

### **Long-Term Survival and Need for Reoperation After Surgical Repair of Complete Atrioventricular Septal Defect – 40 Year Follow-up at a Single Institution**

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**Background:** Decreased perioperative mortality over the past several decades has produced a growing population of adults with repaired complete atrioventricular septal defect (CAVSD). Early reports suggest good survival at short and mid-term follow-up. However, about 5% to 10% require reoperation, most commonly for left atrioventricular valve (LAVV) regurgitation and subaortic stenosis. The long-term survival of CAVSD is unknown. Whether the need for reoperation persists in the long-term after CAVSD repair is also unknown. The purpose of this study was to determine long-term outcome in adults with CAVSD with particular emphasis on the need for reoperation for LAVV regurgitation and subaortic obstruction.

**Methods:** Between 1974 and 2000, a total of 220 patients underwent surgical repair for CAVSD at our institution. A retrospective analysis of records was performed. Patients with partial or unbalanced (single ventricle) atrioventricular septal defects were excluded from the study.

**Results:** Associated diagnoses for the 220 CAVSD patients include Down syndrome in 170 (77%), tetralogy of Fallot (TOF) in 21 (9.5%), and coarctation of the aorta in 6 (2.7%). Pulmonary artery banding was performed in 32 (14.5%) patients prior to CAVSD repair. Following CAVSD repair, there were 20 early deaths (< 30 post-operative days), resulting in an overall perioperative mortality of 9.1%. Total survival for the cohort was 86% at 10 years, 82% at 20 years, and 70% at 30 years. Risk factors for death after CAVSD repair include early surgical era ( $p<0.0001$ ) and TOF ( $p=0.04$ ). Of 200 operative survivors, 185 patients (84%) had available follow-up data with a median duration of 16 years (range 1 to 40 years). For the 185 patients with follow-up data, 39 (21%) required at least 1 reoperation following CAVSD repair. Total freedom from reoperation after CAVSD repair was 89% at 10 years, 80% at 20 years, but then remained steady at 80% at 25 years and 76% at 35 years. Indications for reoperation included LAVV regurgitation in 16 (8.6%) (LAVV repair = 14, replacement = 2), subaortic obstruction in 9 (4.8%), and residual VSD in 8 (4.3%). Median post-operative duration for undergoing LAVV surgery was 2.04 years (range 2 months to 13.5 years). Risk factors for LAVV surgery include history of pulmonary artery band ( $p=0.04$ ). Of the 16 patients with LAVV surgery, only 2 required subsequent surgery for re-repair ( $n=1$ ) or re-replacement ( $n=1$ ). There was a nonsignificant trend towards increased long-term mortality in patients requiring subsequent LAVV surgery after CAVSD repair ( $p=0.07$ ). Median post-operative duration for undergoing subaortic obstruction repair was 8.3 years (range 2 months to 15.8 years). Postoperative heart block was identified in 9 patients (4.9%), 6 of which occurred immediately after CAVSD repair, and 3 occurred late at 14, 18, and 21 years after CAVSD repair and were not associated with any reoperations.

**Conclusion:** Long-term survival following repair of CAVSD remains excellent. Late complications however do exist and some patients may require reintervention. The majority of reinterventions however appear to occur within the first two decades following initial repair, with need for reintervention decreasing with longer follow-up.