EthyleneVinylAlcohol Copolymer (Onyx-18) Used in Endovascular Treatment of Vein of Galen Malformation

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Vein Of Galen Malformation

- Congenital arteriovenous fistula that usually present in the newborn with pulmonary hypertension and heart failure secondary secondary to right atrial and ventricular overload from high volume venous return and high pressure venous return to right side of heart.

- Potential brain damage due to shunting of blood through malformation and reduction in flow to normal brain.
Malformation between veins and arteries

Dilated **vein of Galen**

**Fistulas:** Abnormal connections between arteries and veins; no capillaries between arteries and veins to decrease blood pressure and volume.

**The heart’s right ventricle** receives blood from the brain under high pressure and is forced to pump harder.

*(Drawing is schematic and is not anatomically correct.)*
VGM
Treatment Options

- Medical therapy
- Surgery
- Radiosurgery
- Endovascular therapy
Endovascular Treatments

- Transvenous and/or transarterial embolization using coils, balloons, liquid embolics
Case Report

- Male born at 38 weeks
- Apgars 8 and 9
- Cardiac murmur and tachypnea
- Chest X ray revealed cardiomegaly
- Echocardiogram revealed CHF
- VGM found with cranial ultrasound and MRI/MRV
- Patient placed on numerous IV cardiac meds and transferred from New Orleans to Pittsburgh
Treatment Stage #1

- 3.5 kg patient
- 10 cc contrast/treatment
- 100 detachable and non-detachable coils placed
- 5 arterial and venous embolizations
- Venous approach via femoral vein to VG
- Arterial approach via PCA
- All pressor agents discontinued
- Echocardiogram showed improved cardiac function
Treatment stage #1

- Discharged home
1 Year Later

- All developmental milestones met
- Weight 10 kg.
- Increasing tachycardia noted by pediatrician
- Echocardiogram normal
- Child returned for treatment
Treatment Stage #2

- Transarterial and transvenous embolization with 3.1 cc Onyx-18 over 8 minutes
- Follow-up MRI/MRV showed no evidence of residual AVF
- Discharged home