

Left ventricular systolic function after pulmonary valve replacement

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In the current issue of *Cardiovascular Innovations and Applications* , Ali N. Zaidi and W. Aaron Kay from Columbus Ohio Adult Congenital Heart Disease Program, The Heart Center, Nationwide Children's Hospital and Division of Cardiovascular Medicine, Wexner Medical Center, The Ohio State University, Columbus, OH, USA and the Division of Pediatric Cardiology, The Heart Center, Nationwide Children's Hospital, The Ohio State University, Columbus, OH, USA consider how following reparative surgery for tetralogy of Fallot or critical pulmonary stenosis (PS), patients frequently present with severe right ventricular (RV) volume overload due to pulmonary regurgitation, resulting in decreased RV function.

Tetralogy of Fallot (TOF) accounts for approximately 10% of all cases of [congenital heart disease](#), and is one of the most common cyanotic congenital heart defects. It has been more than five decades since the first total TOF repair was performed in 1955. Reparative surgery permits more than 85% of children born with TOF to survive into adulthood. With advances in surgical techniques, perioperative support, and imaging modalities, long-term outcomes have also substantially improved in the last 20 years, but resultant abnormalities such as severe pulmonary regurgitation (PR), significant right ventricular (RV) enlargement, dyskinetic interventricular septal motion, and reduced RV systolic function are still present in more than half of these patients. It is now commonly accepted that pulmonary valve replacement (PVR) in patients with severe PR and concomitant RV volume overload can result in preservation or recovery of RV function. As such, much of the

current literature on congenital [heart](#) disease focuses on preservation and recovery of RV function in patients with repaired TOF (rTOF).

Although LV volume and systolic function can be abnormal in adults late after TOF repair, PVR may have a beneficial effect on LV systolic function. The authors found that the only independent CMR predictor of postoperative improvement in LV systolic [function](#) is preoperative LV systolic dysfunction. This may be secondary to normalization of interventricular interactions after PVR, but the exact mechanisms responsible are as yet unknown. Larger studies are needed to further analyze the findings and determine accurate predictors associated with increased LVEF following PVR.

More information: Ali N. Zaidi et al, Evaluation of Left Ventricular Systolic Function after Pulmonary Valve Replacement Using Cardiovascular Magnetic Resonance Imaging, *Cardiovascular Innovations and Applications* (2018). [DOI: 10.15212/CVIA.2017.0050](https://doi.org/10.15212/CVIA.2017.0050)

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