

3 D ECHOCARDIOGRAPHY

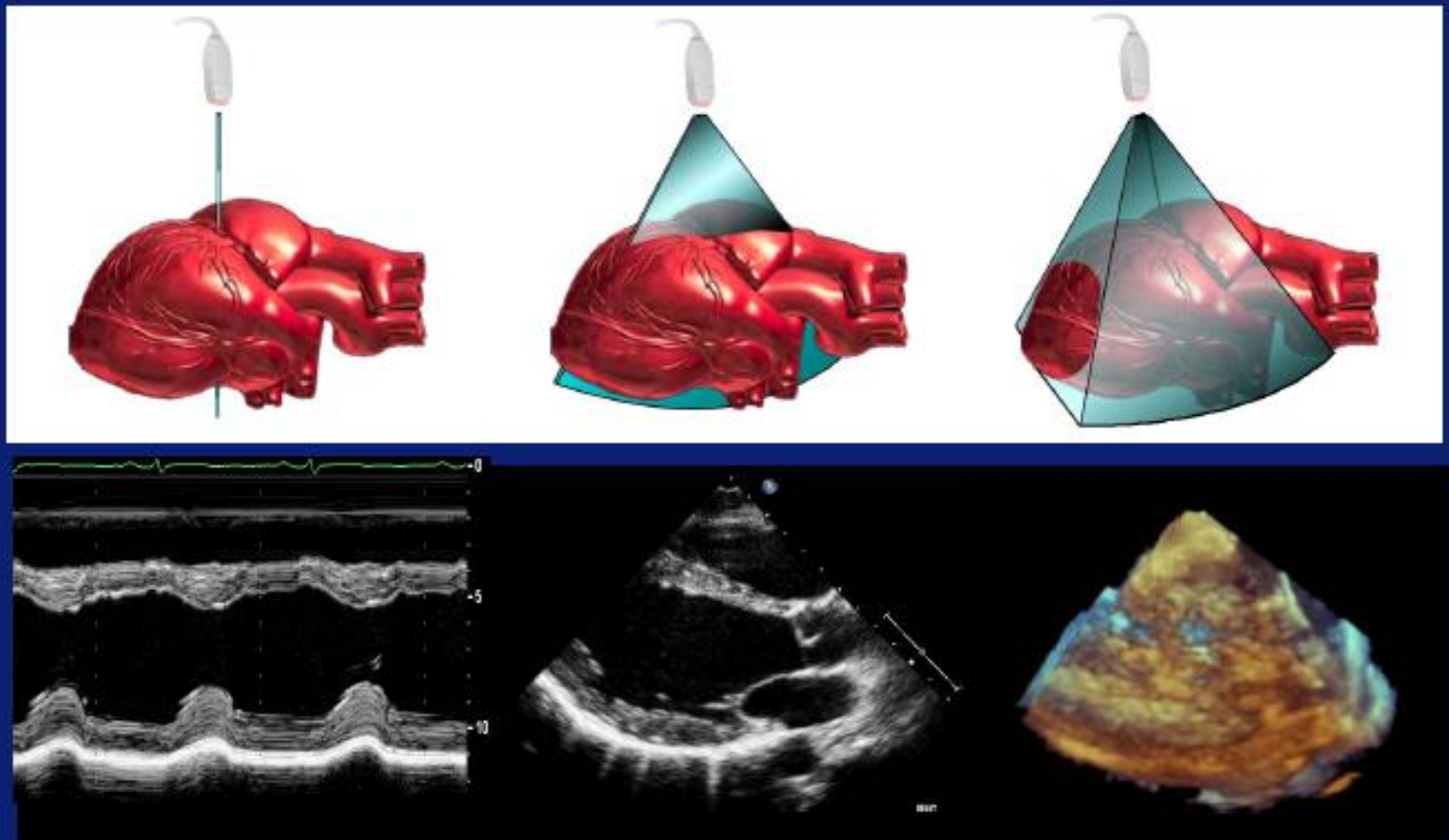
TS BS Nguyễn Tuấn Vũ

TTYK MEDIC-ĐHYK PNT

MEDIC-Philips IE 33

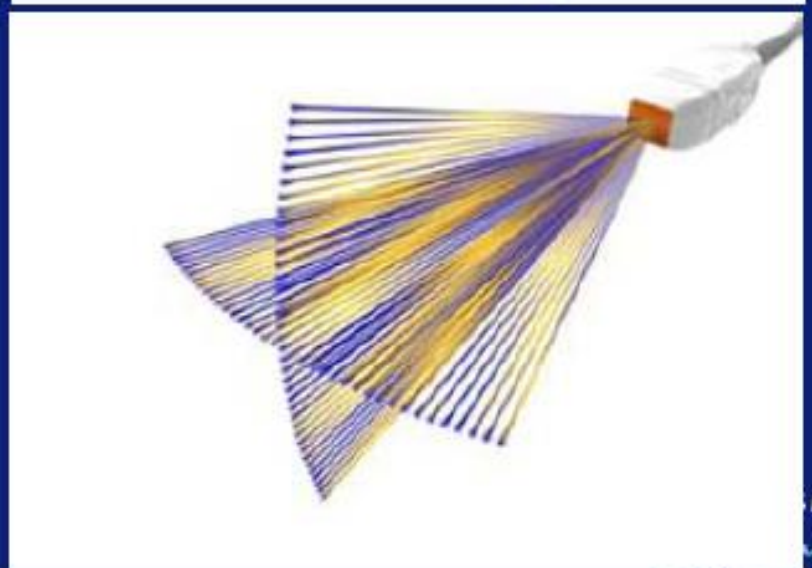
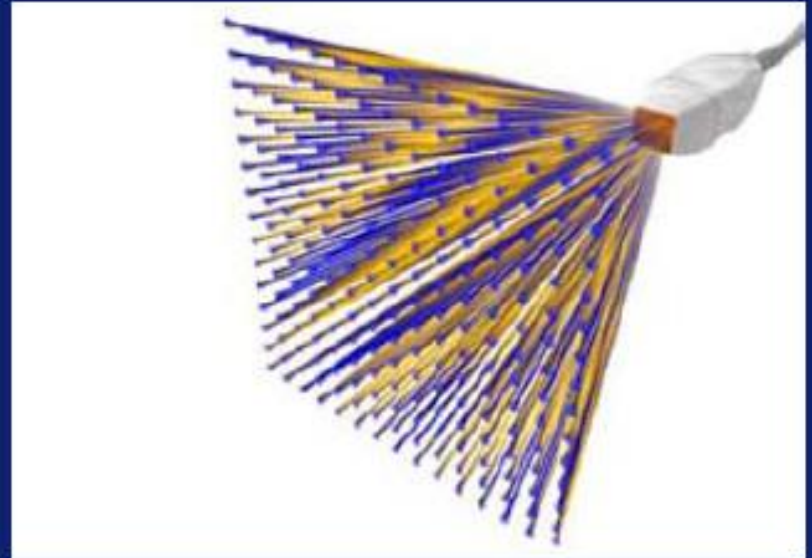


M mode, 2D and 3D Modalities





xMatrix array technology
utilizes 2400 fully-sampled
elements for 360-degree
focusing and steering



3D Echocardiography, transducers

RT3DE transducers iE33

Purewave technology – wider bandwidth higher sensitivity

X3-1



TTE
adult
>20 kg

Footprint
15 x 24mm

X7-2



TTE
pediatric
<20 kg

Footprint
15 x 20mm



TEE
adult

X7-2t



X5-1 Transducer

X5-1: the all in one transducer



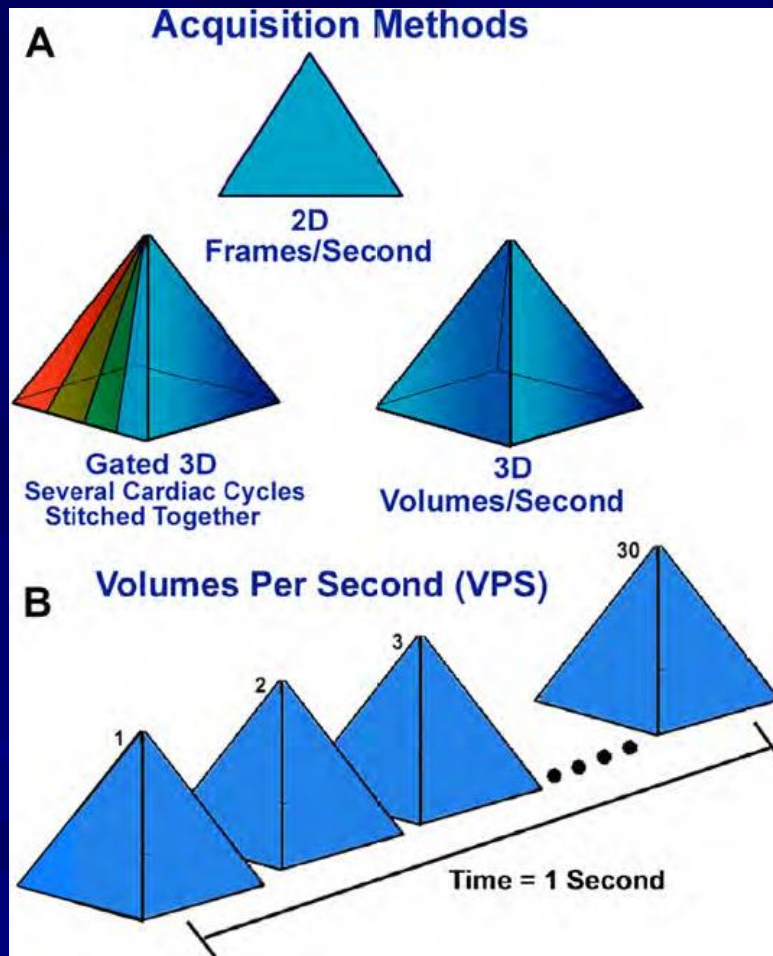
2D imaging
2D colour Doppler
PW and CW Doppler



3D imaging
Live 3D imaging and colour
Live 3D zoom
Full volume imaging and colour

Erasmus MC
Erasmus

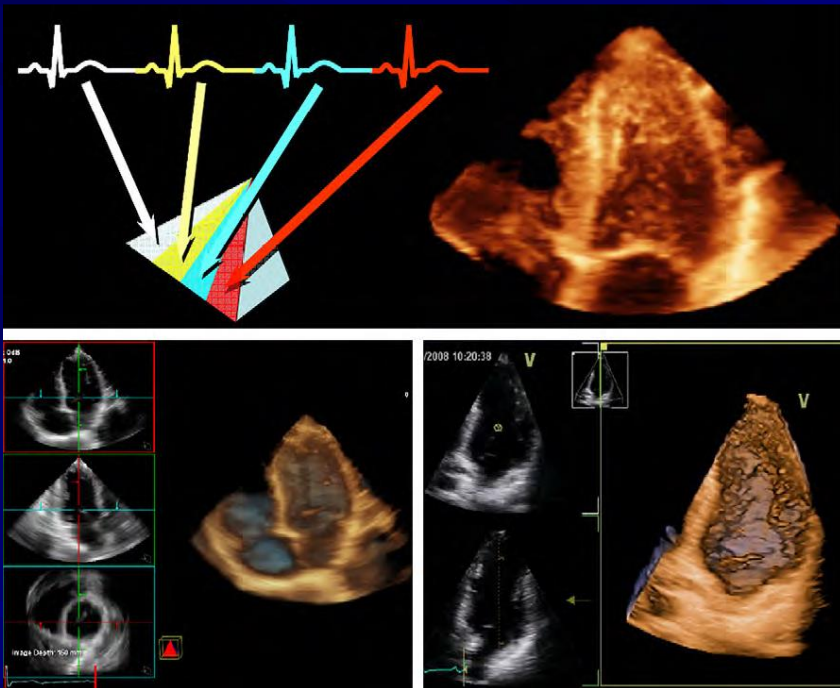
3 D Echocardiography



- Fully sampled Matrix-Array Transducer
- 3000 Piezoelectric Elements
- TTE 2-4MHz
- TEE 5-7MHz

