

TAVR in a Patient with Severely Depressed Left Ventricular Ejection Fraction

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*Complex Management Options in TAVR
(Sponsored by the Israel Heart Society Working Group on Interventional Cardiology)*

Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship

- Grant/Research Support
- Consulting Fees/Honoraria

Company

- Edwards
- Medtronic

Mr S

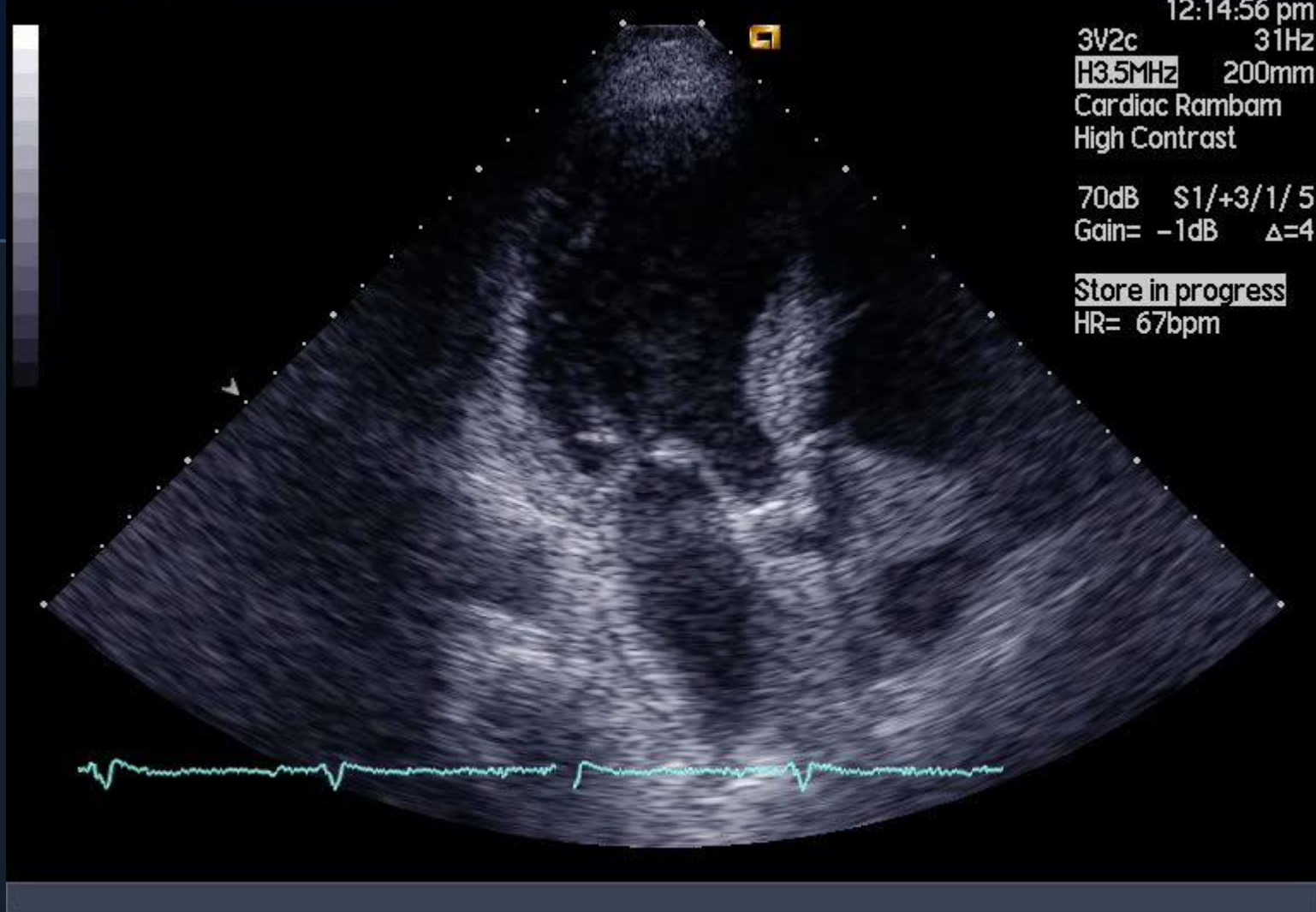
86 yo Male

- **Diabetes, Hypertension, Hyperlipidemia.**
- **Chronic renal failure [Cr- 1.5]**
- **Was admitted for decompensated left heart failure and worsening angina.**

Mr S

86 yo Male

- S/P inferior MI [1999]
- Stents to RCA
- Nuclear scan - Severe infero-lateral ischemia.



Mr S 86 yo Male

TTE:

Mr S 86 yo Male

- **Moderately to severely reduced LV systolic function EF 25-30%**
- **Infero-postero lateral akinesis (MI) and septal hypokinesis.**
- **Mildly dilated LV.**
- **Moderate diastolic dysfunction (Pseudonormal filling pattern)**

TTE:

Mr S 86 yo Male

- Low gradient severe calcific aortic stenosis
- Trans aortic gradients: peak 37 mmHg, mean 23 mmHg.
- Aortic valve area 0.8-0.9 cm² by continuity and planimetry.
- Annulus 21 mm.

