to determine whether presence of MF on visual assessment (MFVA) and gray zone fibrosis (GZF) mass predicts SCD and ventricular fibrillation/sustained ventricular tachycardia after cardiac implantable electronic device (CIED) implantation.

**Materials and Methods** In this prospective study, total fibrosis and GZF mass, quantified using cardiovascular magnetic resonance, was assessed in relation to the primary endpoint of sudden cardiac death (SCD) and the secondary, arrhythmic endpoint of SCD or ventricular arrhythmias after CIED implantation.

**Results** Among 700 patients (age 68.0 ± 12.0yrs [mean ± SD]), 27 (3.85%) experienced a SCD and 121 (17.3%) met the arrhythmic endpoint over 6.93 yrs (median; interquartile range 5.82–9.32). MFVA predicted SCD (hazard ratio [HR]: HR: 26.3 [95% confidence interval [CI] 3.70–3337]; negative predictive value: 100%). In competing risks analyses, MFVA also predicted the arrhythmic endpoint (subdistribution [sHR]: 19.9 [95% CI 6.40–61.9]; negative predictive value: 98.6%). Compared with no MFVA, a GZF mass measured with the 5SD method (GZF5SD) > 17 g was associated with highest risk of SCD (HR: 44.6;95% CI 6.12–5685) and the arrhythmic endpoint (sHR: 30.3 [95% CI 9.60–95.8]). Adding GZF5SD mass to MFVA led to reclassification of 39% for SCD and 50.2% for the arrhythmic endpoint. In contrast, LVEF did not predict either endpoint.

**Discussion** This is the largest CMR study of MF in relation to long-term clinical outcomes in patients undergoing CIED implantation. Several findings have emerged. First, all patients experiencing SCD had MFVA on preimplantation CMR. Second, absence of MFVA virtually excluded the composite, arrhythmic endpoint. Third, both TF5WHAM mass and GZF5SD mass had an additional predictive value over and above MFVA with respect to both SCD and the arrhythmic endpoint. Last, LVEF did not predict SCD or the arrhythmic endpoint.

**Conclusion** In CIED recipients, MFVA excluded patients at risk of SCD and virtually excluded ventricular arrhythmias. Quantified GZF5SD mass added predictive value in relation to SCD and the arrhythmic endpoint.

**Acknowledgements** We are grateful to Medtronic, Abbott and Boston Scientific for their support in funding this study, in the form of unrestricted educational grants.

---

### EFFECT OF AORTIC VALVE REPLACEMENT ON LEFT ATRIAL AND VENTRICULAR MYOCARDIAL DEFORMATION IN SEVERE AORTIC STENOSIS

**Introduction** Aortic valve replacement (AVR) in patients with severe aortic stenosis (AS) leads to reverse remodelling, with reduction in left ventricle (LV) mass and volumes. However, the effect of AVR on LV and left atrial (LA) myocardial deformation using feature tracking cardiovascular magnetic resonance (FT-CMR) has not been extensively studied.

**Materials and Methods** Patients with severe AS scheduled for AVR were recruited. CMR and echocardiography scans were performed pre- and post-AVR using a standard protocol. In addition to volumetric assessment using area-length method for LA and short-axis cine stack for LV, myocardial deformation was assessed using FT-CMR by a blinded single observer using QStrain v2.0 (Medis v3.1, medical imaging system). LA strain (LAS) corresponding to reservoir, conduit and booster pump function were assessed on 4- and 2-chamber long-axis standard steady-state free precession cine images, and average values calculated. For the LV, the three long-axis cines were utilised for global longitudinal strain (GLS), and global circumferential strain (GCS) was derived by averaging values from the basal, mid and apical short axis cine slices. Longitudinal and circumferential peak early diastolic strain rate (PEDSR) were also derived.