

Successful Pregnancy Following Relief of Pulmonary Regurgitation using a Percutaneous Pulmonary Valved Stent

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AUTHOR DISCLOSURE:

Professor Philipp Bonhoeffer is consultant for NuMed and Medtronic

RV Volume ↑
Redington et al. 88

Exercise Capacity ↓
Wessel & Paul, 99

Pulmonary Regurgitation

QRS > 180 Ms
Gatzoulis et al. 97

Sustained VT
Harrison et al. 97

Sudden Death 2%
Gatzoulis et al. 00

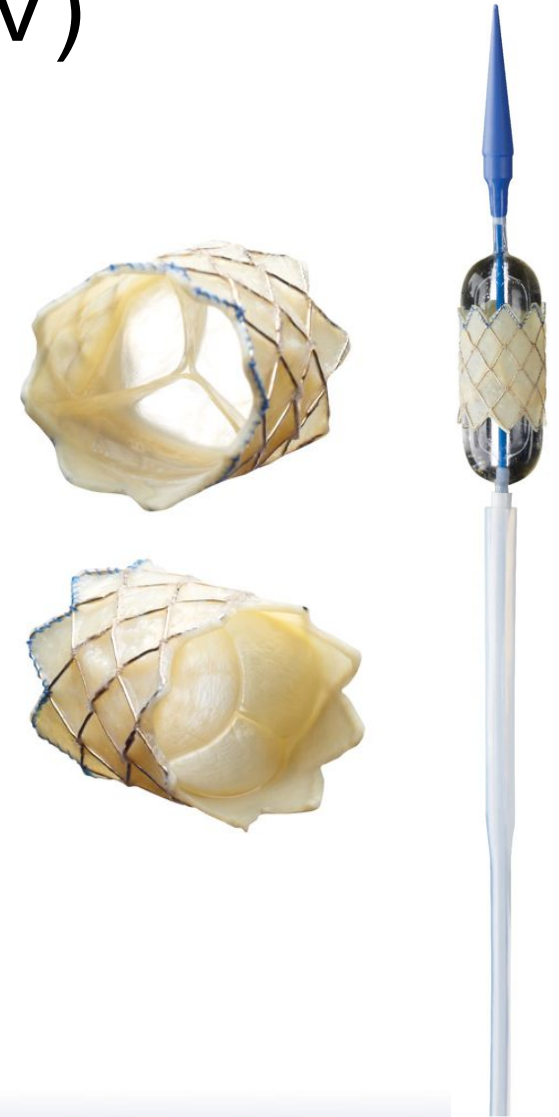
Maternal Predictors of Cardiac Events During Pregnancy

