

Table 1. Clinical, imaging, procedural and outcome data of index TAVI and TAVI-in-TAVI procedures.

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10
Index TAVI procedural data										
Aortic valve morphology	Tricuspid	Tricuspid	Tricuspid	Tricuspid	Tricuspid	Tricuspid	Tricuspid	Bioprosthetic valve	Tricuspid	Tricuspid
TAVI indication	AS	AS	AS	AS	AS	AS	AS	AR	AS	AR
Access	TF	TF	TF	TF	TF	TF	TF	TF	TF	TF
Anaesthesia	GA	GA	GA	GA	GA	Unknown	GA	GA	LA	LA
TAVI platform	Sapien XT	Sapien XT	Sapien	Corevalve Evolut R	Sapien	Corevalve Evolut R	Corevalve	Corevalve Evolut R	Corevalve Evolut Pro	Corevalve Evolut R
TAVI Size (mm)	23	26	23	29	23	34	26	23	26	34
Pre-dilation balloon size (mm)	20	20	20	20	20	Unknown	18	Nil	18	23
Post-dilation balloon size (mm)	Nil	Nil	Nil	Nil	Nil	Unknown	Nil	Nil	20	Nil
In-hospital complications	No	No	No	No	No	No	No	No	No	No
Post-index TAVI echocardiogram										
Aortic valve area (cm ²)	1.8	2.1	1.5	2.4	1.8	Unknown	1.9	2.3	2.2	2.2
Indexed EOA (cm ² /m ²)	1.1	1.2	1.0	1.5	1.1	Unknown	1.2	1.3	1.3	1.2
Aortic MPG (mmHg)	18	13	12	8	16	Unknown	14	4	7	13
AV peak velocity (cm/s)	298	240	260	200	240	Unknown	270	128	183	259
LVEF (%)	61	62	66	46	67	Unknown	69	45	60	59
Aortic regurgitation	Trivial	Mild	Trivial	Trivial	Trivial	Unknown	Trivial	Trivial	Trivial	Trivial
Patient clinical characteristics during TAV-in-TAV										
Age, years	88	61	81	104	78	84	81	86	78	73
Sex	Female	Female	Female	Male	Female	Male	Male	Male	Male	Male
Symptoms	Dyspnoea	Dyspnoea/ chest pain	Nil	Dyspnoea	Dyspnoea	Dyspnoea	Nil	Nil	Dyspnoea	Nil

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NYHA class	II	II	I	II	II	II	I	I	III	I
STS score	2.0	8.7	2.1	22.5	1.2	2.7	2.6	20.5	2.0	3.7
High risk features	Porcelain aorta	Patent LIMA	Porcelain aorta	NA	Porcelain aorta	Patent LIMA	Porcelain aorta	Patent LIMA	NA	Porcelain aorta
Smoking history	N	N	N	N	N	N	N	N	N	N
Hypertension	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Dyslipidaemia	Y	Y	N	N	Y	Y	Y	Y	Y	N
Diabetes mellitus	N	Y	N	N	Y	N	N	Y	N	N
Previous PCI	N	Y	N	Y	Y	Y	N	N	Y	Y
Previous CABG	N	Y	N	N	N	Y	N	Y	N	N
Previous SAVR	N	N	N	N	N	N	N	Y	N	N
Previous PPM	N	N	N	Y	N	N	N	N	N	Y
Dialysis	N	Y	N	N	N	N	N	N	N	Y
Time from index TAVI (months)	85	24	85	43	104	57	109	44	75	74
Pre-TAV-in-TAV echocardiogram										
Aortic valve area (cm ²)	0.9	0.7	0.7	1.4	0.6	2.1	0.9	1.8	2.5	1.7
AVA indexed (cm ² /m ²)	0.5	0.4	0.6	0.9	0.3	1.2	0.6	1.0	1.5	1.0
Aortic MPG(mmHg)	40	47	40	5	40	9	45	11	8	10
AV peak Velocity (cm/second)	410	460	416	157	410	230	406	214	193	214
LVEF (%)	70	62	62	64	60	60	61	60	62	43
Transvalvular AR	Mild	Mild	Trivial	Severe	Mild	Severe	Trivial	Severe	Severe	Severe
TAV-in-TAV indication	AS	AS	AS	AR	AS	AR	AS	AR	AR	AR

