

**Transcatheter Potts Shunt creation in children for suprasystemic pulmonary hypertension: initial and midterm results**

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**BACKGROUND:** Reversed Potts shunt improves right ventricular function and physical exercise tolerance in patients with suprasystemic pulmonary arterial hypertension (PAH). Surgical shunt creation in such patients carries high mortality and morbidity risks. Proximity of left pulmonary artery (LPA) and descending aorta (DAo) permits creation of such a connection percutaneously potentially reducing procedure-related risks. Feasibility, safety and hemodynamic efficacy of the transcatheter Potts shunt in children was not reported.

**METHODS:** Transcatheter Potts shunt creation using radiofrequency-guided vessel walls perforation followed by covered balloon-expandable stent placement connecting the DAo and LPA lumens. Procedural details, and clinical and echocardiographic follow-up data were prospectively collected.

**RESULTS:** Stent-secured Potts shunt was successfully created in 6 children (mean age  $11.0 \pm 4.2$  years) with drug-refractory suprasystemic PAH and deteriorating right ventricular function. Shunt creation produced nearly complete systolic pressure equilibration with right ventricular function improvement within days in all patients. After shunt creation, 2 patients with severe biventricular dysfunction and pericardial effusion pre-procedurally, demonstrated acute function worsening of the unloaded left ventricle resulting in cardiac arrest and died of irreversible brain at 3 and 10 days despite complete cardiac function recovery. Stent embolization occurred in one patient with successful placement of the second stent. Four patients survived the procedure without complications and all but one showed significantly improved clinical status at mean follow-up of  $6 \pm 3$ -months.

**CONCLUSIONS:** Transcatheter Potts shunt is feasible in children and results in drastic improvement of the clinical status in surviving patients. Careful selection of patients is important to ensure favorable outcome of the procedure.