PROCEDURAL AND ONE-YEAROUTCOME OF RVOT STENTING IN OLDER CHILDREN WITH TETRALOGY OF FALLOT AND HIGH-RISK FEATURES

Jose Jonas Del Rosario[1]

[1] University of the Philippines-Philippine General Hospital

Background:

Tetralogy of Fallot (TOF) is now usually repaired during infancy. However, in resource limited settings, these children grow older without getting the definitive management hence some of them develop risk factors that preclude total repair. Right ventricular outflow tract (RVOT) stenting is a technique that has been used as palliation for high-risk neonates and infants with severe right ventricular outflow tract obstruction. Little is known about its application for older children with TOF.

Methods:

We report our initial experience with older children with TOF with high risk features who underwent RVOT stenting in terms of the immediate procedural outcome, 6 month follow up and 1 year follow up and surgical outcomes if available. A retrospective descriptive study design was utilized to evaluate the outcomes of the first 15 patients more than 1 year of age who underwent RVOT stenting for TOF with poor anatomical surgical risks in our institution from January 2020 to December 2021. A review of medical records, catheterization reports and echocardiographic reports was done to obtain the demographics, procedural details, outcomes, complications and other related patient characteristics.

Results:

The median age was 5 years old (1-13, mean 5.2), 53 % were male, 40% (6/15) had frequent hypercyanotic spells and 60% (9/15) had severe hypoxemia. The indication to stent 73.3% (11/15) were because of small sized pulmonary arteries, 13.3% (2/15) were due to unrepaired imperforate anus, 6.7% (1/15) patient had left ventricular dysfunction and 6.7% (2/15) had significant right ventricular dysfunction.

Stent implantation was successful in all patients. The mean pre stenting oxygen saturation was 66% (35-78%) which increased to 89% (77-96%) post stenting, and remained at 87% (73-94%) at 6 months and 82% (68-94%) at 1 year. The RVOT gradient pre stenting was 89mmHg (70-98mmHg) which decreased to a mean of 50mmHg (28-80mmHg) post procedure but increased

to 77mHg (30-80mmHg) at 6 months. This can be explained by somatic growth observed in the patients as well as in stent fibrosis causing increasing obstruction at 6 months. The pulmonary arteries likewise showed an increase in diameter at 6th month follow up with a mean z score of -2.6 (-1 to -5) for right pulmonary artery and -2.1 (-1.6 to -4), improving to z score mean of -1.5 (0.49—2.44). There was 1 reperfusion injury requiring intubation, no mortalities, no other complications noted. One patient required redilation of stent because of hypoxemia. No Infective endocarditis, hypoxic spells, stroke, stent migration and arrhythmia were observed. Seven patients underwent successful total correction after one year.

Conclusion:

This preliminary data showed that RVOT stenting is a feasible palliation strategy for children with TOF with high risk anatomy in order to decrease hypoxemia. Overall patency has remained good for at least one year. Improvement pulmonary artery growth and/or ventricular function were likewise observed in some cases which allowed for total correction after 1 year.