



EMBOLIZATION OF THE RIGHT VENTRICULAR OUTFLOW TRACT IN POST PULSATILE-BIDIRECTIONAL CAVOPULMONARY SHUNT: A BRIDGING TRANSCATHETER INTERVENTION BRIDGING TOWARDS AN IDEAL SINGLE-VENTRICULAR PALLIATIVE SURGERY

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Introduction:

Some complex cyanotic congenital heart disease with one functional ventricular eventually undergo a single-ventricular palliative surgery Fontan procedure. The main preparation for Fontan procedure is making sure that the patient meets the criteria for surgery. Conditions such as left ventricular dysfunction with marked regurgitation and high pulmonary vascular resistance are a contraindication for Fontan.

Case Illustration

History, physical examination and imaging:

A 21-years old girl, body weight 44 kg, with tricuspid atresia, restricted muscular ventricular septal defect (VSD), hypoplastic right ventricular, sub-valvular pulmonic stenosis, post pulsatile Bi-directional Cavo-pulmonary shunt (BCPS) sent to catheter laboratory to hemodynamic measurement before the Fontan. The results showed the mean PA pressure (mPAP) was 16 mmHg and the left ventricular end-diastolic pressure (LVEDP) 21 mmHg which not an ideal candidate to single-ventricular palliative surgery. Then we decided to perform the RVOT embolization. The RVOT size was measured where the smallest diameter was 9 mm. Furthermore we put 14/16 Heart-R classical PDA occluder from right internal jugular vein. A 0.035" stiff wire was put, then we inserted 9F in delivery sheath across the RVOT. The PDA occluder was put in the RVOT and had been evaluated by left ventricular-angiogram. After device detachment, hemodynamic catheterization was performed. The mPAP was decreased down to 10 mmHg so were the LVEDP down to 12 mmHg which more ideal to Fontan.



Indication for intervention:

This patient has a tricuspid atresia with hypoplastic RV and performed pulsatile-Bidirectional Cavo Pulmonal Shunt before undergo Fontan. As mentioned previously, an elevated pulmonary vascular pressure and resistance with LV dysfunction are contraindications for Fontan procedure. The sources of additional antegrade pulmonary flow beside from the BCPS may be from a stenosed pulmonary artery with a gradient across the valve. The RVOT embolization will diminish the additional antegrade pulmonary flow further lowering the pulmonary artery pressure and the LVEDP. The low pulmonary vascular resistance and low LVEDP will allow a better flow from the systemic vein which has a low pressure to one ventricle directly through the pulmonary artery.

Learning points of the procedure:

Transcatheter RVOT embolization intervention could play as bridging intervention toward an ideal candidate of Fontan procedure. It has benefits not only could lowering the PA pressure and LA pressure but also lowering the risk of adhesion prior Fontan procedure.

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