Background

Accurate device positioning during transcatheter aortic-valve implantation (TAVI) is crucial in order to achieve optimal results.

Objectives

To evaluate the exact location of Edwards-SAPIEN devices in different stages of implantation and to quantify for possible operator-independent device movement during final deployment.

Methods & Results

This multicenter study group consisted of 68 patients. Device positioning was assessed using fluoroscopic images and the C-THV system (Painleve Medical).

Multivariate analysis revealed that the upper movement during rapid pacing is independent of device version (SAPIEN vs. SAPIEN-XT) and procedural access (transfemoral vs. transapical). Moderate and severe aortic-valve calcification were associated with a 49% higher upward movement than mild calcification (p=0.03). Estimated aortic root volume was negatively correlated with movement size (r = -0.35, p = 0.005).

Conclusions

Final device position was mostly aortic in relation to the anatomical annulus. There is an operator-independent upward movement of the device during the final stage of implantation, especially in highly calcified valves and those with aortic roots of small volume. Anticipated upward movement of device center should influence device positioning before final deployment.