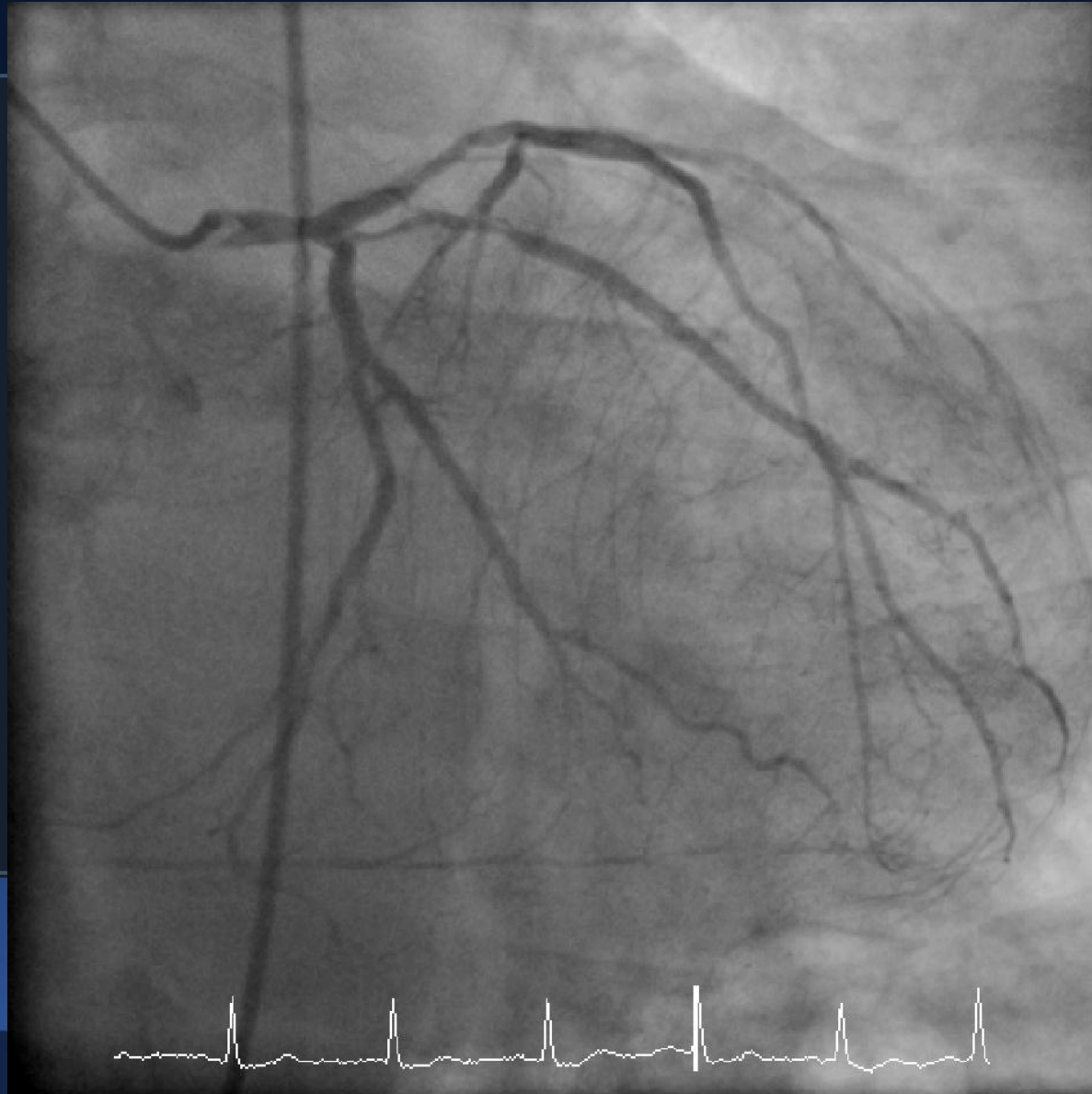
- Moderate MR
- Mildly reduced RV systolic function.
- Pulmonary artery systolic pressure ~45 mmHg

Mr S 86 yo Male

- **Coronary angiography:**
 - 50% LM disease,**
 - 50% LAD**
 - 70% Ramus**
 - Long ISR in RCA.**

Mr S 86 yo Male

Cath:



Mr S 86 yo Male



Mr S 86 yo Male

- A long DES was inserted in the RCA with good angiographic result and improvement in anginal symptoms.
- LV function - moderately to severely reduced.

Mr S 86 yo Male

- Symptomatic
- Dyspnea after minimal efforts
- Hospitalized again after several days

