International Symposium on 3D Imaging for Interventional Catheterization in CHD
October 20th, 2019

Taped Case: MR-guided catheterization from Dallas

Suren Reddy, MD/FSCAI
Associate Professor of Pediatrics
Interventional Cardiology and Adult Congenital Heart Disease
University of Texas Southwestern Medical Center &
Children's Health – Dallas Texas

UT Southwestern Medical Center®

children's health®

Case Presentation

- 4 years old, 12.5 kgs F born at 34 weeks gestation with HLHS
  - Norwood/Sano – 3 weeks of age
  - Right bidirectional Glenn – 8 months of age
- Needed home oxygen for few months after Glenn
- H/o Nissen/G tube, Seizures – controlled on meds
- Recent clinic visit - complaints of easy fatigue, decreasing activity. Sats 75-80%.
- Echo – unobstructed Glenn pathway, mild TR, mild residual aortic arch obstruction (PG 10-15 mm Hg), moderately dilated/hypertrophied RV with normal RV systolic function.
- Referred for MRI guided Cardiac Catheterization
- Goals:
  - MRI guided Right and Left Heart Catheterization – QP/Qs, PVR, AP collateral burden, Glenn pathway obstruction, venous collaterals, Lymphatics
  - (Condition 2 – Volume study research)
  - Routine MR Imaging
  - If interventions needed – transfer to Cath lab


U: 6-7927
U: 6-3753
6-8141
Huddle and Time Out

Cath Results

MRI guided cardiac catheterization (RFV, RFA, RIJV)

- Unobstructed right Glenn anastomosis and right pulmonary artery
- Mild LPA narrowing (gradient of 1)
- Normal pulmonary vein saturations (99%) bilaterally
  - relatively early return of right pulm vein contrast to the left atrium
- Highest TPG 4 mm HG, PVR 2.5 WU.m2 (on sildenafil)
- Large neoaorta to small/normal size descending aorta - mild arch narrowing with no pressure gradients
- AP collateral flow from RIMA - s/p occlusion
- AP collaterals and capillary mesh to the left lung and left bronchus

MRI Results

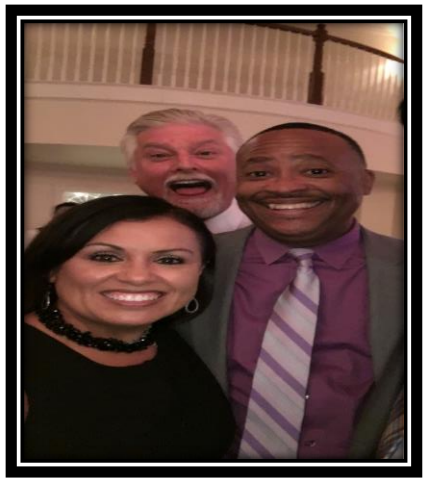
- Unobstructed right Glenn anastomosis and RPA.
- Hypoplastic LPA with circuitous course of proximal LPA. Pulmonary blood flow distribution is LPA 47% and RPA 53%.
- Direct 1% dilute contrast injection into the RPA - there is a rapid (~2 beats) return of contrast to the LA
  - suggests presence of right-sided pulmonary arterio-venous malformations.
- Qp/Qes = 0.7, PVR= 1.8 WU.m2
- RV is dilated and hypertrophied with a normal ejection fraction of 52%.
- Moderate TR, calculated regurgitant fraction of 27%.
- Lymphatics: Thoracic duct is patent. Abnormal signal intensity in bilateral supraclavicular regions extending into the mediastinum, consistent with grade 3 Dori classification of lymphatic abnormalities.
- Aortic root/AAO measure mildly dilated for BSA. Though there is a caliber change at the aortic isthmus, it measures normal for BSA.
- All hepatic veins join the right-sided IVC → connected to RA.
- The cardiac mass sits central in the chest. On real time cine there is evidence of adhesions of the anterior cardiac structures to the sternum.

