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Percutaneous Pulmonary Valve Implantation in Patient with Native Right Ventricular Outflow Tract

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Background: Right Ventricular Outflow Tract (RVOT) dysfunction due to transannular patch or valvulotomy remains as a risk factor that increase the mortality and morbidity on late period. Surgical pulmonary valve implantation is the traditional treatment strategy. Recurrent surgeries, may leads complications of cardiopulmonary bypass, sternotomy etc. Percutaneous pulmonary valve implantation (PPVI) is an alternative, in order to prevent the patient from cumulative risk of multiple surgeries. However, anatomical complexity and differences and very large sizes for balloon expandable valves of RVOT, makes the PPVI technically more difficult. In this paper we present PPVI with Edwards Sapien XT valve in patients with native RVOT.

Patients and Methods: Fourteen (14) patients were taken to catheterization laboratory for PPVI procedure. In patients with transannular patch who has no stenosis, stent implantation was done at first session. Least two months after stent implantation, PPVI was performed. In one patient with stenosis and free regurgitation PPVI procedure was performed at the same session with stenting.

Results: Mean age was 13 4,5 (6-26) years and mean weight was 28 7,9 (17-75) kg.

In 92% of (13/14) patients PPVI was performed successfully. Ten (10) patients had free pulmonary regurgitation, 3 patients had severe pulmonary stenosis and moderate pulmonary valve insufficiency. Andra XXL stent were used for pre-stenting in 11 cases. CP stent were implanted in two cases who had stenosis. Mean maximal diameter of the RVOT's was 23 6,8 (12-26,8) mm. Edwards Sapien XT valve were used in all patients. Size of the implanted valves were 20 mm in two cases, 23 mm in two cases, 26 mm in 3 cases and 29 mm valve was used in 7 cases. In one patient, stent embolization occurred during pre-stenting. Stent exteriorized surgically without any complication and surgical valve inserted. Mild paravalvular insufficiency remained in one patient.

Conclusion: PPVI is an alternative in the treatment of RVOT dysfunction in patients with native RVOT. Presenting is essential for valve implantation in order to create a landing zone. Using of 26 and 29 mm sizes of Edwards Sapien XT valve extend the possibility of percutaneous valve implantation in larger RVOT's.