Folded Melody Valve Technique for percutaneous valvulation of Complex Right Ventricular Outflow Tracts

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Introduction: Percutaneous Melody valve implantation has achieved standard of care for the management of patients with dysfunctional right ventricle (RV) to pulmonary artery (PA) conduits. The landing zone right ventricular outflow tract (RVOT) dimensions may vary significantly making it unfavorable for Melody valve implantation. We report a novel technique in patients with complex, repaired RVOT anatomies.

Methods: All patients were candidates for Melody insertion were evaluated with angiography. The landing zone was carefully studied. Patients with short landing zone or landing zone consisting of a retrosternal part were valved using a special technique. The insertion of the Melody valve in retrosternal continuity is at risk of stent fracture. In patients with short landing zone, there was a risk of Melody valve impingement with the RV muscle at the proximal end and the risk of accidental covering of PA distally. To circumvent these potential complications, we modified the Melody valve before implantation. The terminal open stent struts of the Melody valve were folded over itself from inside out to reduce its effective length.

Results: From 2008 to 2012, four patients (out of 4) received a shortened, folded Melody. The uncovering, crimping and loading of the Melody valve was technically simple in all. The folded and crimped valve moved easily in the delivery system and the deployment was done using standard technique. All valves were positioned where intended. Patients were discharged the day after the procedure. Evaluation showed excellent performance of the Melody valve with no paraprosthetic leak, no erosion, no perforation, no stent fracture, no residual stenosis, no valvular or para valvular regurgitation immediately after implantation or at follow up.

Conclusion: The “Folded valve technique” is a safe addition to the interventional armamentarium allowing the implanting physician to modify the valve in patients with complex short RVOTs. By implanting the Melody valve far from the sternum, this technique may reduce the overall incidence of stent fractures reported with this device. In the future, this technique may also be a good option for patients with vulnerable RVOT neighborhood that may preclude conventional technique.