AORTIC ROOT REMODELING AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION: EVALUATION BY COMPUTED TOMOGRAPHY

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We investigated post-TAVI remodeling of the aortic root by CT.

Methods: In 30 pt, cardiac CT was performed before and after TAVI (Edwards Sapien prosthesis). Smallest diameter, largest diameter and area of the LVOT, aortic annulus, implanted prosthesis, and aortic sinus were measured. Eccentricity E was quantified by dividing the smallest (R1) by the largest diameter R2 (E = R1/R2). Calcium of the aortic commissures and the base of the cusps were quantified (scale of 0 to 3).

Results: Areas of LVOT (4.9±0.9 vs 4.9±1.6 cm²) and aortic sinus (8.8±1.5 vs 9.2±1.5 cm²) were not different before and after TAVI. Aortic annulus area was significantly lower after TAVI (6.0±1.2 vs 5.1±0.6 cm², p = 0.001). Aortic annulus (E = 0.84±0.06) and LVOT (E = 0.73±0.07) were strongly eccentric before implantation. After TAVI, eccentricity of the aortic annulus (deformation of the implanted valve, E = 0.94±0.05) and of the LVOT (E = 0.81±0.09) was significantly reduced (p = 0.0001 and p = 0.002). In comparison to 16 patients without eccentricity of the implanted valve (E > 0.95), 14 patients with eccentricity (E < 0.95) demonstrated significantly more calcium of the aortic valve (visual score 3.9±0.9 vs. 3.0±0.8, p = 0.04) and base of the cusps (score 1.9±0.7 vs. 1.1±0.7, p = 0.05), but not commissures (see figure).

Conclusions: Aortic annulus eccentricity is reduced by TAVI. Pronounced calcium prevents Edwards Sapien prostheses from assuming circular shape. The relevance regarding outcome will need to be determined.