

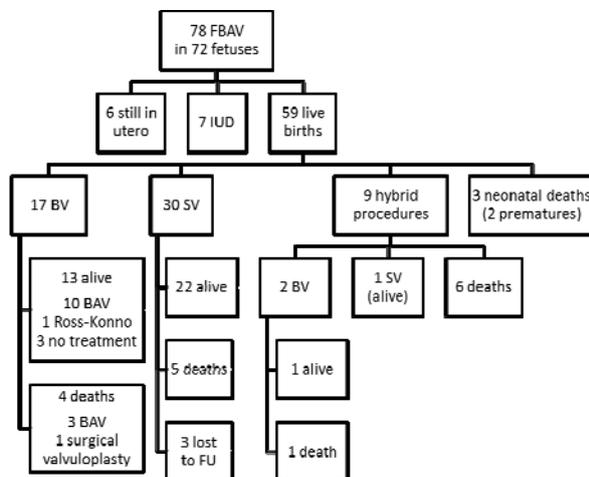
Short- and long-term outcomes of fetal balloon aortic valvuloplasty – single-center experience.

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Introduction: Fetal balloon aortic valvuloplasty (FBAV) for critical aortic stenosis is performed to prevent the progression to hypoplastic left heart syndrome (HLHS). Multiple selection criteria for postnatal biventricular (BV) outcome were developed, however, the management of borderline-LV patients remains highly variable and center-dependent. The aim of this study was to summarize the results of FBAV performed in a single fetal cardiology center.

Methods: We evaluated the data of 72 fetuses in whom 78 FBAV was performed between 2011-2017. Searching for the predictors of BV outcome we analyzed the time of FBAV, threshold score, and selected left-heart measurements (aortic valve, ascending aorta, mitral valve, LV length, width and indexed volume) pre-, post-intervention, and in the newborn. The follow-up data were collected from target cardiology units.

Results: From the study group, 59 children (89%) were live-born, at median 39 weeks, 40% via cesarean section. 3 neonates died before any treatment. From the remaining group, 30 patients (54%) were qualified for single-ventricle (SV) palliation, 17 (30%) for BV treatment, and in 9 (16%) the hybrid procedure was performed. From the last group, 1 patient followed SV palliation strategy, and 2 were converted to BV circulation. In the BV group, 13 newborns had BAV performed (1 followed by Ross-Konno operation), and 1– surgical valvuloplasty; 3 required no treatment. 3 children, with very poor function of LV died post-intervention. Overall, out of 53 treated children with known follow-up, 14 (26.4%) have BV circulation and 23 (41%) SV palliation. All results are summarized below:



Out of prenatal echocardiographic parameters, the bigger AAO diameter, higher LV pressure and later performed FBAV (26 vs. 24 weeks) significantly correlated with BV postnatal treatment. The threshold score ≥ 4 also occurred predictive for BV outcome (sensitivity 94%, specificity 41%, $p < 0.05$). In the newborns' echocardiographic examinations, all left-heart structures diameters and LV indexed volume were significantly larger in the BV group.

Conclusions: FBAV allows for postnatal BV treatment in a subset of patients with critical aortic stenosis. Nevertheless, the post-intervention course is highly unpredictable, and the treatment method depends on the newborn's condition and left-heart structures development, as well as center experience.