

Assessment of Aortic Annulus Diameter by TTE and TEE in Patients Undergoing TAVI

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Precise measurement of the aortic annulus diameter (AAD) is critically important in pts undergoing Transcatheter Aortic Valve Implantation (TAVI), for appropriate valve size selection. AAD measurements are usually performed using transthoracic echocardiography (TTE), transesophageal echocardiography (TEE) or CT. Aim: To determine whether TTE or TEE measurements of AAD alone can predict correct valve size in pts undergoing TAVI. Methods: 75 pts (49% male, mean age 82.4 ± 7 yrs) who underwent successful TAVI in our department since 2008, were included in the study. AAD was measured a few days before TAVI by TTE. If imaging of AAD was not optimal, pts underwent TEE. Measurements were repeated several times (3-5 loops). A 23mm prosthetic valve was implanted if the AAD was >18 and <22 mm; and a 26mm valve was implanted if the AAD was ≥ 22 and <25 mm. In borderline measurements of AAD, final size was confirmed after aortography with an inflated balloon during TAVI.

Results: A balloon expandable valve (Edwards-Sapien-69pts, Medtronic-6pts) was implanted: 59 by retrograde transfemoral, 15 by antegrade transapical and 1 by subcalvian approach. Additional 3 pts died during procedure and 2 were transferred for urgent surgery and survived. Aortic peak/mean gradient in pre and post TAVI were $87.1 \pm 26 / 49.8 \pm 18$ mmHg and $22.4 \pm 11 / 12.4 \pm 7$ mmHg respectively ($p < 0.0001$ for both). Mild aortic incompetence (AI) post TAVI was observed in 24(31%) pts, moderate in 16(20%) patients. No patient had severe AI. Mean AAD size was 22.0 ± 0.2 mm. Valve size was 23mm in 39(52%) pts, 26mm in 33(44%) and 29mm in 3(4%) pts. TEE predicted the correct valve size in all pts. TTE/TEE predicted valve size in 72/75 (96%) pts ($p < 0.0001$). Failure of valve implantation was not related to incorrect AAD measurement.

Conclusions: TTE/TEE are reliable methods for determining correct valve size in TAVI.

Decision can be made based on TTE alone; if imaging is not optimal, TEE should be performed.