Supplemental Materials

Fig. S1 Flow diagram of present study. Patients who were not performed 4D flow MRI were excluded. Thirty patients underwent 4D flow MRI post-TPVI 3 months, and among them 15 patients underwent 4D flow MRI post-TPVI 1year.

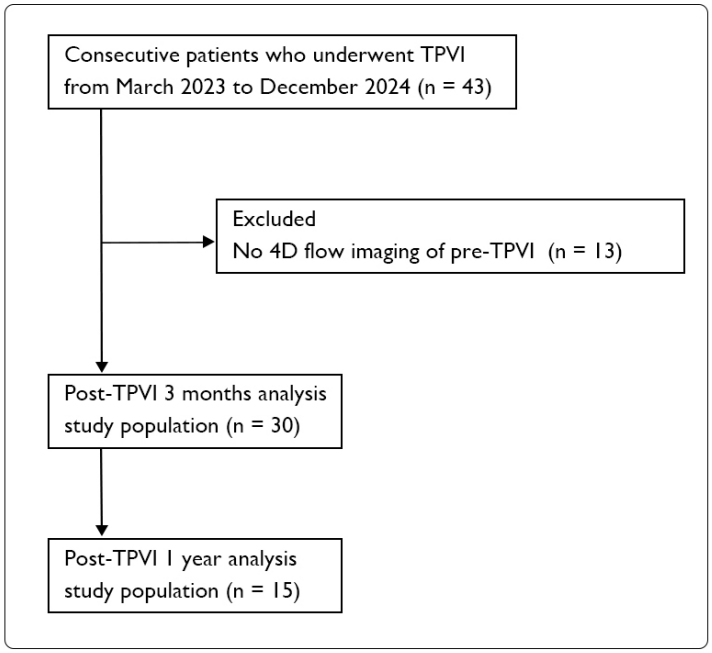

Fig. S2 Measurement of regurgitant fraction and MPA cross-sectional area using 4D flow MRI. (A) The regurgitant fraction obtained using 4D flow (RF-4D) was calculated as the ratio of the average backward flow volume to the average forward flow volume across the 5 cross-sections. (B) The cross-sectional area of the pulmonary artery was measured based on the blood flow signal in the 4D flow phase contrast images and average of area measurements from 5 slices was used for analysis.

