Background The prevalence of morbid obesity (MO) is increasing worldwide and consequently increasing numbers of morbidly obese (MO) patients are undergoing transcatheter (TAVR) and surgical (SAVR) aortic valve replacement for severe aortic stenosis (AS). Currently, no head to head randomized data exists to inform the optimal treatment strategy in this cohort. We aimed to compare the periprocedural and mid-term outcomes in MO patients undergoing TAVR versus SAVR.

Methods We performed a multicentre retrospective study including consecutive MO patients (BMI $\geq 40$kg/m$^2$, or $\geq 35$kg/m$^2$ with obesity related co-morbidities) undergoing either TAVR (n=860) or biological SAVR (n=696) for severe AS. Eighteen centres from Europe, North and South America were included. To control for differences in baseline characteristics between groups, propensity score matching was performed resulting in 362 pairs.

Results After matching, periprocedural complications including blood transfusion (14.1% versus 48.1%, $p<0.001$), stage 2–3 acute kidney injury (3.99% versus 10.1%, $p=0.002$), hospital acquired pneumonia (1.7% versus 5.8%, $p=0.005$), and access site infection (1.5% versus 5.5%, $p=0.013$) were more common in the SAVR group, as was moderate-severe patient prosthesis mismatch (PPM) (9.9% versus 39.4%, $p<0.001$). TAVR patients more frequently required permanent pacemaker implantation (14.4% versus 5.6%, $p<0.001$) and had higher rates of moderate residual aortic regurgitation (3.3% versus 0%, $p=0.001$).
SAVR was an independent predictor of moderate-severe PPM (HR 1.80 95% CI 1.25–2.59, p=0.002) as was increased BMI (HR 1.14 per 1kg/m² increase in BMI), pre-existing hypertension (HR 2.09) and the use of smaller valve sizes (HR 29.06 for valve sizes 18–23mm). TAVR however was not a predictor of moderate-severe PPM. In-hospital mortality was 3.9% in TAVR versus 6.1% in SAVR group (p=0.171). Two-year outcomes including all-cause and cardiovascular mortality, and readmissions were similar in both groups (log rank p>0.05 for all comparisons). Predictors of all-cause 2-year mortality differed between groups although low baseline haemoglobin and post procedure stage 2–3 acute kidney injury were predictors following both SAVR and TAVR. Moderate-severe PPM however, was a predictor of all-cause 2-year mortality after SAVR (HR 1.78; 95% CI 1.10–2.88, p=0.018), but not after TAVR (p=0.737).

Conclusions SAVR and TAVR offer similar mid-term outcomes in MO patients with severe AS, however, TAVR offers advantages in terms of periprocedural morbidity and reduced incidence of moderate-severe patient prosthesis mismatch.

**Abstract 15 Figure 1 CMR & laboratory findings**