

Cardiac Imaging for Nursing

김현주 RN, RDCS
Severance Hospital



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SEVERANCE

1885 제증원 창립
심장혈관병원



Nurse, Nursing



Nursing Specialty



"The 1st Coronary Care Unit"(1962)

-A New Era of Specialization

*"CCU nurses expanded their
scope of practice"*

-Identifying cardiac arrhythmia

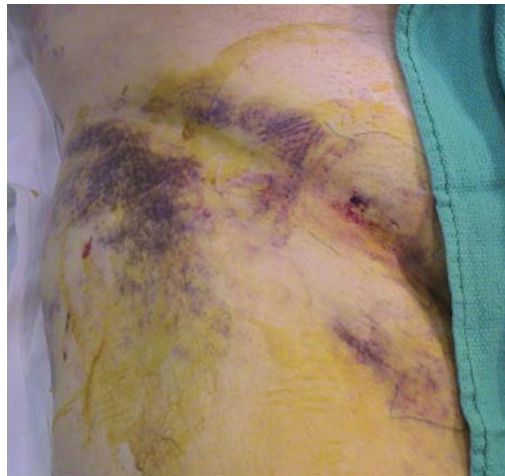
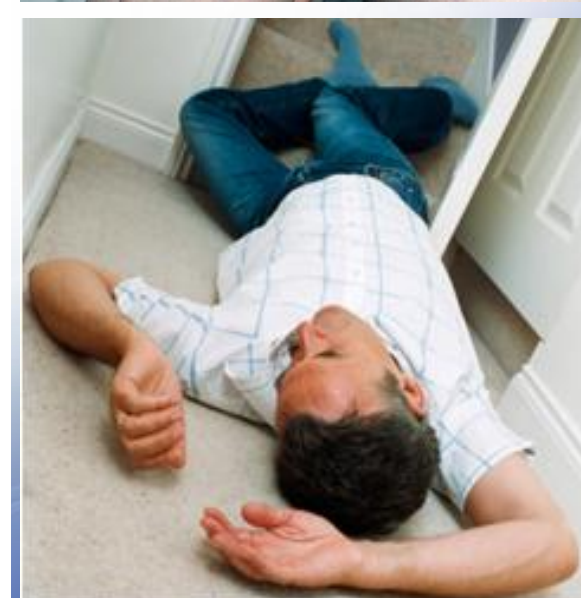
-Administering IV medications

-Defibrillating

The specialty, 50 years after...

Imaging, Nursing

- Assess
- Educate
- Counsel
- Administer medication



Cardiac Imaging & Nursing Specialty



Disease information

Pre, During, Post-Imaging care

Interdisciplinary approach

Physician Assistant

Nursing Specialties

1. Advanced Practice Registered Nursing
2. Ambulatory Care Nursing
3. Business in Nursing
4. Bariatrics Nurse – *(Super new!)*
5. Camp Nursing
6. Cardiac Care Nursing
7. Cardiac Cath Lab Nursing
8. Case Management Nursing
9. Clinical Nurse Leader
10. Clinical Nurse Specialist

