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Procedural and One-Year Outcome of Right Ventricular Outflow Tract Stenting in Older Children with Tetralogy of Fallot with High-Risk features

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Abstract/Case authors

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Background: TOF is routinely repaired in early infancy and childhood in developed countries but in resource limited setting, operation is often delayed and children develop high risk features that preclude safe total repair. RVOT stenting is a possible palliation strategy to improve the surgical risk of these patients.

Methods

Retrospective Descriptive study of initial experience with RVOT stenting in high risk TOF

Objective

To determine the short term outcomes of RVOT stenting in unrepaired TOF at time of intervention and 1 year post procedure

Inclusion criteria

- > 1 year old
- With 1 or more Indication for RVOT Stenting
  - Hypoplastic PAs 11 (73%)
  - Ventricular dysfunction 8 (53%)
  - Unrepaired imperforate anus 3 (20%)
  - Frequent hypercyanotic spells 9 (60%)

Results

- 15 patients (13 TOF, 2 DORV with PS)
- 1-13 (Mean 4.7)years old, Weight 5-32 Kg
- 100% successful implantation
- 2 reperfusion pulmonary edema treated with diuretics and positive pressure ventilation
- No need for reintervention at 1 year
- 8/15 successfully underwent surgery
- Growth of PA 15/15
- Growth of LV 14/15
- Significant clinical improvement

	Pre-RVOT stenting[1] (Mean±SD)	Immediate Post RVOT Stenting[2] (Mean±SD)	12 months Post RVOT stenting[3] (Mean±SD)	Percent Change (%)	P value
Oxygen Saturation	65.53 ± 12.55	89.6 ± 3.81	86.53 ± 4.45	$_{1,2}$ 36.73	p-value$_{1,2}$ =0.001
				$_{2,3}$ 3.42	p-value$_{2,3}$ =0.003

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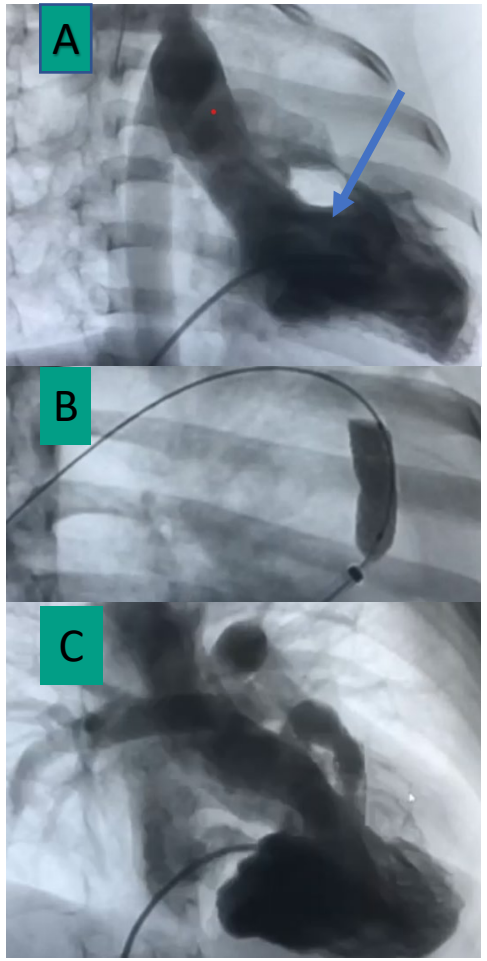

A. Pre RVOT stenting, note narrow infundibulum
B. Stent deployment **(Cook Formula Stent 7mm x 12mm)**
C. Post RVOT stenting with increased flow across RVOT

Features	Pre-RVOT stenting (Mean±SD)	12 months Post RVOT stenting (Mean±SD)	Percent Change (%)	P value
1. Echocardiogram				
Pulmonary Valve Annulus				
Diameter (mm)	8.09 ± 2.58	11.43 ± 3.29	41.3	<0.001
Z Score	-3.84 ± 1.40	-1.91 ± 0.97		<0.001
Pulmonary Artery				
Right Pulmonary Artery				
Diameter(mm)	6.38 ± 2.52	9.14 ± 2.16	43.3	<0.001
Z score	-2.25 ± 1.65	-0.63 ± 0.91		0.001
Left Pulmonary Artery				
Diameter(mm)	6.16 ± 2.38	8.91 ± 2.09	44.6	0.003
Z score	-1.66 ± 1.47	0.07 ± 0.93		<0.001
Left Ventricle				
Diameter(mm)	21.54 ± 3.98	28.07 ± 6.38	30.31	0.001
Z score	-3.89 ± 1.47	-2.06 ± 1.32		0.001
2. Angiogram				
Pulmonary Valve Annulus				
Diameter (mm)	8.67 ± 2.41	14.01 ± 4.12	61.5	0.003
Z Score	-3.23 ± 1.33	-0.84 ± 1.39		<0.001
Pulmonary Artery				
Right Pulmonary Artery				
Diameter(mm)	7.21±1.90	10.69±2.75	48.3	0.001
Z score	-1.42 ± 1.07	0.39 ± 0.94		0.001
Left Pulmonary Artery				
Diameter(mm)	7.78 ± 2.38	11.18 ± 2.35	43.7	<0.001
Z score	-0.25 ± 1.13	1.58 ± 1.30		0.001