Arteriovenous Malformation of the Neck Presenting in Pregnancy

Kalogera E.[1], Faksh A.[1], Davies N.[1], Arendt K.[2], Rose C.[1]

[1]*Division of Maternal Fetal Medicine, Mayo Clinic, Rochester, MN, USA*
[2]*Department of Anesthesia, Mayo Clinic, Rochester, MN, USA*

4th International Congress on Cardiac Problems in Pregnancy (CPP 2016)
Las Vegas, Nevada, Feb 29th, 2016

Disclosure Information

The authors have nothing to disclose

MAYO CLINIC

Objectives of the presentation

- Background
- Case presentation
  - 26 yo multiparous w/ neck arteriovenous malformation at 34 wks
    - Antepartum
    - Intrapartum
    - Postpartum
- Conclusion
  - Lessons learned

MAYO CLINIC

Background

- Vascular malformations
  - High flow arteriovenous (AV), mixed arterial, or low flow venous, lymphatic or capillary
  - Tend to enlarge overtime
  - Increased morbidity
- AV malformation (AVM) clinical presentation
  - Vascular blush/staining/mottling; bleeding/ulceration; palpable thrill; disfigurement; cardiac failure
- AVM expansion
  - Hormonal changes, puberty, pregnancy

MAYO CLINIC

Hoff SR et al., Otolaryngol Clin North Am 2015; Lakkasetty YT et al., J Oral Maxillofac Pathol 2014; Kohout MP et al., Plast Reconstr Surg 1998

Case Presentation
Antepartum

- 26 yo Somali G6P5004 transferred at 34 0/7 wks for increasing dyspnea in the setting of enlarging R neck mass
- Pregnancy complications
  - Iron deficiency anemia status post RBC transfusion; pulmonary hypertension (HTN)
- Obstetrical History
  - NSVD x5 in Africa;1 neonatal death at 1 month
- Past Medical History
  - Neck mass since 2011 (w/ 4th pregnancy)

