

## O12-5

### Changes in right ventricular function after fetal pulmonary valvuloplasty in fetuses with pulmonary atresia with intact septum

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In-utero pulmonary valvuloplasty in fetuses with pulmonary atresia with intact ventricular septum (PAIVS) is technically feasible and should lead to beneficial changes of RV function with the goal to improve the chances for a postnatal biventricular circulation.

The aim of the study was to assess immediate changes in RV filling and function using 2D, Doppler and Tissue-Doppler measurements

Patients: Since 2000 we performed 20 fetal pulmonary valvuloplasties in 14 fetuses with PAIVS (n=8) or critical pulmonary stenosis (n=6). Median gestational age at intervention was 27+6 weeks (23+6 - 32+1). The procedure was successful or partially successful in 12/14 (86%) and not successful in 2 patients. There were no fetal deaths. 8/12 children became definitive biventricular, 2 with one and a half ventricle, and 2 infants with BT Shunts still have an undetermined circulation. To assess immediate changes we measured RV morphologic and functional parameters 1-2 days before and 1-2 days after the procedure. Parameters were compared by paired student's t-test.

	<b>N</b>	<b>before - median (range)</b>	<b>after - median (range)</b>	<b>p-value</b>
<b>RV length z-score</b>	10	-2,8 (-3,81 - -1,78)	-2,07 (-3,14 - -1,07)	0,026
<b>RV/LV ratio</b>	10	0,58 (0,51 - 0,67)	0,66 (0,59 - 0,87)	0,017
<b>TV z-score</b>	10	-1,43 (-2,52 - 0,39)	-1,23 (-2,22 - 0,74)	0,010
<b>TV/MV ratio</b>	10	0,85 (0,64 - 0,97)	0,78 (0,70 - 0,98)	0,307
<b>RV inflow duration (%)</b>	10	0,3 (0,19 - 0,4)	0,42 (0,30 - 0,46)	0,021
<b>TR velocity (m/sec)</b>	10	4,83 (3,28 - 5,5)	3,95 (2,10 - 5,38)	0,013
<b>PV velocity (m/sec)</b>	6	2,72 (2 - 3,3)	3,23 (2,06 - 4,4)	0,374
<b>RV Tei index</b>	10	0,89 (0,35 - 2,04)	0,57 (0,30 - 1,16)	0,030

Fetal pulmonary valvuloplasty lowered RV pressures as measured by TR velocity and improved RV filling as assessed by longer RV inflow time and larger RV structures. RV Tei index decreased mainly due to shorter PEP.

Conclusion: Successful fetal pulmonary valvuloplasty led to several significant immediate changes of RV dimensions and function. These changes should allow for beneficial in-utero RV remodeling and improved RV function, thus improving the chances for a postnatal sustained sufficient biventricular circulation.