

**Values of Color Doppler Three Dimensional Transesophageal Echocardiography in the Percutaneous Closure of Mitral Prosthesis Paravalvular Leak***Biner, S<sup>1</sup>; Rafique, A<sup>2</sup>; Siegel, R<sup>2</sup>; Shiota, T<sup>2</sup>**<sup>1</sup>Tel Aviv Sourasky medical Center, Tel Aviv, Israel; <sup>2</sup>Cedars Sinai Medical Center, Los Angeles, USA*

Methods and results: We investigated the clinical value of three dimensional (3D) transesophageal echocardiography color flow Doppler (TEE-CFD) for percutaneous transcatheter closure of mitral prosthesis paravalvular leaks (PVLs) in comparison with two dimensional (2D) TEE. Number, location and size of mitral prosthesis PVLs were determined in 8 patients by 2D TEE-CFD and 3D TEE-CFD. We also evaluated 2D TEE-CFD and 3D TEE-CFD for identifying the canalization of target PVL during intervention, and assessing the change in PVL effective orifice following the endovascular procedure. Twelve PVLs and 15 PVLs were visualized with 2D TEE-CFD and 3D TEE-CFD. There was no substantial disagreement between 2D TEE-CFD and 3D TEE-CFD for location for each of the PVLs. There was no difference in vena contracta short axis width obtained by 2D TEE-CFD and 3D TEE-CFD ( $5.7 \pm 1.4$ mm vs.  $5.5 \pm 1.3$ mm,  $p=0.09$ ). However, only 3D TEE-CFD demonstrated the PVL effective circumferential orifice length ( $12.2 \pm 8.5$ mm). A closure device was deployed in 6 cases. In one case, the canalization of a non-target PVL, visualized only on 3D TEE-CFD, led to an appropriate change of treatment strategy. The reduction in mean PVL vena contracta width demonstrated with 2D TEE-CFD and 3D TEE-CFD was similar ( $2.2 \pm 0.7$ mm vs.  $2.1 \pm 1.1$ mm,  $p=0.69$ ). However, only 3D TEE-CFD verified the reduction of PVL effective orifice circumferential length by  $10.5 \pm 5.6$ mm. Conclusion: 3D TEE-CFD provides unique and additive information in patients with mitral prosthesis PVLs. This new technology has the potential to improve the procedural success of percutaneous transcatheter closure of PVLs.