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Double Edwards Sapien XT valve-in-valve implantation

Alvarez-Fuente M. (1), Haas N.A. (2), Fernández Pineda L. (1), Tamariz R.(1), Del Cerro M.J. (1).
Hospital Ramón y Cajal, Madrid, Spain (1)
Heart and Diabetes Center NRW, Bad Oeynhausen, Germany (2)

Background:
Percutaneous implantation of pulmonary valves is now a common procedure in patients with congenital heart disease and pulmonary regurgitation and/or stenosis. The Melody® valve was the first pulmonary percutaneous valve to achieve this indication. In 2011 the first CE-marked transcatheter Sapien pulmonic valve was implanted in Europe and the first percutaneous valve-in-valve was implanted in a patient with a bioprosthetic pulmonary valve without a conduit or prestenting, being an off-label use. The implantation of the Sapien valve in tricuspid position is not yet approved by the EMA, although it is a good alternative to surgery for patients with high surgical risk. We present the case of a double valve-in-valve implantation of two Sapien XT valves in pulmonary and tricuspid bioprosthetic valves.

Case Report:
A 20 year old male with severe pulmonary stenosis and hypoplastic right ventricle, palliated at neonatal age by percutaneous valvuloplasty. At age 14 two surgical prothesis were implanted: Edwards 25 mm in pulmonary and 29 mm in tricuspid position. Both valves degenerated to stenosis and regurgitation, developing supraventricular arrhythmia due to severely dilated right atrium. Angiographies show severe combined tricuspid and pulmonary lesion with great dilation of the pulmonary trunk. Under general anaesthesia, through right femoral venous access, initial balloon predilation was performed (Andralec 30 x 40 mm). Thereafter we implanted a 26 mm Sapien XT in pulmonary position and a 29 mm Sapien XT over the pulmonary and tricuspid bioprosthetic valves with the support of a super stiff wire (Lunderquist). Based on the anatomy, no prestenting was performed. There were no complications, although due to the severely dilated right atrium and hypertrabeculated right ventricle the implantation of the pulmonary valve required multiple manoeuvres and changing the wire position from the left pulmonary artery to the right artery. Both valves were implanted successfully and with good angiographic and echocardiographic results.

Comments:
This case shows the feasibility of implanting two percutaneous Sapien XT valves in the same procedure. It also reinforces the feasibility and security of the implantation of the Sapien XT valve over a degenerated tricuspid bioprosthetic valve, which is still an off-label procedure.