Commentary: No harm, no foul—Staged pulmonary artery banding in complete canal defects

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In this month's edition of *The Journal of Thoracic and Cardiovascular Surgery*, Devlin and colleagues¹ present their work studying the efficacy of pulmonary artery banding (PAB) in patients with complete atrioventricular septal defect (AVSD). In an analysis of data from the Congenital Heart Surgeons' Society AVSD cohort, Devlin and colleagues¹ studied 50 patients with an AVSD who underwent a PAB (median age, 1.1 months) as a staged procedure before a biventricular repair or a univentricular versus biventricular decision. Although this contemporary cohort is relatively small and spread across 28 institutions, there is much to be gleaned from this experience.

First, staged PAB in patients with a planned biventricular repair is very effective. The 33 patients (66%) in the PAB cohort who ultimately underwent a biventricular repair had a 93% survival at 4-year follow-up, compared with a 91% survival in the cohort of 333 patients (initial AVSD cohort) who underwent a primary biventricular repair. These results simultaneously provide encouragement that staged banding with planned biventricular repair is equally effective as primary repair and caution that the midterm mortality was 9% in a contemporary series of patients with complete AVSD. In 2018, Buratto and associates² reported a similar cohort of patients with AVSD undergoing PAB who had a 78% survival at 5 years. When they examined patients who underwent an early PAB (<3 months of age), however, survival was improved to 88%.² These complementary studies support the efficacy of staged PAB in patients with a balanced AVSD and planned biventricular repair.

A similarly important finding in this study is the variable and unpredictable effect of PAB on the function of the common atrioventricular valve. Unfairly, but not uncommonly, PAB is abandoned for fear of worsening atrioventricular valve function. In the study of Devlin and colleagues,¹ 14 patients had a decrease in common atrioventricular valve regurgitation after PAB and 10 had an increase. In the overall cohort, however, atrioventricular valve regurgitation did not change significantly with time. The relatively small

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Central Message

Pulmonary artery banding in patients with complete atrioventricular septal defects is an effective strategy with little impact on valve function, especially for those staged to a biventricular repair.

See Article page 1493.

sample size prohibited subgroup analysis and identification of factors predictive of any direct effect of PAB on valve function.

An important limitation of the study of Devlin and colleagues¹ is the small sample size and dilution of PAB experience across 28 centers. It is important to understand how a similar technique and consistent achievement of objective hemodynamic metrics of band adequacy (oxygen saturations, postbanding pulmonary artery pressures etc) specifically correlate with mortality and atrioventricular valve function. Similarly, although this study did not contain any neonatal repairs, it is important to compare prospectively the outcomes of competing early surgical interventions, namely neonatal PAB versus complete neonatal repair.

Despite study limitations, this excellent article supports the selective role of PAB in the treatment of patients with a complete AVSD. When properly chosen, the majority of these patients can undergo eventual biventricular repair with excellent midterm survival.

References

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