



Adult Outcomes After Double Patch Closure of Ventricular Septal Defects for Children with Pulmonary Hypertension and Elevated Pulmonary Vascular Resistance

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Disclosures

Nothing to Disclose

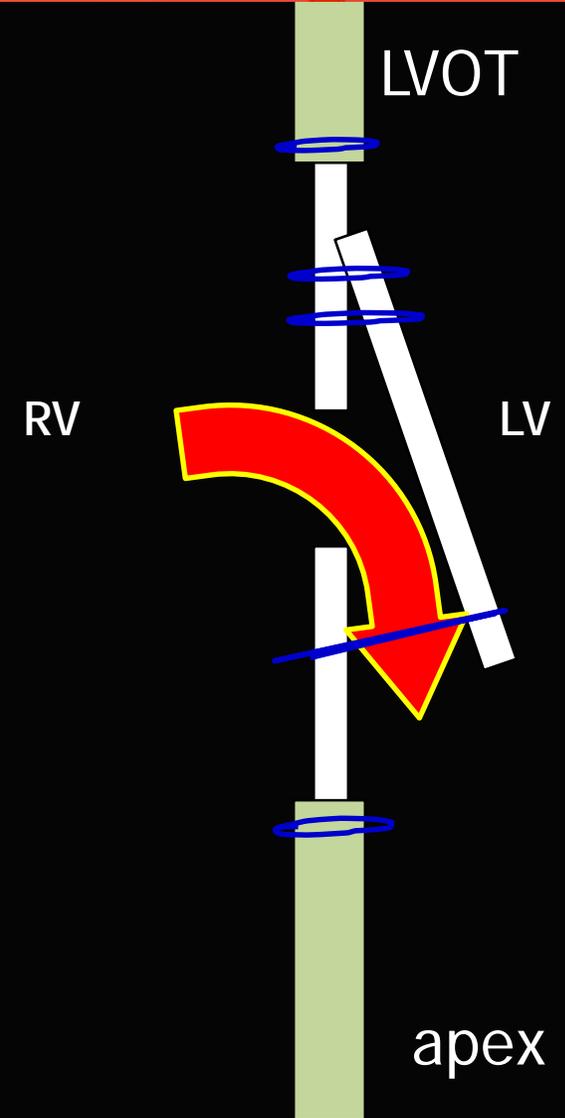


Pulmonary hypertension in children with Ventricular Septal Defects: Concerns Regarding Operation