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Pre-procedural MSCT										
Aortic annulus area (mm ²)	252	384	316	405	282	471	325	275	358	405
Aortic annulus perimeter (mm ²)	57.0	69.8	64.5	74.0	60.4	77.2	64.0	59.0	66.0	72.0
Average annular diameter (mm ²)	17.8	22.1	20.6	23.8	19	24.3	20.5	18.6	20.6	26.0
LM height (mm)	9.7	13.4	18.5	12.4	12.3	10.0	14.0	9.9	12.2	13.3
RCA height (mm)	11.6	17.1	16.5	13.2	13.4	12.0	15.0	14.0	17.9	18.1
Average SOV width (mm)	28.8	33.1	27.1	33.0	28.0	42.0	30.0	29.0	30.0	37.0
STJ diameter (mm)	26.0	28.0	26.0	35.0	20.3	35.9	27.0	32.0	25.0	30.4
VTC (mm)	6	NA s/p CABG	LM and RCA above XT	9	5	NA s/p CABG	RCA 4, LM 6	9	5	9
VTSTJ (mm)	Index TAVI below STJ	NA s/p CABG	Index TAVI below STJ	6	Index TAVI below STJ	NA s/p CABG	3	NA s/p CABG	3	6
Procedural characteristics										
Access	TF	TF	TF	TF	TF	TF	TF	TF	TF	TF
Anaesthesia	GA	GA	LA	GA	GA	LA	LA	LA	LA	LA
Transcatheter heart valve	Corevalve evolut R	Corevalve evolut Pro	Corevalve evolut R	Corevalve evolut R	Corevalve evolut R	Sapient 3	Sapient 3	Corevalve evolut FX	Sapient 3	Sapient 3
Valve size (mm)	23	26	23	29	23	29	23	23	23	23
Pre-dilation	N	N	N	N	N	N	N	N	N	N
Post-dilation	N	N	N	N	N	N	N	N	N	N
Cerebral embolic protection	N	N	N	N	N	Y	N	N	N	N
In-hospital complications	N	N	N	N	Y-Vascular	N	N	N	N	N

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Post-TAV-in-TAV echocardiogram										
Aortic valve area (cm ²)	1.7	1.2	1.2	2.6	1.6	1.7	1.9	1.6	1.5	2.2
Indexed EOA (cm ² /m ²)	1.0	0.7	0.9	1.6	0.9	0.9	1.2	0.9	0.9	1.3
Aortic MPG (mmHg)	15	9	15	5	12	9	15	10	11	10
AV peak velocity (cm/s)	259	217	267	164	220	196	254	187	227	217
LVEF (%)	63	60	64	60	67	40	63	57	56	35
AR	Nil	Mild	Mild	Nil	Mild	Trivial	Trivial	No	No	Trivial
Follow-up data										
Duration of mortality from TAV-in-TAV (months)	70	54	NA	NA	28	NA	NA	6	NA	NA
Age at time of mortality (years)	94	66	NA	NA	81	NA	NA	86	NA	NA
Cause of mortality	Pneumonia	Limb gangrene	NA	NA	Intestinal bleed	NA	NA	Intracranial Bleed	NA	NA

AR: aortic regurgitation; AS: aortic stenosis; AV: aortic valve; CABG: coronary artery bypass surgery; EOA: effective orifice area; GA: general anaesthesia; LA: local anaesthesia; LCC: left coronary cusp; LIMA: left internal mammary artery; LM: left main; LVEF: left ventricular ejection fraction; MDCT: multi-detector computer tomography; MPG: mean pressure gradient; N: no; NA: not available; NYHA: New York Heart Association; NCC: non-coronary cusp; PCI: percutaneous coronary intervention; PPM: permanent pacemaker; RCA: right coronary artery; RCC: right coronary cusp; SAVR: surgical aortic valve replacement; SOV: sinus of Valsalva; s/p: status post; STJ: sinotubular junction; STS: Society of Thoracic Surgeons; TAV: transcatheter aortic valve implantation; TAVI: transcatheter aortic valve implantation; TF: transfemoral; VTC: valve-to-coronary; VTSTJ: valve-to-STJ; Y: yes.