Mitral valve replacement in children after failed valvuloplasty. The last technical option

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Objectives: Mitral valve replacement (MVR) is the last option after a failed valvuloplasty for children with a severe mitral lesion. We present our surgical results, technical solutions, mortality risk factors and follow-up.


Results: Age at MVR 67±58(7-200) months, women 17(74%), weight: 19±16(5-65) Kg. Preoperative diagnosis: 1 mitral regurgitation (MR) in L-transposition of great arteries; 2 rheumatic disease; 6 residual MR in atrioventricular septal defects; 14 congenital mitral lesion (isolated or in a Shone complex). Surgical indication: mitral stenosis (MS) 7(30,5%), MR 10(43,5%), MS-MR 6(26%).

Previous surgery: 15(65%). Age at previous surgery: 19±23(0,1-79) months. Number of previous surgeries: 1,3±1 (0-4). All patients had one/more valvuloplasty, before or during MVR time. NYHA preoperative status: III-IV 91%.

Preoperative echocardiography: peak transmitral gradient 19,7±12(3-40) mmHg; medium 11,6±9(1-30). MR: no 3(13%); mild 2(9%), moderate 4(17%), severe 14(61%). Mitral annulus: 23±7(13-39) mm. Leaflet anomalies: 9(39%). Single papillary muscle: 1(4%).

Concomitant moderate or severe pulmonary hypertension in 17(74%). Left ventricle ejection fraction (LVEF): normal 20(87%), disfunction 3(13%).

Surgical approach: transeptal 7(30%), left atriotomy 14(61%), superior-septal 2(9%). Prosthesis size: 20±4(16-31).

Conservation of papillary muscles: 7(30%). Supra-annular implantation: 5(22%).

Cardiopulmonary by-pass time: 159±45(90-237) minutes, aortic clamp time: 113±32(65-181).

In hospital results: mortality 2(8%); intubation: 92±176(1-600) hours; intensive care unit stay 11±12(2-46) days and hospital stay 23±18(7-69). Morbidity in 14(61%), most frequently an additional pacemaker: 3(15%).

Follow-up: 31±39(0,5-176) months. Late mortality: 4(20%). Reoperation in 2(10%), because patient overgrowth/mismatch and prosthesis thrombosis. NYHA status: I-II 87%. Echocardiography: peak transmirtal gradient 21±12(8-51) mmHg, medium 9±6(3-25). All patients have no MR and good LVEF. Moderate or severe pulmonary hypertension in 45%.

Whereas total mortality (6 patients) mostly happened in the youngest, p value for patient’s weight, age and prosthesis size were not significant for mortality.

Conclusions: MVR is the last option, even in small annulus, with inhospital mortality rate (8%) similar at expected mortality in RACHS-1 risk category, but higher (20%) in follow-up, due to anticoagulation troubles. NYHA status and pulmonary hypertension improved. MR disappears in all, but re-stenosis is still a matter of concern.