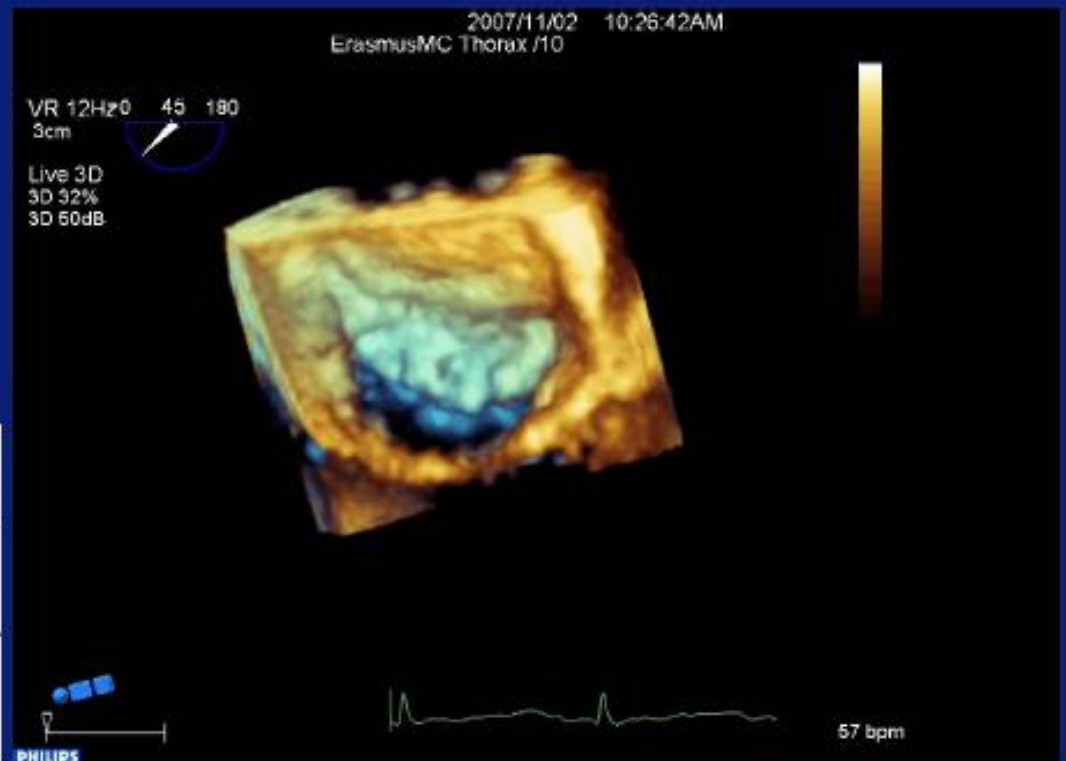
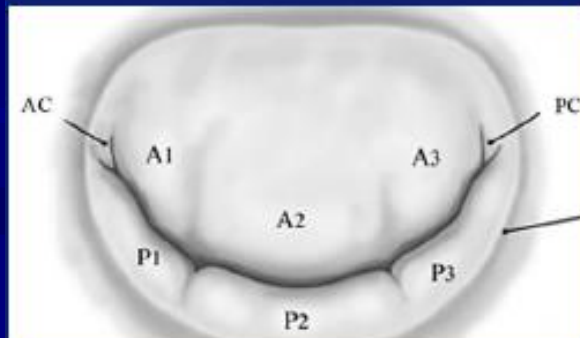
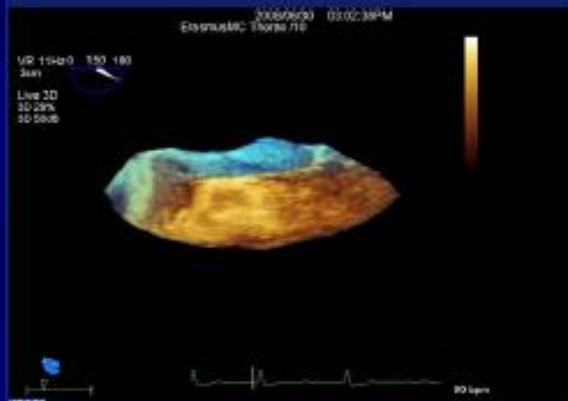
Data Acquisition

- Live 3 D : real time 3 D mode, narrow sector
- Full volume: gated acquisition
- Zoom 3D: focused wide sector



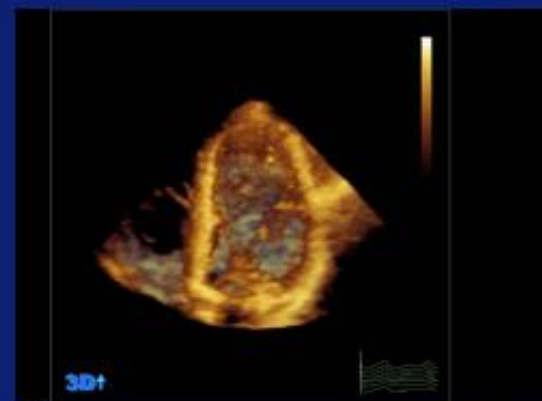
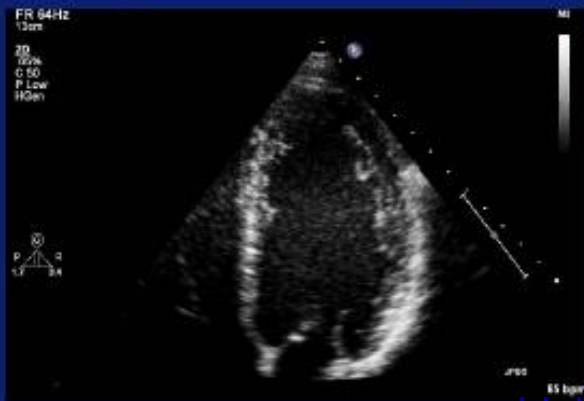
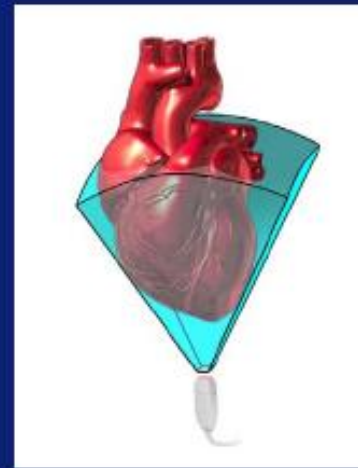
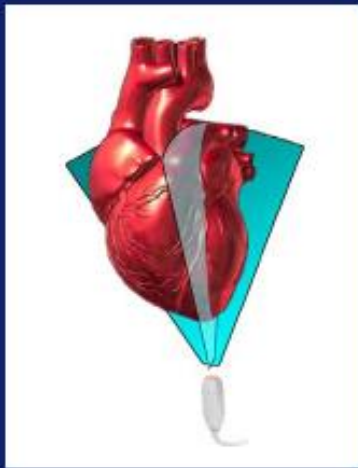
Live 3 D

LIVE 3D – Zoom mode (TEE)



