

### Atrioventricular valve repair concomitant with Fontan procedure: "simple" surgical strategies for single-ventricle patients

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**INTRODUCTION:** Atrioventricular (AV) valve regurgitation is widely known as a risk factor for the Fontan completion in patients with univentricular physiology. To date, indications and timing for the AV valve repair remain unclear and different surgical techniques have been advocated. We present our initial experience by using individualized "simple" techniques for repairing the AV valve along with Fontan completion.

**PATIENTS/METHODS:** Since 2013-2015, 53 consecutive patients underwent extracardiac Fontan completion in our institution. AV valve repair (avoiding the use of prosthetic ring) was performed as concomitant procedure in three of them due to moderate or severe tricuspid regurgitation. **Case 1:** 9 year-old, 26 kg. Diagnosis: unbalanced atrioventricular septal defect. AV valve: common AV valve. Procedure: closure of the left-side cleft (cardioplegic arrest) (1A/1B). **Case 2:** 5 year-old, 15 kg. Diagnosis: hypoplastic left heart syndrome. AV valve: tricuspid. Procedure: the antero-septal commissure was closed, as well as two gaps in the posterior valve (beating-heart repair) (2A/2B). **Case 3:** 5 year-old, 18 kg. Diagnosis: double outlet right ventricle, non-committed ventricular septal defect. AV valve: mitral and tricuspid. Procedure: both anterosseptal and posteroseptal tricuspid valve commissures were closed (cardioplegic arrest) (3A/3B). In the three cases, following the valve repair, the Fontan pathway was completed uneventfully with an extracardiac 18-20 mm conduit.

**RESULTS:** On-table echocardiography, trace-to-mild regurgitation was noticed for all the cases. No post-operative complications were detected. Patient 1 underwent percutaneous embolization of venous collaterals on early post-operative period. Average in-hospital stay was 19 +/- 6 days. At follow-up (18 +/- 4 months), they remain asymptomatic with unchanged echocardiography findings (trace-to-mild regurgitation).

**CONCLUSION:** The AV valve repair concomitant with Fontan procedure when moderate or severe regurgitation is present may be performed at a low risk with excellent short-term results. Beating-heart surgery can be accomplished in selected cases and surgical techniques should be simple and reproducible, avoiding AV valve replacement in these single-ventricle patients.

