Aortopulmonary Window associated with an IAA: midterm results using a Single-Patch Technique

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Very rare congenital heart defect.

Significant rates of perioperative mortality.

Significant rates of recurrent arch obstruction.
OBJECTIVES

We assessed outcomes associated with the use of a single pericardial patch technique for primary repair:

- Early and mid-term mortality/morbidity
- Aortic arch and great arteries reoperation
METHODS

Unicentric retrospective study (2002-2011)

- 9 neonates and 2 infants
- Single-stage repair
- Under hypothermic (28°C) continuous CPB
- Antegrade selective cerebral perfusion
- Autologous pericardial patch (glutaraldehyde-fixed 6 min)
METHODS: surgical technique used

**Fig. 1:** APW (dashed line) associated with a type A IAA.
METHODS: surgical technique used

Fig.2: - incision made from the anterior-superior part of the APW and
- extending distally into the ascending aorta and aortic arch concavity.
METHODS: surgical technique used

*Fig. 3*: partial anastomosis between descending aorta / aortic arch
METHODS: surgical technique used

Fig. 4: single autologous pericardial patch was used to both:

- augment the aortic anastomosis
- and to close the APW using the “sandwich” technique
RESULTS

- IAA type A (n=6) and type B (n=5).
- APW type I (n=6), type II (n=4) type III (n=1)
- Median age: 11 days [range: 6-180]
- Median weight: 2.6 kg [range: 2.2-6.5]
RESULTS

- Mean CPB time: 108.6 ± 27.5 min.
- Mean aortic cross-clamp time 49.3 ± 13.4 min.
- Associated procedures:
  - 3 ASD and 1 VSD
RESULTS

- Chest left open:
  - 2 days (5 patients)
  - 3 days (3 patients)

- ICU: 4 to 18 days (mean: 8.7 ± 4.9 days)

- Hospital stay: 11 to 34 days (mean: 16 ± 9 days).
RESULTS

Mean follow-up time: 6 ± 3 years

• Postoperative morbidity: 1 stroke (no late sequelae)
• No pulmonary artery stenosis
• Arch: no stenosis
• No residual APW
• At final follow-up, all patients within NYHA class I
### Study Follow-up Patients Early Late Arch

<table>
<thead>
<tr>
<th>Study</th>
<th>Follow-up (years)</th>
<th>Patients (n)</th>
<th>Early Mortality (n)</th>
<th>Late Mortality (n)</th>
<th>Arch Reintervention (%)</th>
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</thead>
<tbody>
<tr>
<td>Barnes et al. (1)</td>
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<td>Konstantinov et al. (10)</td>
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<td>20</td>
<td>3</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>Our study</td>
<td>6</td>
<td>11</td>
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</tbody>
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<sup>a</sup> 3 patients with evidence of recurrent arch obstruction were monitored; <sup>b</sup> 3 late deaths at 2, 5, and 72 months postoperatively; u: unknown.
## COMMENT

### Table: Comparison of Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Patients ($n$)</th>
<th>Early mortality ($n$)</th>
<th>Late mortality ($n$)</th>
<th>Arch reintervention (%)</th>
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<td>Largest study</td>
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<td>Konstantinov J Thorac Cardiovasc Surg 2006</td>
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Comparison between our results and results from the largest multi-institutional study.
Limitations

- Long-term?
- Largest unicentric study but:
- Small number of cases
- …
- to be interpreted with some caution!
Primary anatomical repair of APW/IAA can be safely performed.

Efficiency of the single-patch technique was confirmed by:

- the restitution of normal functional anatomy of the great arteries
- and aortic arch in follow-up.