Interventricular septum rupture after transcatheter aortic valve implantation

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A 76-year-old woman with hypertension, severe chronic obstructive pulmonary disease, and severe aortic valve stenosis with preserved left-ventricular ejection fraction was referred by dyspnoea. High surgical risk was calculated (EuroSCORE: 17%); therefore, transcatheter aortic valve implantation (TAVI) was planned.

Aortic valve was dilated with a 22 mm Nucleus® balloon and a 26 mm CoreValve® prosthesis was implanted. Aortography revealed residual severe aortic regurgitation owing to incomplete valve expansion. Therefore, a 25 mm Nucleus® balloon dilatation was performed. A new aortogram showed grade 1 aortic regurgitation and a tiny contrast pass from left to right ventricle (Figure A, arrow).

The patient developed symptoms of heart failure. Transthoracic echocardiography showed interventricular septum rupture (ISR) at the level of membranous septum, in apical (Figure C) and short-axis views (Figure D). Defect size was 6 mm (Figure E). Interventricular septum rupture surgical repair was refused because of high risk. The patient improved clinically and was discharged asymptomatic on Day 12.

Interventricular septum rupture contributing factors after TAVI are unknown. In our series of 50 patients, 6 required postdilatation with balloon and only one ISR occurred. Computed tomography in our patient showed calcification extending from aortic valve to the beginning of the membranous septum. Membranous septum size was 8.7 mm (Figure B, arrows), which is longer than the median length in our patients (3 mm). It is too early to determine the predisposing factors for ISR post-TAVI; however, a severely calcified membranous septum longer than usual and overdilatation of the prosthesis could contribute to this complication.

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