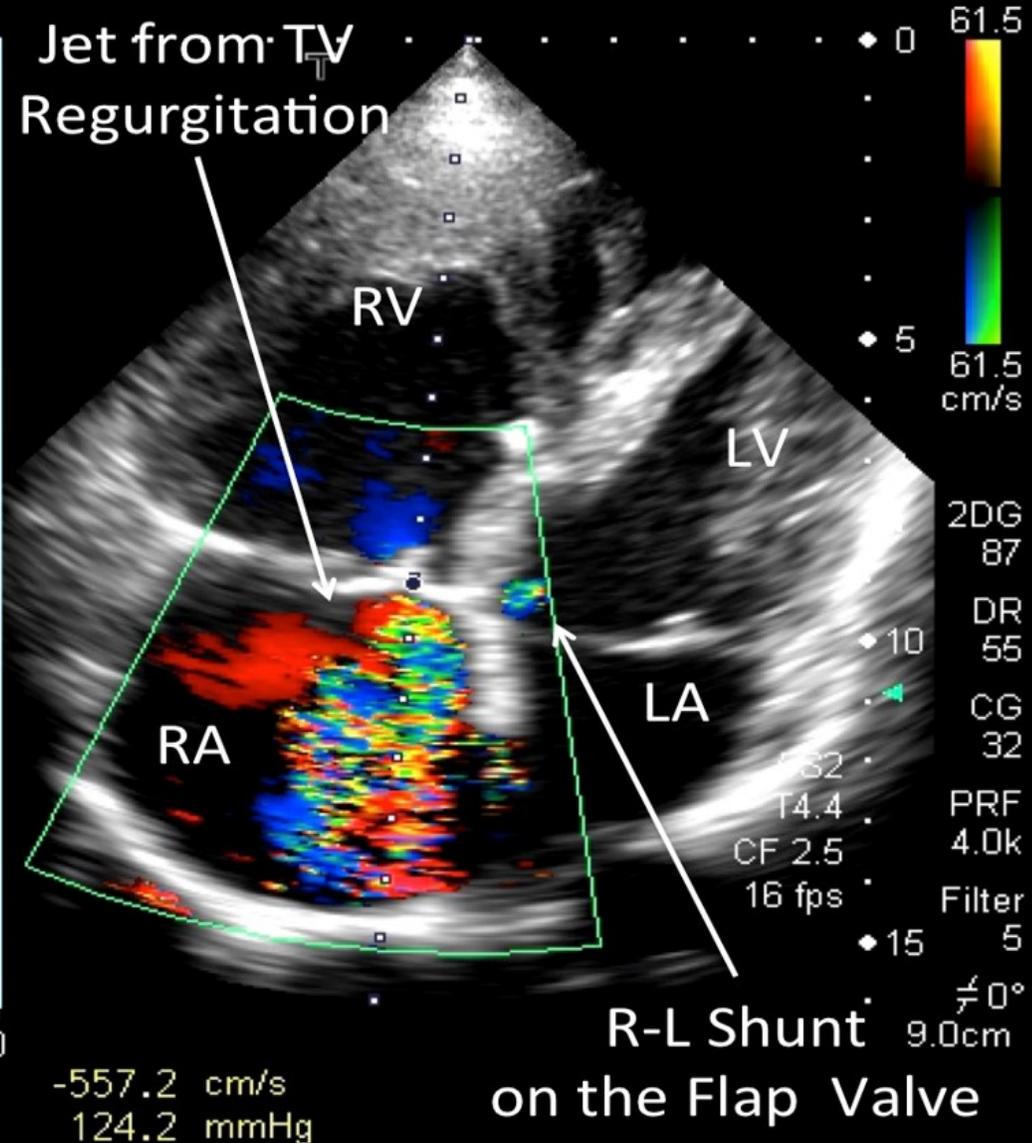
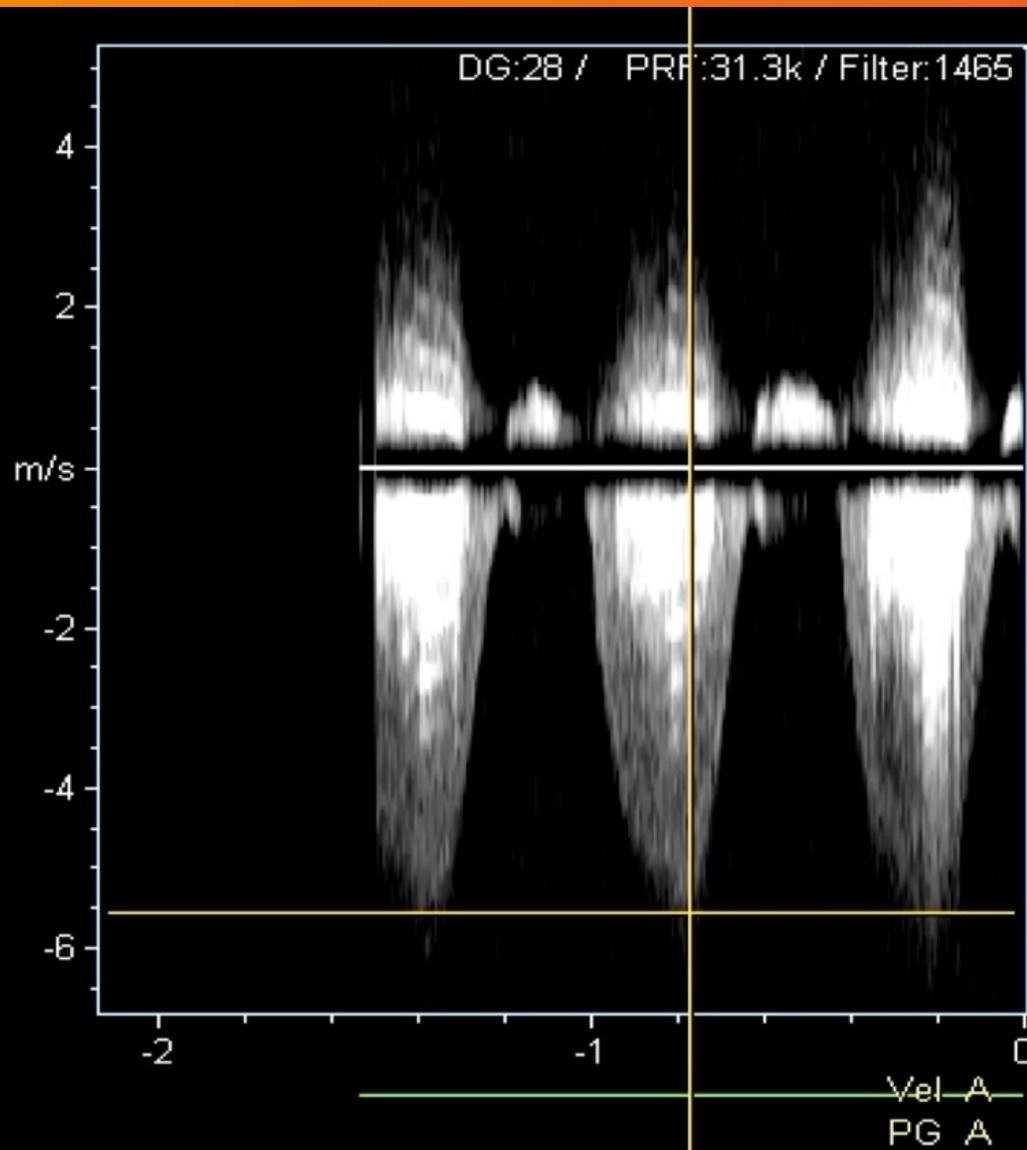
- *Delays in diagnosis and/or treatment of children with ventricular septal defects (VSD) results in **patients presenting late** with pulmonary hypertension (PHT) and elevated pulmonary vascular resistance (PVR).
- *Historically, those children with PHT and elevated PVR have been considered “**HIGH RISK**” for mortality following surgical correction because of pulmonary hypertensive crisis in the post-operative period.
- *In North America, Europe, some Latin American countries and the industrialized Pacific Rim countries children receive **operation mostly in infancy** thus preventing elevated PVR.
- *The absence of costly sophisticated medications to treat PHT or equipment for rescue therapy for PHT crises (ECMO) resulted in children frequently being **denied corrective operations** in many countries.
- *We introduced (1996) a modification to the uni-directional flow concept with the **double patch flap valved** VSD closure technique, allowing operations to be carried out safely without the need for these sophisticated medications or equipment (*Ann Thor Surg 1998, 2005*).



