# Aortic regurgitation after transcatheter valve implantation: subvalvular calcification as a predictor of paraprosthetic regurgitation.

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Aims: Periprosthetic aortic regurgitation after TAVI is relatively common, but may have relevant clinical consequences.
The aim of our study is to evaluate the role of subvalvular calcifications in the generation of paravalvular aortic regurgitation.

Methods: A total of 58 consecutive patients who underwent TAVI with CoreValve. Two and three dimensional transesophageal echocardiography was performed during the procedure. The presence and the distribution of aortic valve calcifications were evaluated from three dimensional dataset. The distribution of sub valvular calcifications (calcium nodules located below the aortic annulus line) was described referring to the corresponding aortic cusp. The presence of post-procedural aortic regurgitation was evaluated at the end of the device implantation and graded as 0=absent, 1=mild, 2= moderate and 3=severe. Regurgitation jets localizations were than described referring to the corresponding aortic cusp. Patients were divided into 4 groups based on regurgitation severity.
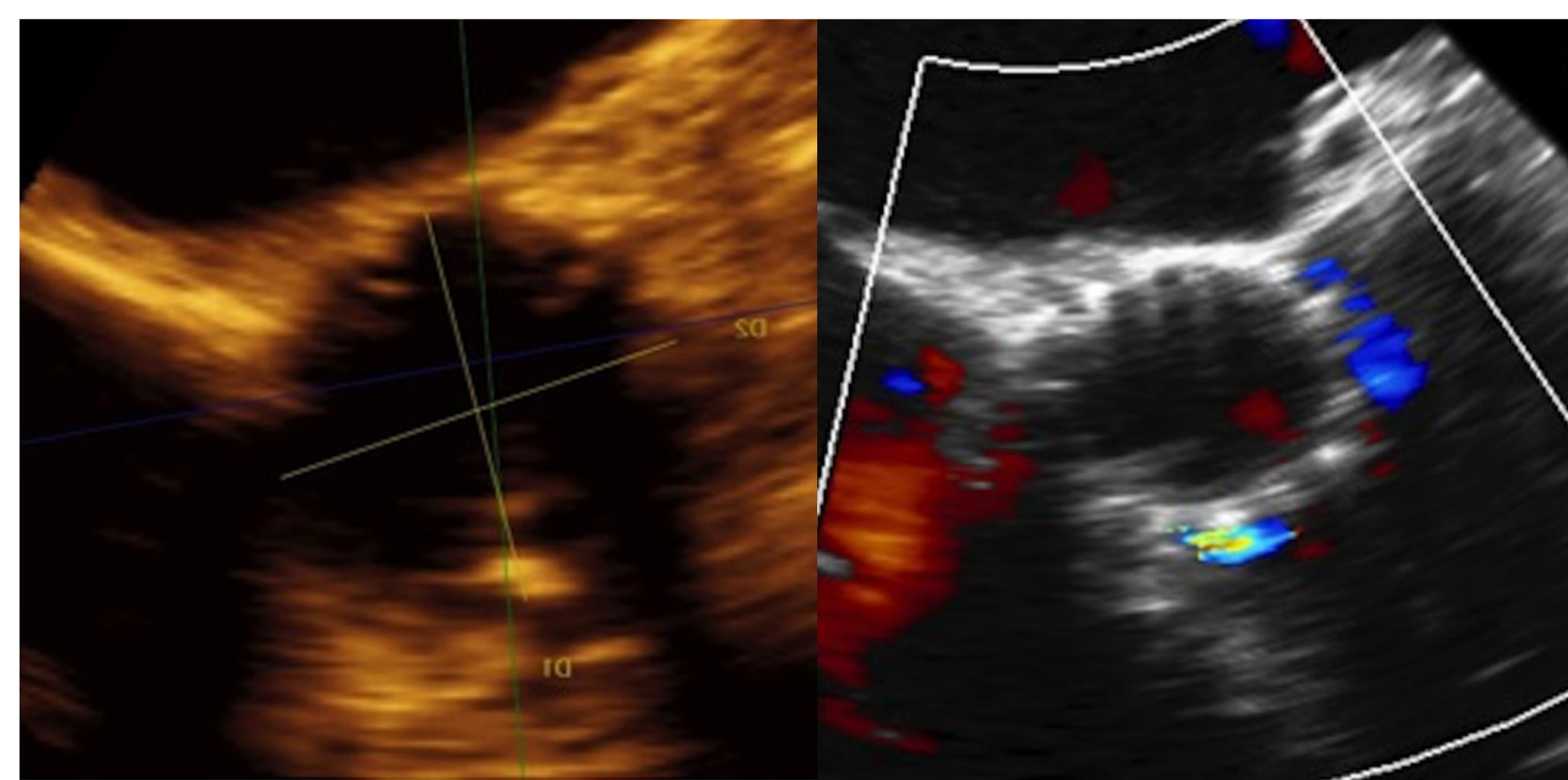
Results: Successful TAVI was achieved in all patients. Aortic regurgitation was graded 0 in 4 patients (6,9%), 1 in 48 patients (82,8%) and 3 in 6 patients (10,3%). No patient had grade 3 aortic regurgitation. There were no statistical difference in terms of area, perimeter, diameters and eccentricity index between the different regurgitation severity group.
The concordance between subvalvular calcification and the development of paravalvular regurgitation was 77,6%, 81,0% and 86,2% for non coronary cusp, left coronary cusp and right coronary cusp respetcively.
Table 1 shows the sensibility, specificity, positive and negative value for the correct localization of paravalvular aortic regurgitation among each coronary cusp territory.

	Sensibility	Specificity	Negative predictive value	Positive predictive value
NCC	73,7%	85,0%	63,0%	90,3%
LCC	78,6	87,5%	60,9%	94,0%
RCC	100,0%	84,9%	100,0%	38,5%

Conclusions: The presence of subvalvular calcifications showed a good correlation with the local development of paravalvular aortic regurgitation after TAVI as confirmed by sensitivity, specificity, positive and negative predictive values. Sub-valvular calcification may play a major role in the development of paravalvular aortic regurgitation causing an incomplete apposition of the prosthesis to the left ventricular outflow tract since the inflow part of the prosthesis is the last barrier to the development of paravalvular aortic regurgitation.