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Surgical repair of the left AV valve in atrioventricular septal defect : incidence and modes of failure

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Introduction: Late attrition of surgical correction of atrioventricular septal defect(AVSD) is strongly dependent on the result of left atrioventricular valve(LAVV) repair. The study aim is to investigate the long-term outcome of AVSD repair, based consistently on the use of a double-patch technique and primary closure of the LAVV cleft.

Methods: Retrospective investigation of 202 children with AVSD, operated on in our center between August 1992 and February 2016, was performed. Analysis focused on survival and freedom from reoperation for recurrent LAVV dysfunction, with specific attention to the mode of valve failure.

Results: The study population consisted of 129(64%) cAVSD and 73(36%) pAVSD patients, corrected at the mean age of 7.6(95%CI 5.2-9.9) and 81(95%CI 53-109)months respectively. Survival at 10 year was 86±4% for cAVSD and 98±2% for pAVSD (p=0.012), yielding a significantly better 8-year survival during the second decade of the study (91±4% versus 81±7%, p=0.02). Within a mean follow-up of 7.6(95%CI 6.5-8.7)years, 27(13%) patients required reoperation for LAVV dysfunction, respectively in 17(13%) cAVSD and 10(14%) pAVSD patients. Freedom from LAVV reoperation at 10 year was 86±4% for cAVSD and 91±4% for pAVSD (p=0.97).The mode of failure was predominantly technical in cAVSD (69% versus 22% in pAVSD), while LAVV failure was preferentially due to residual anatomical abnormalities in pAVSD (78% versus 31% in cAVSD)(p=0.04). Most frequent causes of technical failure were cleft suture dehiscence(n=8), incomplete cleft closure(n=5), whereas anatomical reasons were remnant distortion of the subvalvular apparatus(n=10), small asymmetric bridging leaflet (n=1) or double orifice(n=2), and additional cleft(n=1). Eight patients underwent second LAVV surgery, and 2 patients even a third procedure. Other reoperations were required for acquired LVOTO(n=8) and pacemaker implantation(n=14).

Conclusion: Whereas advances in the peri-operative management have improved their survival, the long-term outcome of AVSD patients is still importantly affected by the failure of the LAVV. Despite the systematic closure of LAVV cleft, patients with cAVSD remain at risk of LAVV failure, mainly by technical inadequacy, while pAVSD patients need increased attention for additional anatomical features at the time of surgical repair.