PTFE double flap valve VSD closure patch



Double Flap Valve in PHT Crisis



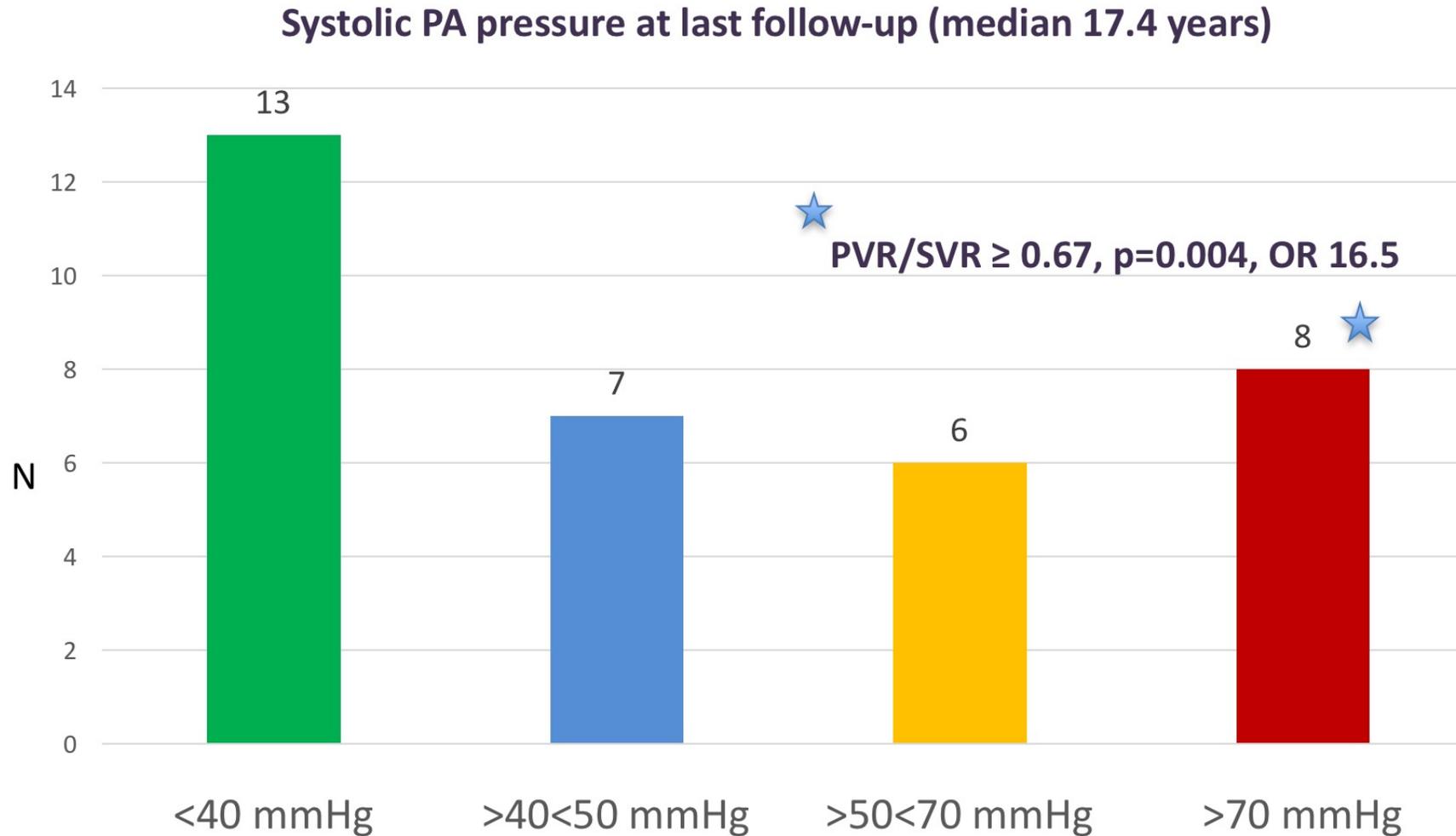
Methods

- Database queries were made at 3 sites known to have reliable follow-up on double patch patients : Kyiv, Nizhny Novgorod and Zagreb.
- Only those patients with double patch VSD closure who were or would have been ≥ 18 years of age on 12/31/2016 were extracted for analysis.
- Pre-operative catheterization data, echocardiographic evaluation and post-operative echocardiographic evaluations were retrieved.
- Follow-up was conducted between 1/2016 to 12/2016.

