



## Right ventricular outflow tract stenting in neonates and infants with tetralogy of Fallot and small pulmonary arteries; involving versus preserving the pulmonary valve: a comparative study on immediate and intermediate results

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### **Background:**

Stenting of the right ventricular outflow tract (RVOT) in patients with tetralogy of Fallot is the primary palliative prime alternative to a modified Blalock-Taussig shunt (mBTS) and has been identified as a possible approach for babies with reduced pulmonary blood flow.

### **Objectives:**

We aimed to compare the immediate and intermediate results of the right ventricular outflow tract (RVOT) stenting in symptomatic infants with tetralogy of Fallot (TOF) and small pulmonary artery branches in cases the stent had involved the pulmonary valve versus spared it.

### **Methods:**

Twenty-one patients with TOF, who underwent percutaneous stent implantation into a severely stenosed RVOT, were enrolled. Fifteen patients underwent RVOT and the pulmonary valve stenting, simultaneously, whilst six patients underwent RVOT stenting alone.

### **Results:**

The mean age at the time of stent implantation was  $9.97 \pm 8.33$  and  $5.51 \pm 6.28$  days in RVOT and RVOT+VALVE groups, respectively. Whilst O<sub>2</sub> saturation was similar between RVOT and RVOT+VALVE groups before the procedure ( $p=0.622$ ) it was immediately improved after the stenting with a significant difference ( $p=0.009$ ) in both groups. The sizes of right (RPA) and left (LPA) pulmonary arteries revealed a difference between pre and post-stenting in both groups (RPA:  $p$  RVOT=0.027 and RPA:  $p$  RVOT+VALVE=0.001, LPA:  $p$  RVOT =0.041 and LPA:  $p$  RVOT+VALVE =0.001). The LPA was significantly larger in valve-spared cases. Although post-procedure left pulmonary artery's Z-scores were similar ( $p$  initial=0.850,  $p$  final=0.062), a significant difference was observed between the two groups after adjustment for initial values



( $p=0.011$ ). Despite the difference in the right pulmonary artery's Z-scores; before and after the stenting in the RVOT+VALVE group ( $p=0.002$ ), RPA-Z scores showed a lack of difference.

**Conclusion:**

Stenting of a severely stenotic RVOT regardless of involving the pulmonary valve may lead to better outcomes regarding the improvement in general condition, potentially making the patients better candidates for surgery. It seems that the RVOT+VALVE cases in comparison with the only RVOT ones have more advanced improvement outcomes regarding the size and Z scores of PA branches and are highly recommended to focus on more studies with a larger population database in the future.

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