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Commentary: Simplifying complex heart defects through modeling

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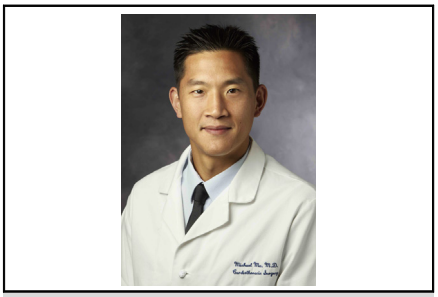

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CENTRAL MESSAGE

Custom 3-dimensional printed models improve surgical planning for complex congenital heart defects.

Three-dimensional (3D) printing has been searching for its purpose, and has found at least 1 home. Contreras and colleagues[1] delve into a particularly vexing lesion—transposition of the great arteries-ventricular septal defect-left ventricular outflow tract obstruction—and briefly outline the many surgical strategies that might be considered to reconstruct this defect. Traditional echocardiography and magnetic resonance imaging were coupled with a superior 3D appreciation via a physical model that ultimately influenced preoperative planning and intraoperative execution of a Damus-Rastelli repair.

A plethora of literature has expounded on the benefits of 3D printed models in congenital heart disease, for medical education, patient communication, and presurgical planning and simulation, with the largest studies indicating substantive changes in management attributable to the use of such models.[2,3]

The absolute cost versus benefit of creating such bespoke models can be argued ad nauseum, but the relative utility is well demonstrated here. If presented with a bevy of more traditional diagnostic tests and a 3D printed model, very few of us would choose to forego a detailed assessment of the model before stepping into to the operating room.

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