

Is stenting of pulmonary artery branch stenoses helpful to reduce the amount of pulmonary regurgitation in patients with Tetralogy of Fallot?

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Introduction:

In patients with Tetralogy of Fallot (TOF) the extent of pulmonary regurgitation (PR) and the right ventricular volume are the main criteria for longitudinal evaluation of these patients. Whether an interventional treatment of stenoses of the left or right pulmonary artery has any impact on the timing or necessity of pulmonary valve replacement is under discussion.

Methods:

Retrospective analysis of the indexed end-diastolic right ventricular volume (RV-EDV) and pulmonary regurgitation volume (PRvol) in 31 patients with TOF by cardiac MRI. Sequential analysis over a period of 2 years. Group A: 16 patients (9 female, median age 15 years, RV-EDV 135.7 ± 37.4 ml/m², PRvol 19.1 ± 14.3 ml/m²) had an CMR before and after stenting (mean interval 1.5 years). Group B: 15 patients served as control group (9 female, median age 12.5 years, RV-EDV 126.5 ± 21.8 ml/m², PRvol 23.3 ± 12.5 ml/m²) and had no intervention.

Results:

The RV-EDV in the control group increased significantly about 7.4 % to 135.8 ± 23.8 ml/m² ($p < 0.05$) without a significant change of the PRvol. Whereas in patient with intervention, even if not statistically significant, the right ventricular and pulmonary regurgitation volume decreased to 134.34 ± 29.9 ml/m² and 15.2 ± 19.5 ml/m², respectively.

Conclusion:

Patients with Tetralogy of Fallot, PR and stenoses of the pulmonary artery branches may benefit from stent implantation already after a short period of time. Right ventricular enddiastolic volume remained stable whereas in the group without afterload reduction via stenting it increased significantly. These results may indicate that mechanical afterload reduction may delay the need and timing of pulmonary valve replacement, too.