Can Complete Heart Block occurring during TAVR be reversed ?

Disclosure

- None

Authors

- Dr. Balbir Singh – Presenting Author

Max Superseciality Hospital, Saket New Delhi, India

- Dr. Roopa Salwan
- Dr. Brajesh Mishra
- Dr. Prateek Chaudhary
- Dr. Vir Bhan

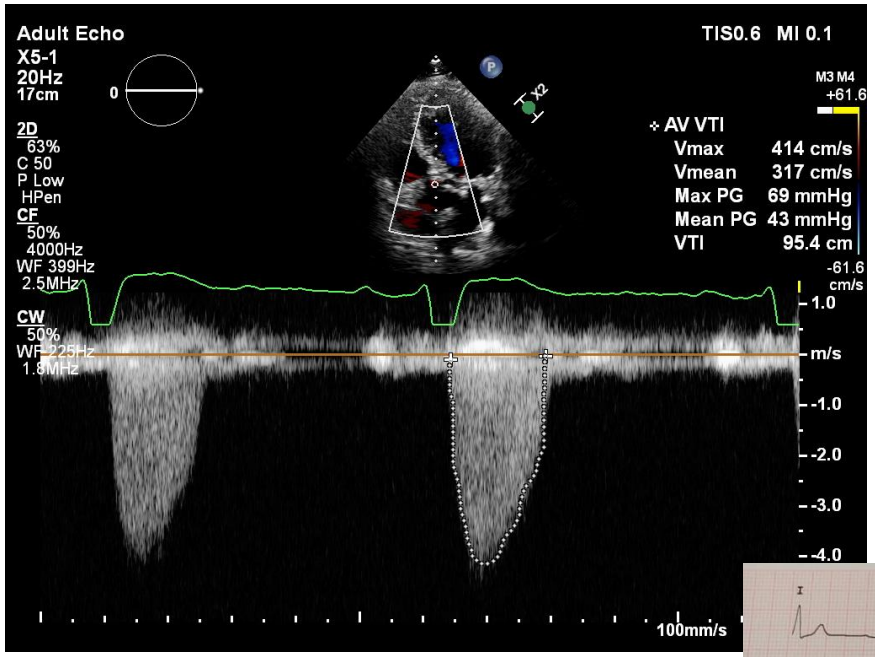
Background

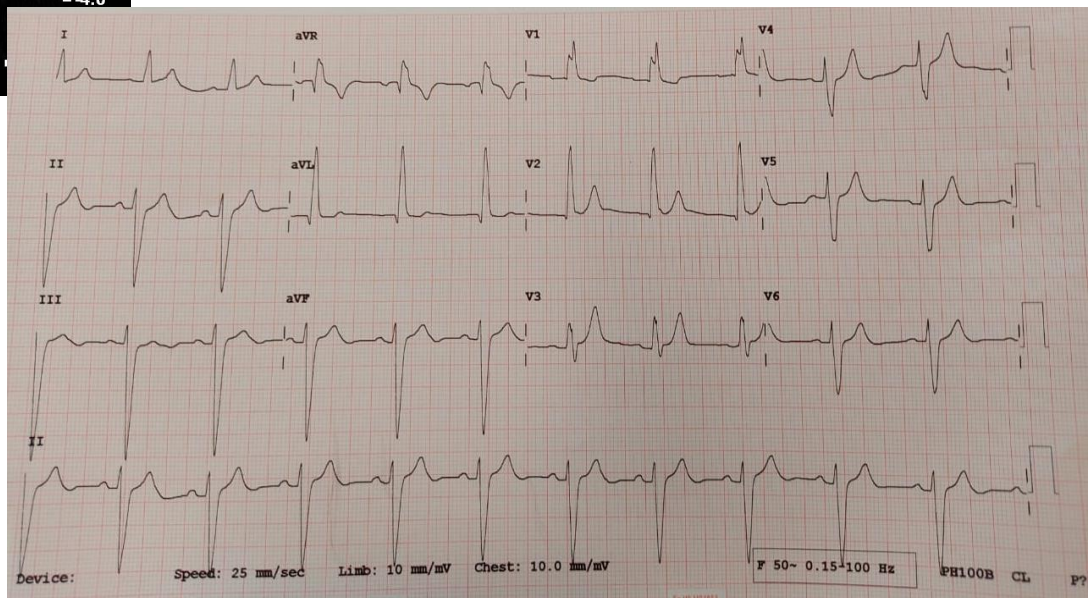
- Complete heart block is common in patients with preexisting RBBB undergoing TAVR
- Several new techniques have been discussed towards reducing PPI rates
  - Shallow deployment
  - Measurement of Membranous Septum Length
  - Cuspal Overlap
- New Valves, with refined technology allows the system to recapture & reposition.
- In this case, we showcase, how simple maneuver can help us avoid having pacemaker

