

Results: The AV conduction time increased over the time in all groups (Z-score: from 0.9 ± 1.1 to 1.3 ± 0.9 in G1, 0.9 ± 1.2 to 1.7 ± 1.6 in G2 and 0.7 ± 0.7 to 1.4 ± 1.3 in G3). One G2 patient and two G3 patients had increased PQ duration >200 msec at late follow-up. The QRS duration increased during the follow-up at a rate of 1.78 msec/year in G1, 2.34 msec/year in G2 despite pulmonary valve replacement in 10 patients, and 1.81 msec/year in G3 despite conduit replacement in 9. At the later follow-up, the QRS duration was significantly increased (Z-score: 4.5 ± 3.6 in G1, 5.7 ± 1.4 in G2 and 4.6 ± 1.9 in G3). One patient in each group had QRS duration of 170 msec or longer and the one in G3 had a history of serious ventricular arrhythmia. Three patients had a QTc duration above 460 msec.

Conclusions: Conduction disorders are noted at late follow-up in Fallot patients who received transannular patch but also in those who received no patch or a pulmonary homograft. It suggests that volume overloading related to the transannular patch but also chronic pressure overloading and myocardial injury related to surgery also contribute to the development of conduction disorders. We suggest that all Fallot patients should undergo regular ECG follow-up and that, in those with signs of conduction disorders, further diagnostic procedures should be considered.

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Percutaneous closure of atrial septal defects in children : what are the predictive factors of success ?

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Introduction: Percutaneous atrial septal defect (ASD) closure is now a safe and efficient alternative to surgery in adults. In paediatric population, its feasibility is still uncertain and limited in young children with large defect. Our aim was to determine predictive factors of success of percutaneous ASD closure in this population.

Methods: All patients less than 12 years-old who underwent an attempt of a percutaneous ASD closure using Amplatzer septal occluder device were retrospectively reviewed. We analysed by echocardiography ASD diameter, length of rims surrounding, length of atrial septum, and during catheterization balloon-stretched diameter. ASD area was calculated and normalized to the body surface area of patients. The procedure was abandoned when the device placement failed after three attempts.

Results: 140 patients (age 7.7 ± 2.5 years, weight 25.3 ± 9 kg) were included. Echocardiographic ASD diameter was 15 ± 4.1 mm, balloon-stretched diameter 19.8 ± 4.7 mm, length of atrial septum 34.8 ± 5.9 mm, diameter of implanted device 18.6 ± 4.3 mm. All rims surrounded ASD measuring at least 3 mm. Percutaneous closure was successfully performed in 131 patients and failed in 8 patients. One device embolization into right atria occurred without any complication leads to surgery. Predictive factors of success included smaller ASD echocardiographic and balloon-stretched diameters (14.6 ± 3.8 vs 19.9 ± 4.4 mm, $p < 0.001$ and 19.0 ± 0.6 vs 25.6 ± 6.3 mm, $p < 0.001$), smaller ratio ASD area/body surface area (338 ± 139 vs 569 ± 210 , $p < 0.05$), smaller device size (18.3 ± 3.9 vs 22.4 ± 5.7 mm, $p < 0.05$), and smaller gap between balloon-stretched and implanted device diameters (-1.0 ± 0.6 vs 3.1 ± 2.8 mm).

Conclusion: Percutaneous ASD closure using Amplatzer device is feasible and safe in most of children. Small ASD and an appropriate size device are predictive of success. In the larger ASD and in the younger patients, normalization of ASD area to body surface area may help to choice the best treatment.

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Palliative Potts anastomosis for primary pulmonary hypertension in children : mid-term results.

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Despite permanent progress in medical treatments, primary pulmonary hypertension in children (PPHTC) remains a not curable disease with a severe prognosis. Moreover, continuous intravenous treatment is particularly unacceptable for the quality of survival at this age.

Background: Eisenmenger syndrome with large patent ductus arteriosus carries a relatively good prognosis with long-term survival. This prompted us to try a Potts anastomosis as surgical palliative treatment for PPHTC : direct anastomosis between the descending aorta and the left pulmonary artery without cardiopulmonary bypass.

Aim: To assess the risks and benefits of that surgery and the mid-term results in the first cases.

Material and methods: From 06/05/2004 to 23/03/2007, six children underwent Potts anastomosis for PPHTC. Age was 2.4 to 11 years, weight 14 to 23 Kg. All were NYHA IV and experienced syncope. All received Bosentan, associated with continuous intravenous prostacyclin in 4 and Sildenafil in 1. Bosentan was used in monotherapy in 1.

Immediate results: No death occurred during surgery.

One child died at day 12 with staphylococcus infection and major cyanosis. This child received Bosentan monotherapy.

Mid term results: No death occurred during a mean follow-up of 4 years and 2 months. For the 5 surviving patients, functional status increased from NYHA IV to NYHA I (3 pts) and NYHA II (2 pts). No syncope occurred. Intravenous prostacyclin therapy was stopped for 3/4 pts who received it before. Oral treatment was continued. Potts anastomosis remained large with right to left shunt and same pressure in pulmonary arteries and aorta. Percutaneous oxygen saturation in inferior limbs is stable, from 88 to 72 %, and normal in right upper limb. All have mild to moderate polycythaemia.

Conclusion: Surgical Potts anastomosis is a palliative solution for PPHTC with an acceptable perioperative risk and good mid-term results. It avoids sudden death and allows a better quality of life in these children.

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Endothelial function and arterial mechanical properties in children after Kawasaki disease.

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Introduction: Kawasaki disease is the leading cause of acquired heart disease in children. Increased cardiovascular risk can be assessed by intima-media thickness (IMT), a strong independent predictive factor for coronary heart disease, as could be the flow-mediated vasodilatation (FMD). However, controversy exists about these parameters if altered in children with Kawasaki disease.

Objective: The aim of our study was to study the mechanical arterial properties and to analyze endothelial function by measuring the flow-mediated dilatation proving its alteration in Kawasaki disease patients evolving with moderate or without coronary artery lesions.

Population and methods: A study design of 29 patients who had Kawasaki disease with no or transient or coronary artery involvement less than 4 mm of dilatation (group I), mean age 7,6 years, was compared to 30 healthy age-matched children (group II), mean age of 8,3 years. The carotid IMT, incremental elastic modulus, cross sectional compliance, distensibility and FMD were determined non-invasively one year following the disease.

Results: No significant difference was found with Flow-Mediated Dilatation between either group, for group I (9,16 %, Standard Deviation: SD = 5,05) and group II (8,8 %, SD = 4,56). As it was for mechanical arterial properties, like incremental elastic modulus, vascular compliance, distensibility and IMT, for group I (Mean IMT = 0,44 mm, SD = 0,028) vs (0,46 mm, SD = 0,060) for group II.

Conclusions: Early evaluation of mechanical properties and endothelial function of the arteries in patients with Kawasaki disease, who have no or little dilatation less than 4 mm in coronary arteries, don't show any alteration as compared with healthy population.