Mr S 86 yo Male

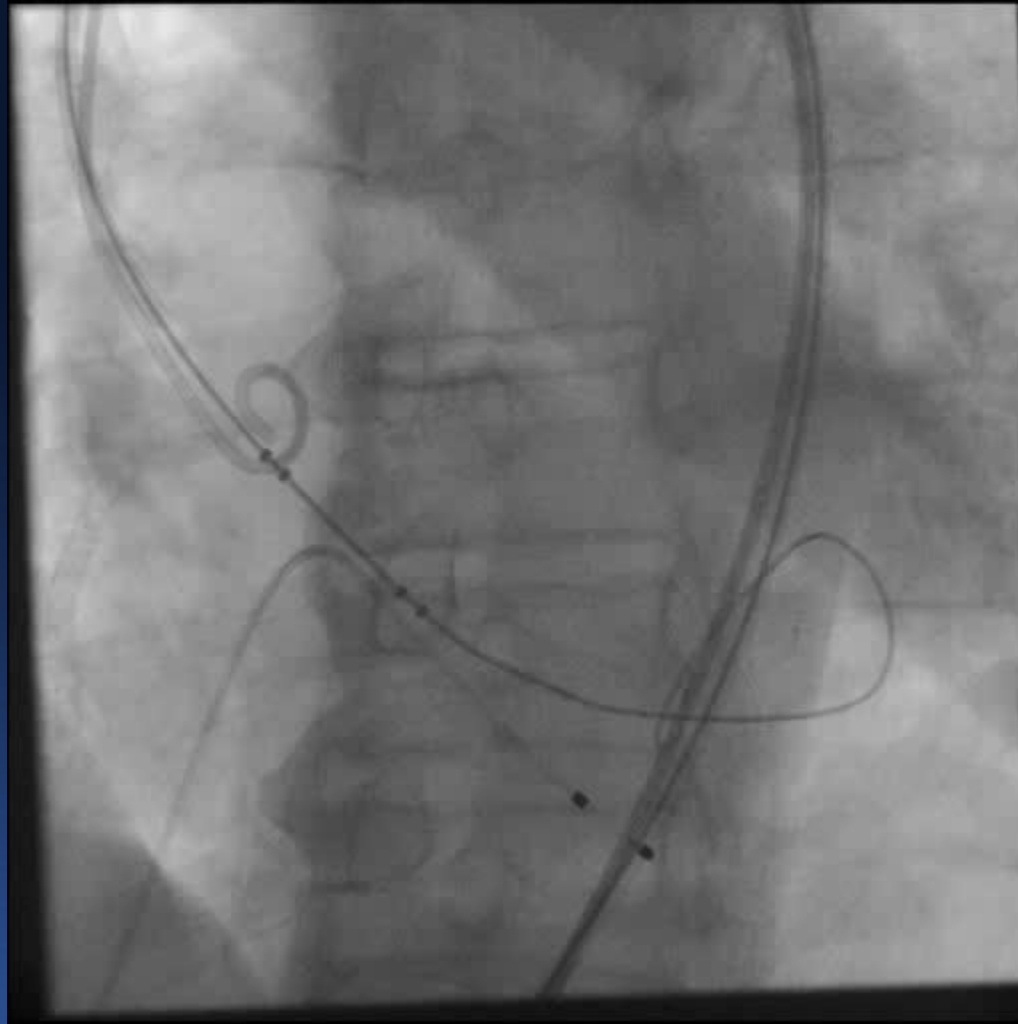
- Heart team : recommendation - TAVI
- Logistic EUROSCORE 21.63%
- STS
8.6% for mortality,
36.2% for morbidity & mortality

Mr S 86 yo Male

CT Angio:

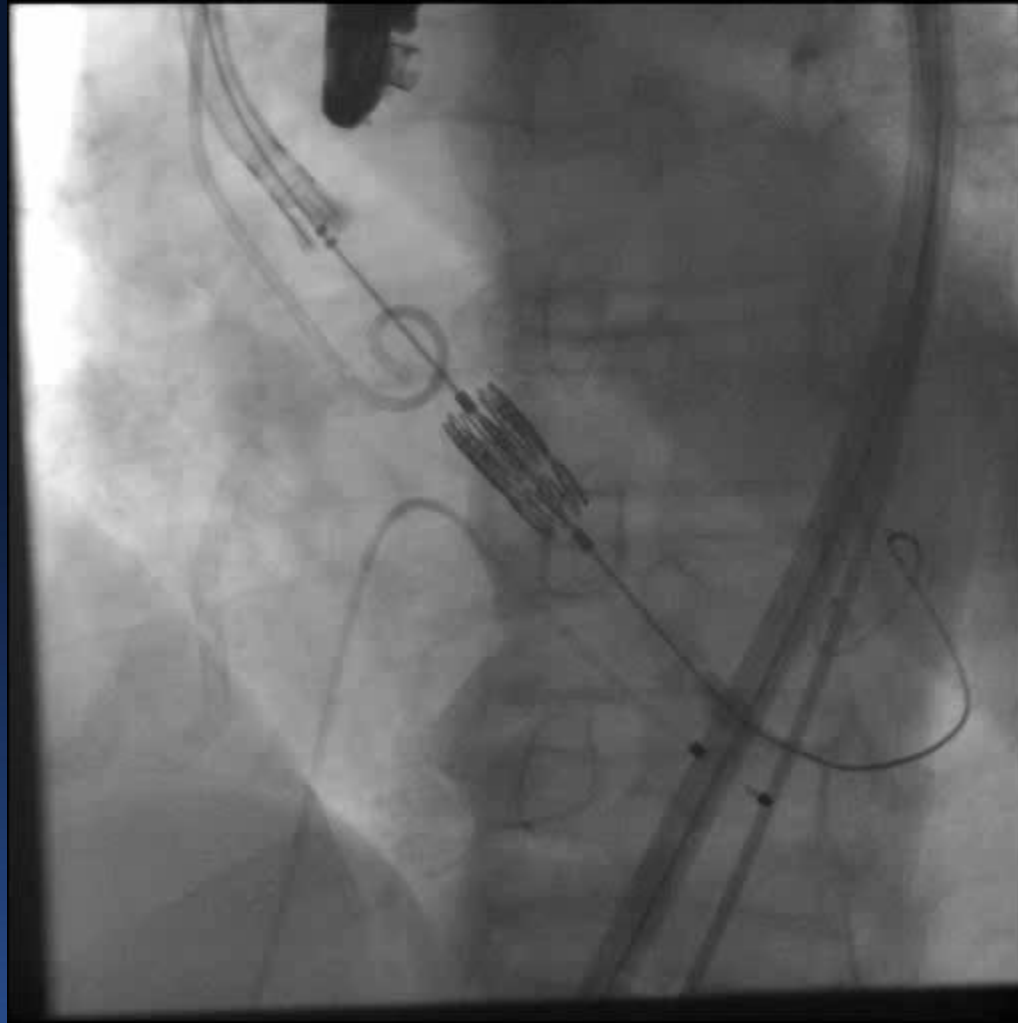
- Minimal diameters 7.9 mm Bilateral
- For transfemoral approach.

