Ring-enforced right ventricle-to-pulmonary artery conduit in Norwood stage I reduces proximal conduit stenosis.

BACKGROUND: An increasing number of surgeons prefer to place a conduit from the right ventricle to the pulmonary artery at the time of the Norwood stage I procedure. Proximal conduit stenoses have led us to modify this technique by using ring-enforced polytetrafluoroethylene conduits. METHODS: Angiograms of 24 patients with conventional conduits (CC) and 28 patients with ring-enforced conduits (RC) before partial bidirectional cavopulmonary anastomosis were analyzed. The degree of conduit stenosis on three different levels—proximal anastomosis, substernal part of the conduit, and distal anastomosis—was compared between the two groups. RESULTS: In the RC group, the extent of conduit stenosis at the level of proximal anastomosis and within the substernal proximal third of the conduit was minimized (23% +/- 22% vs 45% +/- 22%, p = 0.001, and 7% +/- 6% vs 49% +/- 26%, p < 0.001, respectively). At the level of the anastomosis with the pulmonary arteries, results were similar in the RC group (24% +/- 14%) vs CC group (31% +/- 15%, p = 0.103). Significantly fewer patients in the RS group required urgent intervention (dilatation +/- stenting) or early stage II operation (1 vs 6 patients, p = 0.034). CONCLUSIONS: The use of a ring-enforced polytetrafluoroethylene conduit between the right ventricle and the pulmonary artery in Norwood stage I
palliation effectively prevents substernal compression and reduces interstage morbidity.