Neonatal Aortic Stenosis Is a Surgical Disease

Viktor Hraška
No Disclosure


Background

Understanding of Limitation of Biventricular Repair

Improved Early Results

Method of Treatment
The Goals

Easy to Achieve

Relief of Aortic Obstruction

Difficult to Achieve

Provide Lasting Freedom from AS w/o Causing AR
Valvotomy of any kind is a palliative procedure and reintervention remains frequent

The long-term preservation of the native aortic valve seems to be dependent on the morphology of the aortic cusps and on the method used
The aim of presentation

Benefits of surgical valvotomy
Why surgical valvotomy

Commissurotomy

Resection of Myxomatous Tissue

Correction of Associated Anomalies
<table>
<thead>
<tr>
<th>Reference</th>
<th>Grade</th>
</tr>
</thead>
</table>
Survival • 75 - 95% at 10 years

Event free survival • 50 – 70% at 10 years

Freedom from AVR • 70 – 80% at 10 years
The Long-Term Outcome of Open Valvotomy for Critical Aortic Stenosis in Neonates

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Study Design

Retrospective study


Patients data

- 34 neonates
- 85% males
### Early Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mortality</strong></td>
<td>• 3 pts (8.8%)</td>
</tr>
</tbody>
</table>
| **Postoperative Morbidity** | • 1 pt early Ross-Konno  
 |                       | • 1 pt CoA repair                                                      |
|                      | • Ventilation - 108 h (mean)                                            |
| **Optimal functional results** | • 93% of pts (AS & AR ≤ mild)                                         |
Survival; Mean FU - 11 years

91.2% ± 4.9%

Percent survival vs. Months

Patients at risk: 34, 26, 26, 25, 22, 18, 13, 9, 8, 5
Event-free Interval

<table>
<thead>
<tr>
<th>Interval (Years)</th>
<th>Freedom (% ± SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>77.2 ± 8.2</td>
</tr>
<tr>
<td>10</td>
<td>68.2 ± 9.4</td>
</tr>
<tr>
<td>15</td>
<td>68.2 ± 9.4</td>
</tr>
<tr>
<td>20</td>
<td>56.8 ± 13.0</td>
</tr>
</tbody>
</table>

Patients at risk: 4
Event-free Interval

Log-rank test: p = 0.006

3 cups anatomy: n = 14

1 or 2 cups anatomy: n = 16
## Freedom from AVR

<table>
<thead>
<tr>
<th>Interval (Years)</th>
<th>Freedom (% ± SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>92.6 ± 5.0</td>
</tr>
<tr>
<td>10</td>
<td>82.8 ± 8.0</td>
</tr>
<tr>
<td>15</td>
<td>67.9 ± 12.0</td>
</tr>
<tr>
<td>20</td>
<td>56.6 ± 14.4</td>
</tr>
</tbody>
</table>

### Graphical Representation

The graph displays the freedom from AVR over time, with intervals noted at 5, 10, 15, and 20 years. The x-axis represents months, ranging from 0 to 240, and the y-axis shows the freedom in percentage. The table provides specific freedom rates along with their associated standard error means (SEM), indicating the variability in the data. The graph is annotated to highlight the percentage of patients at risk over the specified time periods.
Freedom from AVR

Log-rank test: p = 0.0012

3 cups anatomy: n = 14

1 or 2 cups anatomy: n = 16

Months
Freedom in %
Critical aortic stenosis with severe left ventricular dysfunction

Viktor Hraška* and Martin Schneider

Critical AS

- Bad LV Function
  - “Gentle” ballooning
- Good LV Function
  - Surgical valvotomy
Conclusions

Surgical valvotomy in neonates with critical AS carries a low early mortality and high survival benefit in the long run.
Conclusions

Optimal functional result at discharge can be achieved in majority of pts (>90%)

It is a palliative procedure and reintervention remains frequent
The long term preservation of native AoV after surgical valvotomy seems to be a morphology depended.

Exceptional results can be achieved in tricuspid valve morphology, preserving native valve in majority of patients with minimal need for AVR.
Pediatric cardiologists and pediatric cardiac surgeons should plan the treatment of each individual patient TOGETHER.
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