Background

- **Placental Vascular Malformation:** "Inadequate remodeling of maternal spiral arteries leading to restricted or high-velocity, erratic blood flow."[1]
- Diagnosed on patient's imaging
  - MRI: Cluster of vessels traversing mid-placenta
  - Ultrasound: Unusually large placental lakes (>5x4cm)
    - **Placental Lakes: pools of maternal blood within placenta**
      - *Usually benign, but large pools (>4cm) are abnormal*[2]
      - *Raise concern for placenta accreta syndrome*
- High risk of severe PPH

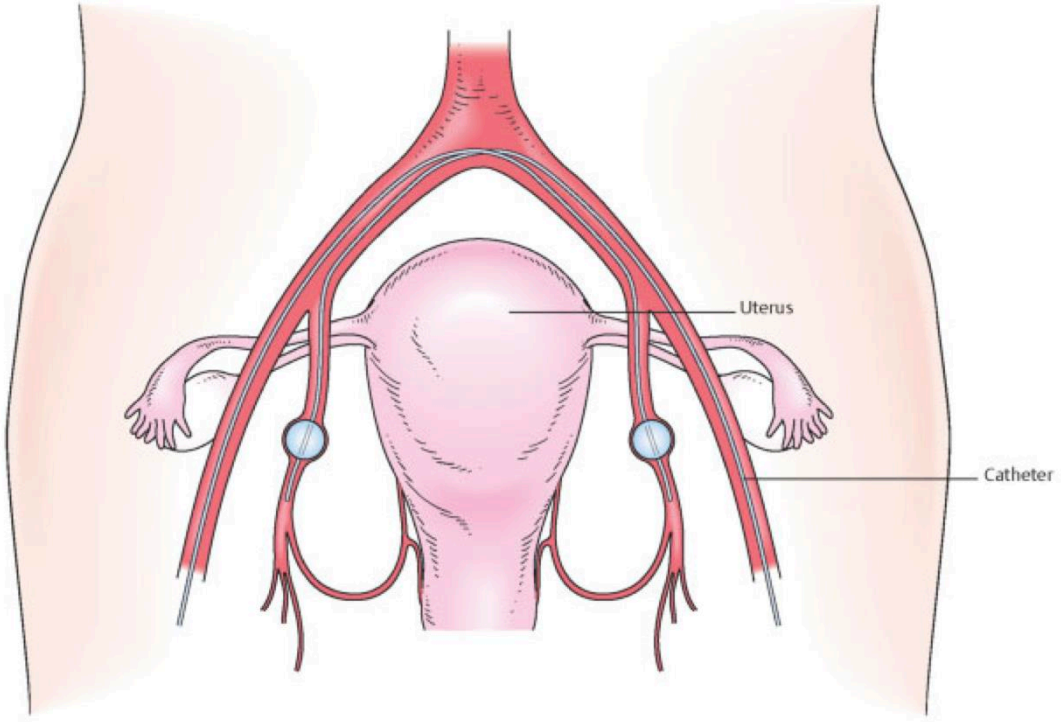
Placental Lakes[3]

1. Hendrix MLE, Bons JAP, Alers NO, Severens-Rijvers CAH, Spaanderman MEA, Al-Nasiry S. Maternal vascular malformation in the placenta is an indicator for fetal growth restriction irrespective of neonatal birthweight. Placenta. 2019 Nov;87:8-15. doi: 10.1016/j.placenta.2019.09.003. Epub 2019 Sep 5. PMID: 31520871.
2. Reis NS, Brizot ML, Schultz R, Nomura RM, Zugaib M. Placental lakes on sonographic examination: correlation with obstetric outcome and pathologic findings. J Clin Ultrasound. 2005 Feb;33(2):67-71. doi: 10.1002/jcu.20086. PMID: 15674837.
3. http://www.perinatology.com/Q&A/qanda37.htm

The Case

- 32 yo F G6P2112
- PMH: CS @ 24 weeks for placental abruption c/b DIC
- Imaging: Third trimester ultrasound detected an abnormal placenta with large turbulent venous lakes. MRI imaging confirmed abnormal vascularization of placenta.
- Planned CS at 37w – Preop:
  - Received a L3-4 epidural, pre-delivery arterial line, 2 large bore PIV
  - T&C 6 units pRBC & FFP
  - Trauma surgery on stand-by for REBOA
  - Interventional radiology placed prophylactic bilateral internal iliac artery balloon catheters (not inflated)
- The CS:
  - Main OR; baby was delivered with APGARs 8 & 9
  - Hemorrhage ensued → IR inflated BIIA balloon catheters
  - Uterus exteriorized → placenta accreta & suspected increta → hysterectomy & salpingectomy
  - RSI, 4u pRBC, cell saver, TXA, Ca+, pressors
  - Extubated in OR in stable condition → transported to IR for embolization of BIIA & BUA
  - Final EBL 1500 mL
- Post-op: D/c home POD3, stable, minimal pain, healthy baby

Teaching Points



Balloon Occlusion of Internal Iliac Artery[1]

- Patients at high-risk of PPH require **early planning** with **multidisciplinary team** (anesthesiology, OB, IR, trauma surgery) to minimize patient risk
- Prophylactic bilateral internal iliac artery balloon catheterization can reduce intraoperative bleeding and transfusion requirements[2]
  - Studied in patients with placenta accreta syndrome
  - Associated with vascular complications

1. Terao Y, Takeda S. Abdominal myomectomy for huge uterine myomas. In: Hiramatsu Y, Konishi I, Sakuragi N, Takeda S, eds. Mastering the Essential Surgical Procedures OGS Now, No.11. Uterine Myoma: How to Operate in These Cases?
2. Wang R, Li J, Peng B, et al. Prophylactic internal iliac artery balloon occlusion in placenta accreta spectrum: evaluating efficacy, risks, and clinical implications. BMC Pregnancy Childbirth. 2025;25(1):721. Published 2025 Jul 3. doi:10.1186/s12884-025-07842-3