

Left ventricular outflow morphology as a predictor of arrhythmic disturbances after TAVI

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Introduction: Left bundle branch block (LBBB) and permanent pacemaker (PM) are frequent complications after transcatheter aortic valve implantation (TAVI), but few predictors have been reported.

Purpose: This study sought to determine the relationship between left ventricular outflow tract (LVOT) morphology and the development of conduction disturbances after TAVI.

Methods: From 1/2020 to 12/2020 consecutive patients who underwent TAVI and an analyzable CT scan in our center were selected. Patients were categorized according to the LVOT morphology into three groups. The delta value between mean aortic root diameter (AA-d) and mean LVOT-d were calculated, and divided into terciles. In patients in the third tercile the AA-d was greater than LVOT-d and was defined as tapered-LVOT (group 1). First and second terciles had tubular or flared-LVOT shape and were defined as group 2. We compared conduction disorders after TAVI with and without tapered-LVOT. Primary endpoint was the combined of new-onset of

transient/persistent LBBB, and PM. Factors with $p < 0.05$ on the univariate analysis were entered into the multivariate analysis.

Results: Among 98 eligible patients thirty-two patients (33%) presented a tapered-LVOT (Group 1) and 66 (67%) had tubular or flared-LVOT morphology (group 2). The mean age was 80.5 ± 5.5 years and 60% were female. Baseline characteristics were similar between groups except for the incidence of dyslipidemia that was higher in group 2. The primary study endpoint was significantly higher in group 1 (78% vs. 59%; $p = 0.036$). After adjusting for confounding factors, this relationship remained statistically significant (OR: 2.81 (CI95%: 1–7.96), $p = 0.046$). Independent predictors of conduction disturbance were: tapered-LVOT, prior coronary artery disease and prior surgical valve replacement.

Conclusions: After TAVI, patients presenting a tapered-LVOT morphology have a 2.8-fold greater risk to develop LBBB or require permanent PM when compared to another LVOT shapes.