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Transcatheter replacement of pulmonary valve with Venus P-Valve : a single center experience in 15 patients

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Objectives: To report the short term results of transcatheter replacement of pulmonary valve with the Venus P-Valve

Methods: During a 10-month period, 15 patients underwent attempted transcatheter replacement of pulmonary valve with a Venus P-Valve. Of the 15 patients aged 26 ± 12 years, all had moderate-to-severe pulmonary regurgitation and significant right ventricular dilation. Fourteen had postoperative Tetralogy of Fallot and 1 had aortic valve stenosis status post Ross procedure. The diameter of Venus P-Valve selected was 2-4 mm larger than waist diameter of the sizing balloon. The length selected was similar to main pulmonary artery length. Aspirin 100mg and Plavix 37.5 mg was given to each patient for 6 months.

Results: The procedure was successful in all 15 patients. Eight patients underwent a 6-month follow-up magnetic resonance imaging study. There were significant reductions of right ventricular end-diastolic volume index (RVEDVi) and right ventricular end-systolic volume index (RVESVi) (168 ± 11 vs. 126 ± 9 ml/m², and 93 ± 16 vs. 69 ± 8 ml/m², respectively, $P < 0.01$). But there were no significant changes in RV ejection fractions (44.9 ± 10.0 vs. $44.8 \pm 6.0\%$). No major complications occurred. One patient developed tarry stool then aspirin was discontinued. After a mean follow-up period of 5.9 ± 3.4 months, symptomatic improvements were documented in 11 patients. The most recent echocardiography showed the implanted valves in good position and trivial pulmonary regurgitation in all 15 patients. Very mild paravalvular leak was found in 4 patients.

Conclusion: Transcatheter replacement of pulmonary valve with Venus P valve is safe and effective in patients with moderate-to-severe pulmonary regurgitation.