# [Right ventricular fibrosis is associated with cardiac remodelling after pulmonary valve replacement.](https://www.ncbi.nlm.nih.gov/pubmed/30514732)

Yamamura K, Yuen D, Hickey EJ, He X, Chaturvedi RR, Friedberg MK, Grosse-Wortmann L, Hanneman K, Billia F, Farkouh ME, Wald RM.

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**Take Home Points:**

* Patients post TOF repair often have right ventricular histological fibrosis.
* Patients with severe right ventricular fibrosis are associated with higher right ventricular end systolic volume indexed (RVESVi), less change in the RVESVi and increased RV mass post pulmonary valve replacement.



**Commentary from Dr. M.C. Leong (Kuala Lumpur), section editor of ACHD Journal Watch:**

Although there has been many studies associating late gadolinium enhancement in cardiac magnetic resonance (CMR) with late adverse outcome in repaired tetralogy of Fallot (rTOF), the implication of histological fibrosis, was poorly understood. In this study, Yamamura and colleagues aimed to evaluate right ventricular histological fibrosis in adults with rTOF and to evaluate the impact of severity on the extent of cardiac reverse remodeling following pulmonary valve replacement (PVR) as determined by comparison of preoperative and postoperative CMR studies.

This is a prospective study enrolling all patients scheduled for PVR from 2013 to 2017. During PVR, RV muscles were obtained from the parietal trabeculations. The specimens were then stained with picrosirius red for quantification of RV fibrosis. Prior to and after the PVR, CMR was performed as per protocol.

53 patients [58% male, mean age : 38 ± 11 years, median follow up after PVR 2 years, IQR (1-3)] were studied. Those with severe fibrosis (collagen volume fraction >11.0%, n=13) had longer aortic cross-clamp times at initial repair compared with the remainder of the population (50 vs 33 min, p=0.018) and increased RV mass:volume ratio pre-PVR (0.20 vs 0.18 g/mL, p=0.028).

Post-PVR, the severe fibrosis group had increased indexed RV end-systolic volume index (RVESVi) (74 vs 66 mL/m2, p=0.044), decreased RVESVi change (Δ29 vs Δ45 mL/m2, p=0.005), increased RV mass (34 vs 25 g/m2, p=0.023) and larger right atrial (RA) area (21 vs 17 cm2, p=0.021). Unfortunately, due to the short follow up period, the association between the RV fibrosis and morbidity and mortality in this group of patients is not well established.