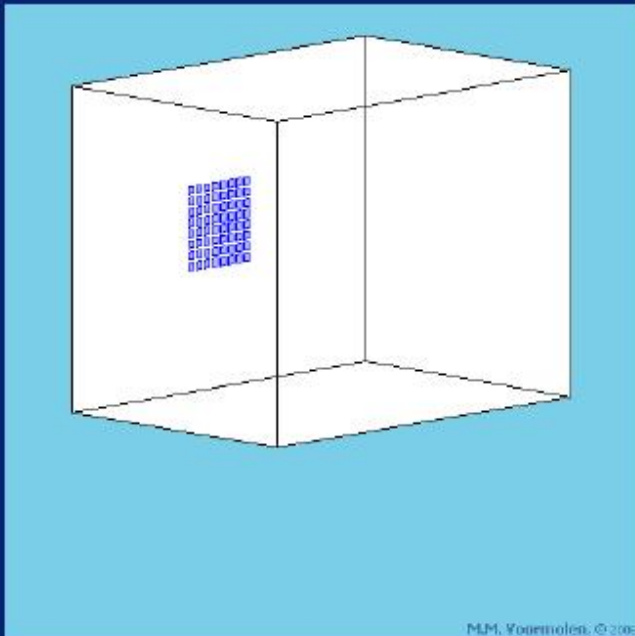
Full Volume 3 D

2D to 3D full volume



Full Volume 3 D

Full Volume



Maximal pyramidal
dimensions

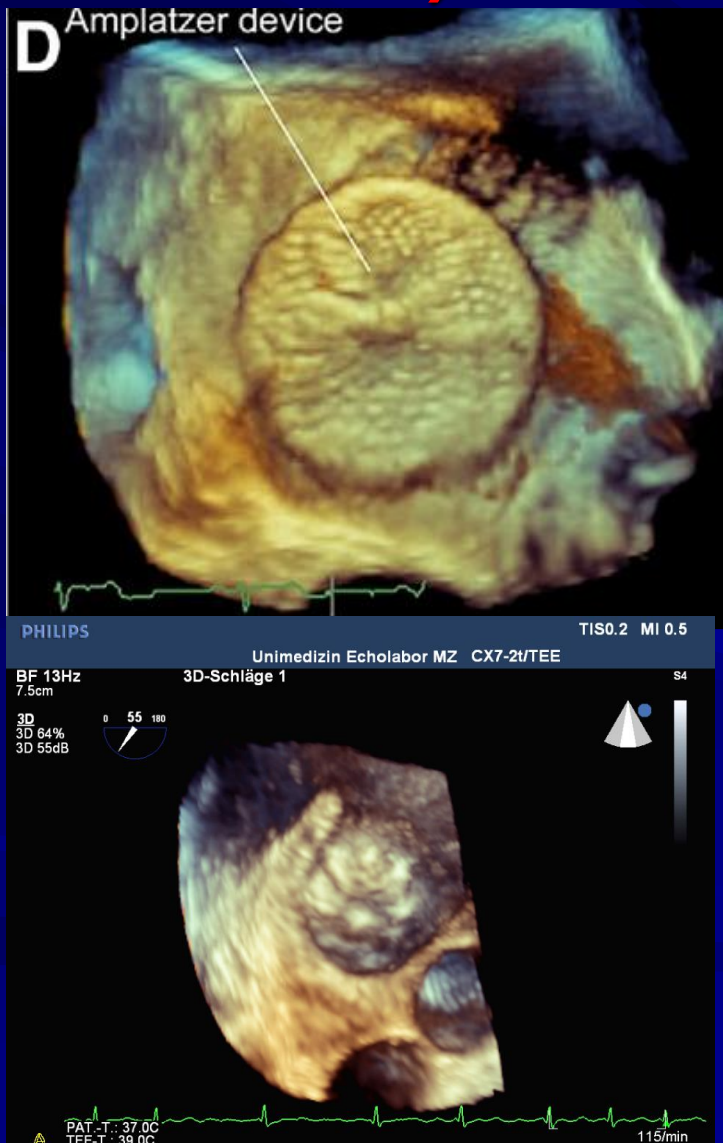
X7: 92° x 83°

X4: 84° x 84°

X3-1: 101° x 104°

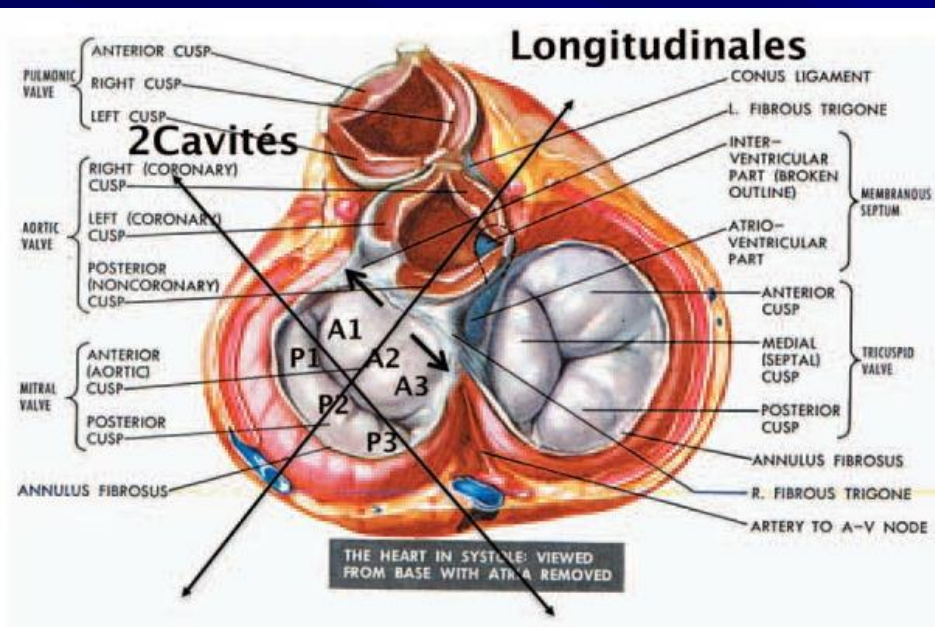
- not real-time
- multiple subvolumes are necessary because of limited maximal scan sector

3 D TEE, Advanced Applications



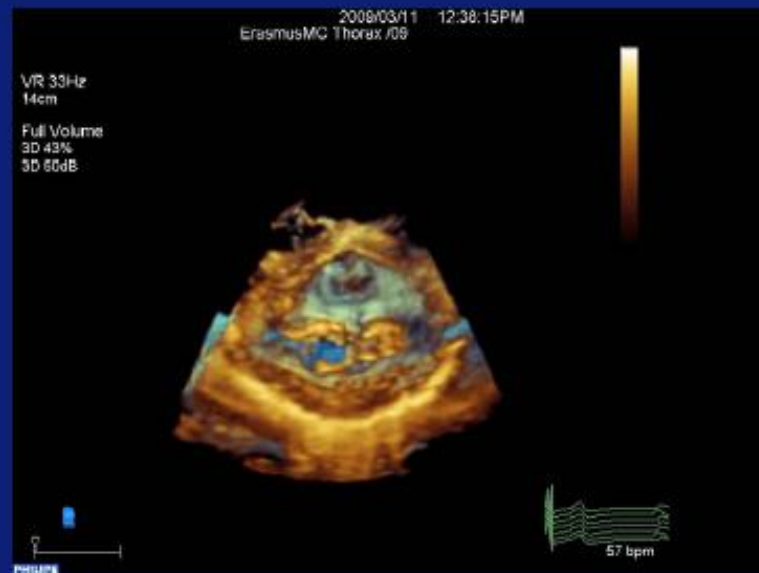
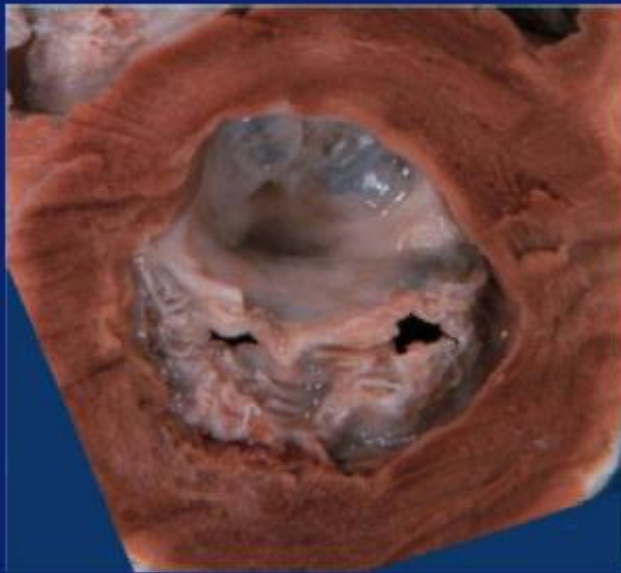
- Balloon Mitral Valvuloplasty
- Percutaneous Mitral Edge-to-Edge Procedure
- Percutaneous Aortic Valve Implantation
- Device Closure of ASD, PFO...
- Watchman device

