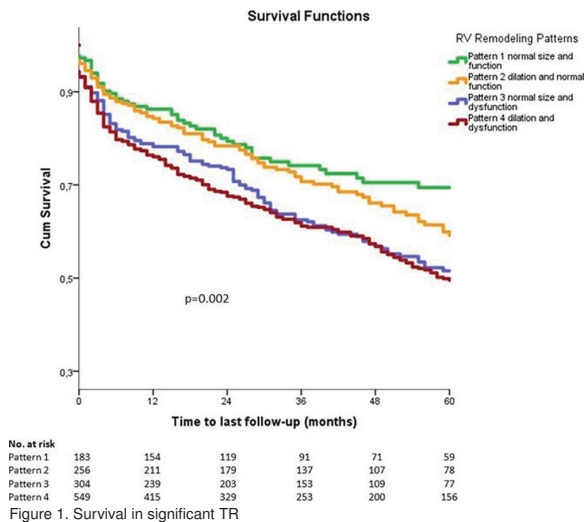


lar ejection fraction ( $p < 0.001$ ), and were more often symptomatic ( $p = 0.009$ ). Only 98 (8%) patients underwent tricuspid valve annuloplasty during follow-up. During a median follow-up of 34 (IQR 14–67) months, 591 (46%) patients died. Cumulative 5-year survival was 55%. The 5-year survival rate was significantly worse in patients presenting with patterns 3 and 4 RV remodeling compared with pattern 1 (52% and 50% vs. 70%;  $p = 0.006$  and  $p = 0.002$ , respectively). 5-year survival was not significantly different between pattern 1 and 2 (70% vs. 60%,  $p = 0.332$ ). (Figure)



**Conclusion:** In patients with significant functional TR, the RV remodeling pattern is significantly associated with all-cause mortality at long-term follow-up: patients with RV systolic dysfunction have worse clinical outcome regardless of the presence of RV dilation.

### 5321

#### Severe functional tricuspid valve regurgitation: predictors of mortality at 1 and 2 years and heart failure admission

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**Background and introduction:** There are limited published data to guide the treatment of patients with severe functional tricuspid regurgitation (TR).

**Purpose:** Our study aims to assess the predictors of adverse outcomes in this cohort of patients.

**Methods:** Our study retrospectively identified 399 consecutive patients who had severe functional tricuspid regurgitation diagnosed on transthoracic echocardiography in an academic medical centre from 1999–2016. We assessed their underlying comorbidities and analyzed their impact on heart failure hospitalization and mortality at 1 year and 2 years.

**Results:** There were 230 (57.4%) females, aged  $67.7 \pm 16.4$  years old. Mean left ventricular ejection fraction (LVEF) and pulmonary systolic pressure (PASP) were  $47.6 \pm 17.4\%$  and  $60.2 \pm 19.2$  mmHg respectively. Pre-existing atrial fibrillation (AF), ischemic heart disease and prior valve surgery were 184 (45.9%), 123 (30.7%) and 47 (11.7%) respectively. The major mechanisms for severe TR were AF with annular modeling (31.6%), left heart disease  $\pm$  pulmonary hypertension (50.6%) and isolated right ventricular dilatation (17.8%). Only 34 (8.5%) patients had subsequent intervention for TR. The mean follow up period of the study was  $1294.9 \pm 1350.7$  days.

101 (25.2%) patients and 125 (31.2%) passed away at 1 year and 2 years respectively and 143 (35.7%) patients had heart failure hospitalization. Multivariate analysis revealed that PASP of more than 60 mmHg (Hazard ratio 2.46,  $p = 0.014$ ), LVEF of less than 50% (Hazard ratio 2.42,  $p = 0.016$ ) and age above 72 (Hazard ratio 2.13,  $p = 0.033$ ) were associated with mortality at 1 year. The same factors of PASP more than 60 mmHg (Hazard ratio 2.30,  $p = 0.021$ ), LVEF of less than 50% (Hazard ratio 1.93,  $p = 0.050$ ) and age above 72 (Hazard ratio 3.01,  $p = 0.003$ ) were associated with mortality at 2 years. LVEF of less than 50% (Hazard ratio 2.49,  $p = 0.013$ ) was associated with heart failure hospitalization.

**Conclusion:** Severe functional tricuspid regurgitation is a malignant disease which is under treated. The presence of elevated PASP, reduced LVEF and older age on diagnosis should be considered when evaluating these patients for intervention.