Results

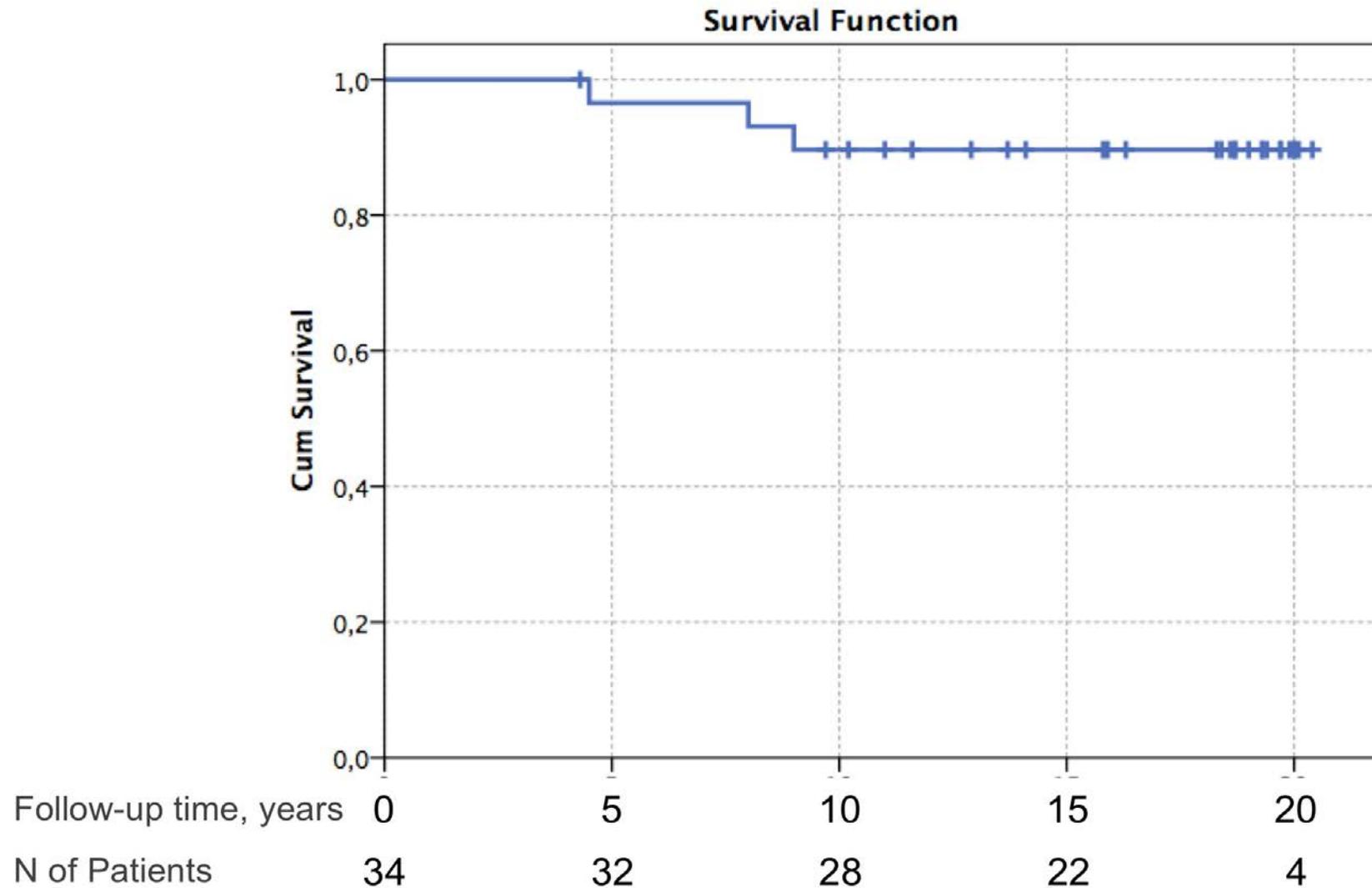
- 35 patients were identified, 19 females.
- Median age at operation 7.3 years, IQR (3.8;12.9).
- Median baseline PVR 9.6 WU, IQR (7.6;12.6).
- Median sPAP/sSAP 1.00, IQR (0.89;1.00).
- Operative Mortality 0%, all 35 discharged home.
- Median follow-up period 17.4 years, IQR (11.9;19.3).
- Median age at follow-up 23.7 years, IQR (20.5;25.9).
- Lost to follow-up, 1 patient.
- Late deaths, 3/34 (8.6%) at 4.5, 8 and 9 years post-operatively.

Late Pulmonary Hypertension



Median PAp/SAP @ last f/u = 0.41; $p < 0.001$ vs. pre-op

Kaplan-Meier Survival Curve



Cumulative Survival – 90.7%



Inferences

- Late closure of VSD in patients with PHT and elevated PVR does not predispose to earlier death.
- PVR/SVR at baseline catheterization is predictive of late severe PHT if ≥ 0.67 .
- Children with elevated PVR and PHT should not be denied operation because of potential “High Risk” for mortality.
- Most patients will survive to adulthood with mild or no PHT.

Thank You.

