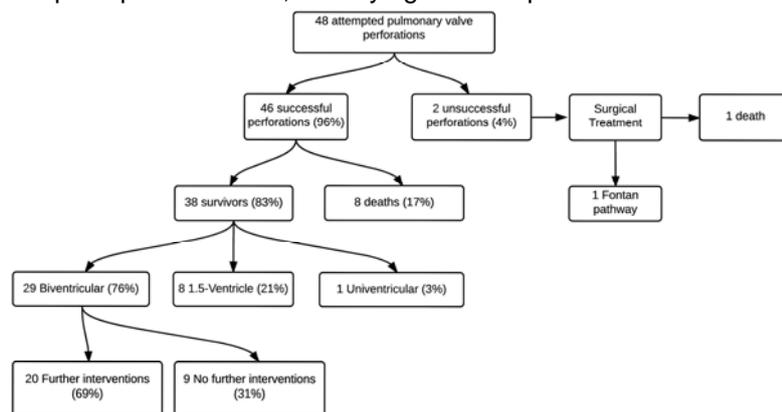


## Long Term Outcome after Catheter Perforation of Pulmonary Valve in Pulmonary Atresia and Intact Ventricular Septum – a 25 year experience

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**Introduction:** Perforation of the pulmonary valve (PV) via interventional catheterisation for patients with pulmonary atresia and intact septum (PAIVS) was pioneered at our institution twenty-five years ago and is now an established procedure. This study examines the long-term outcome for our complete patient cohort, identifying late complications and outcome predictors.



**Methods:** Patients who underwent catheter based perforation with PAIVS from 01/05/1990 to 25/12/2015 were identified from the Departmental database. Demographic and clinical data were collected, with final outcome at last follow-up evaluated on 31/12/2015. One-way-ANOVA and Kruskal-Wallis tests were performed for data that was normally and non-normally distributed, respectively. Receiver operating characteristic

(ROC) curve analysis was performed as predictor of biventricular (BV) versus non-biventricular (non-BV) outcome amongst survivors, with bimodal logistic regression to assess the relevance of risk factors.

**Results:** 48 patients were identified. The table and figure below demonstrate the key findings. The median follow-up period was 12.2years (Range 0.3-25.9years). All deaths were within 90 days of birth. One patient had an embolic stroke at age 4.3 years following TCPC completion, No other significant complications were identified. Five patients with BV outcome had surgical RV overhaul procedures at a mean age 1.6 years. No patient has as yet required interventional or surgical procedures beyond 11 years. One patient is currently listed for PV replacement. Saturations at one year (Sats1Yr) were a strong predictor of BV versus non-BV outcome (area under curve (AUC) 0.889) with Sats1Yr of 90% predicting BV outcome with sensitivity 75% and specificity 78%. AUC for tricuspid and PV z-score at birth were 0.715 and 0.744 respectively. Logistic regression modelling confirmed the prominent role of Sats1Yr in achievement of Biventricular repair.

**Conclusions:** PV perforation for PAIVS is associated with good long-term outcomes, with few late complications. At up to 25 years follow-up, the incidence of arrhythmias and ventricular dysfunction secondary to PV regurgitation is low. The initial size and anatomy of the RV structures is clearly a strong predictor of final outcome, but the contribution of Sats1Yr suggests other possible factors such as diastolic dysfunction and ventricular fibrosis may play a significant role

n=48	Failed (2)	Died (8)	Non-Biventricular (9)	Biventricular (29)	p *
Birthweight	3.4 ± 0.75	2.69 ± 0.29	3.11 ± 0.15	3.07 ± 0.10	0.22
Procedure age(d)	18 ± 4	12.88 ± 8.53	5 ± 0.7	4.83 ± 0.8	0.80
Duct stent	0	3	7	13	0.12
zPV	-2.08 ± 0.65	-2.86 ± 0.17	-3.65 ± 0.44	-2.1 ± 0.3	0.012
zTV	-8.76 ± 2.54	-6.93 ± 1.98	-5.87 ± 0.69	-3.41 ± 0.52	0.019
Sats1Yr	-	-	84 ± 2	93 ± 1	<0.001

\* 'Failed' group excluded from statistical analysis, due to low numbers  
zPV and zTV = Pulmonary valve and Tricuspid valve Z scores at birth (Daubeney et al)