Successful percutaneous implantation of Symetis ACURATE neo transcatheter aortic bioprosthesis in a patient with existing mechanical mitral valve

A 73-year old woman who had previous mechanical mitral valve replacement (MVR) presented with worsening symptoms of dyspnea. Echocardiographic evaluation revealed severe aortic stenosis with calcified trileaflet aortic valve (aortic valve area was 0.9 cm^2, mean gradient was 42 mm Hg with 45% ejection fraction). Society of Thoracic Surgeons score of the patient was 8.9%, mean logistic European system for cardiac operative risk evaluation was 23.8%. After multi-disciplinary discussion of Heart Team, patient was taken for transcatheter aortic valve replacement (TAVI) using Symetis ACURATE TF (SATF) (Symetis SA, Ecublens, Switzerland) via transfemoral approach. During the procedure, medium-sized valve was positioned for deployment following balloon valvuloplasty. After unsheathing of upper crown and opening of stabilization arches, full deployment of valve was performed through unsheathing of lower crown (Fig. 1, 2; Video 1–3). After implantation, final aortography showed no paravalvular leak (Fig. 3). Patient was discharged at postoperative day 2 and follow-up echocardiography demonstrated excellent aortic and mitral prosthesis function after 30 days.

It is well known that presence of mechanical mitral valve within aorto-mitral curtain not only makes proper positioning challenging, but also makes procedure difficult with life-threatening complications such as malposition and embolization of device, or post-procedural dysfunction of mitral prosthesis due to damage. Although SATF has been designed as novel prosthesis for TAVI, there is still paucity of data in the literature for patients with history of MVR who have undergone TAVI. According to the literature, most procedures are still performed with first-generation devices. Flexible stabilization arches, upper, and lower crowns allow cover to remain in proper position. Unlike other devices, SATF has very low radial force and facilitates optimal implantation with only a few millimeters protruding in left ventricular outflow tract or annulus of mechanical mitral prosthetic valves during procedure. In our patient, SATF valve showed promising results in terms of safety and feasibility.

Video 1. Symetis ACURATE neo bioprosthesis valve after unsheathing of upper crown and opening of stabilization arches, and relationship between mitral prosthesis and aortic annulus.

Video 2. Full deployment of Symetis ACURATE neo bioprosthesis valve under rapid pacing.

Video 3. Final arcus aortography after procedure with excellent bioprosthesis function.

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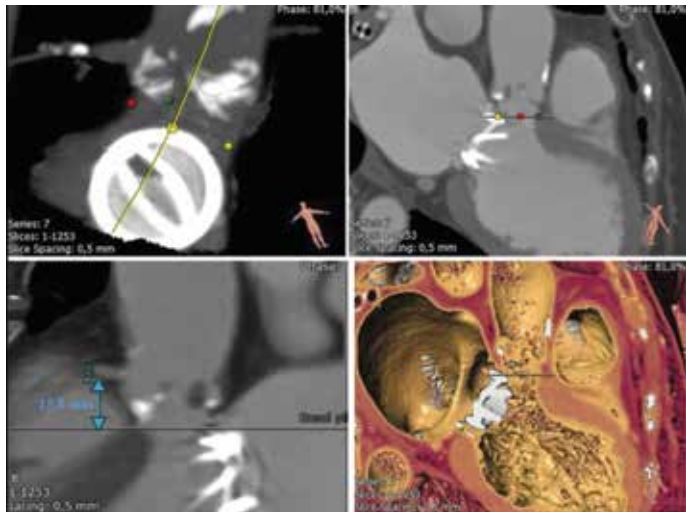

Figure 1. Computed tomography images demonstrate association between aortic annulus, aortic valve, and previously implanted mitral valve prosthesis

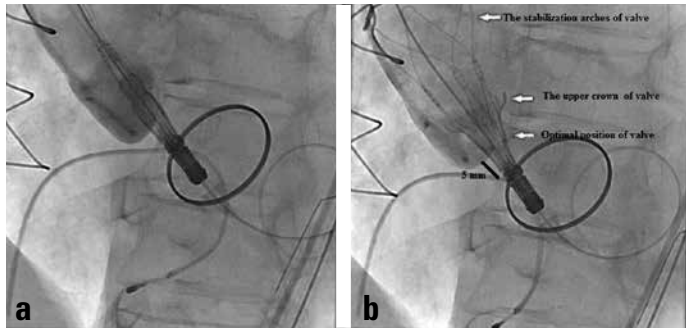

Figure 2. (a) Association with previously implanted mitral prosthesis and aortic annulus and Symetis ACURATE neo bioprosthesis valve; **(b)** Fluoroscopy illustrates Symetis ACURATE neo bioprosthesis after unsheathing of upper crown and opening of stabilization arches, and relationship between mitral prosthesis and aortic annulus

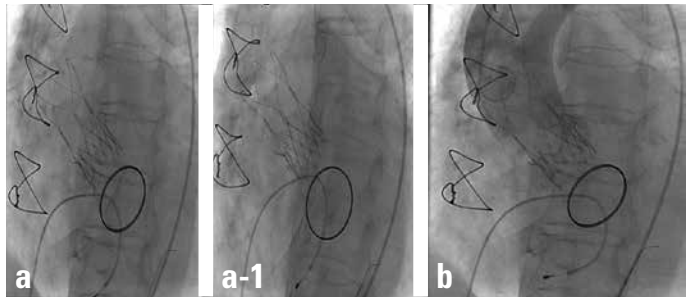

Figure 3. (a) Symetis ACURATE neo bioprosthesis valve is seen after full deployment and association with mitral prosthesis; **(b)** Arcus aortography demonstrated no aortic regurgitation after implantation of valve

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