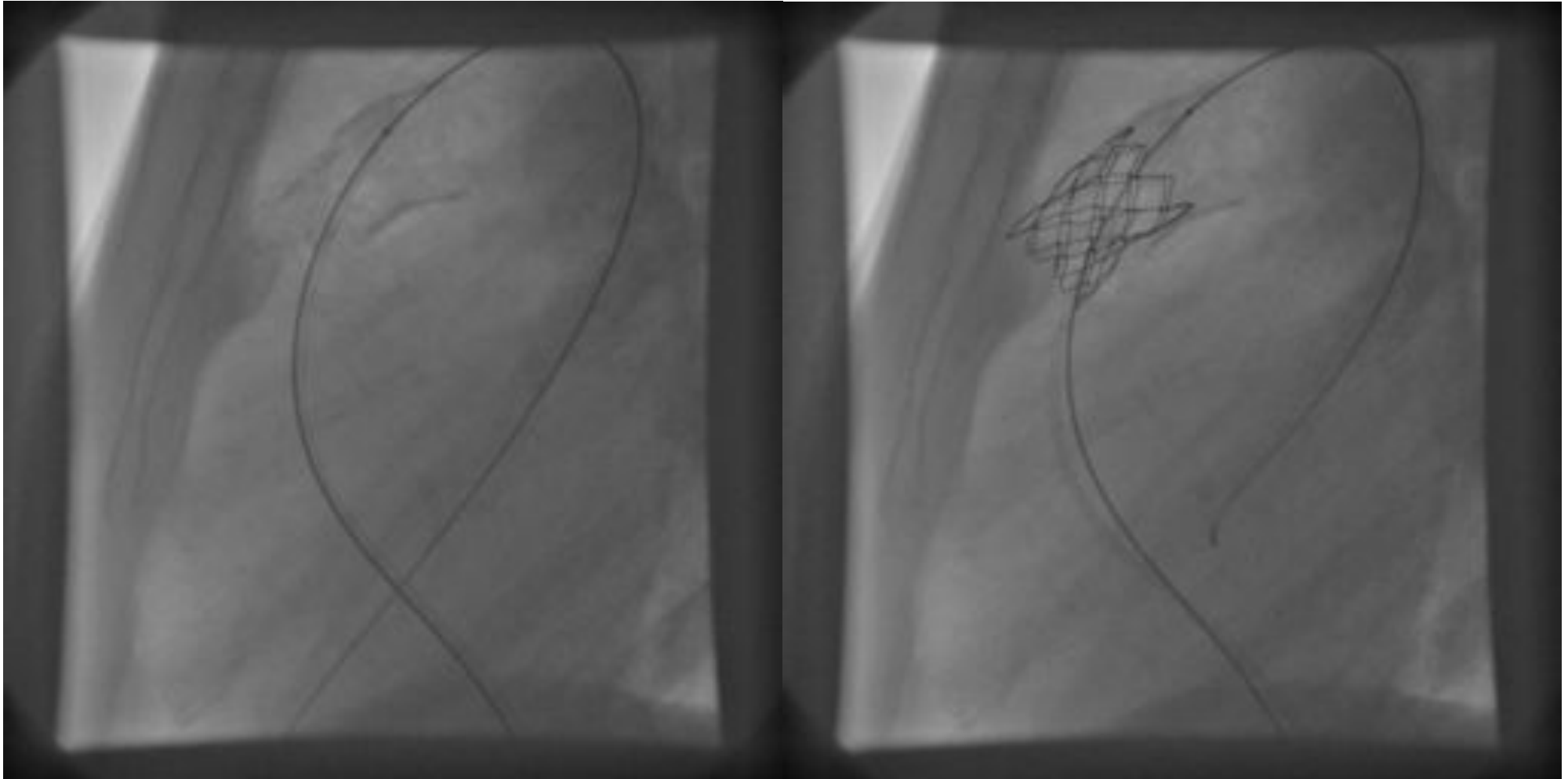
	OR	95% CI	p
Univariate Predictor			
Baseline NYHA \geq 2	5.4	1.2-25.2	0.032
Weight (kg)	1.1	1.02-1.14	0.009
Smoking history	15.5	1.5-163.6	0.022
Severe PR	4.6	1.1-19.5	0.037
Depressed RVEF	7.7	1.5-40.2	0.016
Multivariate Predictor			
Severe PR or depressed RVEF	9.0	1.5-53.1	0.016
Smoking history	27.2	1.9-384.6	0.015

Khairy P et al. Circulation 2006

Transcatheter Pulmonary Valve Implantation (TPV)

- CE Mark September 2006
- FDA Approval January 2010
- >1,200 patients
- >90 centers worldwide
- Procedural mortality <1%





Indications



Dysfunctional circumferential RVOT
conduits ≥ 16 mm diameter at original
implantation

