Results of atrioventricular valve repair in patients with functional single ventricle

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INTRODUCTION
Significant atrioventricular valve (AVV) regurgitation is known as a risk factor for mortality and poor long-term outcome following modified Fontan operation in patients with functional single ventricle.

METHODS
Between 2000 and 2014, 24 consecutive Fontan candidates underwent AVV repair. A retrospective study was carried out to evaluate the indications for AVV repair, the techniques of repair and the clinical outcome.

RESULTS
All patients had a functional single ventricle: left-dominant (9 pts-37%), right-dominant (6 pts-25%), unbalanced atrioventricular septal defect (4 pts-17%) and double inlet ventricle (5 pts-21%). AVV regurgitation was evaluated by echocardiography and graded as significant (> grade 2) in all patients. A staged strategy for Fontan was applied; 18 patients (75%) reached Fontan completion. Primary AVV repair was performed at an age ranging from 11 days to 16 years (median: 5.4 yrs) and the timing was variable: before bidirectional Glenn (BDG) in 2 pts (8%), at the time of BDG in 9 pts (38%), between BDG and Fontan in 5 pts (21%) and at the time of Fontan completion in 8 pts (33%). Various techniques for AVV repair were used: annuloplasty (11 cases), commissuroplasty (9 cases), closure of cleft, fenestration or indentation (9 cases), edge-to-edge repair (3 cases), chordal shortening (1 case) and valve closure (4 cases).

There were two deaths (8.3%): one early cardiac death and one late non-cardiac. 6 patients (25%) underwent 8 reoperations for recurrent regurgitation. The first reoperation included re-repair in 3 patients and AVV replacement in 3 patients. The second reoperation included repair in 1 patient and replacement in 1 patient. At last follow-up (mean follow-up: 9.9 years), 3 patients had significant (> grade 2) residual AVV regurgitation, 4 patients had valve replacement, ventricular dysfunction was present in 5 patients and one patient had had heart transplantation.

CONCLUSIONS
In Fontan candidates, early repair of significant AVV regurgitation is essential to minimize volume overload and preserve ventricular function. AVV repair provides acceptable results and the need for reoperation is relatively low. Valve replacement, if needed, remains a valuable option.