

during CPET, which does not require a maximal exercise to be interpretable. This study aimed to evaluate the OUES of a large cohort of children with CHD, and to compare the results with those of healthy controls. We also intended to identify, in this specific population, the clinical and CPET variables associated with the OUES.

Methods and results This cross-sectional multicenter study enrolled 709 children (407 CHD and 302 healthy controls). The association of clinical characteristics with weight-normalized OUES (OUESkg) was studied using a multivariable analysis. The mean OUESkg was significantly lower in CHD than in healthy controls (respectively 38.6 ± 8.5 and 43.9 ± 8.5 ; $P < 0.001$). The OUESkg was predominantly affected in the most severe CHD. The OUESkg correlated well with VO₂max ($r = 0.85$, $P < 0.001$). The decrease of OUESkg was associated with increased age, increased BMI, number of cardiac catheter or surgical procedures, female gender and decreased FVC (Z-score).

Conclusion The OUES is significantly impaired in children with CHD and strongly correlates with VO₂max. The OUES has the same clinical determinants as VO₂max and therefore may be of interest in submaximal exercise.

Keywords Cardio-pulmonary exercise test; Congenital heart disease; Oxygen uptake efficiency slope; OUES; Pediatrics

Disclosure of interest The authors declare that they have no competing interest.

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Mid-term outcomes after percutaneous pulmonary valve implantation in complex right ventricular outflow tracts using the “folded” Melody® valve technique

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Abstract

Background Percutaneous pulmonary valve implantation (PPVI) using Melody® valve has been validated as a valuable therapeutic option for the management of right ventricular outflow tract (RVOT) dysfunction but remains challenging [1–3]. The “Folded” modification of the Melody® valve has been reported as a safe and feasible technique in complex RVOT [4]. We sought to evaluate mid-term outcomes in a multicentre cohort who underwent PPVI using the “folded” Melody® valve technique.

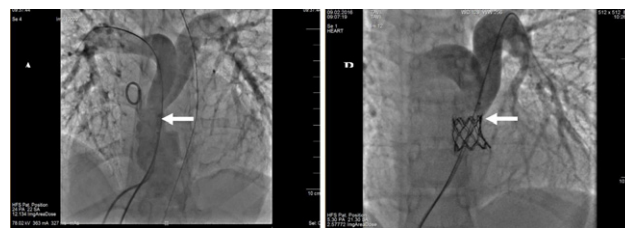


Fig. 1 Folded Melody valve implantation in a patient with Truncus arteriosus type 2A with short RVOT and early PA bifurcation. (A) Angiogram showing short RVOT with early PA bifurcation (white arrow) and free PR; (B) Angiogram after Folded valve implantation showing good valve function (white arrow). PA, pulmonary artery; PR, pulmonary regurgitation; RVOT, right ventricular outflow tract.

Methods Patients who underwent PPVI using a Foled Melody® between April 2012 and November 2018 in 6 European tertiary Centers were retrospectively included.

Results “Folded” Melody® valve technique was successfully performed in 28 patients (mean age = 17.7 ± 10 years old). Indications were: short RVOT and early bifurcation of pulmonary arteries in 12 (42.8%) (Fig. 1), bioprosthetic valves in 10 (35.7%), coronary arteries proximity in 4 (14.3%) and prevention of retrosternal compression in 2 (7.2%). No complication occurred during procedures. All patients had excellent hemodynamic results. Mean transvalvular peak velocity decreased from 3.8 ± 0.86 m/s before PPVI to 2.4 ± 0.55 m/s in the immediate post-PPVI period. Only 5 patients had trivial pulmonary regurgitation (PR) at discharge. After a median follow-up (FU) of 27 ± 17.9 months, all patients were alive, and all, but 3 patients, were free from reintervention: 1 patient (3.5%) developed Melody® valve infective endocarditis 3 months after PPVI and underwent RVOT surgical replacement; Two underwent pulmonary artery stenting 2 and 4 years after of PPVI, but the lesions were not related to the Folded valve. At last FU mean transvalvular peak velocity was 2.6 ± 0.66 m/s and only 5 (17.8%) patients had mild or less PR. No stent fractures were observed.

Conclusion The “folded valve technique” is a safe and feasible modification of the Melody® valve which provides favourable mid-term results without increased rate of valve related complications.

Keywords Transcatheter valve; Pulmonary valve; Stent; Complex right ventricular outflow tract

Disclosure of interest AE, MG, JBT and YB act as proctors for Medtronic Inc.; ZJ is consultant for Medtronic. Other authors have no conflict of interest to declare.

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