Mitral valve, 3D TEE



MV, Anatomy and 3D Image

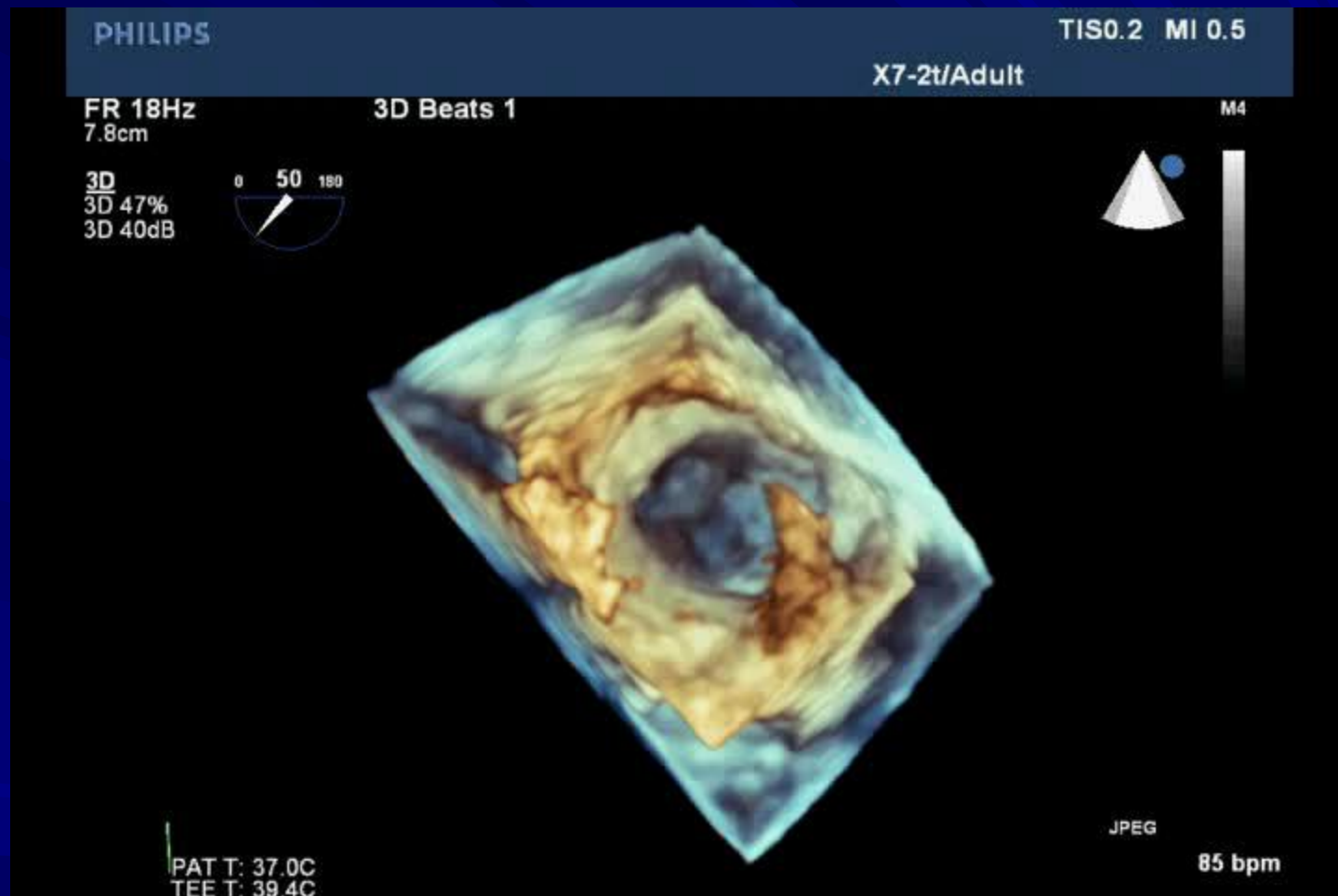
Normal Mitral Valve



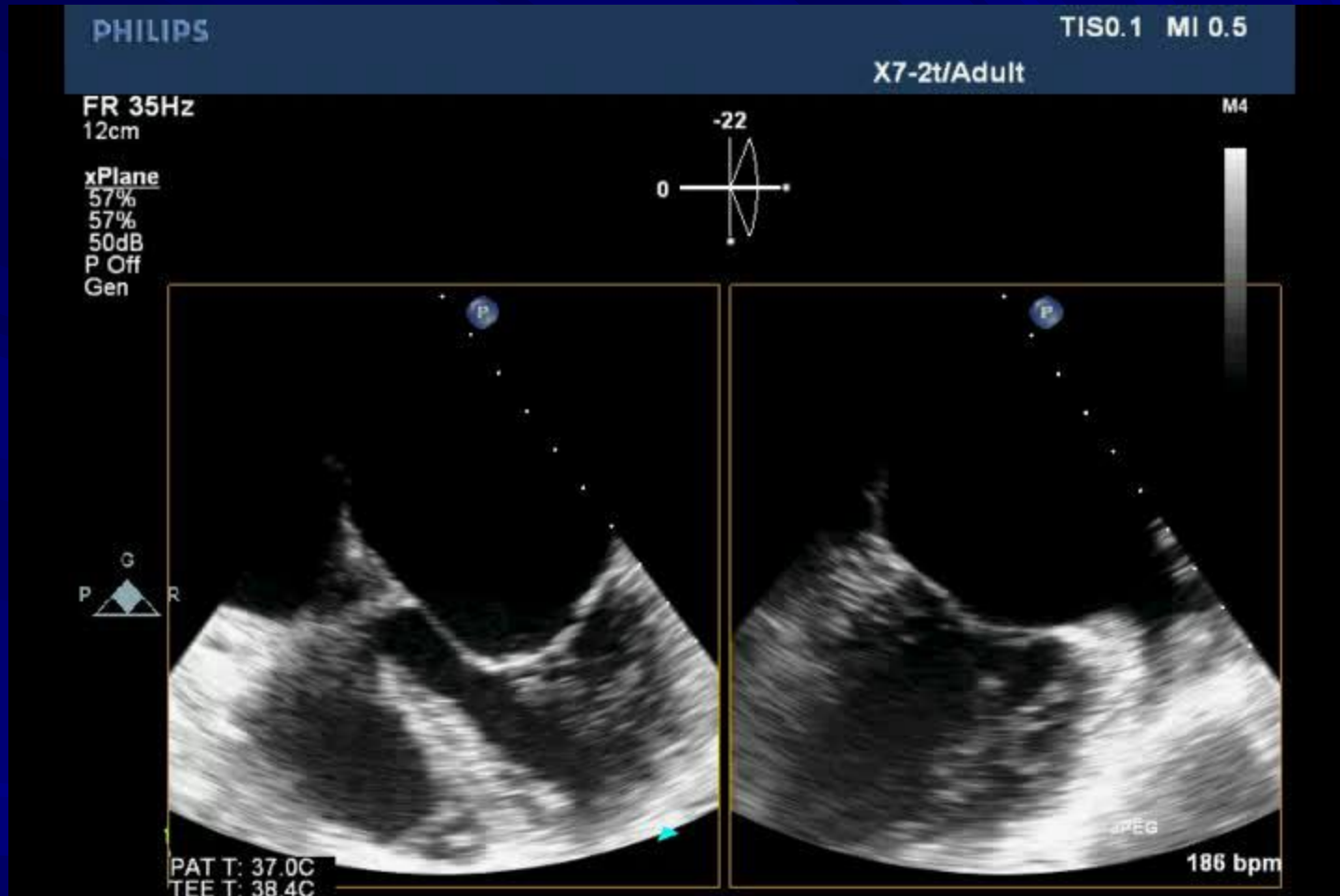
Normal Mitral Valve



Normal LAA



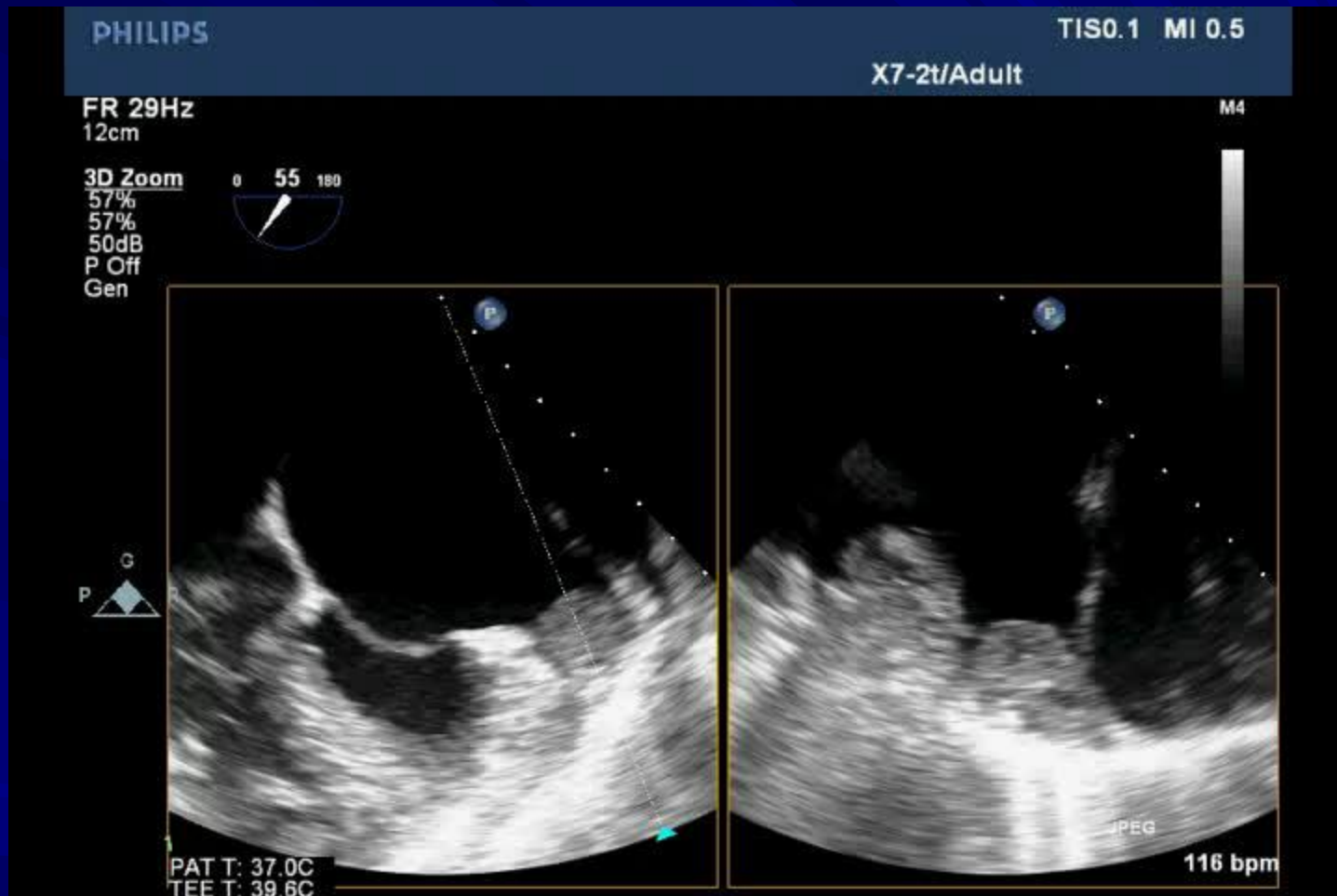
Mitral Stenosis



Mitral Stenosis



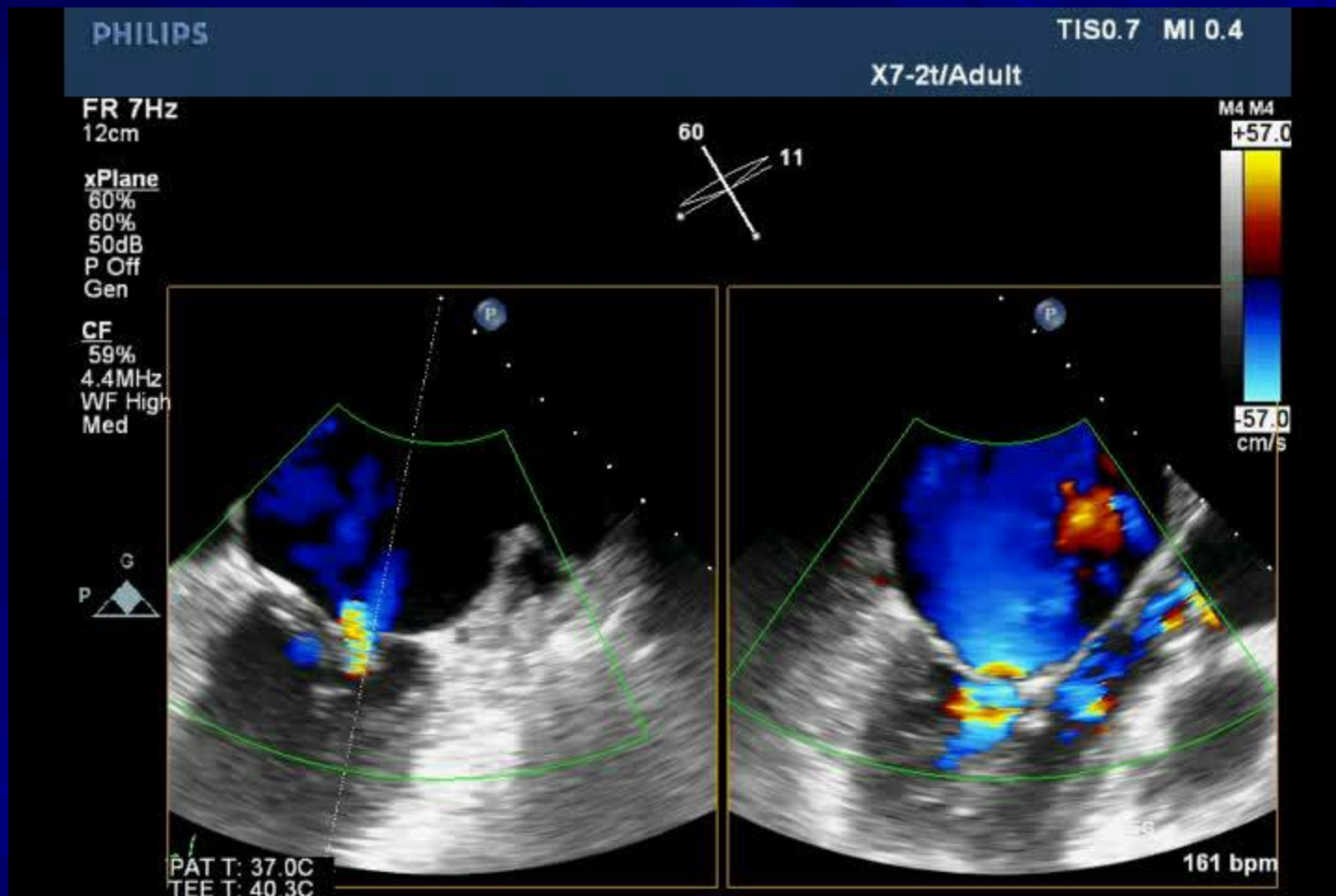
LAA Thrombus



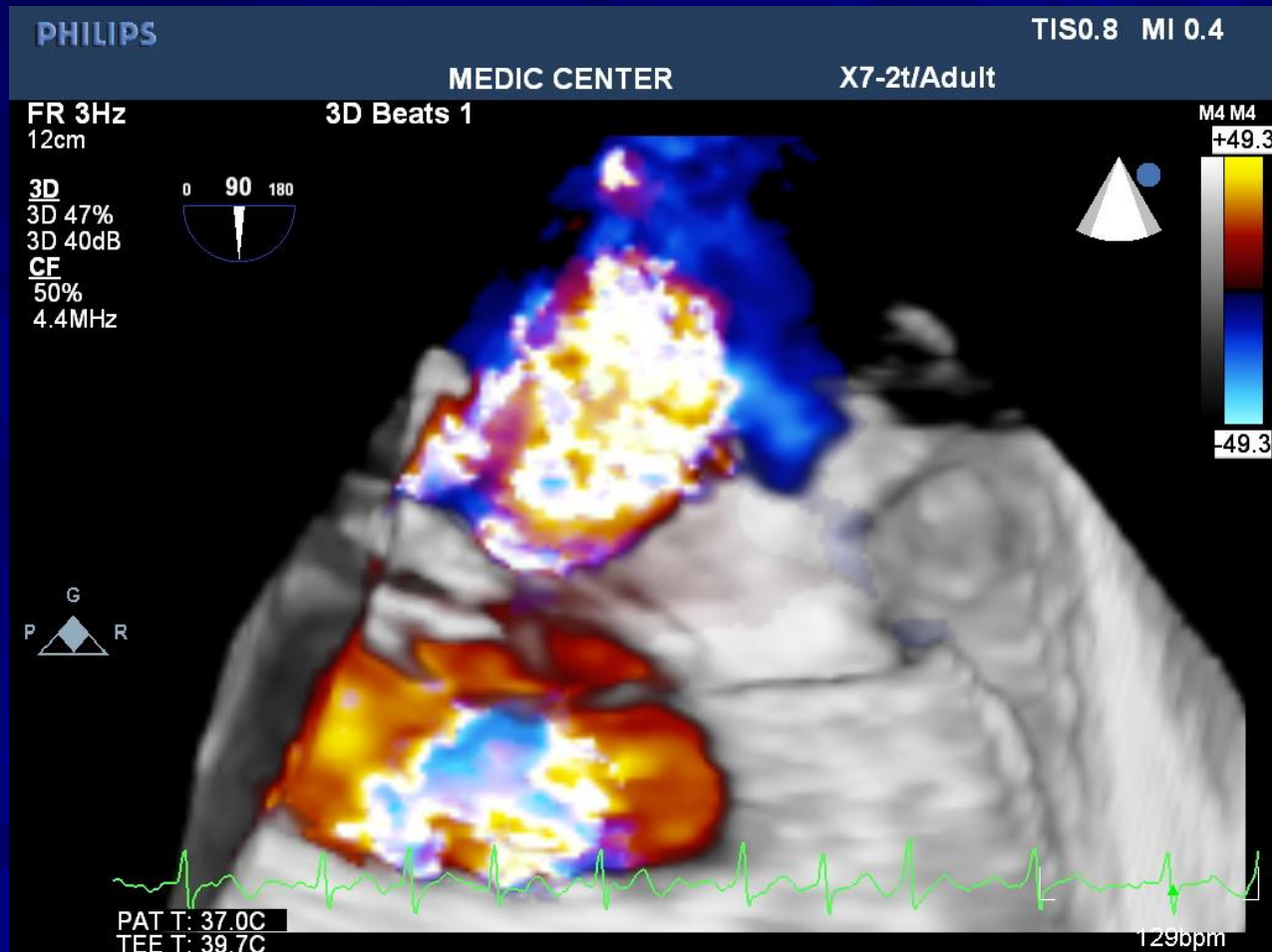
LAA Thrombus (3D)



