salpingo-oophorectomy / right oophorectomy performed
  - **7 units pRBCs, 4 units cryoprecipitate, 2 units FFP, 500cc albumin**
- Extubated and initially transferred to **ICU**, then to mother-baby unit on POD#2
- Surgical pathology was consistent with **placenta accreta**
- Discharged on POD#4 with *prophylactic* Lovenox, but readmitted seven days later with worsening abdominal pain and fevers
  - Diagnosed with septic thrombophlebitis and **gonadal vein thrombosis**
  - Treated with Unaysn and *therapeutic* Lovenox
  - Discharged three days later with planned follow-up with OBGYN and Hematology



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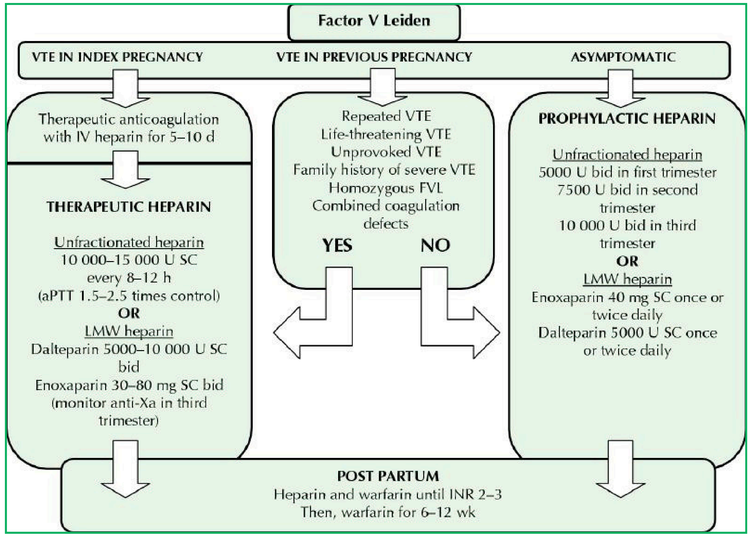
TEACHING POINTS

- Antenatal diagnosis of accreta is desirable → outcomes are optimized when deliveries occur at level III or IV maternal care centers
  - Multidisciplinary team: obstetricians, maternal-fetal medicine specialists, advanced pelvic surgeons, obstetric anesthesiologists, critical care experts

Pre-operative Management

- Increased, early surveillance is advised **throughout pregnancy** for those at risk
  - Ultrasound at 18-20 weeks, 28-30 weeks, 32-34 weeks in asymptomatic patients
    - Can assess for previa resolution, placental location, possible bladder invasion
- Timing of Delivery: cesarean delivery followed by immediate hysterectomy **prior** to onset of labor
  - Improved maternal outcomes
  - Unclear timing: **34 weeks** suggested as >36 weeks is associated with increase bleeding risk
- Hematologic management
  - Optimize hemoglobin, treatment of iron deficiency, collaboration with blood bank



Intra-operative Management

- If unexpected diagnosis → consider GA, obtain additional IV access and blood products
- Following fetal delivery and hysterectomy, **placenta should be left in situ** as its attempted removal is associated with significant hemorrhage risk
  - Observation period for spontaneous uterine placental separation if diagnosis of accreta spectrum is unclear
- Critical monitoring of volume status, urine output, blood losses, hemodynamics
  - Resuscitation options: 1:1:1 or 1:2:4 strategy for pRBCs:FFP:platelets, autologous cell-saver, anti-fibrinolytics (TXA)
  - **Hypofibrinogenemia** = most predictive biomarker of severe postpartum hemorrhage → highlights importance of obtaining TEG

Post-operative Management

- Ensure hemodynamic stability under ICU care as patients are at high risk for ongoing abdominopelvic bleeding and fluid overload

References