Case Summary

- 70 years/Male
- With history of smoking and chronic lung disease
- Hypertensive
- Angina on exertion x 6months
- Syncope- exertional
- Pre-existing conduction disturbance - RBBB
- Possible Siever's Type 1 Bi-cuspid Valve with raphe between RCC & LCC.
- Perimeter at 5 mm = 68.6 mm, 8 mm = 72.2 mm, ICD at 4 mm = 24 mm

ECG & ECHO


Adult Echo
TIS0.6 MI 0.1
X5-1
20Hz
17cm
2D
63%
C 50
P Low
HPen
CF
50%
4000Hz
WF 399Hz
2.5MHz
CW
50%
WF 225Hz
1.8MHz
M3 M4
+61.6
AV VTI
Vmax 414 cm/s
Vmean 317 cm/s
Max PG 69 mmHg
Mean PG 43 mmHg
VTI 95.4 cm
-61.6
cm/s
1.0
m/s
-1.0
-2.0
-3.0
-4.0
100mm/s

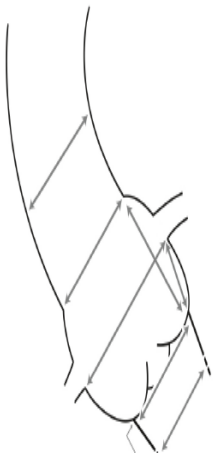

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Device:
Speed: 25 mm/sec
Limb: 10 mm/mV
Chest: 10.0 mm/mV
F 50~ 0.15-100 Hz
PH100B
CL

ANNULUS

Diameter (mm)	19.2	x	23.7	,	21.4
	Min		Max		Mean
Perimeter (mm)	69.5	, Derived Ø (mm)			22.1
Area (mm²)	369.7	, Derived Ø (mm)			21.7

LVOT

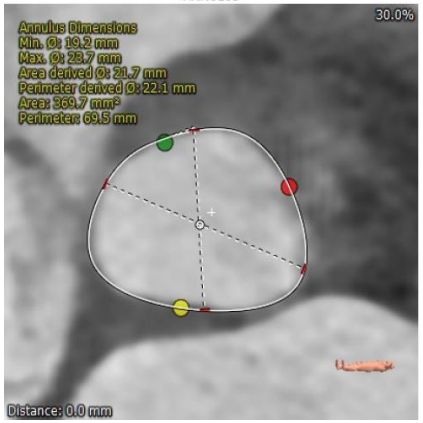
Diameter (mm)	17.9	x	25.4	,	21.6
	Min		Max		Mean
Perimeter (mm)	72.5	, Derived Ø (mm)			23.1
Area (mm²)	379.8	, Derived Ø (mm)			22.0



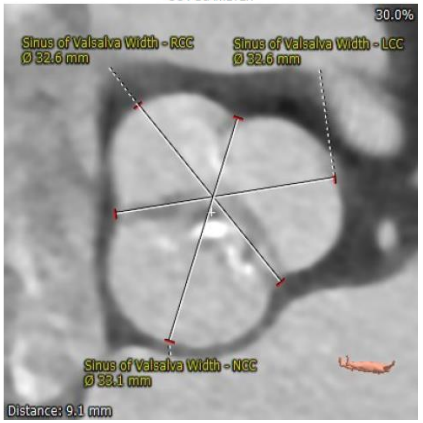
Max Ascending Aorta Diameter (mm)	37.2			
Sinotubular Junction Diameter (mm)	28.6	x	29.5	
	Min		Max	
Sinus of Valsalva Diameter (mm)	32.6	32.6	33.1	
	LCC	RCC	NCC	
Sinus of Valsalva Height (mm)	19.2	19.0	21.1	
	LCC	RCC	NCC	
Coronary Ostia Height (mm)	15.5	15.8		
	Left	Right		

