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Long-term outcomes of the arterial switch operation in a population-based follow-up

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Objectives

To evaluate long-term outcomes of the arterial switch operation (ASO) for transposition of great arteries (TGA) in Finnish nationwide follow-up.

Materials and Methods

All patients (n=148) who underwent ASO in Finland between years 2004 and 2014 were included in this retrospective study. 81 patients (55 %) with simple TGA, 50 (34 %) TGA and ventricular septal defect (VSD) and 17 (11 %) Taussig-Bing anomaly. 129 (88 %) patients underwent balloon atrial septostomy prior to ASO.

Variables	All	Simple TGA	TGA + VSD	Taussig-Bing
n (%)	148 (100)	81 (55)	50 (34)	17 (11)
Male	99 (67)	59 (73)	29 (58)	11 (65)
Prenatal diagnosis	35 (24)	19 (23)	11 (22)	5 (29)
Balloon septostomia	129 (88)	77 (96)	43 (86)	9 (53)
Re-intervention, n (%)	30 (20)	11 (14)	13 (26)	6 (35)
Mean (Std. deviation)				
Birth weight (kg)	3,43 (0.59)	3.50 (0.56)	3.25 (0.58)	3.59 (0.71)
SaO2				
Before septostomy	58.5 (19.2)	53.5 (19.4)	63.2 (16.5)	77.4 (8.5)
After septostomy	82.8 (9.4)	82.2 (10.2)	84.7 (7.7)	80.7 (7.9)
Age at ASO (days)	10.1 (8.6)	9.0 (5.1)	10.7 (10.6)	13.6 (13.7)
Perfusion time (minutes)	180 (54)	160 (31)	195 (66)	233 (48)
Highest Lactate	4.8 (2.8)	5.3 (3.2)	4.4 (2.0)	4.1 (2.3)

Table 1.
Patient characteristics.

Results

The mean age at the time of the ASO was 10.1 ± 8.6 days (Table 1). Thirty patients (20.3 %) underwent 59 reinterventions (19 reoperations and 40 cardiac catheterizations) during the follow-up, most commonly due to pulmonary artery stenosis (53 %), and coarctation of the aorta (13 %). The risk of re-intervention was highest in Taussig-Bing group (35 %) compared to simple TGA (14 %) and TGA + VSD (26 %) (Figure 1). One patient underwent heart transplantation at 10 months of age due to severe heart failure and left ventricular dilatation due to coronary complication. Longer perfusion time ($p=.008$), and abnormal coronary anatomy ($n=34$, $p=.000$) were associated with increased risk for reintervention. Overall survival rate after ASO was 96.6 %. The early mortality (within 30 days or before hospital discharge) was 2.7 % ($n=4$) and late 0.7 % ($n=1$).

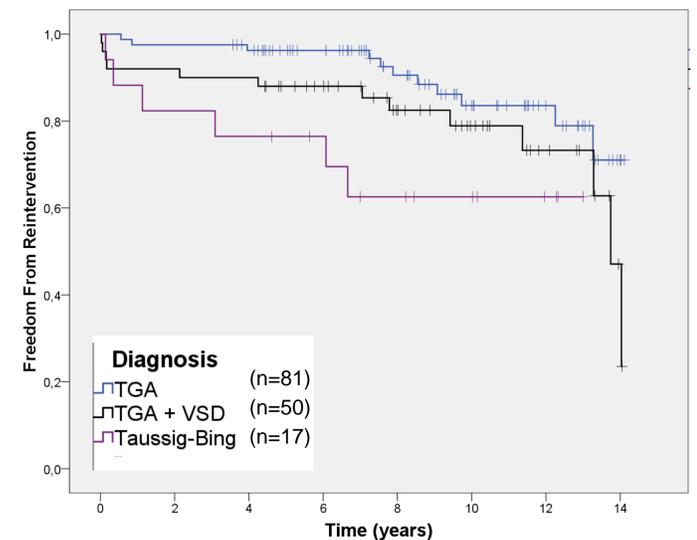


Figure 1.
Freedom from reintervention following arterial switch operation was 96 % in TGA, 88 % in TGA + VSD and 77 % in Taussig-Bing groups at 5 years and 84 %, 79 % and 63 %, respectively, at 10 years.

Conclusions

Long-term survival after ASO is excellent. The most common reason for reintervention after ASO is pulmonary artery stenosis.

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