WITH

\geq moderate PR

OR

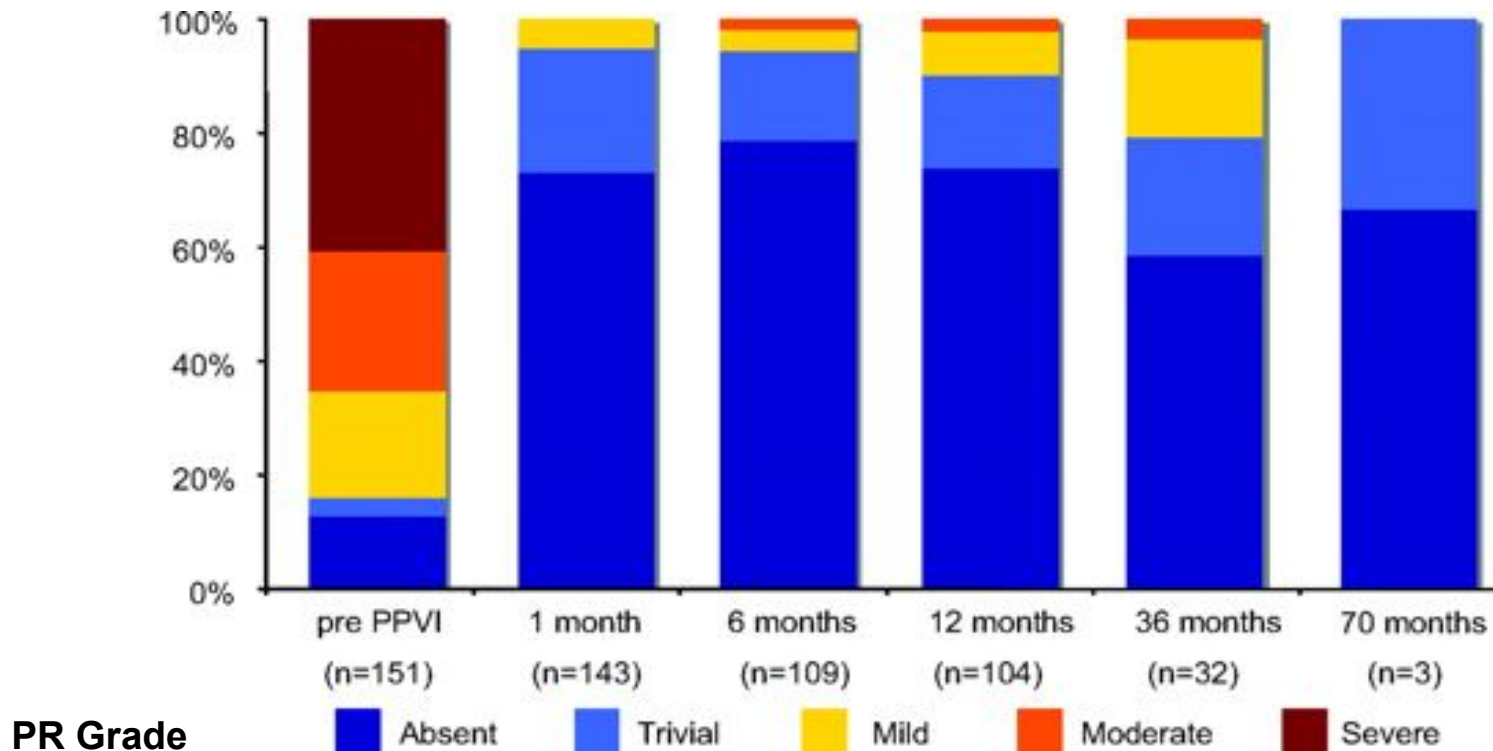
mean RVOT gradient ≥ 35 mmHg

AND

a clinical indication for intervention

TPV Performance (n=151)

RVOT Velocity (m/sec) 3.67 ± 0.85 2.84 ± 0.70 2.93 ± 0.74 2.91 ± 0.74 3.17 ± 0.86 3.70 ± 1.31

