042 ASSESSMENT OF VALVE HAEMODYNAMICS, REVERSE VENTRICULAR REMODELLING AND MYOCARDIAL FIBROSIS FOLLOWING TRANSCATHETER AORTIC VALVE IMPLANTATION COMPARED TO SURGICAL AORTIC VALVE REPLACEMENT. A CARDIOVASCULAR MAGNETIC RESONANCE STUDY

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Introduction One-year survival post transcatheter aortic valve implantation (TAVI) is non-inferior to surgical aortic valve replacement (SAVR) in patients with severe aortic stenosis (AS) and high operative risk. The effects of TAVI on valve haemodynamics and subsequent ventricular reverse remodelling relative to SAVR are less certain, and the impact of myocardial fibrosis (MF) is unknown. These would be expected to impact on longer-term outcome. Our aim was to use cardiovascular magnetic resonance (CMR) imaging to assess the 6-month post-operative aortic valve haemodynamics, reverse ventricular remodelling, and myocardial fibrosis changes following TAVI compared to SAVR. Secondary aims were to identify predictors of impaired left ventricular reverse remodelling and to establish the importance of pre-operative myocardial fibrosis on clinical outcomes.

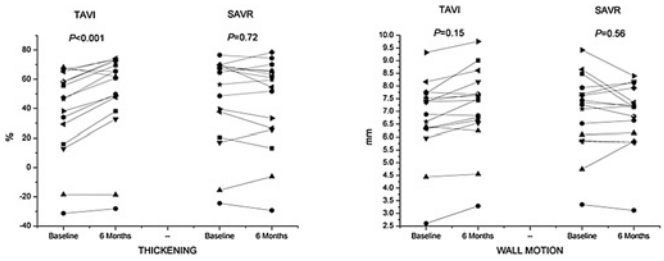
Methods 77 high-risk AS patients referred for TAVI or SAVR were prospectively recruited. 50 patients (25 TAVI, 25 SAVR) completed baseline and 6-month post-operative 1.5 Tesla CMR scans. Multi-slice, multi-phase cine imaging was performed to cover the entire left ventricle. Phase contrast (velocity encoded) imaging was used to quantify aortic mean gradient and % regurgitation. Late gadolinium enhancement was performed 10 min after the administration of 0.2 mmol/kg of Gadoteric acid (Doteram, Guerbet, SA, Villepinte). TAVI used the third generation CoreValve revalving system. In the surgical patients 96% had bioprosthetic valves.

Results Patients were matched for gender, BMI, AS severity and the majority of comorbidities, but not for age (80±6 vs 73±7 years, p=0.001) or EuroSCORE (22±14 vs 7±3, p<0.001). Aortic valve mean pressure gradient decreased to a greater degree (p=0.017) 6 months post-TAVI (50±16 vs 21±8 mm Hg, p<0.001) compared to SAVR (55±20 vs 35±13 mm Hg, p<0.001). AR was reduced by 8% in each group, only reaching statistical significance for TAVI (p=0.003). Post-operative ventricular end-systolic volumes (ESVI) and mass improved in both groups (p<0.05), additionally SAVR reduced end-diastolic volumes (EDVI, p<0.001) and TAVI increased ejection fraction (EF, p=0.01), Abstract 042 table 1. Concentric remodelling (mass/EDV: 0.88±0.2 vs 0.73±0.2, p<0.001) and geometric wall function (thickness and thickening), improved post-TAVI (p<0.001) but not post-SAVR (p>0.05), Abstract 042 figure 1.

Abstract 042 Table 1

	TAVI		SAVR		
	Baseline	6 months	Baseline	6 months	p Value†
Function					
LVEDVI, ml/m^2	94±18	90±20	92±19	74±12	0.04
LVESVI, ml/m^2	46±18	41±17	44±22	32±6	0.19
LVSVI, ml/m^2	48±10	50±10	49±8	42±7	0.14
LVEF, %	52±12	56±10	55±11	57±8	0.57
LVMI, g/m^2	82±20	65±17	74±11	59±8	0.35
LVM/LVEDV, g/ml	0.88±0.2	0.73±0.2	0.80±0.1	0.81±0.2	<0.001
Aortic valve					
MPG, mm Hg	50±16	21±8	55±20	35±13	0.017
AR fraction, %	16±11	8±6	18±7	10±11	0.46

MF burden and low EF were associated with greater post-operative remodelling in both groups by univariate analysis. EF remained an independent predictor on multivariate analysis (p<0.001). MF showed evidence of regression post-TAVI (p=0.04) but not post-SAVR.



Abstract 042 Figure 1

Conclusion In high-risk AS patients, TAVI compared to SAVR produced a greater improvement in the aortic valve pressure gradient, concentric LV reverse remodelling, geometric wall function and MF. EF rather than MF was a more powerful predictor of this process.

043 LOW PACING RATE ACHIEVED IN COREVALVE TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI): COMPARISON OF PACING RATE PRE AND POST NEW DELIVERY CATHETER

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Introduction Permanent pacemaker implantation (PPM) following transcatheter aortic valve implantation (TAVI) is a recognised complication. However, the higher pacing rate post CoreValve TAVI compared to SAVR (33% vs 8%) is a cause for concern. Several factors including pre-existing bundle branch block (BBB), larger valve size, post dilatation and low implantation have been shown to independently impact on an increased risk of PPM requirement. Depth of CoreValve implantation below the aortic annulus can result in compression of conduction tissue and heart block and is therefore an important predictor of PPM requirement. A modified delivery catheter (ACCUTRAK) was introduced to address this by providing more controlled release of the prosthesis, preventing low implantation, thereby reducing the pacing rate. We evaluated the pacing rate in our cohort of patients (pts) and the effect of the new Accutrak catheter on the pacing rate.

Methods TAVI was performed in 91 patients, mean age (82.9 years). The trans-femoral route (72 patients), the left subclavian route (15 patients) and direct aortic approach (4 patients) was used with a consistently high valve deployment strategy of 3–5 mm below the aortic annulus. 46 patients had TAVI with pre-Accutrak catheter

Abstract 043 Table 1

	Procedural results
Mean age (years)	82.9
Mean logistic Euroscore	19.3
Success rate (%)	99
Mortality rate (%)	2.2
Vascular complications (%)	5
Stroke rate (%)	2.2
Permanent pacemaker rate post TAVI* (%)	9.8

*New pacemaker post TAVI within 30 days of procedure.