Many Thanks to the Entire Heart Center Team

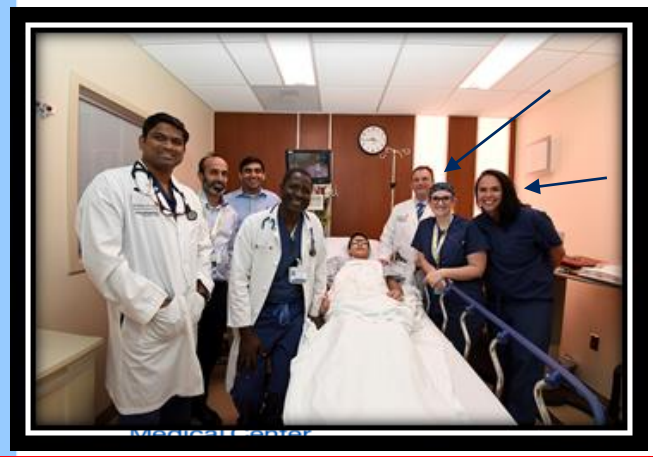
Dr. Gerald Greil

Dr. Tarique Hussain

Maggie and
Cath lab team



Dr. Yousef Arar
Cards fellow

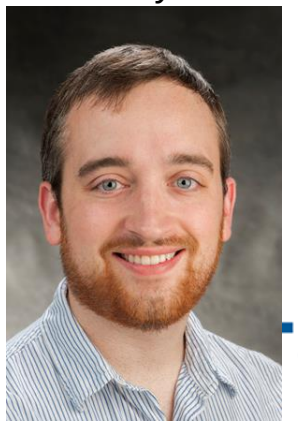


Ms. Amanda Potersnak

Dr. Jenn Hernandez