Aorta

ANNULUS

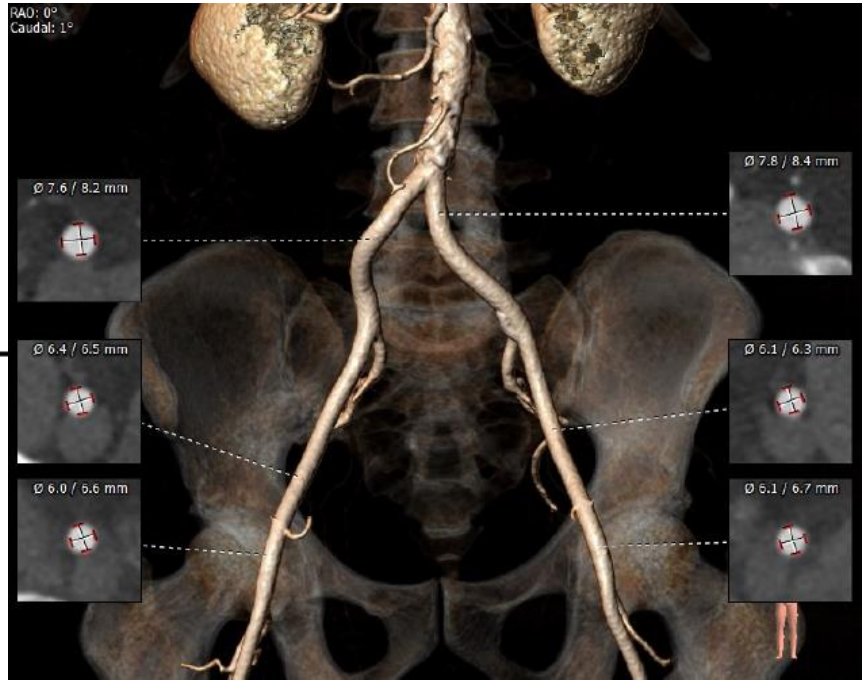


SOV DIAMETER

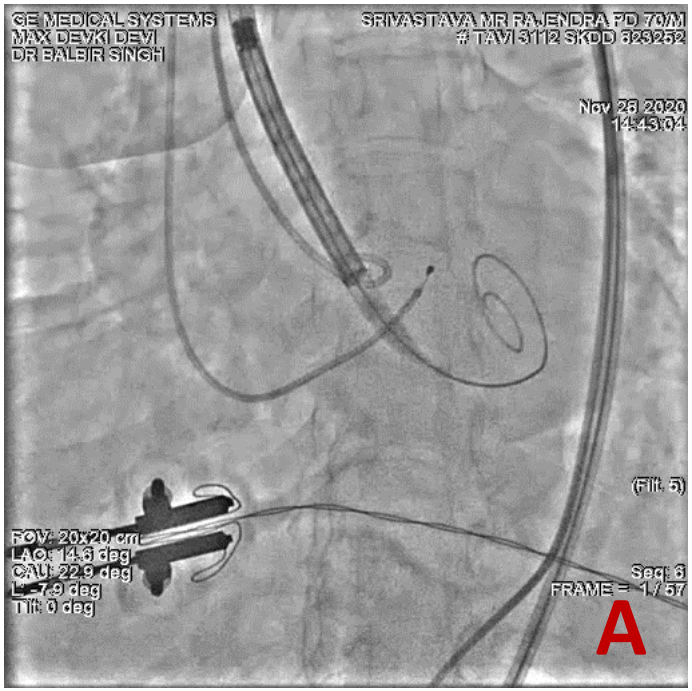


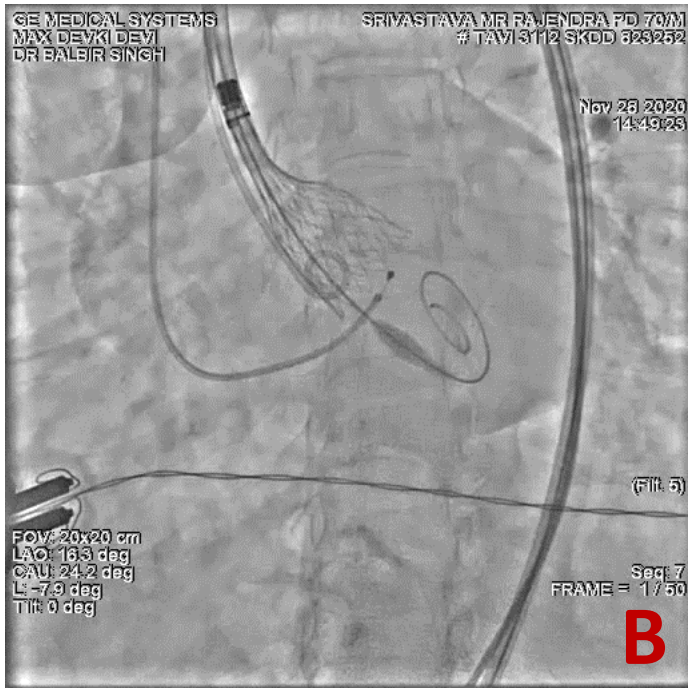
RIGHT		LEFT		RIGHT	LEFT
CIA Min Diameter (mm)		CIA Min Diameter (mm)		Subclavian Min Diameter (mm)	Subclavian Min Diameter (mm)
7.6 x 8.2		7.8 x 8.4		x	x
EIA Min Diameter (mm)		EIA Min Diameter (mm)		Aortic Root Angle	
6.4 x 6.5		6.1 x 6.3		≈44°	
Femoral Min Diameter (mm)		Femoral Min Diameter (mm)			
6.0 x 6.6		6.1 x 6.7			

Please review images for direct aortic evaluation.



