

Conclusions: Patients with LF-LG aortic stenosis experience very high 2-year mortality in the absence of valve replacement. Valve replacement with surgical or trans-catheter approach results in improved 2-year survival and saves 1 life for every 3.6 patients treated with SAVR/TAVI. Data on outcomes of TAVI in these complex patients continues to evolve and mandates heart team approach in clinical decision making.

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Usefulness of Activated Clotting Time Guided Heparin Administration in Reducing Bleeding Events during Trans-femoral Transcatheter Aortic Valve Implantation

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Background: Bleeding after TAVI still remains a frequent and potentially serious complication. A common cause of bleeding in this population might be represented by excessive intraprocedural anticoagulation with heparin. Adjusted heparin dose administration using baseline ACT guidance may reduce the risk of overdosing in this frail population. The aim of our study is to evaluate the impact of the Activated Clotting Time (ACT)-guided heparin administration on bleeding occurrence during trans-femoral (TF) Transcatheter Aortic Valve Implantation (TAVI).

Methods: Among 362 patients undergoing TF-TAVI, heparin was administered according to two strategies: baseline ACT (ACT-guided, n=174) or patient's body weight (non ACT-guided n=188 patients). The primary study objective was 30-day major bleeding occurrence as defined by the Valve Academic Research Consortium (VARC) criteria. Secondary objectives were any life-threatening and minor bleeding, vascular complications, acute kidney failure, myocardial infarction, stroke, all-cause and cardiovascular mortality at 30 days according to VARC.

Results: Bleeding occurred in 167 (46.1%) patients; of these 76 (21.0%) had major bleeding. Of note, the ACT-guided group had a significant lower occurrence of major (7.5% vs. 33.5%, p <0.001), life-threatening (12.1% vs. 20.2%, p=0.04) and any bleeding (25.9% vs.64.9%, p <0.001). Conversely, no differences were noted in the other secondary study objectives. Importantly, irrespective of the time the procedure was performed (experience phase) and of the operator preference in heparin administration, the ACT-guided strategy was associated with a significant lower occurrence of major bleeding at 30 days. Moreover, after multivariate adjustment for potential confounders ACT-guided propensity, the absence of ACT guidance was an independent predictor of major bleeding at 30 days [OR 6.4, 95%CI (2.3-17.9), p < 0.001].

Conclusions: In our experience, ACT guidance in TF-TAVI was correlated with a significant lower occurrence of major, life-threatening and any bleeding. This strategy might be an useful tool in reducing bleeding in this high-risk population.

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Is a high pacing rate post TAVI associated with appropriate pacemaker utilisation? A real-world multi-centre retrospective analysis of pacemaker utilisation in patients paced following TAVI

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Background: Permanent pacemaker (PPM) requirement is a recognised complication of Transcatheter Aortic Valve implantation (TAVI) (published rate of 16-40%) and surgical aortic valve replacement(AVR)(8% of cases). PPM requirement post CoreValve TAVI is influenced by 3 main factors: 1) electrocardiogram predictors, 2) depth of CoreValve below annulus,3) timing of pacing decision. Early pacing may allow earlier discharge but this may contribute to higher pacing rates.PPM utilisation and how this relates to pacing rates in TAVI patients has not previously been studied.

Methods: Data from a total of 821 consecutive patients treated between 2008 and July 2012 with CoreValve in the four UK TAVI centres (A, B, C and D) was examined. A retrospective analysis of all patients who received a pacemaker was performed.

Results: Pre-TAVI electrocardiogram revealed a similar distribution of conduction abnormalities in patients who required a PPM. Centre B had a significantly (p<0.05)

lower overall pacemaker rate (see table). All centres had a procedural management strategy of high implantation of CoreValve. However, in patients receiving PPM, this was not achieved and average depth of valve base from aortic annulus was measured (Centre A 6.73mm, B 8.12mm, C 7.02mm and D 7.18mm, p=NS). The decision to pace was made significantly later in centre B (mean of 6.5 days post TAVI compared to 3.8 days in centre A, 3.4 days in centre C and 4.6 days in D, p<0.01), which may then be reflected in the subsequent patient pacing requirement(see table).

Centre B recorded a significantly lower overall pacing rate. This was associated with a longer time taken for decision to pace but significantly higher pacemaker utilisation and less pacemaker redundancy.

Pacing insertion and utilisation data for 4 CoreValve TAVI centres

Centre	A	B	C	D
Total number of TAVI cases	229	132	198	262
Overall pacing rate % (p<0.05)	22.7	9.1*	24.7	16.8
Duration after TAVI of PPM (days)(p<0.05)	3.8	6.5*	3.4	4.6
Depth of implant (mm)	6.7	8.1	7.0	7.2
Atrial pacing 6 weeks % (p<0.05)	22.6	52*	43.5	16.5
Atrial pacing 6 months %	20.9	25.6	44.8	23
Atrial at latest follow-up %	23.2	39	23	23.2
Ventricular pacing 6 weeks % (p<0.05)	64.9	84.5*	79.7	59.2
Ventricular pacing 6 months %	43.4	69.6	81.4	59.1
Ventricular pacing latest follow-up % (p<0.05)	47.1	84.7*	78	62.2

Conclusions: Pacing rates in each of the 4 centres was lower than previously reported (9-24%vs 16-40%). In one centre, the pacing rate was similar to traditional surgery (9%). Early PPM insertion (<3days) led to a higher PPM rate but low utilisation. Whereas, a delay in decision to insert PPM appears to be associated with a lower overall insertion rates and reduced redundancy in the inserted pacemakers.

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A Risk Prediction Algorithm for 1-Year Mortality after Transcatheter Aortic Valve Implantation

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Background: Transcatheter aortic valve implantation (TAVI) is an increasingly common procedure in elderly and multimorbid patients with aortic stenosis. A pre-procedural risk evaluation scheme beyond current surgical risk scores has not been widely implemented.

Methods: We developed a risk algorithm for 1-year mortality in two cohorts consisting of 845 patients undergoing routine transapical or transfemoral TAVI procedures by commercially available devices, mean age 80.9±6.5, 51% women. Clinically available variables and surgical risk scores were determined at baseline. Multivariable Cox regression related clinical data to mortality (n=207 deaths).

Results: Age, sex, body mass index, estimated glomerular filtration rate, hemoglobin, pulmonary hypertension, and mean transvalvular gradient and left ventricular ejection fraction at baseline were most strongly associated with mortality (C-statistic 0.66, 95% confidence interval [CI] 0.61 to 0.70, calibration Chi² statistic= 6.51; p=0.69). B-type natriuretic peptide and troponin I were significantly related to outcome after multivariable-adjustment, but did not improve the C-statistic. Frailty increased the C-statistic to 0.71 (95% CI 0.65 to 0.76).

Conclusions: We present a specific risk evaluation tool derived and validated in routine TAVI cohorts that predicts 1-year mortality better than the conventional scoring systems. Biomarkers only marginally improved risk prediction. Our risk algorithm may help to guide decision-making when TAVI is planned.