

Location Matters – A Site Specific Analysis of Right Ventricular Outflow Tract Interventions Following the Arterial Switch Operation at a Single Institution

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Purpose

The arterial switch operation (ASO) is the standard of care for infants born with dextro-transposition of the great arteries (d-TGA). Supravalvular pulmonary stenosis (PS) is a common complication with reported reintervention (RI) rates as high as 42%. Improvements in RI rates have been made with time, yet a subset of patients continue to require multiple RIs – balloon angioplasty (BA), stenting or surgical augmentation. We performed a longitudinal review of patients who have undergone ASO and required multiple RIs.

Methods

A retrospective review of patients underwent ASO for d-TGA at a single institution between August 1990 and January 2014. Anatomical, perioperative and follow-up data were collected. RIs were stratified in a site-specific manner, to evaluate the longevity of each treatment option. Statistical analysis was performed using SPSS 21.

Results

Of the 103 patients who met inclusion criteria, 28% (29) required RI for supravalvular PS. Twelve patients (12% of the total and 41% of those requiring at least one RI) required 21 additional RIs. BA of the main pulmonary artery (MPA) and left pulmonary artery (LPA) was associated with the need for multiple RIs (OR 4.9, 95% CI 0.99-24, p=0.051) and (OR 5.1, 95% CI 1.2-22, p=0.029) respectively. Freedom from future RI at the MPA and LPA was significantly shorter following BA as opposed to alternative RI options (HR 10, 95% CI 2.0-50, p=0.005) and (HR 3.2, 95% CI 1.2-8.7, p=0.02) respectively. BA at the right pulmonary artery was not associated with an increased risk of RI (OR 0.51, 95% CI 0.10-2.6, p=0.42).

Conclusion

Supravalvular PS following ASO for d-TGA is common and multiple RIs are required in a subset of patients. The benefit of BA at the MPA and LPA was shown to be temporary. Attempting BAs at these locations remains reasonable, although families should be counseled about the increased incidence of, and time to, subsequent RI that is associated with this treatment option.