Mitral Regurgitation



Mitral Regurgitation



Mitral Regurgitation (3 D)



MS, LAA Thrombus

PHILIPS

TIS0.2 MI 0.5

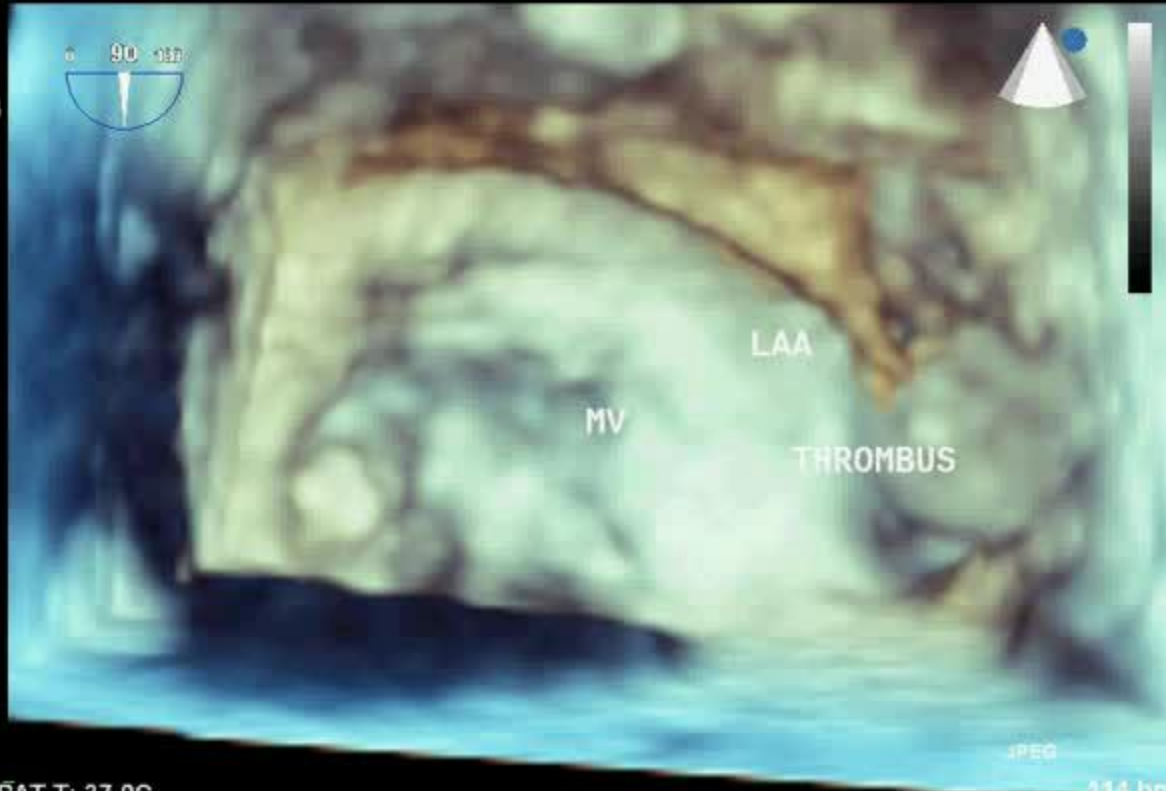
X7-2t/Adult

FR 10Hz
12cm

3D Beats 1

M4

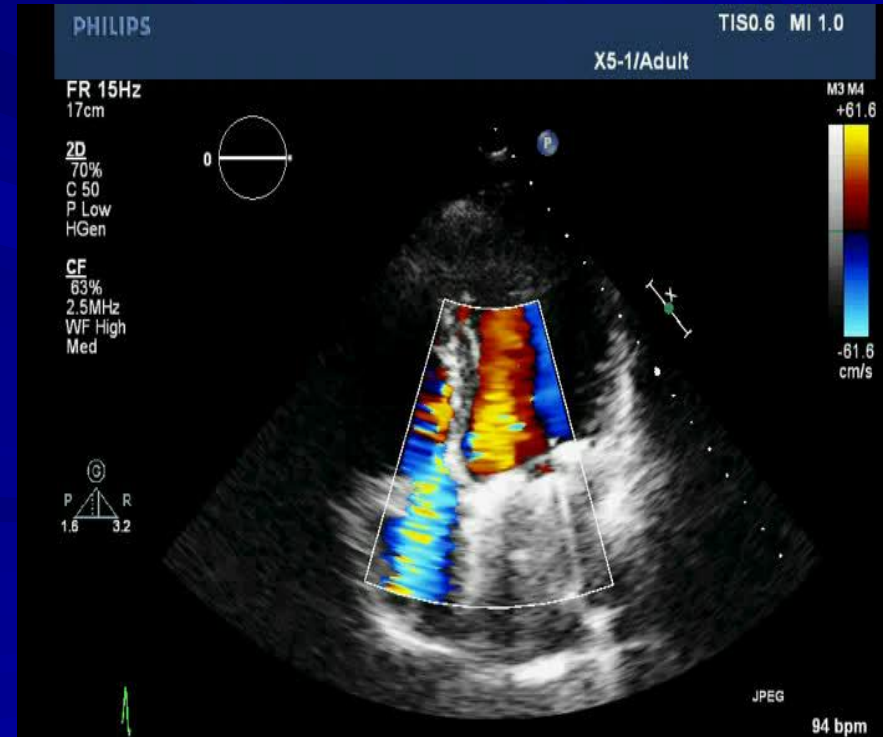
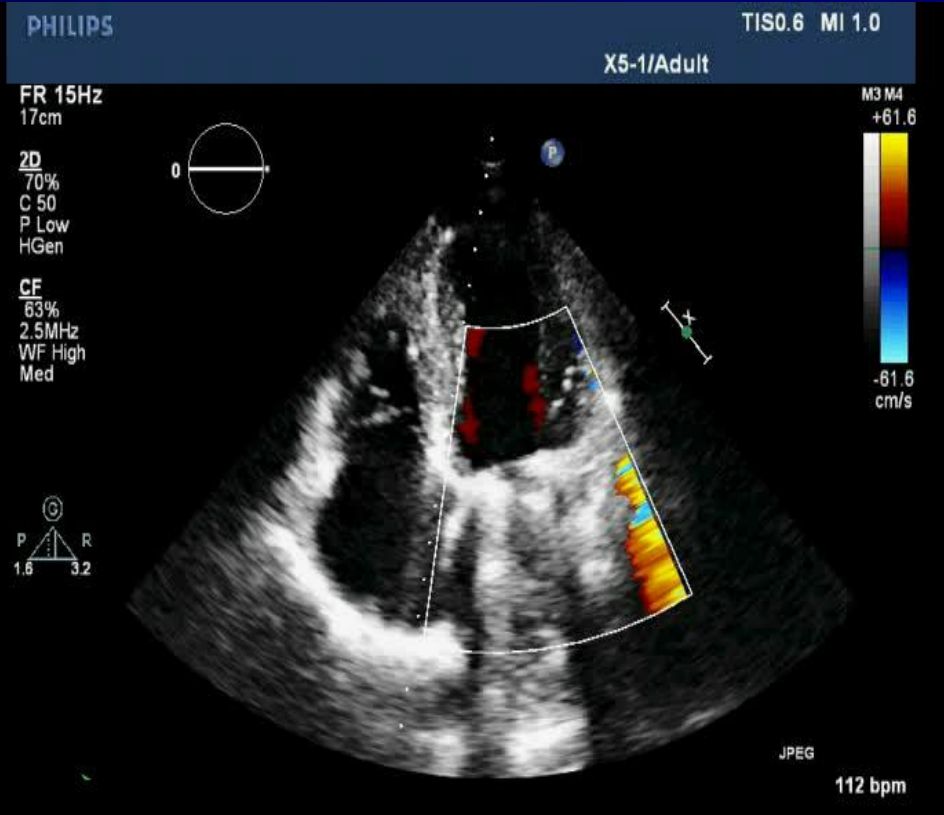
3D
3D 47%
3D 40dB



