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Commentary: Toward a more rational approach in pediatric aortic valve repair

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In the past 20 years, aortic valve (AV) repair has become an increasingly used treatment modality, mostly for the treatment of aortic regurgitation. The goal of AV repair is the creation of normal form and function of the valve. AV repair using only visual assessment of AV form has not always yielded reproducible results.¹ The analysis of geometric parameters of normal aortic cusp and valve form²⁻⁴ has led to a marked increase in the proportion of repaired valves, and it has improved repair durability.⁵ In particular, measurement of cusp tissue height, ie, geometric height,³ and height difference between cusp margins and annular plane, ie, effective height,² have become helpful in choosing the adequate substrates for repair and guiding the repair procedure. Using such a repair concept based on a geometric approach has improved applicability and results of repair.⁵ AV repair has been shown to be associated with a very low incidence of valve-related complications,⁶ and it probably improves postoperative survival.⁷ AV repair is particularly essential for children and adolescents in whom avoidance of anticoagulation is particularly important. In addition, AV repair does not impede somatic growth of aortic root and annulus and—apart from replacement using a pulmonary autograft—allows for normal development until the time of final AV replacement. A wider use of repair in pediatric patients is limited by the morphologic variability of congenital AV disease. In addition, the geometric parameters used for adult AV repair⁴⁻⁶ have not yet been determined for a pediatric or adolescent population.

In this context, the current publication⁸ is an important step forward. Based on echocardiographic examinations, the

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The analysis of geometric parameters of pediatric aortic valves is an important prerequisite for reproducible aortic valve repair in this age group.

authors have achieved in a pediatric population what has been done previously for adults, ie, define the important geometric parameters of AV form. Importantly, they have selected normal or near-normal aortic valves and are thus setting the norm. The information will have to be verified by intraoperative measurements. This study⁶ and its information is thus an essential step forward toward geometry-based and rational AV repair in pediatric patients. It will contribute to wider application of repair and improved reproducibility.

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