



## TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI): ASSESMENT OF MYOCARDIAL SYSTOLIC PERFORMANCE WITH 2D SPECKLE TRACKING ECHOCARDIOGRAPHY

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**Background:** 2D Strain echo allows an accurate measurement of left ventricular (LV) systolic function in TAVI patients. Our aim is to evaluate whether 2D longitudinal and circumferential strain can detect improvement in global and regional LV systolic function immediately after TAVI and three months later.

**Methods:** Twenty-one patients (mean age  $85.6 \pm 2.8$  years; 12 women [57.1%]; mean logistic EuroSCORE  $18.9 \pm 0.03$ ) with symptomatic aortic stenosis (AS) underwent transfemoral TAVI.

2D conventional and 2D strain (speckle analysis) echocardiography were performed before, at one week and at three months after the procedure.

**Results:** After TAVI, we assessed a reduction of mean pressure gradient ( $p < 0.0001$ ), an increase in aortic valve area ( $0.5 \pm 0.1$  vs  $1.5 \pm 0.2$  cm<sup>2</sup>;  $p < 0.0001$ ) and an immediate reduction of LV mass (respectively  $191.1 \pm 52.2$  g/mq vs  $179.5 \pm 57$  g/mq,  $p = 0.029$ ; vs  $159.8 \pm 32.6$  g/mq,  $p = 0.001$ ), but there wasn't a significant improvement of LV ejection fraction (LVEF) (respectively  $52.5 \pm 9.1\%$  vs  $52.6 \pm 9.6\%$ ,  $p = 0.971$ ; vs  $53.1 \pm 8.6\%$   $p = 0.137$ ).

2D 4 chamber longitudinal systolic strain showed a significant improvement early after procedure ( $-13.2 \pm 2.9\%$  vs  $-16.8 \pm 4.3\%$ ,  $p = 0.002$ ) that was maintained at 3 months follow up ( $-16.6 \pm 4.3\%$ ,  $p = 0.008$ ). Also 2D circumferential basal strain showed a significant improvement after procedure ( $-15.1 \pm 6.6\%$  vs  $-19.6 \pm 6.4\%$ ,  $p = 0.013$ ) and at 3 months ( $-20.4 \pm 6.8\%$ ,  $p = 0.003$ ). Longitudinal and circumferential basal strain changes were not different between patients with or without post procedural pacemaker (PMK) or left bundle branch block (LBBB).

**Conclusion:** There is an early improvement in myocardial longitudinal and circumferential systolic measured by 2D Strain analysis in both short and medium term follow-up. The LVEF does not change significantly in our patients after TAVI. These data suggest that sensitive new echo methods can reliably detect early regional changes of myocardial function after TAVI independently of LVEF.

Neither PMK implantation nor new LBBB affect the systolic function assessed by 2D Strain analysis.