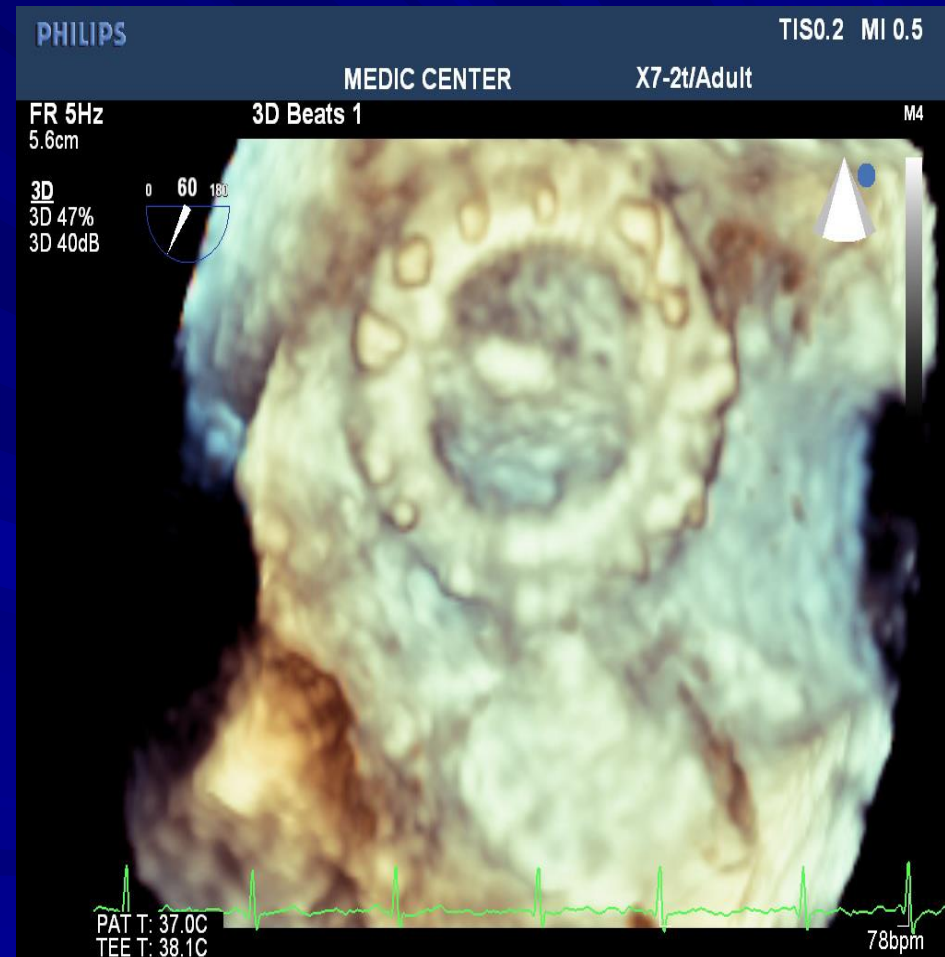
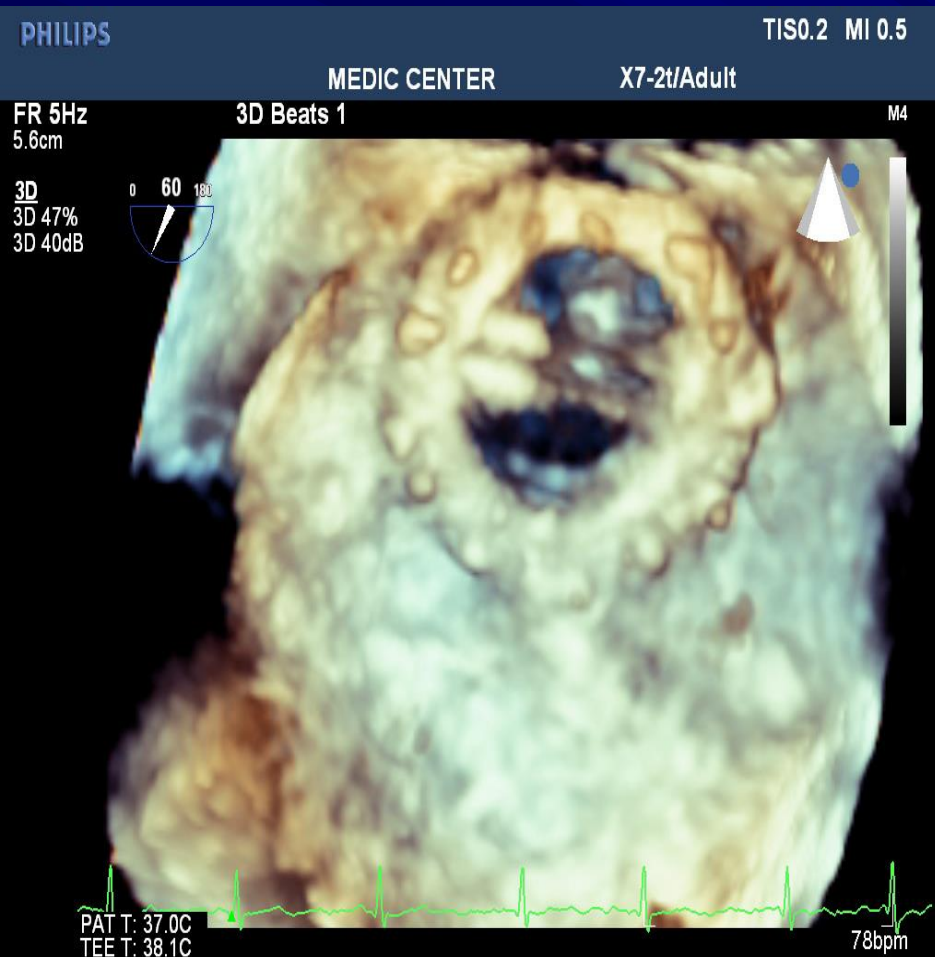
PAT T: 37.0C
TEE T: 39.7C

114 bpm

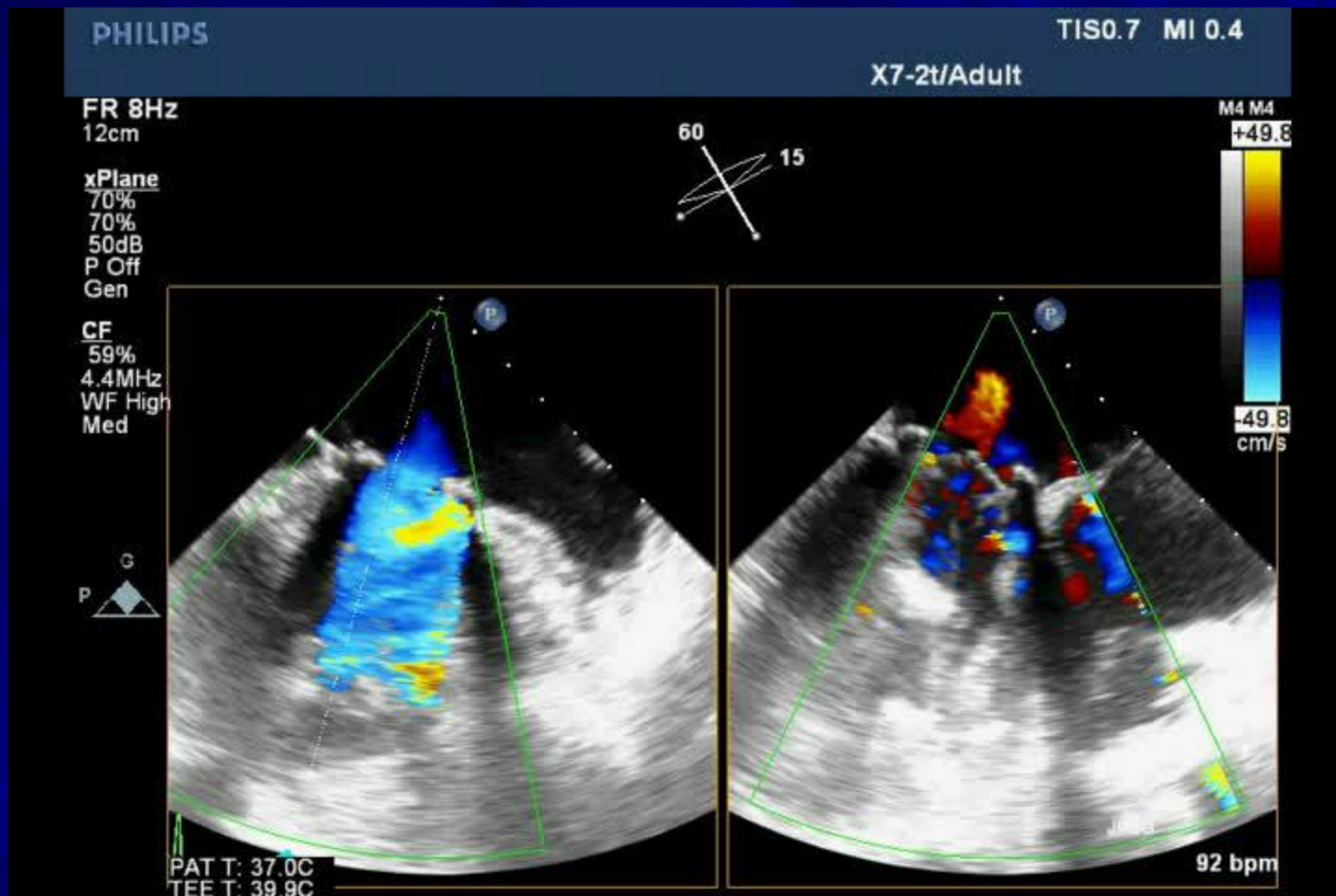
Mechanical Protheses



Mechanical Protheses (3 D)



Prothese, MR (2 D)



