

Transcatheter interventions in post-Fontan patients - a single center experience

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Introduction: Fontan palliation for univentricular hearts carries significant early and late morbidity. Most of these residual lesions or complications can be successfully managed with transcatheter interventional procedures. We analyzed our institutional experience in transcatheter treatment of post-Fontan patients.

Methods: Retrospective review of all transcatheter interventions in Fontan patients since January 2001 at Polish Mothers Memorial Hospital.

Results: A total of 145 interventions were performed in 97 patients (1-3 procedures per patient, in 29 catheterizations more than 1 intervention was performed). Before 2006 only 30 interventions were performed compared to 115 in the most recent years ($P < 0.05$). Patients with RV dependent circulation 58 (60%) required interventions more commonly compared to patients with LV dependent circulation 37 (38%) ($P < 0.05$). Sixteen interventions were undertaken in the early postoperative period, 28 by the end of the first year after Fontan completion and 53 in the second year after surgery. Median age at intervention was 6.5 (range 2.45–24.1) years and median weight was 20 (range 9.4–114) kg. Median time interval between Fontan surgery and intervention was 15 (0–241) months. The most commonly performed intervention was fenestration closure 78 patients (37 – ASO, 31 – ADO II, 10 – covered stent). In 27 procedures pulmonary branch stenosis was treated (19 – stent implantation, 7 – stent redilatation, 1 – balloon angioplasty). In 21 procedures tunnel stenosis was treated (18 – isolated balloon dilatation, 3 – stent implantation). Further 12 interventions were performed to close collaterals (11 veno-venous, 1 – arterio-venous), 5 interventions to dilate Glenn shunt and single intervention to dilate fenestration and recoarctation. Complications related to transcatheter treatment occurred during 6 interventions (4.1%): arrhythmia – 3, death due to thromboembolic complication – 1, vascular trauma – 1, device embolization – 1.

Conclusions: Transcatheter interventions belong to integral management of patients after Fontan completion. Performed interventional treatment was highly successful with low incidence of complications and resulted in significant improvement of venous pressure in the Fontan circuit, diameters of pulmonary arteries and extracardiac tunnel and increase in oxygen saturation. All of the above led to improvement in patients' hemodynamics.