Mr S 86 yo Male



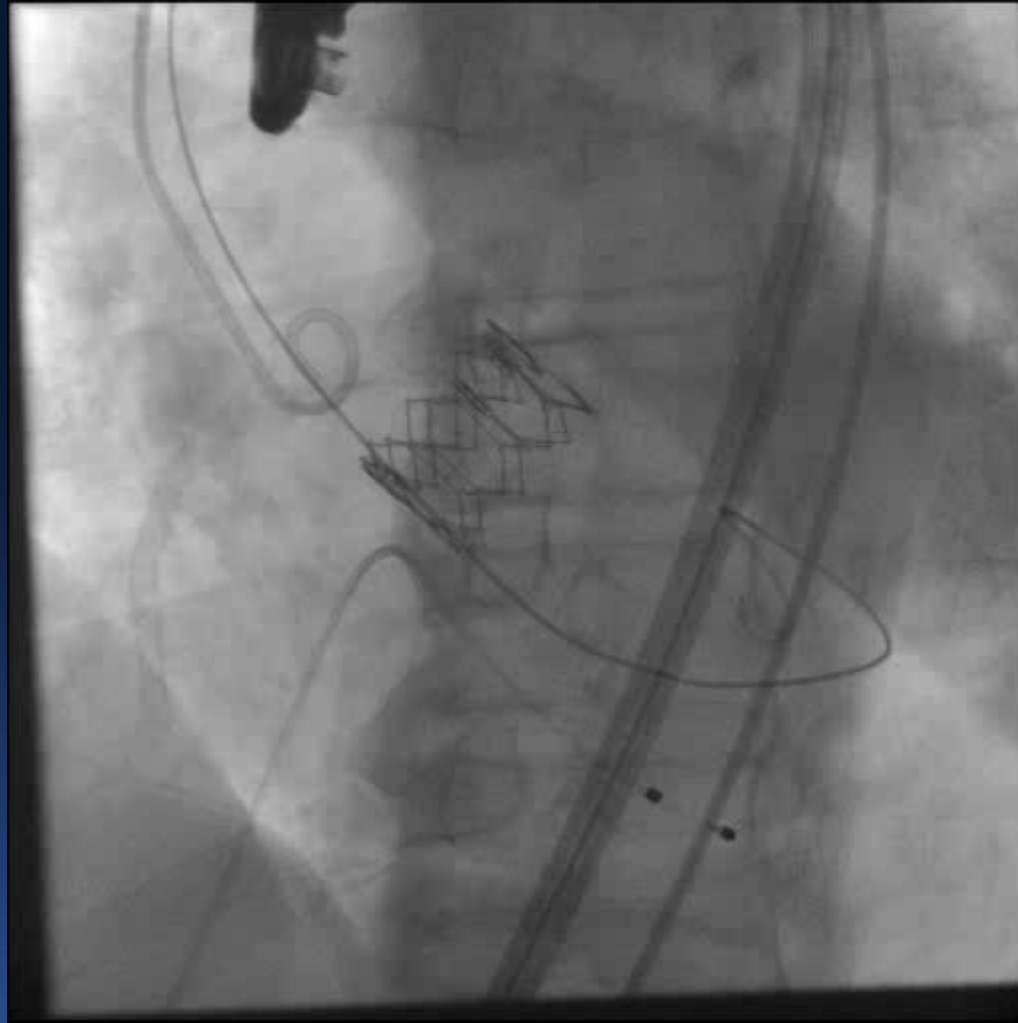
Balloon Valvuloplasty 23mm/30mm

Mr S 86 yo Male



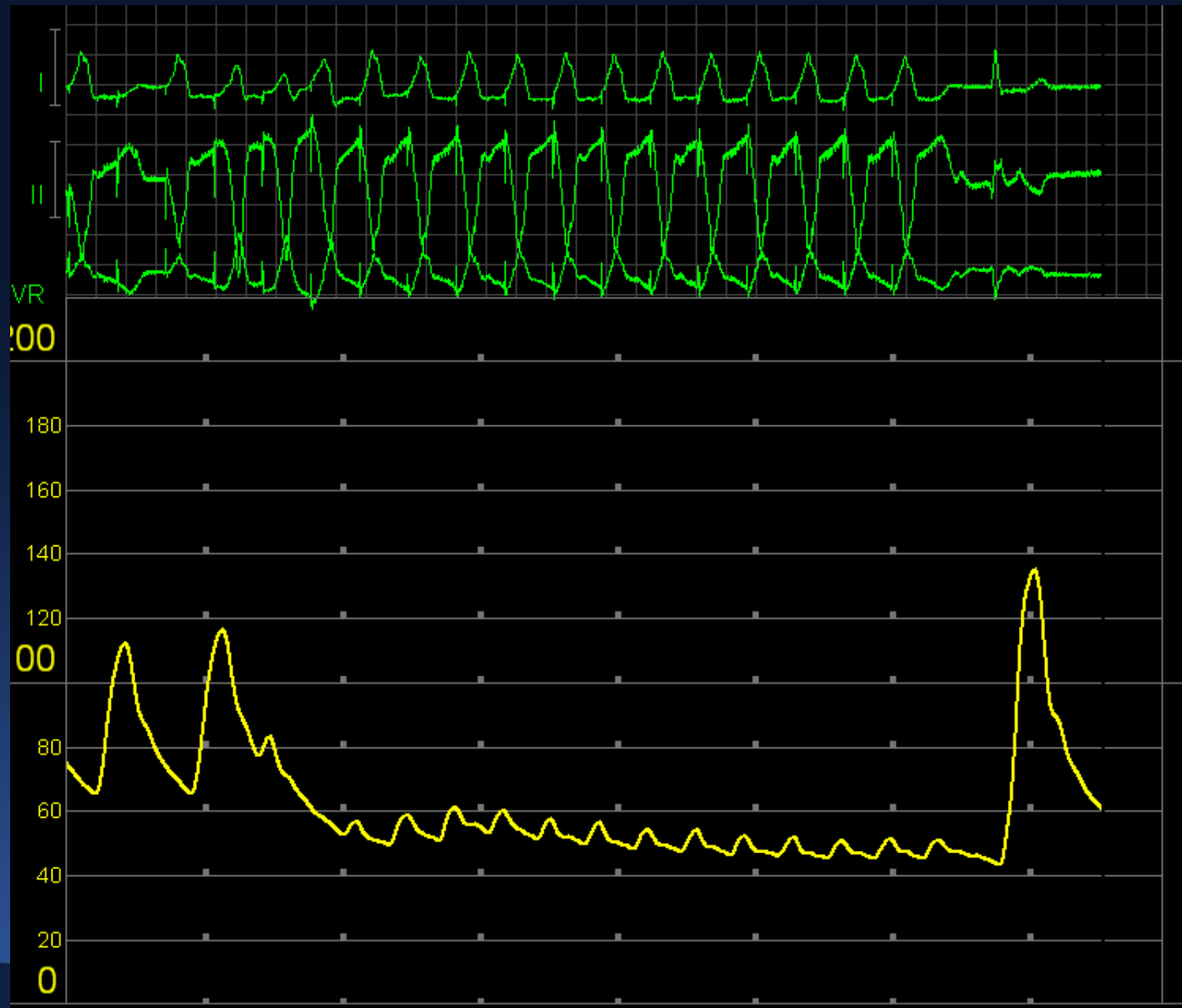
*26 mm Edwards SAPIEN
transcatheter heart valve Valve*

