

An adequately powered randomized controlled trial is needed to tell which approach is superior. This will likely have to be expertise-based to minimize confounding factors like operator level of experience and participation enthusiasm.

DS has become a common, safe alternative to BTS in infants with ductal-dependent pulmonary blood flow, but the

jury is still out as to whether or not there are long-term advantages for 1 approach versus the other.

Reference

1. Alsagheir A, Koziarz A, Makhdom A, Contreras J, Alraddadi H, Abdalla T, et al. Duct stenting versus modified Blalock-Taussig shunt in neonates and infants with duct-dependent pulmonary blood flow: a systematic review and meta-analysis. *J Thorac Cardiovasc Surg.* 2021;161:379-90.e8.

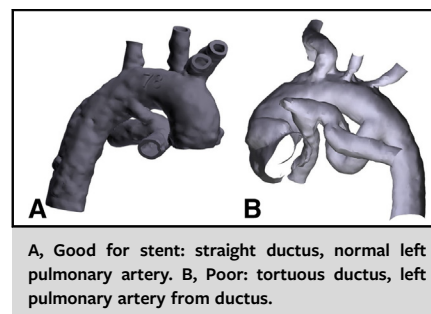
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Commentary: Ductal stenting for ductal-dependent pulmonary blood flow: Time for an exclusive club to expand its membership?

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Infants born with ductal-dependent pulmonary blood flow (ddPBF) have been traditionally palliated initially with a systemic-to-pulmonary shunt, such as a modified Blalock–Taussig shunt (BTS). Stenting of the ductus arteriosus has been widely adopted, because it avoids the risks of a cardiopulmonary bypass and shunt thrombosis. In this systematic review and meta-analysis of 6 studies, Alsagheir and colleagues¹ demonstrate that ductal stenting (DS) was associated with greater medium-term survival, lower number of complications, and intensive care unit and overall



CENTRAL MESSAGE

In infants with ddPBF, DS may be preferable in suitable candidates. Its use is especially attractive in SV disease and merits further study.

length of stay. No difference was noted with 30-day survival, and DS was associated with a greater number of unplanned reinterventions.¹

These pooled data begin to make the case that, in those who are appropriate candidates, DS is a preferable initial palliative strategy. Careful preprocedural planning, such as generating 3-dimensional angiographic models, is essential to maximize the likelihood of procedural success, so that these infants may reap the benefits of the lower morbidity and mortality profile of DS.² While a useful additional approach, DS cannot completely replace BTS, because not all patients' ductal anatomy is amenable to stenting. Congenital heart surgeons should maintain their expertise in the technical complexities and postprocedural management of BTS placement.

It is important to note that all studies included in this review were retrospective cohort studies. The authors classified 3 of 6 as high risk for bias, and this likely precluded

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the performance of subgroup analyses. An important subgroup that merits additional consideration includes infants with single-ventricle (SV) disease. First, patients with SV disease and ddPBF are at higher risk for morbidity and mortality. In a single-center study of 341 infants, Alsoufi and colleagues³ reported that those with SV disease (n = 175) are at greater risk for in-hospital mortality, need for postoperative extracorporeal membrane oxygenation, and unplanned reoperation versus those with biventricular disease (n = 166).³ In one of the only analyses of DS versus modified BTS in patients with SV disease, a multicenter study from the Congenital Catheterization Research Collaborative of 171 patients demonstrated that initial palliation with BTS was associated with a greater absolute number of interstage deaths, heart transplantations, and unplanned reintervention, although this did not reach statistical significance. Notably, both strategies produced similar candidates for superior cavopulmonary connection, because preoperative hemodynamics and pulmonary artery growth did not differ.⁴ These findings suggest greater nuance is needed when considering the source of pulmonary blood flow in patients with SV disease. Although not clearly associated with lower morbidity and mortality, DS would include patients with SV physiology who are more tenuous and less able to tolerate the stress of cardiopulmonary bypass and the risk of shunt thrombosis.

The authors' final recommendation of an expertise-based randomized controlled trial highlights the complexities in decision-making and technical performance of these procedures. Morbidity, mortality, and reintervention are likely to be lowest at centers with expertise in both modalities. The care of these complex infants with a wide spectrum of uncommon diagnoses should ideally take place at regional centers of excellence with the resources to optimize the treatment of each infant with ddPBF.

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