

Multivariate analysis for all risk factors proved statistically insignificant.

Abstract 1660 Table 1 Multivariate risk stratification

Factors	Group	Patients	Procedures	Mortality	p value
Age (months)	< 1 Bet 1–12 > 12	6 18 11	8 21 14	1 3 1	0.79
Weight (kg)	<2.5 2.6–5 5.1–10 >10	3 12 12 8	3 14 15 11	0 3 1 1	0.51
Sex	Male Female	21 14	27 16	3 2	0.89
Time bet surg/ Inter (days)	<1 1–3 3–5 5–7 >7	3 4 6 5 18	3 7 7 5 21	0 1 1 1 2	0.69
Material	Native Synthetic	27 6	35 6	4 1	0.80

Abstract 1660 Table 2 Multifactorial comparison between mortality and survival

Factors	Group	Mean	SD	Range	p value
Age (months)	Mortality Survival	11	14.6	0.3–36	0.792
		21.2	40.9	0.3–192	
Weight (kg)	Mortality Survival	6.6	6.3	2.7–17.5	0.513
		7.3	5.8	1.9–33.9	
Time (days)bet surg/intervention	Mortality Survival	7.8	5.4	3–17	0.399
		13.5	14.8	1–59	

**Conclusion** We conclude that transcatheter intervention in critically sick patients during immediate post operative period is safe in expert hands and in a fully equipped facility, backed up by multi specialty team.

### 1661 COMPUTATIONAL FLUID DYNAMICS SIMULATION OF PRESSURE CHANGES IN THE TRACHEA BEFORE AND AFTER VASCULAR RING SURGERY: THE FEASIBILITY ANALYSIS

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**Background** Effective relief of tracheal stenosis (TS) caused by complete vascular ring (CRV) is mandatory for vascular ring surgery (VRS). Even the forced expiratory volume in the first second (FEV1) measurement is usually applied to assess TS caused by CVR, here has been little research about the quantitative approach for analyzing the airway. Our purpose will apply the computational fluid dynamic (CFD) technique to evaluate the change of tracheal airway pressure by VRS.

**Methods** 12 patients with CVR and TS were found of pressure drops across the tracheal airway segment of TS before and after the VRS. CFD was performed to obtain the velocity field and viscous pressure drops in a realistic, three-dimensional, patient-specific model. The tracheal aerodynamic resistance was represented as a pressure drop in the tracheal airway. Three velocities (0.01, 0.1, and 1 m/s) were used to calculate the pressure drop in the tracheal airway for both inspiratory and expiratory flow patterns.

**Results** The pressure drops of the TS before and after the VRS at inlet velocity 0.1 m/s was improved 45.95% in inspiratory phase and 40.65% in expiratory phase. When the inspiratory inlet velocity reached 1 m/s, the pressure drop became improved of 43.32%. CFD showed a surgical treatment can significantly decrease the pressure drop in the tracheal airway, especially in a low inlet velocity.

**Conclusion** CVR can augment the airway flow resistance of TS. The CFD approach can be a useful alternative for quantifying the change of airway resistance and evaluating the effectiveness of VRS.

### 1662 OUTCOME OF COGNITIVE PERFORMANCE IN SCHOOL-AGED CHILDREN AFTER SURGICAL CORRECTION OF CONGENITAL VASCULAR RING

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**Objective** Our goal in this study is to assess the impact of congenital vascular ring (VR) on cognitive performance and its outcome after surgical correction.

**Background** The clinical indication for VR abnormalities relies on symptoms of tracheal and esophageal compression. However, the possible influence of VR on neurocognitive function and intelligence in school-aged children has yet to be examined.

**Methods** Patients with VR (n=78), which divided into two groups, partial (PVR) or complete vascular ring (CVR), and 30 normal controls were analyzed with Wechsler Intelligence Scale for Children-III (WISC-III) to assess the intellectual abilities before and one year after surgical intervention.

**Results** The initial assessment showed that the overall performances of the two VR groups on all the intelligence measurements are significantly lower than the control group. Nevertheless, the post-operational assessment of the VR groups one year later had shown significant improvement in most of the intelligence categories measured.

**Conclusions** The current results indicate a strong possibility of the influence of VR on neurocognitive development in school-aged children which is prompt to improve after surgical intervention is applied.

### 1663 EARLY CORONARY FLOW AND ECG CHANGES FOLLOWING CARDIOPULMONARY BYPASS SURGERY IN CHILDREN WITH CONGENITAL HEART DISEASE

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**Background** Surgery with cardiopulmonary bypass (CPB) remains the mainstay of therapy in children with congenital heart defects but little is known about its pathophysiologic consequences. We have recently demonstrated that CPB surgery in children leads to increase in coronary flow for at least 1 week after surgery, while others have shown, yet in adults, profound adverse effects of CPB on myocardial repolarization over the same period of time. The latter may be an important mechanism of ventricular arrhythmia, which is a common complication after CPB surgery.

**Objective** To investigate the relationship between coronary flow and myocardial repolarization after CPB surgery.

**Methods** Coronary flow in the proximal part of the LAD and indexes of myocardial repolarization (QT interval corrected for heart rate (QTc) and QT dispersion) were assessed by transthoracic Doppler echocardiography and in 12-lead surface electrocardiogram, respectively, in children with atrial (n=12) and atrioventricular septal defects (n=16) 1 day before, and 5 days after cardiac surgery with CPB.

**Results** Neither QTc nor QT dispersion postoperatively differed significantly compared with preoperative values ("p for mean">0.2 for both). However postoperative QTc showed a significant positive correlation with both preoperative (r=0.4, p=0.03) and postoperative (r=0.5, p=0.01) coronary flow. In patients with atrial septal defects, QTc postoperatively correlated significantly with the duration of CPB (r=0.6, p=0.04), but not in those with VSD.