Mr S 86 yo Male



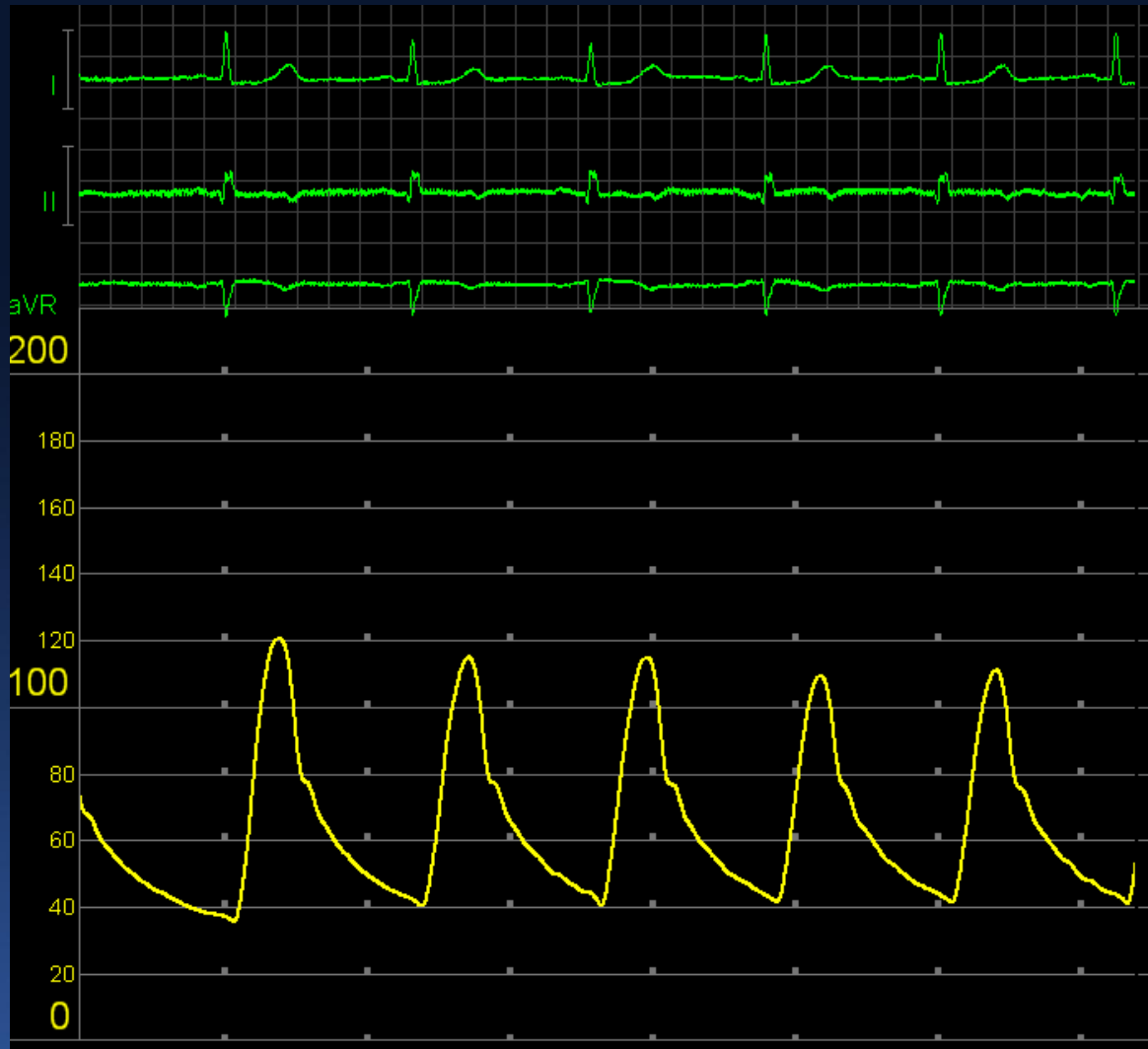
*Post implant
Edwards SAPIEN valve*

Mr S 86 yo Male: Procedure Hemodynamics



