Intermediate and late outcome of Fontan patients after fenestration closure – single institutional study

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Introduction: The study was designed to determine changes in oxygen saturation (satO2) and hemodynamic parameters after closure, and character of complications during follow up. Secondary outcome was to evaluate potential risk factors for late complications.

Methods: Retrospective analysis of medical records approved by single institution. The study sample consists of all patients (pts) who accomplished inclusion criteria and underwent fenestration closure in the period of 1997 to 2011.

Results: In this period were performed 79 procedures in 73 pts. In 3 of the pts have been performed 2 following procedures because of the presence of residual leak or another fenestration. The most common diagnosis were hypoplastic left heart syndrome, tricuspid and pulmonary atresia (55.6%) with their variations. Relation between systemic right and left/single ventricle (SV) was 28 to 44 (0.64). Median age of operation was 43 months, lateral tunnel represented 33.3% and extracardiac conduit 66.6%. The median of follow up postoperatively to fenestration closure was 33 months, of postclosure follow up 56 months. There was no significant difference in satO2 changes between the diagnoses, neither systemic RV and LV/indetermined ventricle. The immediate postoclussion mean baffle pressure increased significantly from 12.1 to 13.3 mmHg. Additional procedure was performed in 9 pts (12.5%). Hemodynamically trivial residual leakage was present in 16 pts (22.2%). Procedure-related complications were present in 34 pts (47.2%) - arrhythmias (11.1%) and transient SV dysfunction (13.9%). During follow up, in none pt was necessary to remove device or restore fenestration. Late complications occured in 19 pts (26.4%). The most frequent were impaired AV valve regurgitation and SV dysfunction (11.1%) and arrhythmia (8.2%). The most serious result from plastic bronchitis. Character of SV did not accomplished statistical significance. Complication-free survival was 88.9%, 74.9% and 56.3% (independent from character of SV), freedom from exitus was 97.2%, 94.71% and 84.2% respectively at 1, 5 and 10 years. From risk factor end-diastolic SV pressure affects the onset of late complications.

Conclusions: The most frequent late complications after fenestration closure result from impaired SV function and arrhythmias (20%). Elevated end-diastolic SV pressure is associated with higher incidence of complications during follow up.