Outcomes of transcatheter transapical simultaneous mitral and aortal valve-in-valve procedures: A single center experience

Harrer M[1], Wallner St[1], Strouhal A[2], Grabenwöger M[1], Moidl R[1].
1: Department of Cardiovascular Surgery Clinic Floridsdorf
2: Department of Cardiology Clinic Floridsdorf

Background:

Reoperation of a double valve disease due to degenerated bioprotheses in aortic and mitral-position is at high surgical risk. Transcatheter mitral, as well as aortic valve surgery, is an alternative for patients with prohibitive surgical risk. In this study we show our single center experience of simultaneous mitral and aortal valve-in-valve procedure using the transapical access.

Age (yrs)	69.5 ± 4.5
Sex (male/female)	4/0
Coronary artery disease	3
Prior PCI and or CABP	3
Atrial fibrillation	3
Pacemaker/CRT-P/ICD	3
NYHA class III-IV	4
Chronic obstructive pulmonary disease	3
Cerebrovascular accident with residuen	1
Peripheral vascular disease	1
Hypertension	4
Log EuroScore, %	23.5 ± 10.8
EuroScore II, %	17.1 ± 7.8
Systolic PAP, mmHg	53,5 ± 12,8
Time interval to previous mitral surgery (yrs)	9 ± 1.2
Left ventricular ejection fraction:	
Moderate reduced (35-45%)	2
High reduced (below 30%)	0
Moderate reduced right ventricular function	1
Failed surgical valves (mitral/aortic):	
Stenosis	3 / 3
Regurgitation	1 / 1

Table 1: Baseline charakteristics (n= 4)

Methods and Results:

Between May 2018 and May 2020, in 4 patients (all were male) a transapical simultaneous transcatheter valve-in-valve aortic and mitral procedure (TAVI-VIV and TMVI-VIV) was performed. Mean age was 69.5 ± 4.5 years, mean log EuroScore I was 23.5 ± 10.8 and mean log. EuroScore II was 17.1 ± 7.8. *Baseline characteristics are shown in Table 1.*

In two patients an Edwards Sapien XT and in the other two S3 (Ultra) transcatheter heart valve was implanted in the mitral and also in the aortic position via transapical access.

Types and size of bioprostheses as well as implanted transcatheter valve size are shown in Table 2.

Patient	Type of Bioprostheses or rings	Size	failure	Implanted Valve	Size
1	CE Magna (mitral)	25 mm	Stenosis	Sapien XT	26 mm
	Medtronic Mosaik (aortic)	27 mm	Stenosis	Sapien XT	26 mm
2	Medtronic Mosaik (mitral)	31 mm	Regurgitation	Sapien XT	26 mm
	St. Jude M. Trifecta (aortic)	25 mm	Regurgitation	Sapien XT	26 mm
3	CE Magna (mitral)	29 mm	Stenosis	Sapien S3	29 mm
	CE Magna (aortic)	27 mm	Stenosis	Sapien S3	29 mm
4	CE Magna (mitral)	31 mm	Regurgitation	Sapien S3	29 mm
	CE Magna Ease (aortic)	23 mm	Stenosis	Sapien S3 Ultra	23 mm

Table 2: Types of bioprostheses and implanted transcatheter valve size

Results:

Overall technical success was 100%. The 30d- and in-hospital mortality rate was 0%.

No valvular or paravalvular leak/regurgitation was observed postoperative.

Mean gradient (mmHg) after implantation was 6.2 ± 1.6 (mitral) or 19.9 ± 3.2 (aortic).

However, in one patients a re-thoracotomy due to diffus bleeding was necessary.

Transcatheter valve implantation procedure:

In all patients the procedure was performered in general anaesthesia via transapical access through a left - anterorlateral minithoracotomy of 4 - 6 cm in the fifth intercostal space.

The aortic VIV procedure was done before the mitral through the same transapical punction side.

The guide wire for the mitral procedure was parked in the right pulmonary vein.

All implantations were performed without predilatation. *Figure 1*

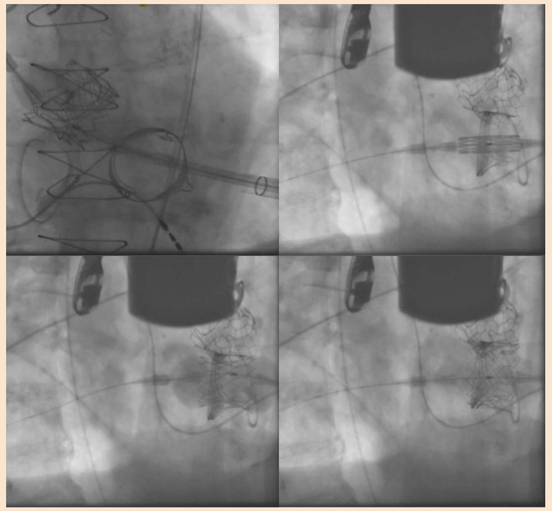


Figure 1. double valve-in-valve procedure: First the aortic procedure was performed, afterwards the mitral procedure through the same transapical punction side. The guide wire for the mitral procedure was parked in the right pulmonary vein.

Conclusion:

In single center experience, simultaneous TMVI-VIV and TAVI-VIV is a safe procedure with low adverse events in patients with high surgical risk using the transapical access.