TRANSCATHETER AORTIC VALVE IMPLANTATION IN A PATIENT WITH RHEUMATIC AORTIC STENOSIS

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A 77-year old male, presented with dyspnea and chest pain from severe aortic stenosis and coronary artery disease, was referred for transcatheter aortic valve implantation (TAVI) after heart team discussion (Society of Thoracic Surgeons predicted of mortality score of 5.8%). He underwent anterior descending branch and right coronary stenting 2 years prior TAVI and was diagnosed with in-stent restenosis at right coronary artery 3 months before his referral. His medical history was noted for rheumatic heart disease, which was also confirmed on transthoracic echocardiography by obvious aortic leaflets thickening (Panel A), mild mitral stenosis and regurgitation. The mean transaortic gradient was 43 mmHg. On multi-detector computed tomography (MDCT), his aortic leaflets were characterized with diffused thickening and a calcification volume of 77.2 mm^3 (Panel B). The perimeter of annulus was 76.2 mm. A 29 mm CoreValve (Medtronic, Minneapolis, MN, USA) was planned with an oversizing ratio of 19.5%.

He underwent Transfemoral TAVI combined with elective right coronary artery stenting. Due to his minimal calcification, pre-dilatation was not performed. Interestingly, when the prosthesis being extruded from the sheath, it dived into the left ventricle, leading a low implantation even though we aimed at 4 to 6 mm below the non-coronary cusp (Movie 1). After final deployment, post-dilatation was required to improve stent frame geometry. Permanent pacemaker implantation was performed 10 days after TAVI because of complete left bundle branch block. Post-procedural MDCT showed the mean depth of implantation was 15 mm. The stent frame was circularly but incompletely expanded (Panel C). He was discharged with a mean gradient of 7 mmHg and no paravalvular leak (PVL), which remained the same one year later.

In conclusion, it is safe and effective to treat rheumatic aortic stenosis with TAVI. The stiff fibrotic leaflets act as seal to PVL but impose diving force to the stent frame during deployment. Thus, pre-dilation or downsize the prosthesis may be required for optimal outcomes.