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The outcome of percutaneous pulmonary valvuloplasty in infants. A single center experience.

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OBJECTIVES: we aimed to evaluate 30 years' experience in pulmonary valvuloplasty (PVP) performed in children with pulmonary valve stenosis (PVS), within 12 months of age, in our Institution. A particular focus was paid to incidence and risk factors of recurrent PVS and progressive pulmonary insufficiency (PI).
METHODS: retrospective review of paper-based and digital archives from June 1988 to February 2017 was undertaken. Statistical significance was set as P-value <0,05. Success of PVP was defined as systolic pressure gradient (SPG) <36 mmHg.
RESULTS: ninety-two patients (critical PVS 34, severe PVS 58) underwent 104 PVP, in the first year of life, of which 12 (11,5%) were repeated PVP in early follow-up. Immediate success rate was 88%, need of surgical RVOT reconstruction 5%, complication rate 6,8%, absent mortality. Seventy-one patients were followed for >1 year (9,6 ± 6,6, range 1,1–27,9 years). Long-term success rate was 87%, freedom from surgery 94%, 94% and 84% at 5, 10 and 15 years respectively. Three patients needed RVOT reconstruction, and 1 PVP. In 65 patients Doppler peak SPG 21,2 ± 10,5, mean 12,9 ± 5,6 mmHg. Prevalence of moderate/severe PI was 13%; 3 patients (4%) required pulmonary valve replacement, after 15,4 ± 4,6 years. Balloon to pulmonary valve annulus ratio (B/A) was 1,18 ± 0,16 in the first PVP, without variation along the study period, and 1,29 ± 0,11 in the second (p = 0,005), annulus Z-score was <2 in 50% patients with repeated PVP. Predictive factors of recurrent stenosis were age <11 days and annulus Z-score <-1,21 at first PVP. BSA at first PVP <0,22 m2 was a risk factor for significant PI; no correlation was found with B/A nor with period of intervention.
CONCLUSIONS: overall critical stenosis had a worse outcome. Prevalence of progressive PI in our series is lower than that found in literature: choosing a low B/A since the beginning of our experience (<1,25) could have protected by this serious complication. Our results confirm the effectiveness of PVP as first-choice therapy for PVS in pediatric patients. Multicenter studies are warranted to further evaluate risk factors for residual defects in larger populations.