Intraoperative MD

PHILIPS

TIS0.8 MI 0.4

X7-2t/Adult

FR 1Hz
12cm

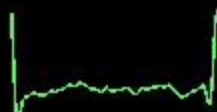
3D Beats 1

3D
3D 47%
3D 40dB
CF
50%
4.4MHz



M4 M4
+49.3




PAT T: 37.0C
TEE T: 38.2C

JPEG

85 bpm

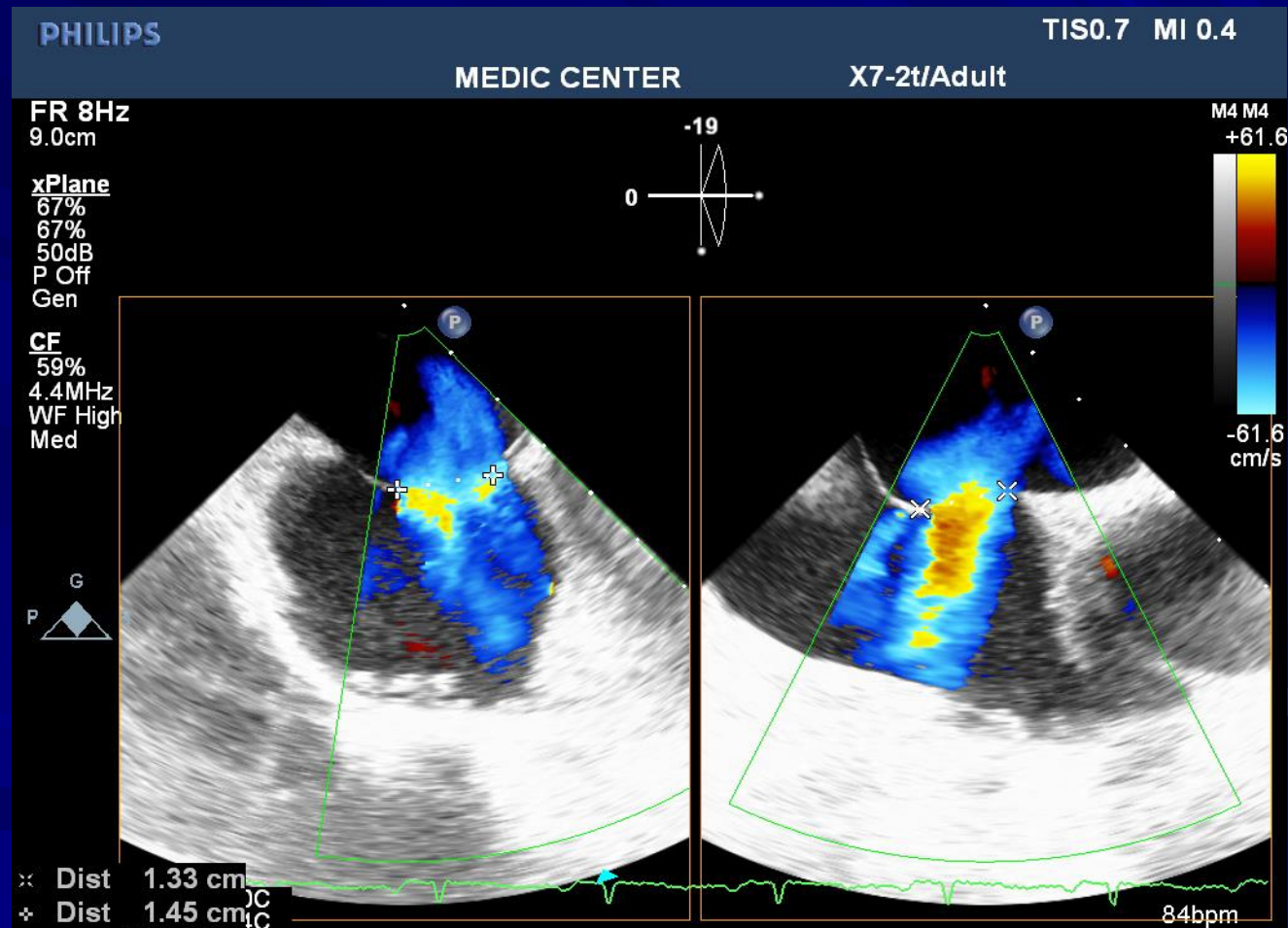
AV Prothèse Dysfunction



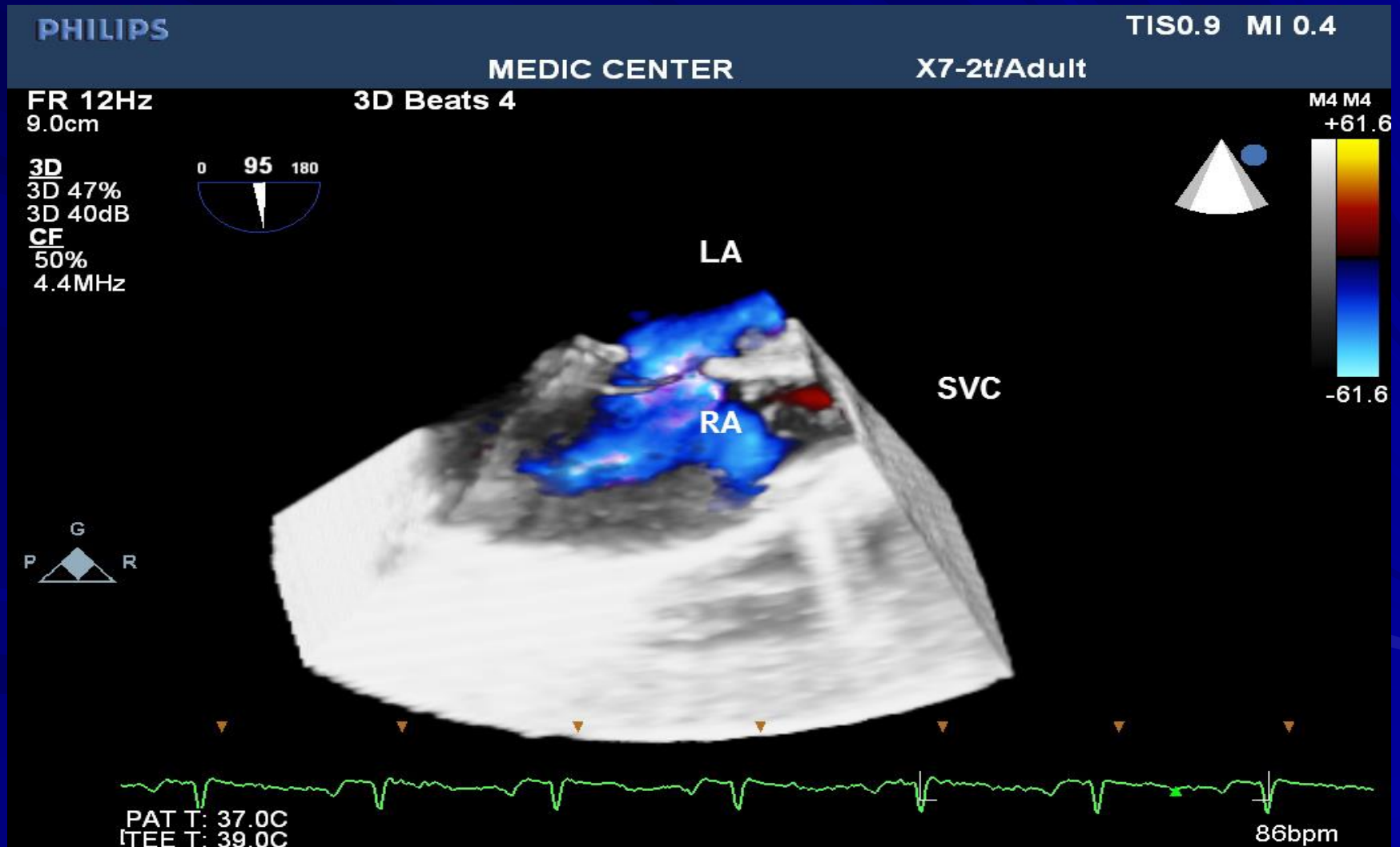
ASD Ostium II



ASD Ostium II



Color Live 3 D



PHILIPS

TIS0.9 MI 0.4

X7-2t/Adult

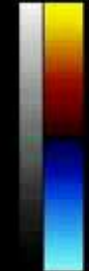
FR 12Hz
9.0cm

3D Beats 4

3D
3D 47%
3D 40dB
CF
50%
4.4MHz



M4 M4
+61.6



-61.6

LA

SVC

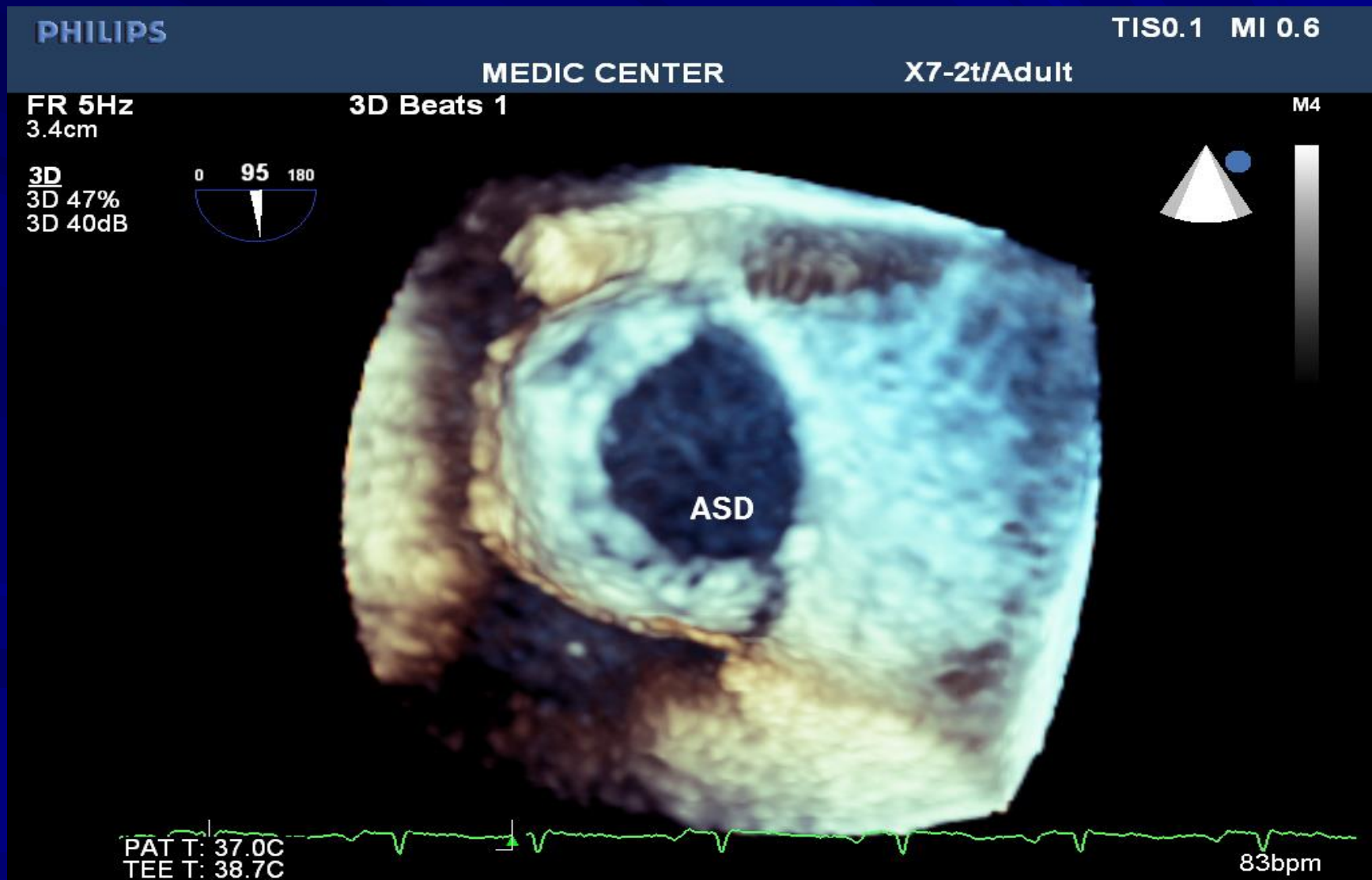
RA

PAT T: 37.0C
TEE T: 38.6C

JPEG

85 bpm

3 D Zoom



3 D Zoom



Sinus venosus ASD



