Transcatheter pulmonary valve implantation – results in 22 patients

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No conflict of interest

Transcatheter pulmonary valve implantation (TPVI) is a relatively new method of treatment in patients with right ventricular outflow tract (RVOT) dysfunction after repair of congenital heart disease.

THE AIM OF THE STUDY:
To assess the early results of TPVI with the use of Melody Medtronic valve

Indications for transcatheter pulmonary valve implantation:
Patients with a history of correction of congenital heart disease with RV-PA homograft implantation and homograft valve dysfunction:
• significant pulmonary incompetence (PI) or/and
• significant pulmonary stenosis (PS), and
• RV dilatation or severe rhythm disturbances or decreased exercise tolerance

PATIENTS
- 22 patients
- Age: 5.6 years
- Sex: 13 males, 9 females
- Diagnosis:
  - TEF – total anomalous pulmonic vein (7)
  - PS – pulmonary stenosis (4)
  - TGA – transposition of great arteries (Rastelli) (3)
  - CAV – common arterial trunk (1)
  - DORV – double outlet right ventricle (4)
  - AS – aortic stenosis (Ross operation) (4)

TPVI PROCEDURE
- Bovine jugular venous valve and balloon expandable stent

INDICATIONS
- 21 successful implantations (96%)
- In one case calcified aortic homograft was damaged during metal stent implantation. The patient was operated with good result one week later

RESULTS
- NYHA class improved 6 mo after TPVI and was stable at 12 and 24 mo follow-up
- Mean PRF decreased from 15.7 ± 11.1% before TPVI to 2.6 ± 2.9% one month thereafter (p<0.0005)
- No stent fractures were observed

METHODS
- Follow-up:
  - 1 month: 21 pts
  - 6 months: 17 pts
  - 1 year: 11 pts
  - 2 years: 4 pts

RVOT dysfunction:
- Pulmonary stenosis (PS) – 20 pts,
- pulmonary gradient: 35–200 mmHg, x 85.5 ± 39.6 mmHg (ECHO)
- Pulmonary regurgitation (PR) 13 pts:
  - PR fraction < 15.7 ± 11.1% (CMR)

OUT EXPERIENCE WITH MELODY VALVE
Medtronic Melody pulmonary valve was successfully implanted without complications in 21/22 patients, which resulted in release of RVOT obstruction and competent new valve

CONCLUSION
TPVI is a safe and effective method of treatment in patients with repaired CHD.