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For infants with heart disease, are shunts or stents better to maintain blood flow?

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Infants with various forms of congenital heart disease require a stable source of blood flow to their lungs in order to survive until a more definitive operation can be performed. In a recent study, pediatric researchers compared two methods to provide that flow: a shunt to reroute blood and an implanted stent to maintain an open path for blood flow.

The surgical Blalock-Taussig (BT) shunt has historically been the more common procedure for infants with ductal-dependent pulmonary blood flow, while the transcatheter patent ductus arteriosis (PDA) stent became available in 1992 as an alternative for these patients. In ductal-dependent pulmonary blood flow, the ductus arteriosus must stay open to allow for stable blood flow, while in most healthy infants it closes shortly after birth.

"Our findings support PDA stents over BT shunt placement for selected patients with this condition, particularly in experienced centers where this procedure can be performed safely and effectively," said study leader Andrew Glatz, MD, MSCE, a pediatric cardiologist at Children's Hospital of Philadelphia (CHOP).

The researchers performed a retrospective cohort study of 106 PDA stent and 251 BT shunt patients with ductal-dependent pulmonary blood flow and confluent pulmonary arteries who were treated at less than 1 year of age in the four member centers of the Congenital Catheterization Research Collaborative over a seven-year period. After adjustment for

differences in patient characteristics between the two groups, there was no difference in the rate of deaths or re-interventions to treat low blood oxygen saturations between the procedures. However, patients with stents had better outcomes in other areas: fewer complications from the procedure, shorter stays in the intensive care unit, less frequent need for diuretics, and larger and more symmetric pulmonary arteries at the time of subsequent surgery. Other, non-urgent re-interventions were more common in the PDA stent group.

"We need further research to identify specific anatomic characteristics of patients that would be most likely to benefit from PDA stent placement," added Glatz.

More information: Andrew C. Glatz et al, A Comparison Between Patent Ductus Arteriosus Stent and Modified Blalock-Taussig Shunt as Palliation for Infants with Ductal-Dependent Pulmonary Blood Flow: Insights From the Congenital Catheterization Research Collaborative, *Circulation* (2017). DOI: 10.1161/CIRCULATIONAHA.117.029987

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