Deployment of the Evolut R valve 26 mm



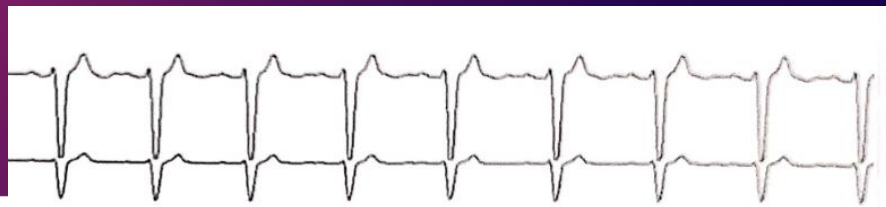


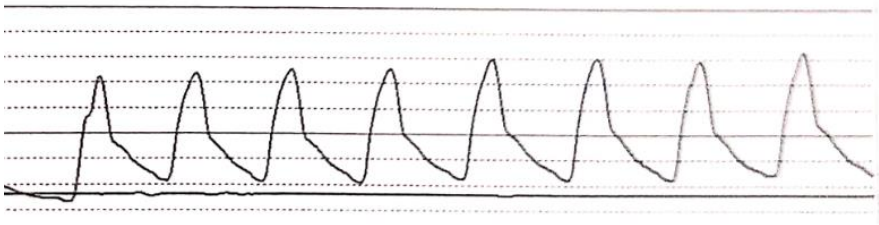
A- Evolut R targeting at– 1mm to 0 mm depth

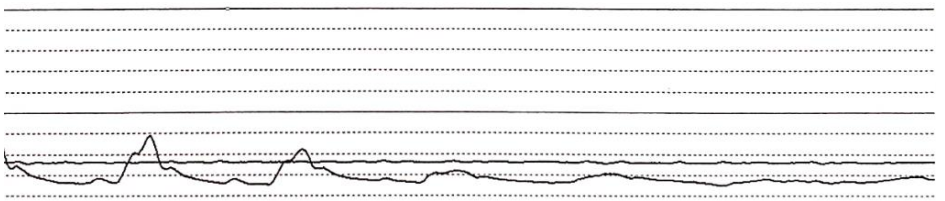
B- During deployment valve dipped to a depth of 4-5 mm
Patient developed CHB at this stage

With pre-existing conduction disturbance Expected CHB..

Should we accept?







