

Predicting surgical outcome in children with acyanotic congenital heart diseases and severe pulmonary hypertension

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Background: Elevated pulmonary vascular resistance is a contraindication for surgical repair for left to right shunts.

Objective: To investigate if perioperative risk stratification be predicted clinically only.

Methods: Clinical, surgical, and post-surgical records of patients with complete atrioventricular septal defect (CAVSD) and ventricular septal defect (VSD) who underwent catheterization from 2001 to 2009 were reviewed. Cohort divided into; group A (low risk) having PVR \leq 6 Woods units and group B (high risk) with PVR $>$ 6 Woods units on room air. Standard operability criterion was exercised to judge the operability.

Results: Eighty four patients; (VSD=47, CAVSD=37) underwent diagnostic catheterization. Mean age/weight=3.5 \pm 2.9 yrs and 11 \pm 5.7 kg in VSD group and 2.9 \pm 3.8 yrs and 10.5 \pm 9.3 kg in CAVSD. Amongst VSD patients, Group A=23 and B=24. In CAVSD patients, Group A=21 and B=16. All VSD and 33 CAVSD were deemed operable. Mean pulmonary artery pressure and PVR was significantly higher in group B in both VSD (62.5 \pm 13mmHg Vs 47 \pm 13mmHg, p = 0.005 and 9.3 \pm 3.3 WU Vs 3.2 \pm 1.3 WU, p = 0.005) and CAVSD (62 \pm 9mmHg Vs 42 \pm 13mmHg, p = $<$ 0.001 and 10.3 \pm 4 WU Vs 3.2 \pm 1.6 WU, p = 0.001). All but three with VSD had SaO₂ \geq 94%. In CAVSD patients, all meeting the PVR based operability criteria had SaO₂ \geq 83%. Four inoperable cases had SaO₂ $<$ 80%. Six patients did not undergo surgical repair, and other 3 had missing records. There was no significant difference in tested variables between the two groups of both VSD and AVSD. Two (4%) VSD and 1 (4%) CAVSD patients died within 30 days of surgery. One high risk VSD patient died two years after. One patient in each group was on anti-pulmonary hypertensive medicines. Rest were doing well over a mean follow up of 4.8 years.

Conclusion: SaO₂ of 94% in children with VSD and of 83% with CAVSD correctly identifies operable patients. This criterion may be used as an alternate to catheterization to identify operability amongst patients with left to right shunts. Immediate postoperative and short term outcome of operable patients having higher PVR is similar to those with PVR $<$ 6 WU.