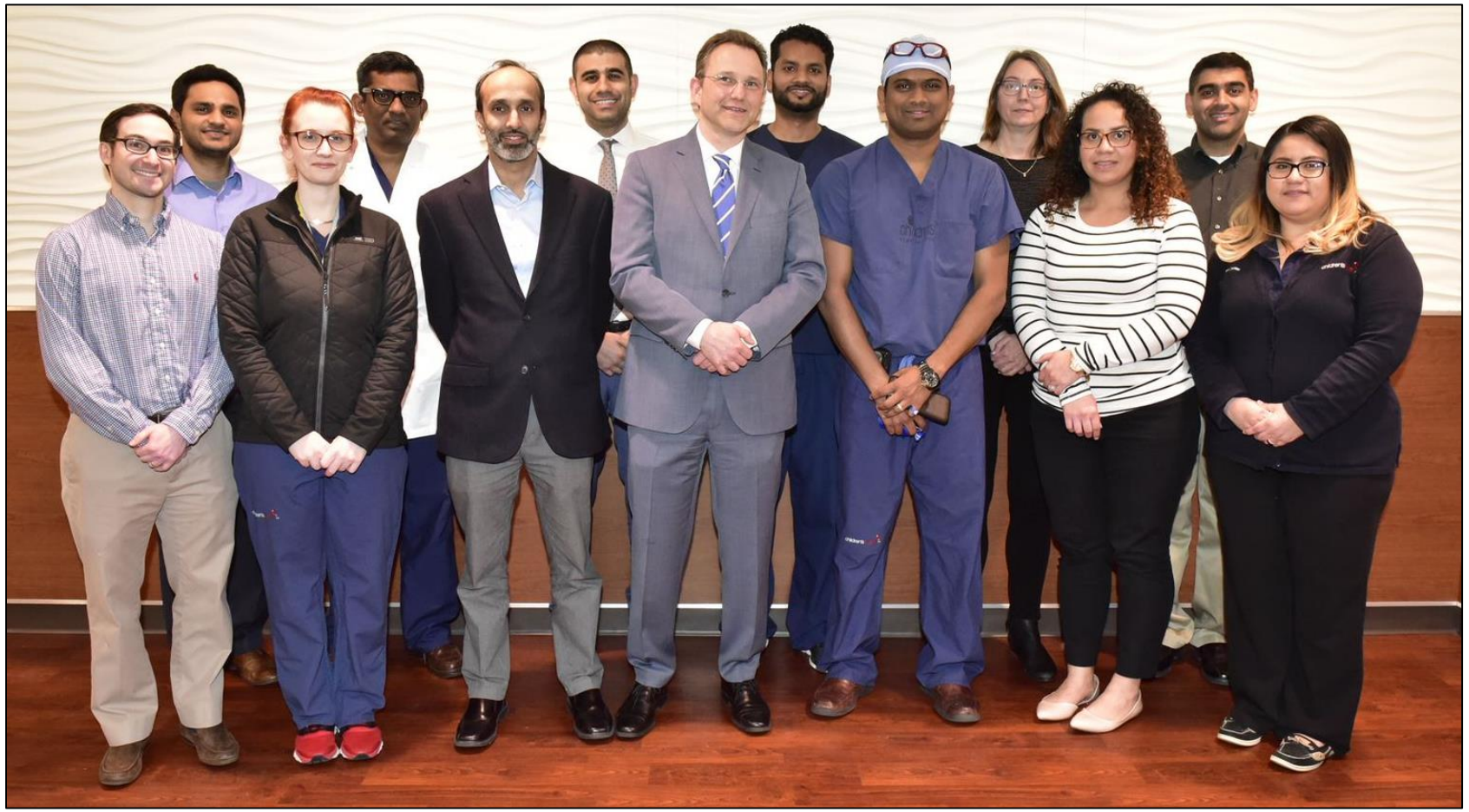
Dr. Daniel Castellanos
CMR fellow

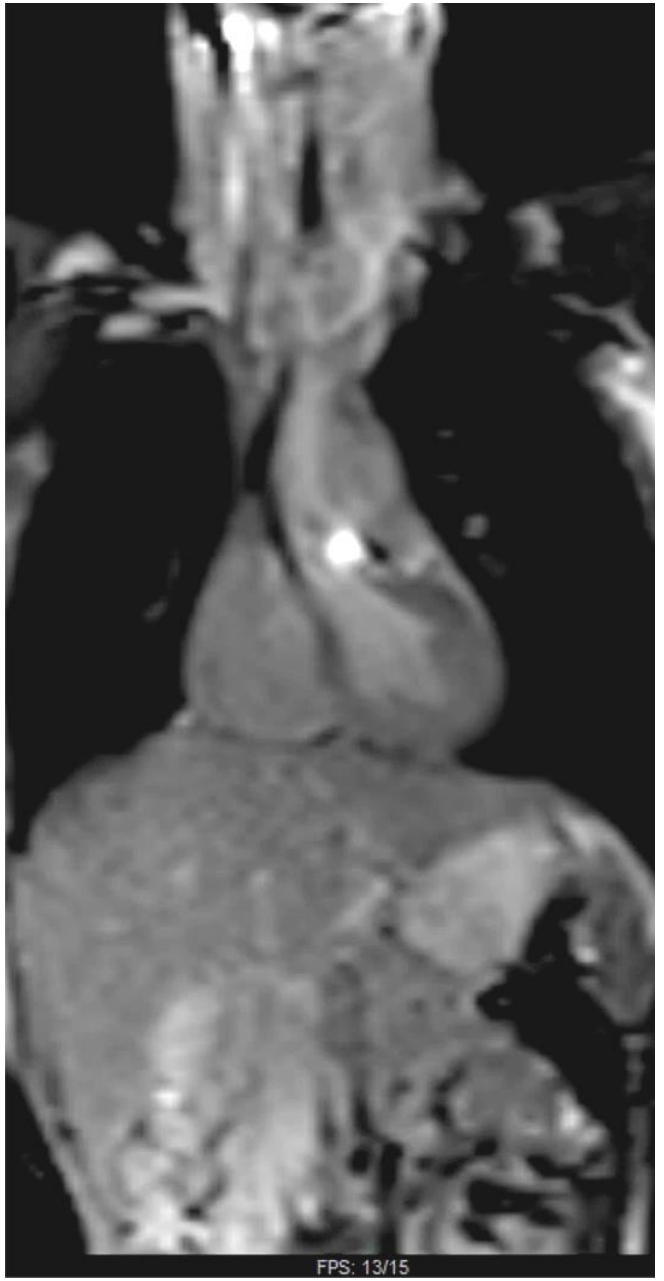
Joshua Greer Ph.D
CMR Physicist



Southwestern
Medical Center®

Questions?





UT Southwestern Medical Center

UT Southwestern Medical Center