Baseline

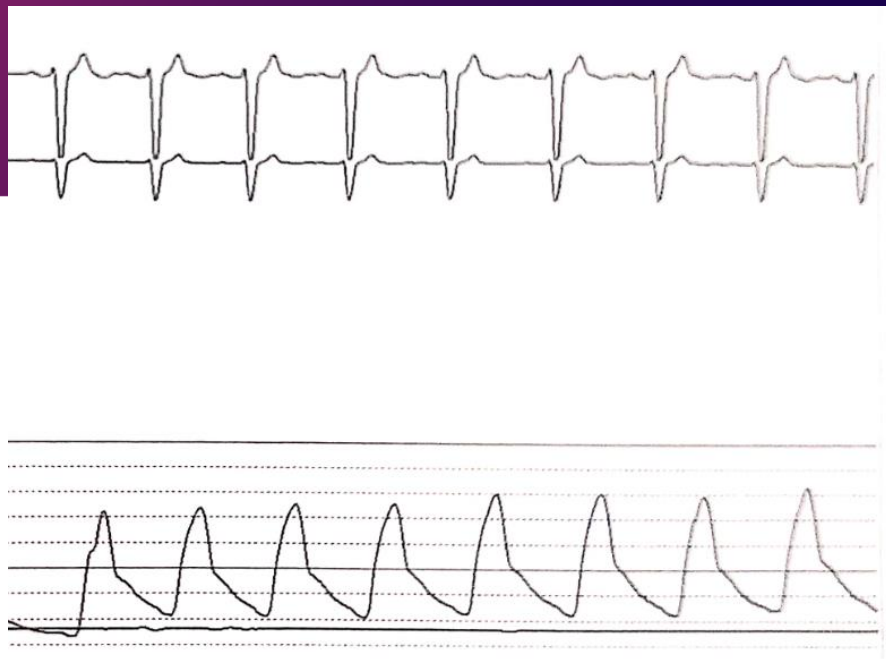
CHB during annular contact

Recapture and positioning of the Valve

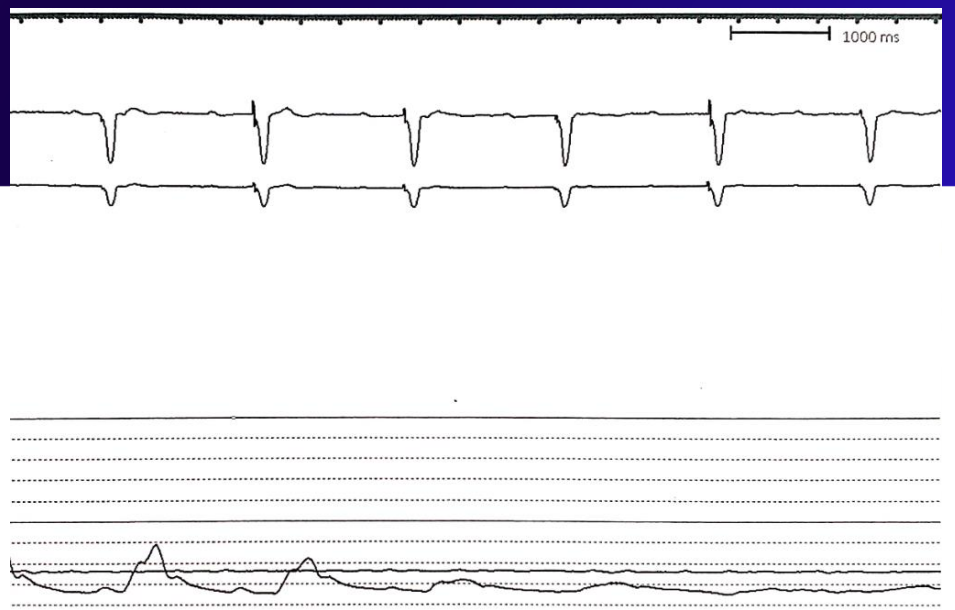
Used the Recapture & Repositioning Feature of the Valve

Repositioned to higher position

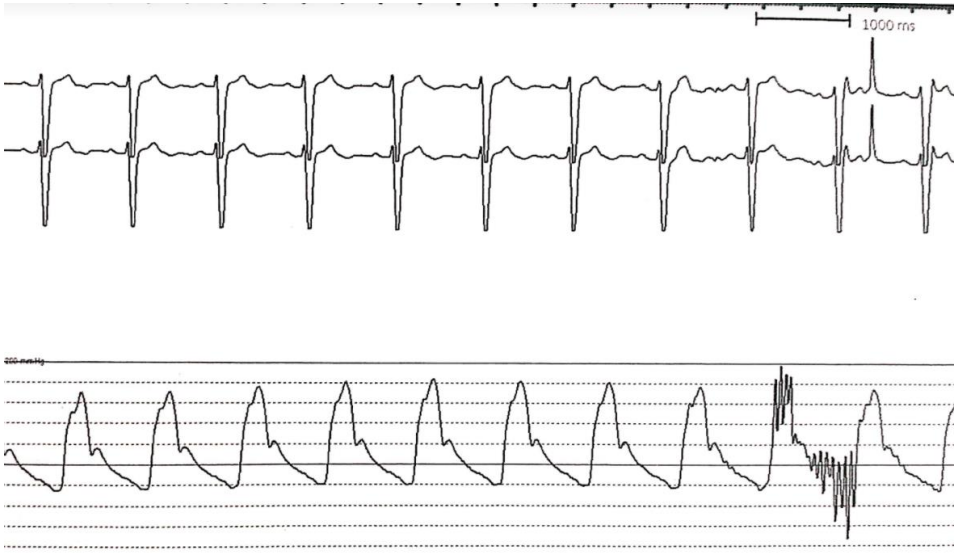
CHB reversed to baseline condition!



Baseline



CHB during annular contact



After repositioning the depth and Valve deployment

Take away

- Patients who develop CHB after TAVR can have adverse effects due to RV pacing
- Depth of deployment has been shown to be an important factor in the development of heart block
- In the present case we were able to identify CHB during deployment recapturing and repositioning little higher was able to reverse the block immediately and had him free of heart block at 4 months post procedure .
- This novel approach can save many patients from developing CHB.