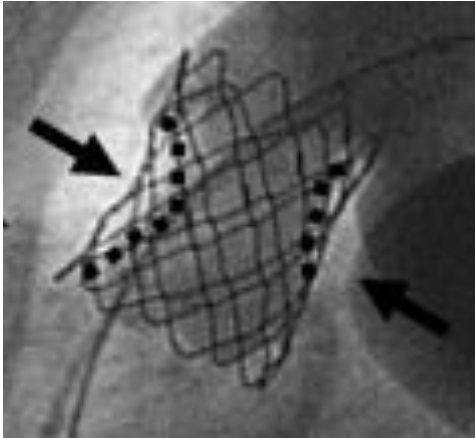


Lurz P et al. Circulation 2008

Case Series

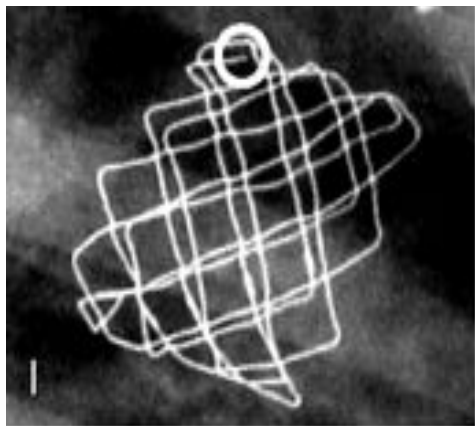
	Diagnosis	Operative History	Lesion
1	Absent Pulmonary Valve	Transannular patch repair PVR: monocusp homograft	Severe PR
2	Pulmonary Atresia/VSD	BTS, Complete repair: unknown conduit PVR: 22mm homograft	Severe RVOTO Moderate PR
3	Tetralogy of Fallot	BTS, Transannular patch repair PVR: 22mm homograft	Severe PR
4	Pulmonary Atresia/VSD	BTS x2 Complete repair: 19mm homograft	Severe PR
5	Pulmonary Atresia/VSD	WS, Rastelli repair: unknown conduit PVR: unknown conduit PVR: 23mm homograft	Severe RVOTO
6	Pulmonary Atresia/VSD	WS Complete repair: unknown homograft	Severe PR
7	Pulmonary Atresia/IVS	BTS, Transannular patch repair PVR: 22mm homograft	Severe RVOTO
8	Pulmonary Atresia/VSD	BTS Complete repair: unknown homograft	Severe RVOTO
9	Pulmonary atresia/VSD	BTS x2, Complete repair: unknown conduit PVR: 24mm homograft	Severe RVOTO

TPV Problems (n=3)



- **'Hammock' effect \Rightarrow 2nd PPV**

- **Stent Fracture \Rightarrow Conservative Rx**



- **Endocarditis \Rightarrow Medical Rx**

Obstetric Outcomes

	Sex	Parity	Gestation (weeks)	Weight (kg)	Mode of Delivery	Complication
1	M	2	38	2.8	Vaginal Induction	
	M	3	37	3.01	Emergency LSCS	Maternal Collapse ?Arrhythmia
2	F	1	38	3.02	Vaginal Induction	
3	M	3	37	3.1	Vaginal Induction	Postpartum Haemorrhage
4	F	1	29	1.12	Elective LSCS	Renal Failure
5	M	1	37	3.5	Emergency LSCS	SROM
6	M	1	41	3.3	Vaginal Spontaneous	Ventouse
7	M	3	38	3.38	Vaginal Induction	
	F	4	36	3.86	Vaginal Spontaneous	
8	M	1	39	2.15	Vaginal Spontaneous	
9	M	1	39	3.6	Emergency LSCS	Failure to Progress

Effects of Pregnancy (n=9)

	Pre TPV	Post TPV Preconception	6-12 months Postpartum	Significance
PR Grade	2.9±1.7	0.7±1.3	0.6±1.2	0.598
RVOT velocity (m/sec)	3.4±0.6	2.5±0.5	2.6±0.7	0.761

Conclusion

TPV is an attractive alternative to redo surgery for women with pulmonary valve dysfunction planning pregnancy

Despite the haemodynamic load of pregnancy, TPV function is well maintained.