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Commentary: Shunts versus stents? Collaboration better than competition

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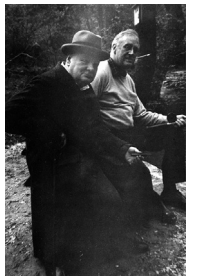

Franklin D. Roosevelt and Winston Churchill fishing at Shangri-La, Maryland, May 1943.

CENTRAL MESSAGE

The ideal approach to managing patients with duct-dependent pulmonary blood flow is a unified therapeutic strategy that is patient centric, evidence-based, and provided by a multidisciplinary Heart Team.

The answer is easy: if outcomes for stenting the ductus arteriosus are equivalent or better than Blalock–Tausig (BT) shunts, each one of us would choose stenting for our daughter.

The history of cardiac surgery is deeply rooted in the BT shunt. The renowned day of November 29, 1944, saw the inaugural *Blue Baby* operation performed by Dr Alfred Blalock with the assistance of the legendary Vivien Thomas.[1] The surgery was a success; the world changed. The lives of thousands upon thousands of children have benefited from the BT shunt. As the years passed, prostaglandins alleviated the need for emergency shunt operations, the BT shunt was modified to be completed with a tube graft, and now, stenting the patent ductus arteriosus may alleviate the need for shunt operations.[2]

In this edition of the *Journal*, Alsagheir and colleagues[3] published the first meta-analysis to review the outcomes of stenting the duct versus performing a BT shunt in patients with duct-dependent blood flow. Their data pool consists of 6 retrospective cohorts: 4 small, single-center studies and 2 larger multicenter studies. Patients who underwent stenting of the duct had shorter length of stay (mean intensive care and total hospital stay), fewer procedural complications but had a significantly increased risk for unplanned reinterventions. On the critical issue of mortality, there was no significant difference in 30-day mortality, but the authors did find a difference in medium-term survival benefit in favor of ductal stenting (risk ratio, 0.63, 95% confidence interval, 0.40-0.99, 164 $P = .05$, $I^2 = 0\%$; from 5 studies; low-quality evidence per the GRADE framework). This group of data does not appear to be the final affirmation to ductal stenting and the conclusion of the BT shunt.

The conflict to find the optimal treatment between stents and surgical shunts is not a new phenomenon; the oldest battle has been between stenting or bypassing (shunting) coronary artery disease in adult patients. The mortality benefit with coronary artery bypass and its long-term durability is well known.[4-6] Yet, despite their current inferior survival and longevity in significant subsets of patients, stents remain eternally resilient. Stents are deployed with a desirable minimally invasive approach, have benefited from significant advances in antithrombotic medication, and as a technology enjoy omnipresent innovation, resulting in a perpetual birth of the next generation of stents. At every instance when surgical therapy demonstrates superiority, there is always a new stent to come that rechallenges its dominance, resulting in continued conflict.[7]

At centers that have firmly committed to a stenting program for all patients with ductal-dependent pulmonary circulation, successful stent placement ranges from 60% to 100%, when outcomes are analyzed by specific ductal morphology.[8] Especially when considering specific anatomic phenotypes, the ideal management of patients with duct-dependent pulmonary blood flow remains elusive. Simply put, the BT shunt is not going away anytime soon. To

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assess which of our patients will best be served by a shunt or a stent, we must transition away from the mindset of conflict, stents versus shunts, interventionists versus surgeons, to collaboration. The ideal approach at a program is a unified therapeutic strategy that uses stenting, complete repair, no treatment, and shunting that is patient centric, evidence-based, and provided by multidisciplinary Heart Teams.[9,10] Transitioning to the Heart Team, with collaboration between surgeons and interventionalists, will optimize patient selection, procedural performance, follow-up care, and enhance the process of patient education and informed consent.

> *Competition has been shown to be useful up to a certain point and no further, but cooperation, which is the thing we must strive for today, begins where competition leaves off.—Franklin D. Roosevelt, March 3, 1912*[11]

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