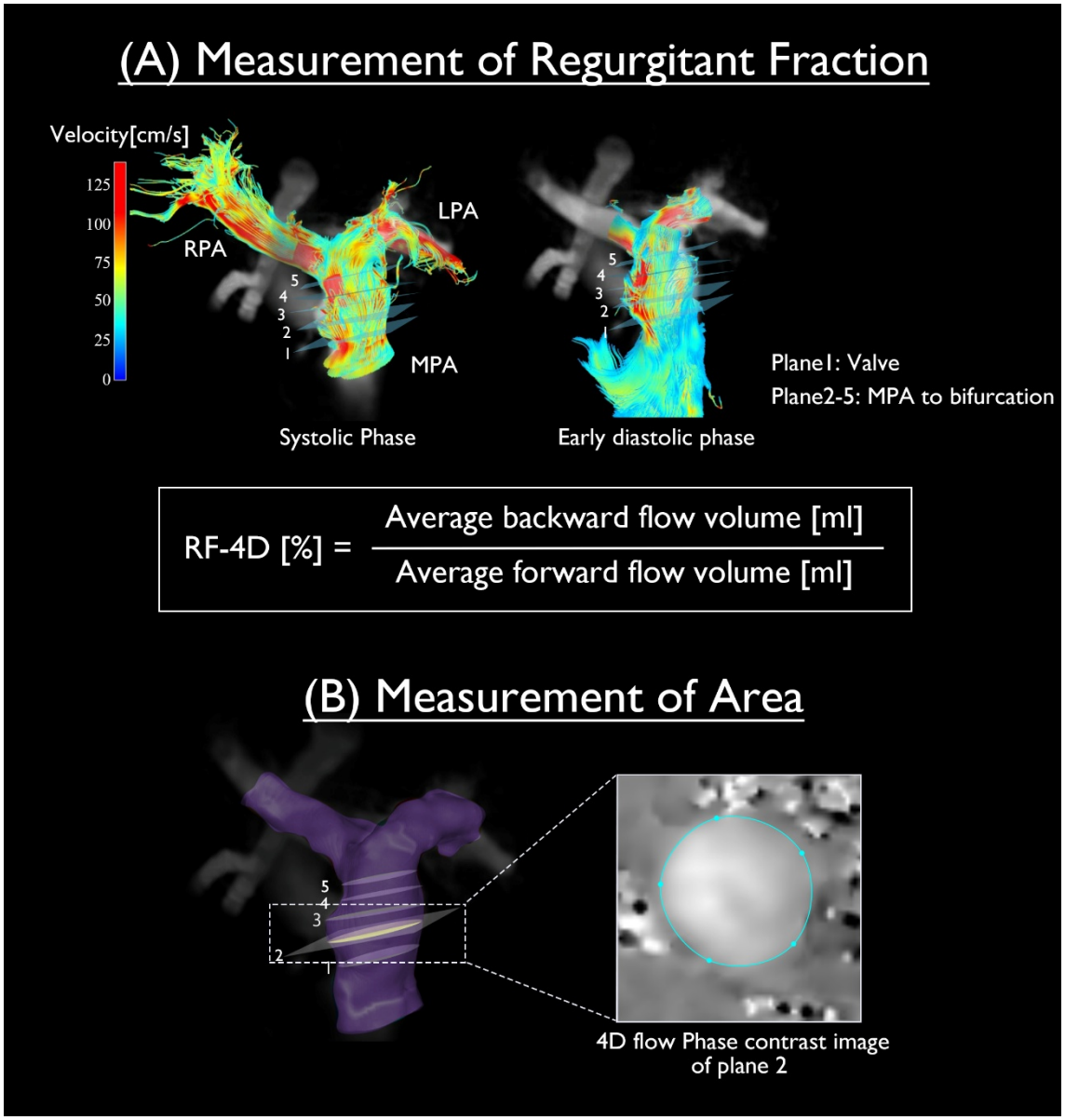

Fig. S3 WSS in cardiac cycles was compared between 3months post-TPVI and 1 year post-TPVI. No significant differences were found in either systolic or early diastolic phase.

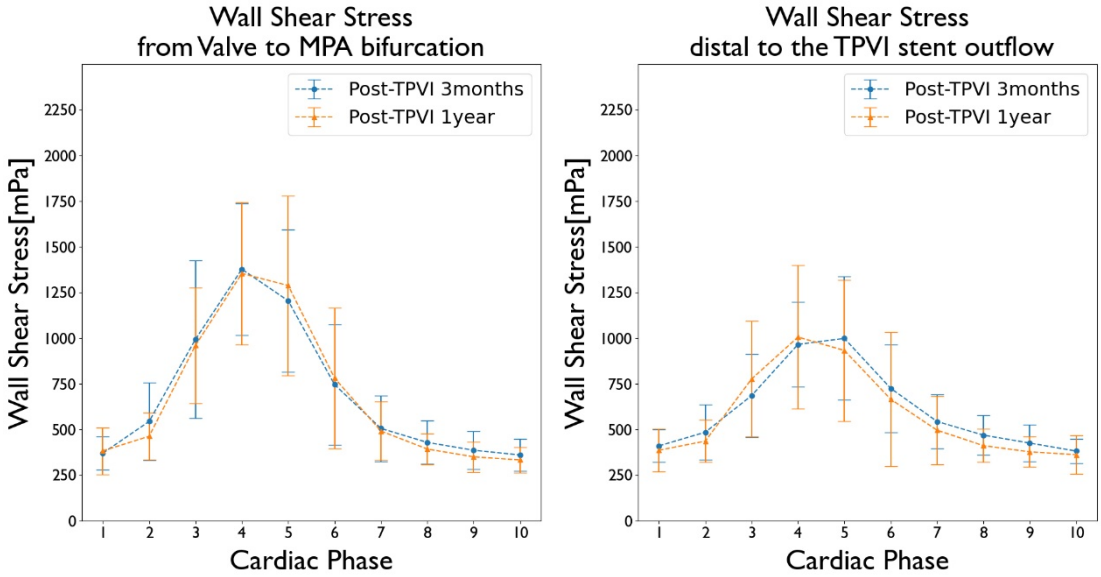

Table S1. Correlation between the average cross-sectional area of the main pulmonary artery and clinical and CMR data

Pre-operative parameters	Average Area of Pulmonary Aretery [mm2]	
	r	p
Age	0.173	0.361
BNP(pg/ml)	-0.031	0.869
RF-4D(%)	0.514	0.003
RVEDVi(ml)	0.313	0.092
RVESVi(ml)	0.206	0.275
RVEF(%)	0.154	0.416
CO-RV(l/min)	0.142	0.453
LVEDVi(ml)	-0.466	0.009
LVESVi(ml)	-0.412	0.024
LVEF(%)	0.16	0.397
CO-LV(l/min)	0.012	0.949
RVSP(mmHg)	0.073	0.701
RVEDP(mmHg)	-0.123	0.518
mPAP(mmHg)	-0.025	0.897
Systolic mean velocity(cm/s)*	-0.68	< 0.001
Diastolic mean velocity(cm/s)*	-0.312	0.093
Systolic WSS(mPa)	-0.545	0.002
Diastolic WSS(mPa)	-0.456	0.011

*mean velocity indicates the mean blood flow velocity of multiple slices measured in 4D flow.