### 5322

#### Prognostic value of right ventricular systolic dysfunction by speckle tracking echocardiography beyond conventional echocardiography in significant functional tricuspid regurgitation

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**Background:** Right ventricular (RV) systolic dysfunction is associated with poor outcome in patients with significant tricuspid regurgitation (TR). Timely detection of RV dysfunction with conventional 2-dimensional echocardiography is limited by the geometry of the RV. It has been suggested that RV strain measured with speckle-tracking echocardiography (STE) permits better identification of patients at risk for cardiovascular events as compared with conventional echocardiography.

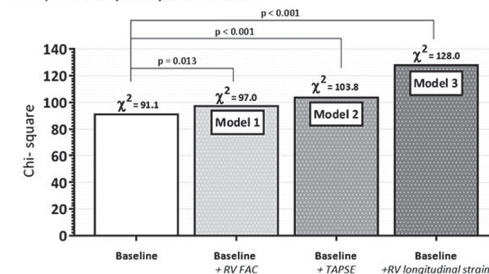
**Purpose:** We sought to evaluate the prognostic value of RV strain in patients with significant (moderate and severe) functional TR, in comparison with tricuspid annular plane systolic excursion (TAPSE) and fractional area change (FAC).

**Methods:** 896 patients (51.3% men, 71 [interquartile range IQR 62–78] years) with significant functional TR were evaluated. RV systolic function was measured with conventional echocardiographic parameters (RV fractional area change [FAC] and tricuspid annular plane systolic excursion [TAPSE]) and with STE-derived free wall peak longitudinal strain. RV dysfunction was defined as RV TAPSE  $< 17$  mm, RV FAC  $< 35\%$  or RV free wall longitudinal strain  $> -23\%$ . Patients were divided according to presence of RV dysfunction and were followed for the occurrence of all-cause mortality.

**Results:** In the overall population, RV dysfunction was observed in 48.5%, 71.7% and 84.9% when using FAC, TAPSE and RV strain, respectively. During a median follow-up of 2.8 (IQR 1.3–5.4) years, 443 (49.4%) patients died. Compared to survivors, non-survivors showed worse left ventricular ejection fraction ( $46 \pm 15$  vs  $41 \pm 16\%$ ,  $p < 0.001$ ), higher RV systolic pressures ( $35 \pm 14$  vs  $41 \pm 27$  mmHg,  $p < 0.001$ ), lower RV FAC ( $37 \pm 13$  vs  $34 \pm 12\%$ ,  $p < 0.001$ ), lower TAPSE ( $15 \pm 5$  vs  $14 \pm 5$  mm,  $p < 0.001$ ) and more impaired RV strain ( $-16 \pm 8$  vs  $-13 \pm 7\%$ ,  $p < 0.001$ ). Kaplan Meier survival analysis showed significant differences in survival for all three measures of RV systolic dysfunction. A baseline multivariate model for all-cause mortality (including age, left ventricular ejection fraction and RV systolic pressure) was constructed and the incremental value of each RV function measure was assessed with a log-likelihood chi square model (Figure). Chi-square analysis showed the highest discriminatory power for impaired RV longitudinal strain (HR 1.043, 95% CI 1.030–1.057,  $p < 0.001$ ), and was incremental to reduced FAC (HR 0.990, 95% CI 0.982–0.998,  $p = 0.012$ ) and reduced TAPSE (HR 0.961, 95% CI 0.940–0.982,  $p < 0.001$ ).

**Figure.** Incremental improvements in predictive value of baseline model (including age, LVEF and RV systolic pressure) for all-cause mortality by addition of RV FAC (model 1), TAPSE (model 2) and RV free wall longitudinal strain (model 3). Measures of RV function are included as continuous variables.

Abbreviations: FAC, fractional area change; LVEF, left ventricular ejection fraction; RV, right ventricle; TAPSE, tricuspid annular plane systolic excursion.



**Conclusions:** In significant functional TR, impaired RV free wall longitudinal strain is independently associated with worse outcome and incremental to conventional echocardiographic parameters of RV systolic function.

### 5323

#### Predictors of procedural and clinical outcomes in patients with symptomatic tricuspid regurgitation undergoing transcatheter Edge-to-Edge repair

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**Objectives:** The present study sought to investigate predictors of procedural success and clinical outcomes in patients with tricuspid regurgitation (TR) at increased surgical risk undergoing transcatheter tricuspid valve edge-to-edge repair (TTVR).

**Background:** Recent studies have suggested that TTVR using the MitraClipTM technique in patients at high surgical risk is safe and feasible, and improves functional status after short-term follow-up.