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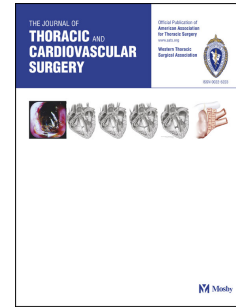
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Pulmonary valve replacement for congenital heart disease: What valve substitute should we be using?

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Invited editorial for Nomoto, et al. Outcomes of Stented Bovine Pericardial Tissue Valves for Pulmonary Valve Replacement in Congenital Heart Disease.

Progress in congenital heart surgery often results in the creation of patient populations in need of future surgical and catheter based interventions. The treatment of Tetralogy of Fallot and other forms of congenital heart disease involving the right ventricular outflow tract are good examples of this phenomenon. Pulmonary valve replacement (PVR) has become one of the most commonly performed procedures in congenital heart surgery. Despite the prevalence of this procedure, considerable uncertainty remains as to the indications and timing for surgery and which valve replacement option is most optimal. The group at Boston Children's Hospital has had a significant impact in defining the appropriate indications and timing for PVR for patients with congenital heart disease. The Boston group has also made contributions that have influenced the choice of valve substitutes for pulmonary valve replacement that are in common use. Current tissue valve options for surgical PVR include allograft tissue valves (pulmonary or aortic), bovine jugular vein valved conduit (i.e. Contegra), stented porcine aortic valves, stentless porcine aortic valves, stented bovine pericardial tissue valves, and now stentless bovine pericardial tissue valves. Excluding allograft valves and the Contegra, most tissue valve types are available from several manufacturers, each having unique design and processing methods. On the plus side we are blessed with a large variety of choices for PVR. Unfortunately, there is insufficient outcomes data to determine the best valve substitute for PVR. This conclusion is supported by the wide variety of valve choices currently used for PVR at institutions across the United States and the world. Patient factors such as age, size, diagnosis, prior surgical history and right ventricular outflow tract anatomy, among other factors, influence this choice, and there is no single best solution for all patients. PVR is almost entirely indicated for congenital heart disease. Given the relatively small number of patients requiring PVR, as compared to aortic valve replacement for acquired disease, the available valve options are largely borrowed from aortic valve options not requiring anticoagulation. Stented bovine pericardial aortic valves offer a larger effective valve orifice compared to similar sized stented porcine aortic valves with at least equivalent valve durability. These properties led to a significant increase in the use of stented bovine pericardial valves for acquired aortic valve

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