

## **Surgical Outcome Of Atrioventricular Valve Replacement For Children With A Functional Single Ventricle**

*Ide Y., Murata M., Ito H., Kanno K., Imai K., Ishido M., Fukuba R., Sakamoto K.  
Mt. Fuji Shizuoka Children's Hospital, Shizuoka, Japan*

### **Objectives**

Atrioventricular valve (AVV) regurgitation remains a big issue in the treatment of children with a functional single ventricle (fSV). Some patients require AVV replacement (AVVR) during the early stage of life for uncontrolled regurgitation even after aggressive AVV plasty. We sought to clarify the current outcome of AVVR for children with fSV.

### **Methods**

A retrospective review of 13 fSV patients who underwent AVVR at a tertiary pediatric cardiac center from January 1999 to March 2016. There were 8 (62%) Heterotaxy and 2 (15%) HLHS patients. Nine (69%) had common AVV morphology. All AVVRs were performed by a single surgeon after at least one time (1-4) of AVV plasty and 9.6 months (7 days-7.9 years) after the final AVV plasty. AVVR was indicated for an AVV regurgitation more than moderate grade at Glenn stage (3), 2nd. interstage (5), Fontan stage (1) and post-Fontan stage (4). Current follow-up is obtained in all of the surviving patients.

### **RESULTS**

Median age and body weight at AVVR was 2.7 (0.28-16.7) years and 8.7 (3.5-33.5) kg, respectively. Replaced valves were bio-prosthesis in 3 and mechanical valve (MeV) in 10. Valve size ranged from 16 to 29 mm. There were 6 mortalities (in-hospital; 4 late; 2) due to heart failure (4), stuck valve (1), thrombosis (1) during 3.7 +/- 4.3 years of follow up period. All 3 bio-prosthesis were replaced to MeV due to progressive stenosis 2.2 (1.1-2.4) years after the first AVVR. Two MeV were stuck and replaced 5.0 and 0.80 years after implantation, respectively. Overall survival after the first AVVR was 61% (1 year) and 53% (5 years). Freedom from re-intervention was 73% (1 year) and 22% (5 years). Lower body weight at AVVR was involved in higher in-hospital mortality (6.5 kg vs 14.7 kg,  $p=0.0492$ ).

### **CONCLUSIONS**

The results of AVVR in fSV patients are disappointing with high mortality and morbidity. Bio-prosthesis degenerates rapidly and requires early re-AVVR, while MeV has high incidence of stuck valve and thrombosis. AVVR should be put off as late as possible if ventricular function is maintained properly by AVV plasty.