During implant

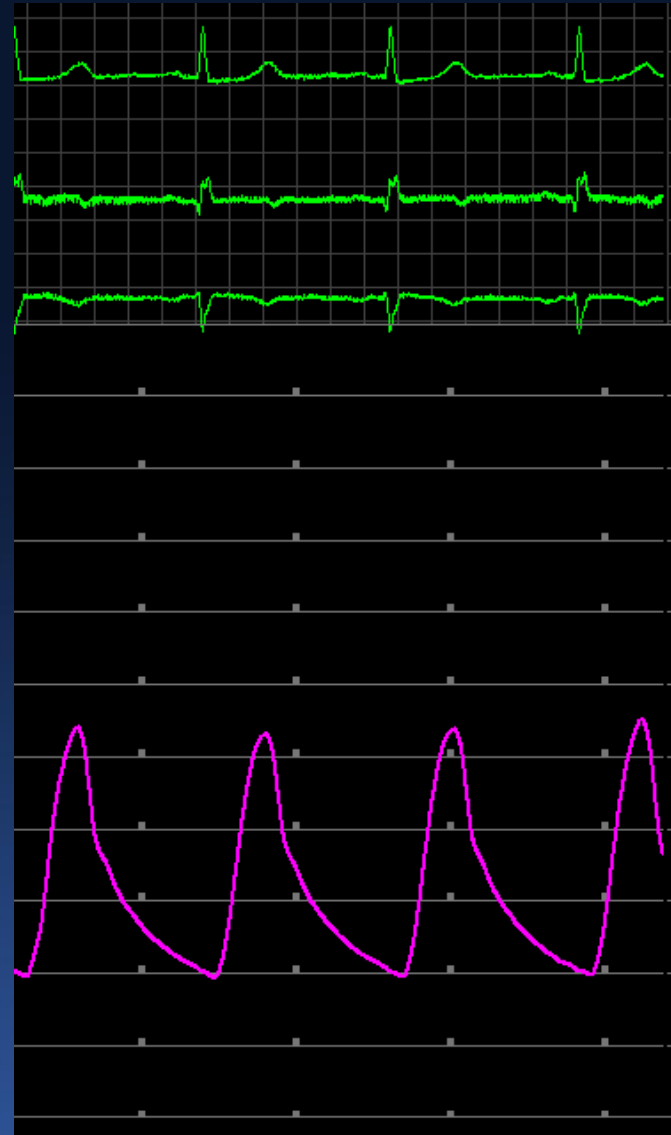
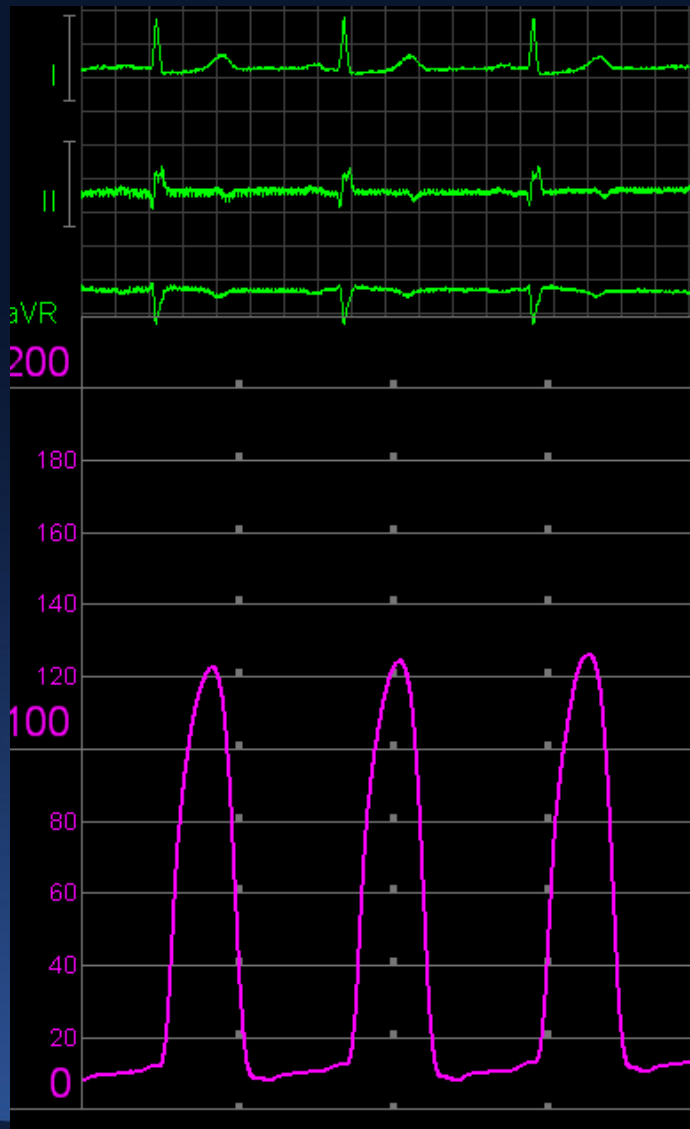
Mr S 86 yo Male: Procedure Hemodynamics



