Abstracts

Multivariate analysis for all risk factors proved statistically insignificant.

Abstract 1660 Table 1 Multivariate risk stratification

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

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.

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

doi:10.1136/archdischild-2012-302724.1661

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 CRV, 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 CRV 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 CFD can augment the airflow resistance of TS. The CFD approach can be a useful alternative for quantifying the change of airway resistance and evaluating the effectiveness of VRS.

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

doi:10.1136/archdischild-2012-302724.1662

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.

Methods Coronary flow in the proximal part of the LAD and vector magnitude and index of myocardial repolarization (QT) were assessed by transhacortic Doppler echocardiography and in 12-lead surface electrocardiogram, respectively, in children with atrial (n=12) and atroventricular 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) whereas QT postoperative electrocardiogram 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.

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

doi:10.1136/archdischild-2012-302724.1663

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