

Results of one-stage repair of arch obstructions associated with ventricle septal defect

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Introduction:

Newborns with severe aortic arch obstruction and ventricular septal defect (VSD) present a critical condition. Immediate surgical therapy is therefore indicated. Different surgical approaches have been suggested: one-stage repair enables almost normal cardiac development but is a challenging operation, carrying a substantial risk of perioperative mortality and morbidity.

Objective:

We review our results during 13-years period with a single stage repair of the aortic arch obstruction with associated VSD.

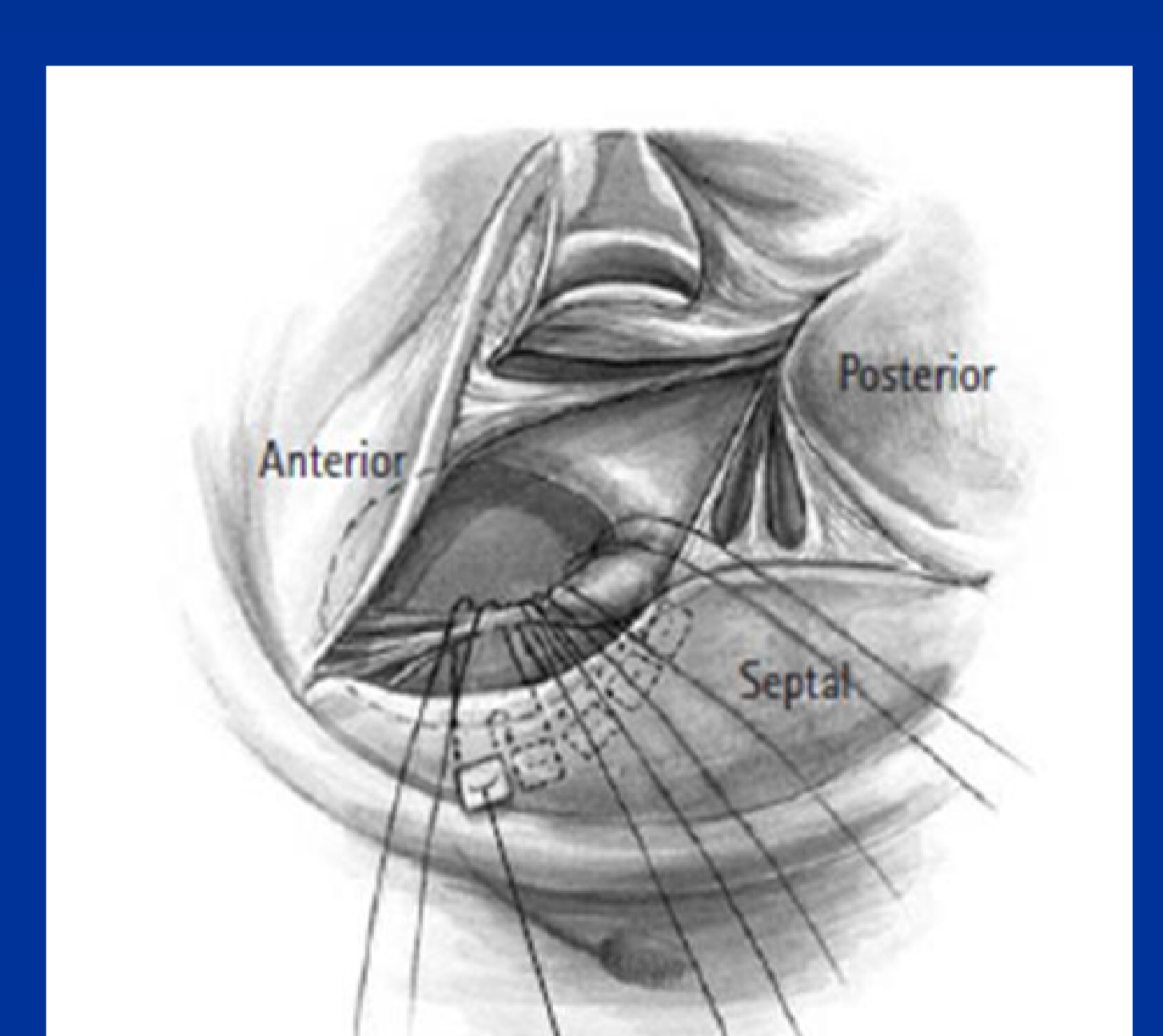
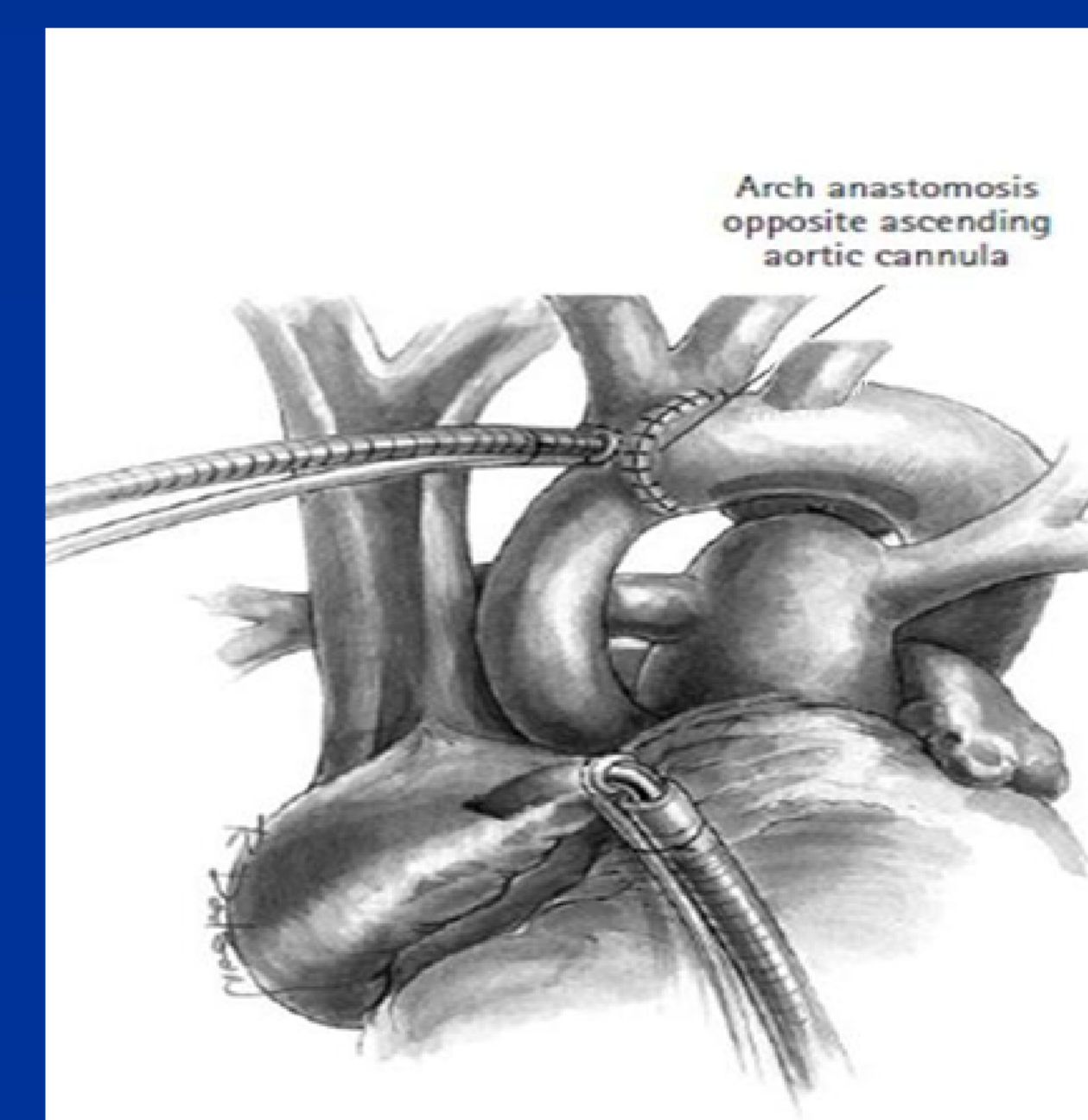
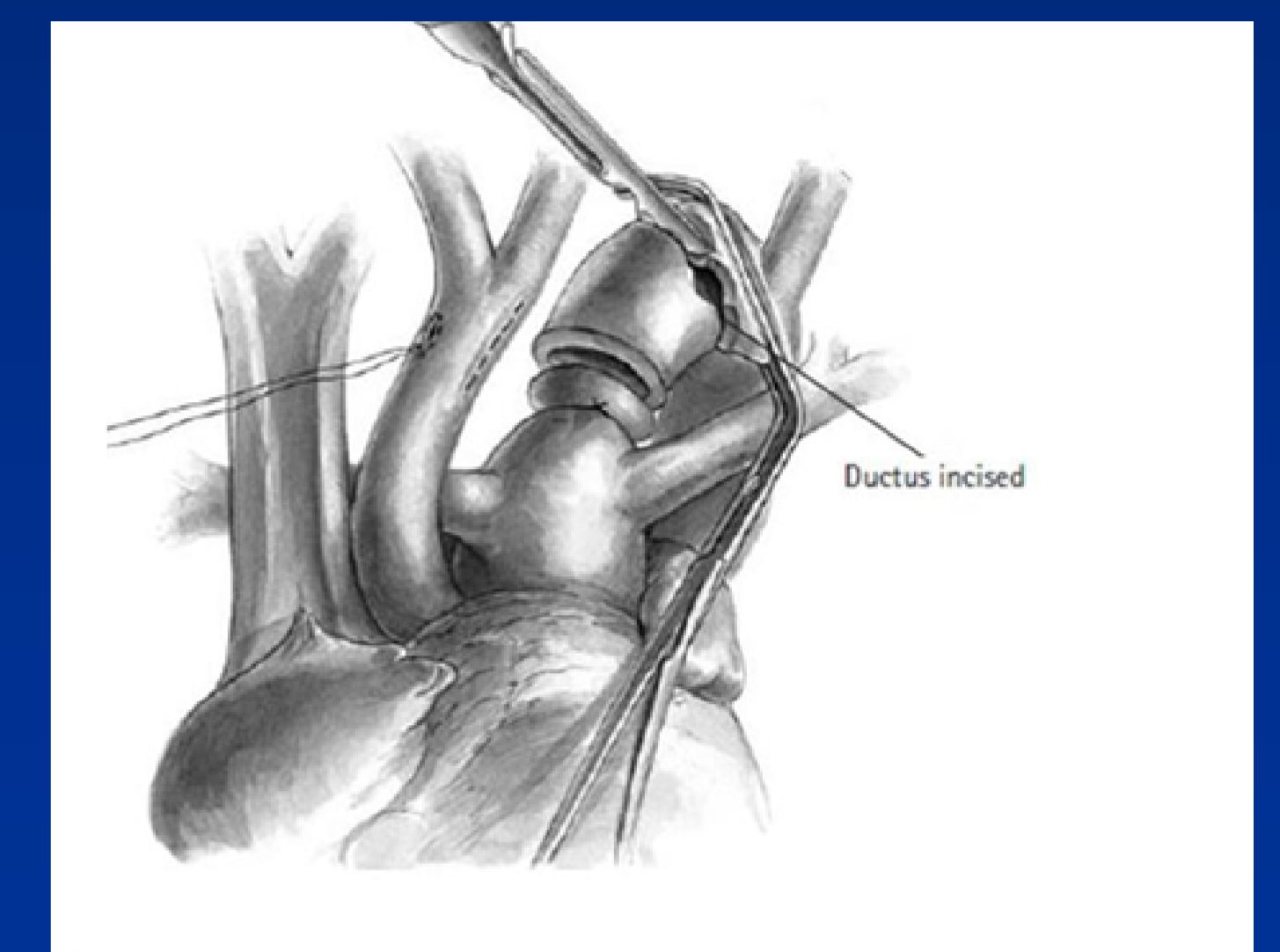
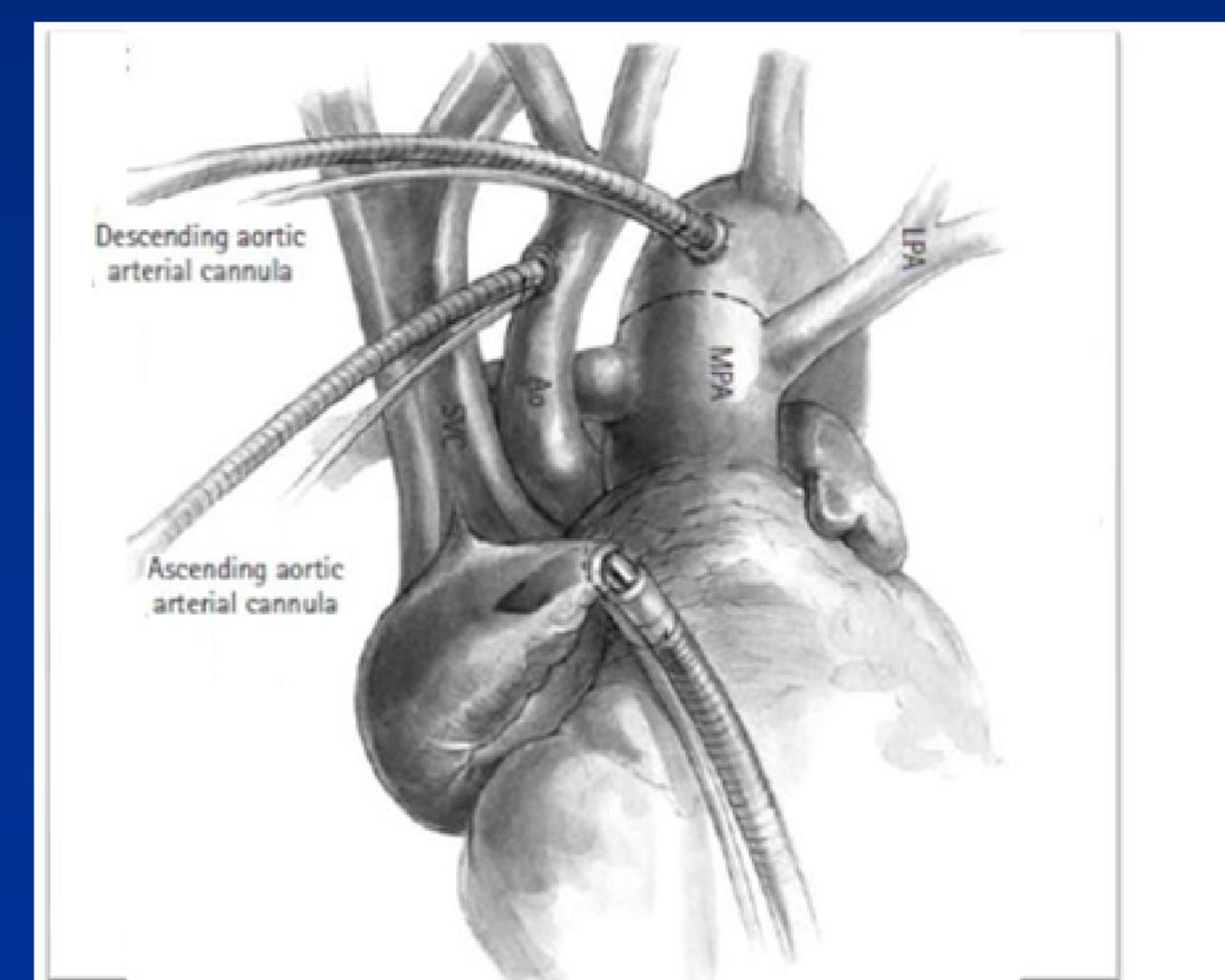
Methods:

Between 1998 and 2011 in the department of cardiac surgery of Children's hospital №1 44 patients underwent single-stage repair of aortic arch obstruction and isolated VSD. There were 21 boys and 13 girls. The patients was divided into 2 groups: the coarctation (CoA) group consisted of 32 patients, and the interrupted aortic arch (IAA) group consisted of 12 patients (8 patients with type B and 4 with type A). Some of the data concerning the preoperative period are presented in Table I.

Table I. Preoperative data

	CoA-group Range (Mean ± SD)	IAA-group Range (Mean ± SD)
Patients	32 (♂23, ♀9)	12 (♂9, ♀4)
Age (days)	3-48 (24,7 ± 11,3)	2-39 (12,4 ± 10,5)
Weight (kg)	2,8-4,9 (3,2±0,4)	2,5-3,4 (3,0±0,5)
Prostaglandin E1 infusion	24 (75%)	10 (83%)

In all cases operation was performed using median sternotomy. Deep hypothermic bypass (18-20 C) and circulatory arrest was used in 79% of cases. In all patients the correction consisted of direct end-to-side anastomosis between the descending and the ascending aorta and total repair of associated heart lesion.



Results:

Some of the data concerning the postoperative period are presented in Table II.

Table II. Postoperative data

	CoA-group Range (Mean ± SD)	IAA-group Range (Mean ± SD)
Ventilation time (h)	18-113 (27 ± 32,2)	21-128 (67,1 ± 43,4)
ICU stay (days)	3-16 (7 ± 4)	3-28 (10,2 ± 4,3)
Inotropic support (h)	17-132 (68 ± 34,3)	23-154 (75,4 ± 44,8)
Delayed sternal closure	21 (65%)	9 (75%)
Sternal closure (days)	1-4 (2 ± 1,4)	1-4 (2 ± 1,8)
Hospitalization (days)	16-38 (26 ± 9,4)	22-46 (32,5 ± 12,4)

There were no deaths in each groups. Follow-up of the 44 survivors has ranged from 5 month to 6,5 years (mean 3,4 years). Three patients had a recurrent arch obstruction: one of them underwent successful reoperation through the median sternotomy and 2 patient underwent endovascular intervention.

Conclusion:

Single stage repair of aortic arch obstruction and VSD can achieve good early and midterm results and low mortality rate. The optimal method of repair of aortic arch obstruction appears to be with direct anastomosis which allows to rely on the absence or minimal need for arch reintervention.