*Post implant
Edwards SAPIEN valve*

Mr S 86 yo Male: Procedure Hemodynamics

Minimal LV-Ao Gradient



LV-Ao Pressure gradient - Post implant

Mr S 86 yo Male

Post Procedure Course

- Patient discharged after 4 days
- No rhythm problems
- Urinary Tract Infection – treated successfully with antibiotics

Mr S 86 yo Male

Clinical Follow Up

- CardioVascular system – excellent post procedure course.
- No chest pain.
- NYHA 1-2

Echo Pre-TAVI

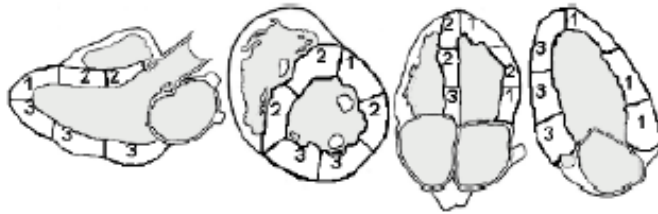
Cardiac Chambers

Left ventricle

LV cavity size:	Mildly dilated		
LV wall thickness:	Mildly increased		
LV systolic function:	Moderately-to-severely reduced		
End-diastolic diameter:	5.9 cm	End-diastolic volume (Teichholz):	173 ml ; 95 ml/m ²
End-systolic diameter:	5.2 cm	End-systolic volume (Teichholz):	131 ml ; 72 ml/m ²
Visually-estimated LVEF:	30%	LVEF (Teichholz):	24%
Interventricular septum thickness:	1.4 cm	Posterior wall thickness:	0.8 cm
LV mass:	272 g	LV mass index:	149 g/m ²

Wall motion score

Rest:



LV regional wall motion: (0-Not visualized 1-Normal 2-Hypokinesis 3-Akinesis 4-Dyskinesis 5-Aneurysm)

Score index: 2.06

Right ventricle

RV size:	Normal
RV systolic function:	Mildly reduced

Left atrium

LA cavity size:	Mildly dilated
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Right atrium

