



LEIDS UNIVERSITAIR MEDISCH CENTRUM

Mild residual pulmonary stenosis after correction of tetralogy of Fallot reduces the risk of pulmonary valve replacement during follow-up



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- Correction of Tetralogy of Fallot (cToF)
 - Pulmonary valve regurgitation
 - RV dilatation/ dysfunction
 - **Pulmonary valve replacement (PVR) may be needed**

- Current (restrictive) surgical approaches may result in a certain degree of residual pulmonary stenosis (PS)

- A mild residual PS could limit the amount of pulmonary regurgitation¹

- The clinical implications of a mild residual PS remain unclear

¹Uebing et al. Heart 2002;**88**:510-4

To investigate the influence of a mild residual PS on the need of PVR during long-term follow-up cToF patients

- Patient selection
 - ToF patients
 - Clinical follow-up ≥ 5 years post-operatively
- Exclusion criteria:
 - Pulmonary atresia
 - Absent pulmonary valve
 - Complete atrioventricular septal defect
 - Surgical pulmonary conduit or PVR at the time of repair
- Follow-up of the included cToF patients lasted until PVR, or until August 2010

- **Pre-operative and peri-operative parameters**
 - Additional malformations or syndromes
 - Shunt placements prior to the corrective operation
 - transventricular or transatrial repair
 - pulmonary valve morphology
 - pulmonary artery size
 - pulmonary valve interventions
 - use of a patch
 - cross-clamp time
 - lowest body temperature
- **Post-operative parameters** (*first available data*)
 - QRS duration
 - Presence and severity of pulmonary regurgitation
 - Peak systolic pulmonary gradients

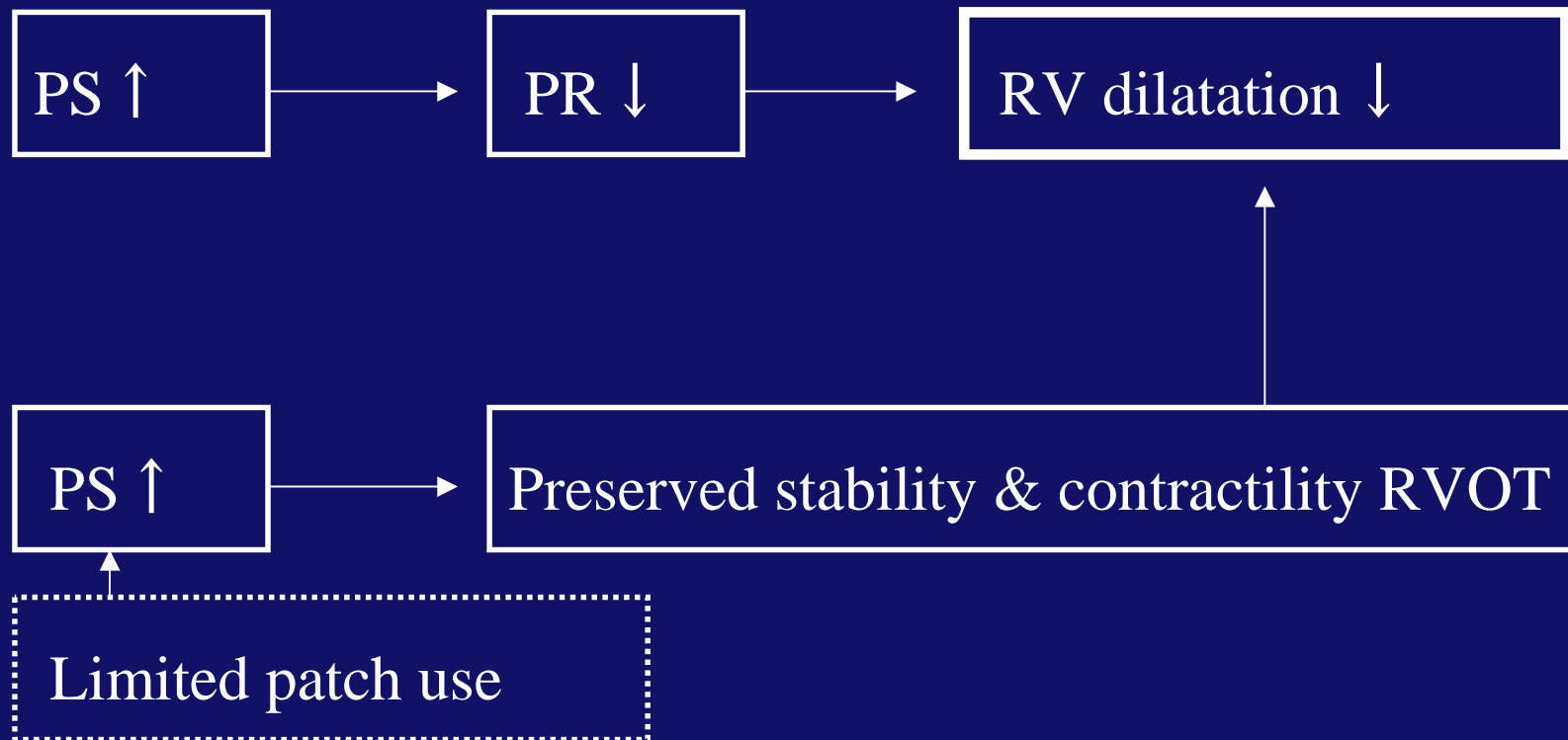
- Pulmonary regurgitation
 - Absent
 - Mild
 - Moderate-to-severe

- Pulmonary stenosis
 - None: 0-15 mmHg
 - Mild: 15-30 mmHg
 - Moderate-to-severe: > 30 mmHg

- Cox regression analysis: to identify predictors of PVR
 - Univariate analysis $\rightarrow p < 0,1 \rightarrow$ Multivariate analysis

- 171 cTOF patients
 - 71 (42%) pulmonary valve replacements
- 39%: post-operative mild PS
- 16%: post-operative moderate-to-severe PS

	HR	95% CI	p-value
Patient characteristics			
Year of birth (y)	1.19	1.12 - 1.26	<0.01
Male sex	..	..	..
Malformations/syndromes	..	..	..
Pre/ peri-operative			
Palliation	..	..	..
Age at repair (y)	1.18	1.10 - 1.27	<0.01
Transatrial/transpulmonary	0.82	0.31 - 2.18	0.70
Patch use			
Non-transannular	5.24	2.28 - 12.06	<0.01
Transannular	8.13	3.73 - 17.68	<0.01
Bicuspid valve	..	..	..
Valve intervention	..	..	..
Pulmonary annulus (z-score)	..	..	..
Cross-clamp time (min)	..	..	..
Minimum temp (°C)	..	..	..
Postoperative			
QRS interval (s)	..	..	..
Pulmonary regurgitation			
Mild	1.66	0.36 - 7.65	0.51
Moderate-to-severe	1.54	0.33 - 7.28	0.59
Pulmonary stenosis			
Mild vs. none	0.47	0.25 - 0.88	0.02
Mild vs. moderate-to-severe	0.35	0.15 - 0.81	0.01
None vs. moderate-to-severe	0.75	0.35 - 1.59	0.45



Kilner et al. *Int J Cardiol* 2009;**133**:157-66
 d'Udekem et al. *Ann Thorac Surg* 2003;**76**:555-61

- A mild residual PS after correction of TOF independently reduces the need for PVR
- This finding provides clinical evidence underscoring the importance of current surgical strategies, advocating a restrictive relief of PS at correction in ToF patients