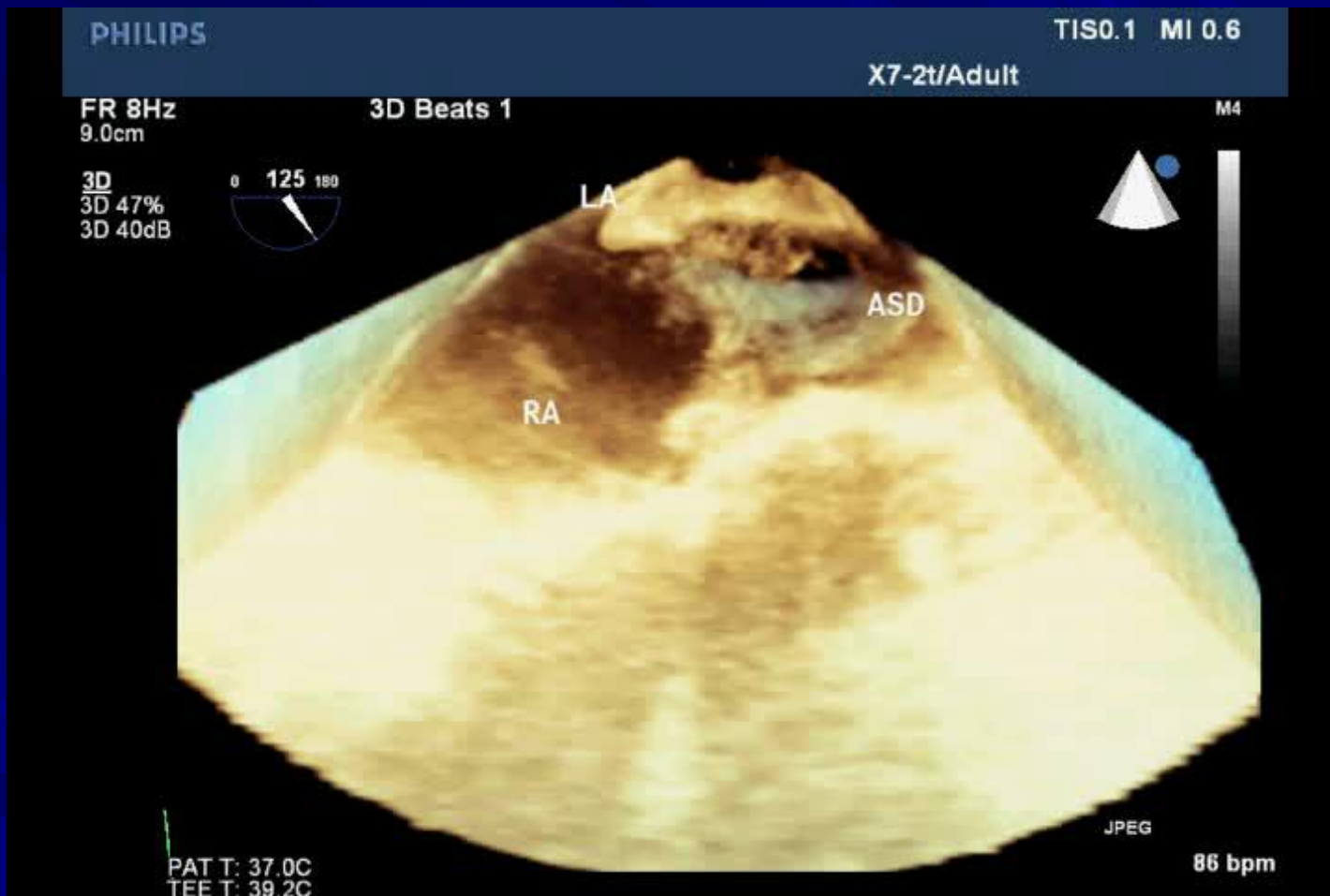
Sinus venosus ASD



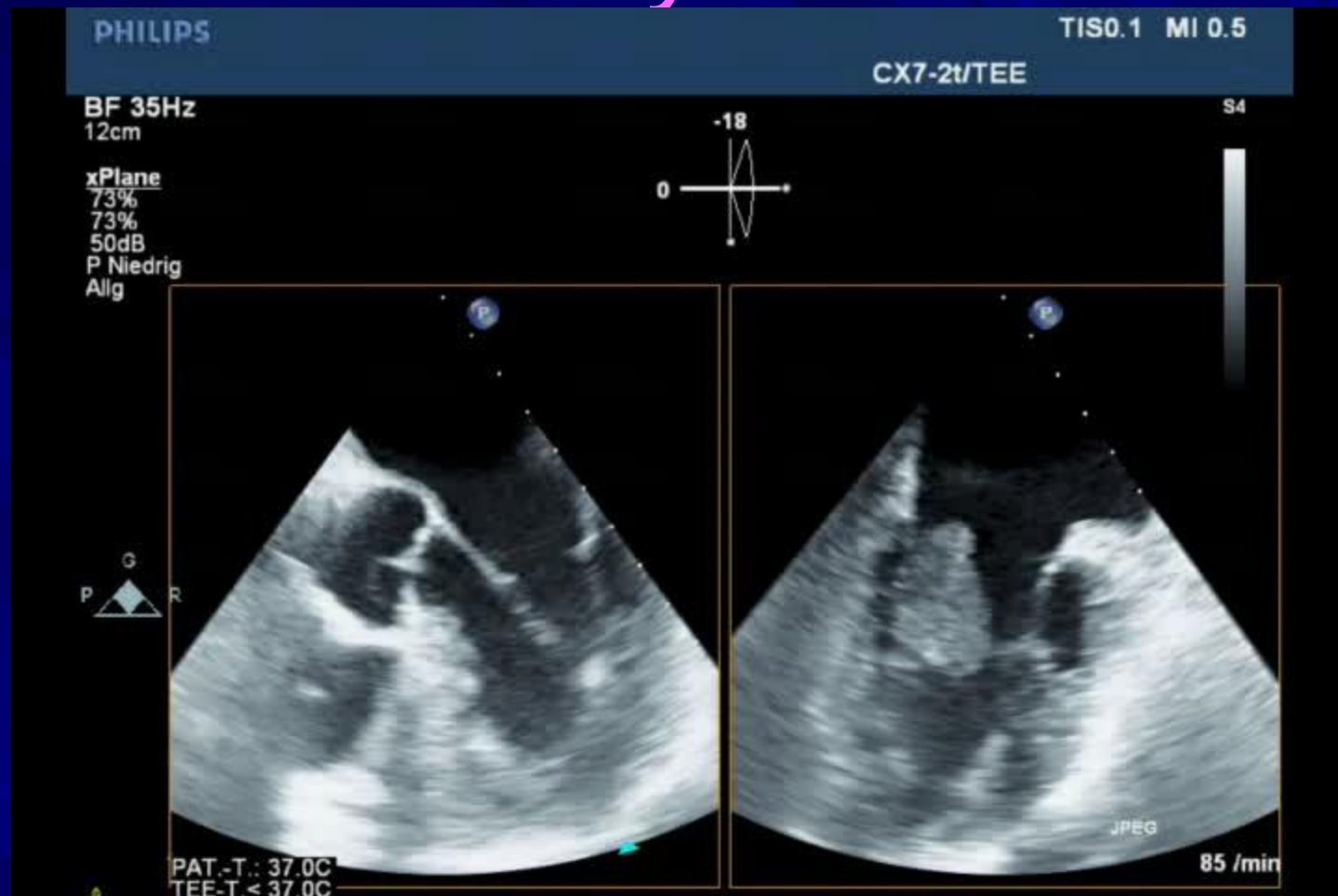
Sinus venosus ASD



Sinus venosus ASD



LA Myxoma



PHILIPS

TIS0.1 MI 0.5

CX7-2t/TEE

BF 50Hz
11cm

S4

2D
71%
K 50
M Niedrig
Allg



JPEG

58 /min

PAT.-T.: 37.0C
TEE-T.: 38.7C

PHILIPS

TIS 0.2 MI 0.5

CX7-2t/TEE

BF 17Hz
9.0cm

3D-Schläge 1

S4

3D
3D 47%
3D 40dB



PAT.-T.: 37.0C
TEE-T.: 38.8C

JPEG

65 /min

PHILIPS

TIS0.1 MI 0.5

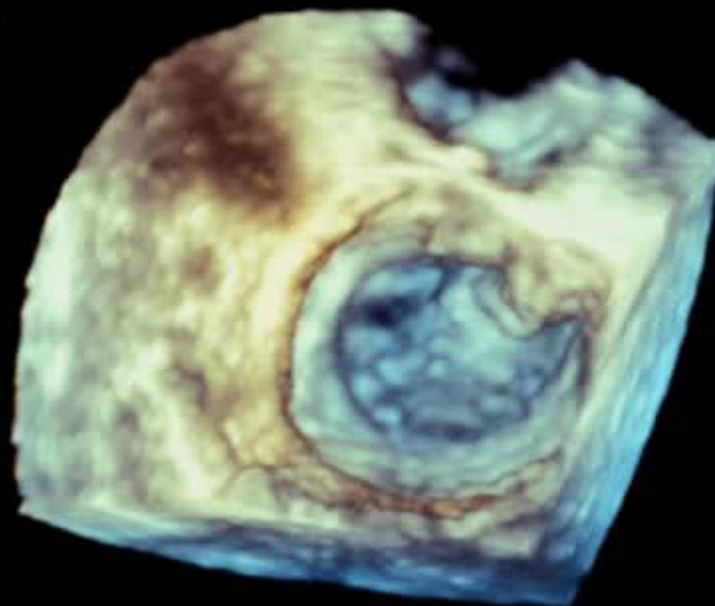
CX7-2t/TEE

BF 9Hz
6.5cm

3D-Schläge 1

S4

3D
3D 47%
3D 40dB

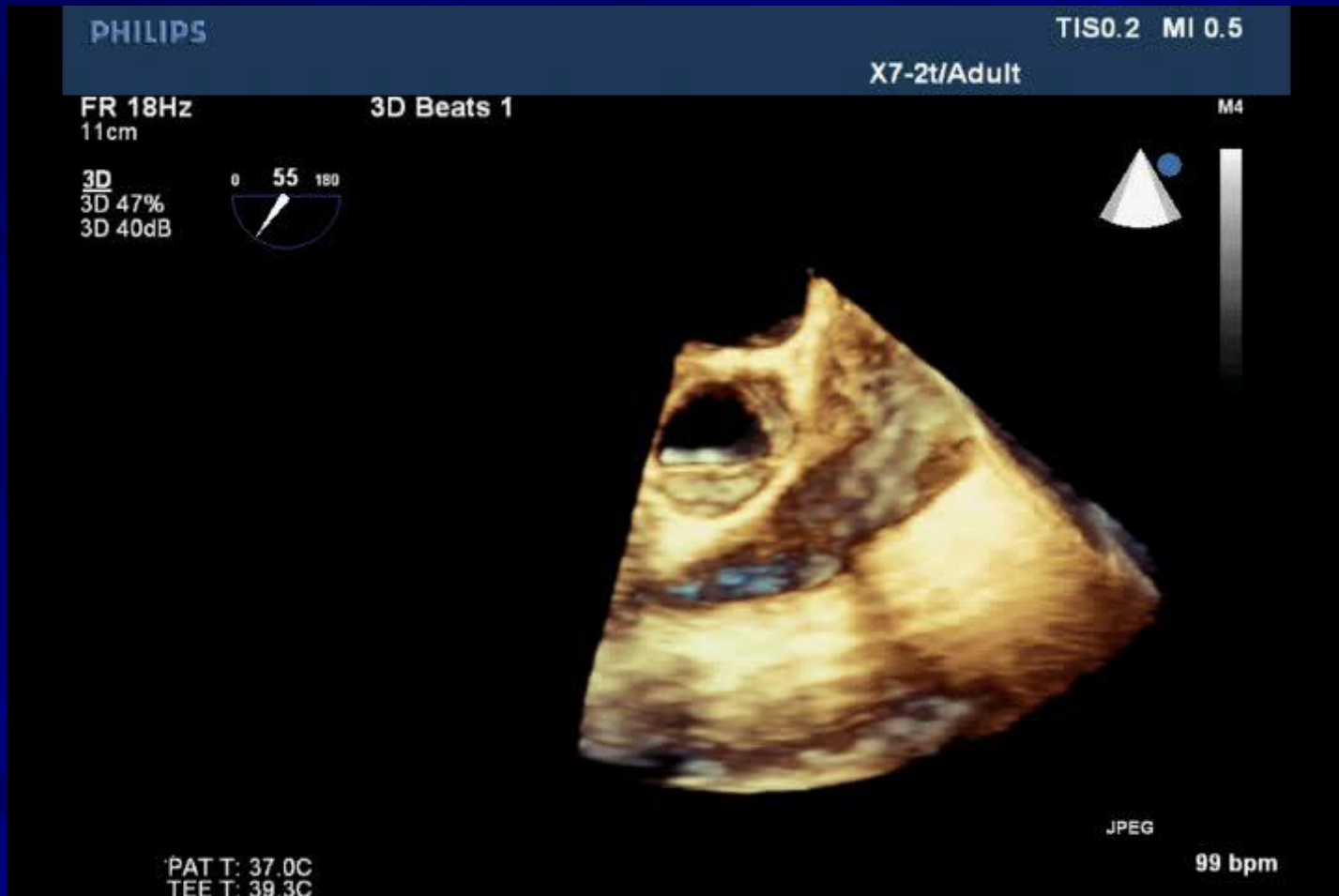


PAT.-T.: 37.0C
TEE-T.: 38.6C

JPEG

61 /min

Supravalvular pulmonary stenosis



Thank you!