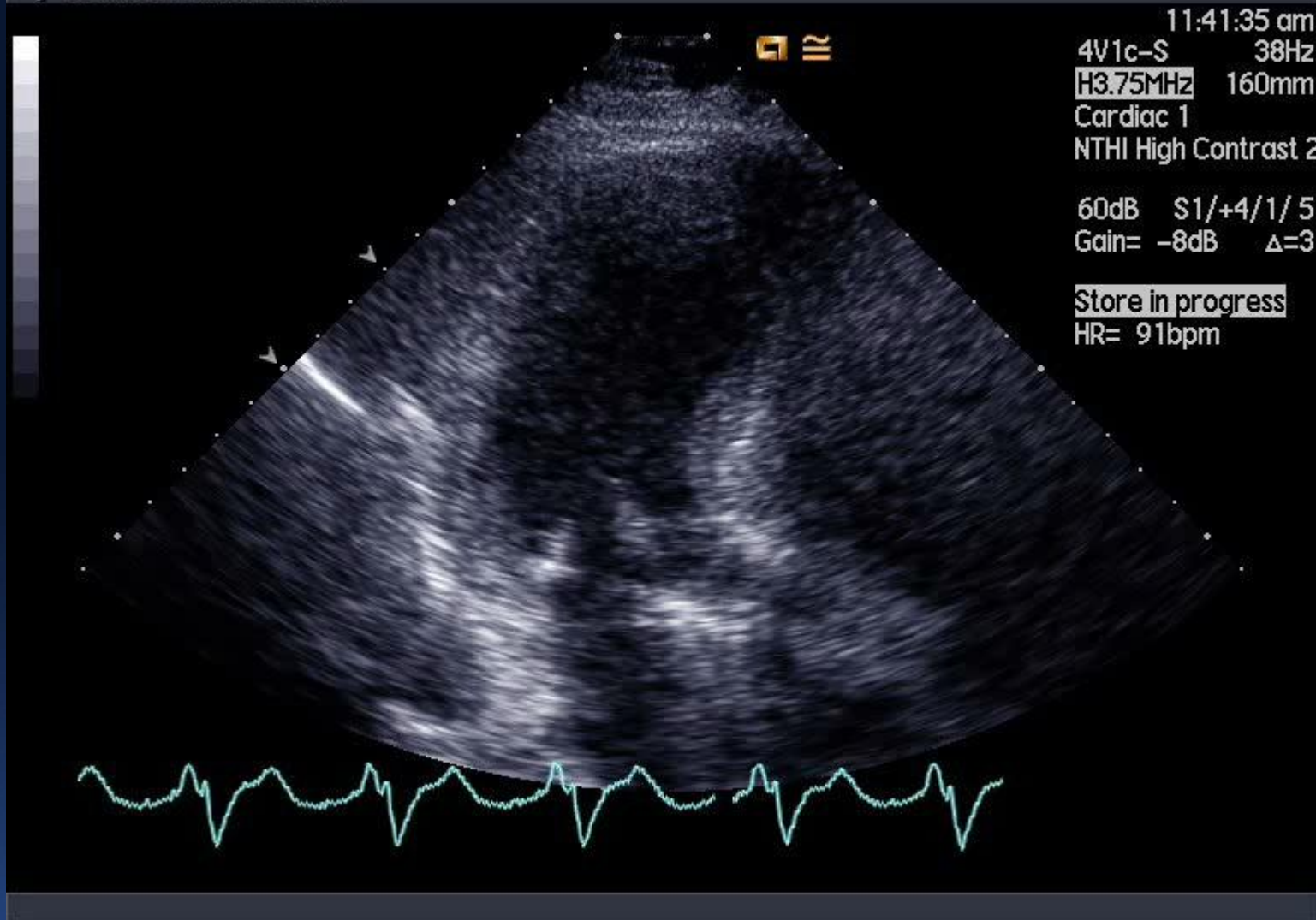
RA cavity size:	Normal
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Aorta

Aortic root / sinuses:	3.7 cm
Proximal ascending aorta:	4.1 cm

Pericardial effusion

Pericardial effusion:	None
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TTE – Follow Up

Echo Follow Up 3 month post TAVI

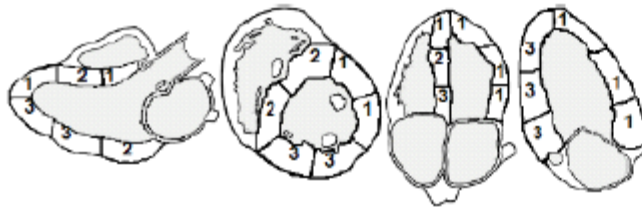
Cardiac Chambers

Left ventricle

LV cavity size:	Mildly dilated		
LV wall thickness:	Normal		
LV systolic function:	Mildly-to-moderately reduced		
End-diastolic diameter:	6.1 cm	End-diastolic volume (Teichholz):	187 ml
Visually-estimated LVEF:	40%		
Interventricular septum thickness:	1.1 cm	Posterior wall thickness:	1.0 cm
LV mass:	270 g		

Wall motion score

Rest:



LV regional wall motion: (0-Not visualized 1-Normal 2-Hypokinesis 3-Akinesis 4-Dyskinesis 5-Aneurysm)

Score index: 1.81

Right ventricle

RV systolic function: Normal

Left atrium

LA cavity size: Mildly dilated

End-systolic area: 25 cm²

Right atrium

RA cavity size: Normal

Aorta

Proximal ascending aorta: 4.2 cm

Pericardial effusion

Pericardial effusion: None

Cardiac Valves

Aortic valve

Aortic prosthesis: Bioprosthesis, normal morphology, posterior perivalvular leak

Echo Follow Up 3 month post TAVI

AS / Prosthesis

Peak pressure gradient:

15 mmHg

Mean pressure gradient:

10 mmHg

Velocity time integral (VTI) - aortic valve:

37 cm

Velocity time integral (VTI) - LVOT:

17 cm

Aortic valve area (continuity equation):

1.4 cm²

LVOT diameter:

2.0 cm

Indexed aortic valve area:

0.82 cm²/m²

Mitral valve

Structure:

Mitral annulus calcification (MAC)

Mitral regurgitation:

Mild (I)

Tricuspid valve

Tricuspid regurgitation:

Mild (I)

Hemodynamics

TR pressure gradient:

15 mmHg

Estimated RA pressure:

5 mmHg

PA systolic pressure:

20 mmHg

Mitral inflow

Comments:

Fused E and A

Cardiac output

Stroke volume

53 ml

Summary

Diagnoses

Left ventricular systolic function: mildly-to-moderately reduced

Right ventricular systolic function: normal

Left ventricular segmental wall motion abnormalities - inferoposterior

Left ventricular concentric hypertrophy: mild

Left atrial enlargement: mild

Aortic bioprosthesis

Aortic prosthesis: normal morphology and function

Mitral annulus calcification

Mitral valve regurgitation: mild

Mr S 86 yo Male Summary

- 86 year old gentleman NYHA 3-4, CCS-3
- S/P MI and coronary artery disease
- EF=30%
- DES to RCA
- Successful TAVI
- Post procedure:
- CCS-1, NYHA 1-2 EF=40%