MAYO CLINIC

©2016 MFMER

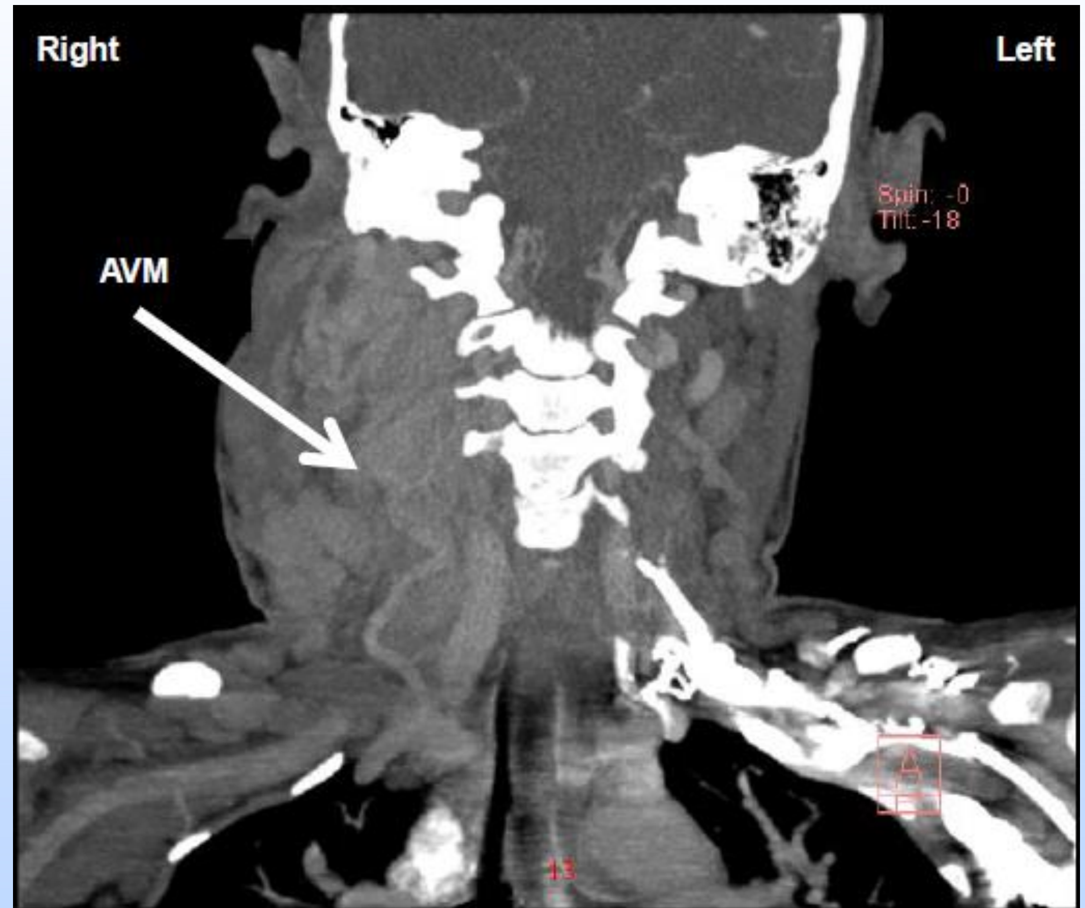
Case Presentation
Antepartum

- Initial evaluation
  - SOB, dysphagia worsened w/ supine position
  - VS stable
  - PE of neck: engorged, tender to touch, palpable thrill
  - No acute OB issues
  - Formal US: singleton, normal growth, normal AFV, cephalic
  - MFM, Anesthesia, Vascular surgery, Radiology, Interventional radiology (IR), Cardiology, ENT, Pulmonary critical care teams

MAYO CLINIC

Case Presentation
Antepartum

- CT angiogram: extensive, infiltrative mass with abnormal vasculature involving R neck (10 x 10 x 12 cm)



©2016 MFMER

Case Presentation
Antepartum

- ENT
  - Fiberoptic scope: upright: no airway obstruction; flat lie: airway diameter decreased but still patent
- Radiology
  - MRI lumbar spine/pelvis: no suspicious vasc lesions
- Cardiology
  - TTE: RVSP 58 mmHg (vs. 41 mmHg before)
  - Bubble study: positive → concern for pulmonary AVM
- Vascular surgery and IR
  - Not candidate for surgery; to evaluate postpartum
- MFM
  - Due to worsening clinical sx → IOL at 34 5/7 wks

MAYO CLINIC

Case Presentation
Intrapartum - Plan

- Immediately available in case of
  - AVM rupture: ENT, vascular surgery, IR
  - Airway compromise: anesthesia w/ video laryngoscope, fiberoptic scope, surgical airway equipment
  - OB emergency: perimortem cesarean delivery tray
- Continuous maternal monitoring
- IV filters
- Early lumbar epidural
- Fully upright at all times
- SBP goal <130 mmHg (use of esmolol boluses)

MAYO CLINIC

©2016 MFMER

Case Presentation
Intrapartum

- IOL at 34 5/7 weeks
  - Duration: ~9 hours
- 1st stage
  - IV Oxytocin and AROM
- 2nd stage
  - Passive descent
  - FAVD to minimize maternal efforts (single pull)
  - Total of 350 mg of esmolol (bolus of 20 or 40 mg) for BP control
  - Female infant 2230 grams; Apgar's at 1' and 5': 7 and 8

MAYO CLINIC

Case Presentation
Intrapartum

- 3rd stage
  - Prophylactic uterotonic: misoprostol, oxytocin infusion
  - Initially no perineal lacerations
  - Following placenta delivery – increased bleeding
    - Uterine atony
      - Manual extraction of clots, uterine massage
    - Vulva: high velocity arterial bleeding from R vulvar area → suspected vulvar AVM
      - Hemostatic stitches, direct pressure
    - EBL 1000 mL; post-delivery Hgb 7.4
- PPD0: stable; transferred to ICU; IR notified

MAYO CLINIC

Case Presentation
Postpartum

- Postpartum/hospital course uncomplicated
  - No further bleeding from suspected vulvar AVM
  - Respiratory sx improved
  - Discharged home on PPD4
- Postpartum visit (~7 wks)
  - MRI pelvis: No uterine AVM
  - Contraception: Copper IUD
- Patient never returned for further follow-up

MAYO CLINIC

©2016 MFMER

Conclusion

- Symptomatic neck AVMs
  - Very rare but significantly increase morbidity
- Vaginal delivery can be considered to carefully selected patients
- Multi-disciplinary team and a tertiary referral center needed
- Complete imaging of abdomen/pelvis and spine important antepartum
- Timing and mode of delivery must be individualized
  - Variable and unpredictable impact of pregnancy on AVM progression

MAYO CLINIC

Martines F et al., Acta Otorhinolaryngol Ital 2009; Bizakis JG et al., Auris Nasus Larynx 2002 ; Elliott JA, Rankin RN et al., Am J Obstet Gynecol 1985

©2016 MFMER

Questions & Discussion