86. Radiology Nursing

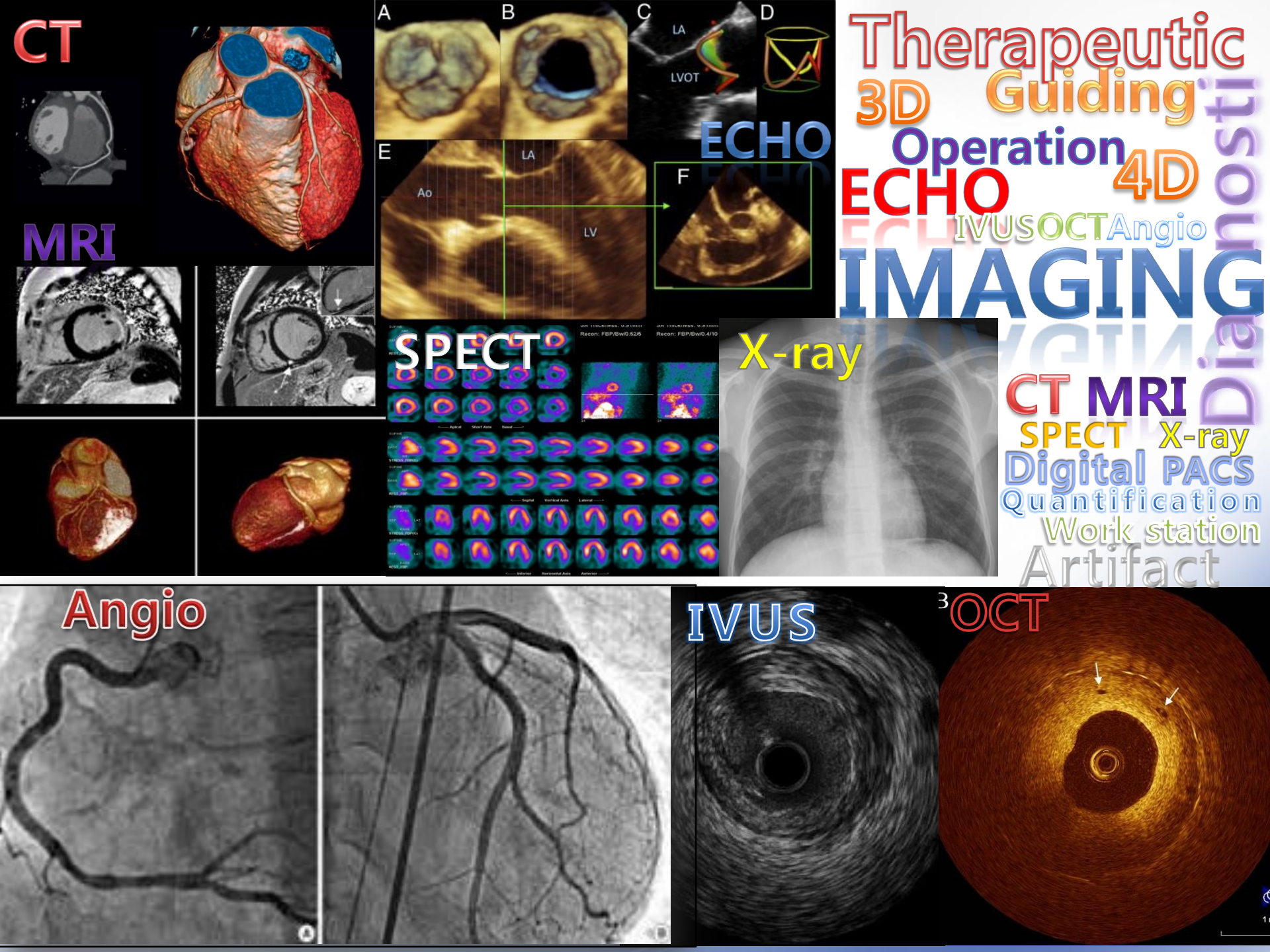
100+
Awesome Nursing
Specializations

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 **NurseJournal.org**
Social Community for Nurses Worldwide

Sample of Reported Job Titles

Radiology Nurse, Echo Radiology PRN, Radiology Technician, Radiology Support Services Nurse, Combined Lab and Radiology Technician



RDCS Registered Diagnostic Cardiac Sonographer

자격

- 학사학위자, 예정자
- 12 개월 임상초음파 경험

서류

- 학위증명서 or 성적증명서 (미국공증)
- CV (clinical verification) form
- CME (continuing medical education) 이수증
- 여권

신청 시험

- ARDMS 시험 신청 (SPI + AE)
- 시험 (SPI + AE)
- 취득 (RDCS)



Cases

Excellent Imaging, Echo

Coronary artery disease

Valvular heart disease

Arrhythmia(AF)

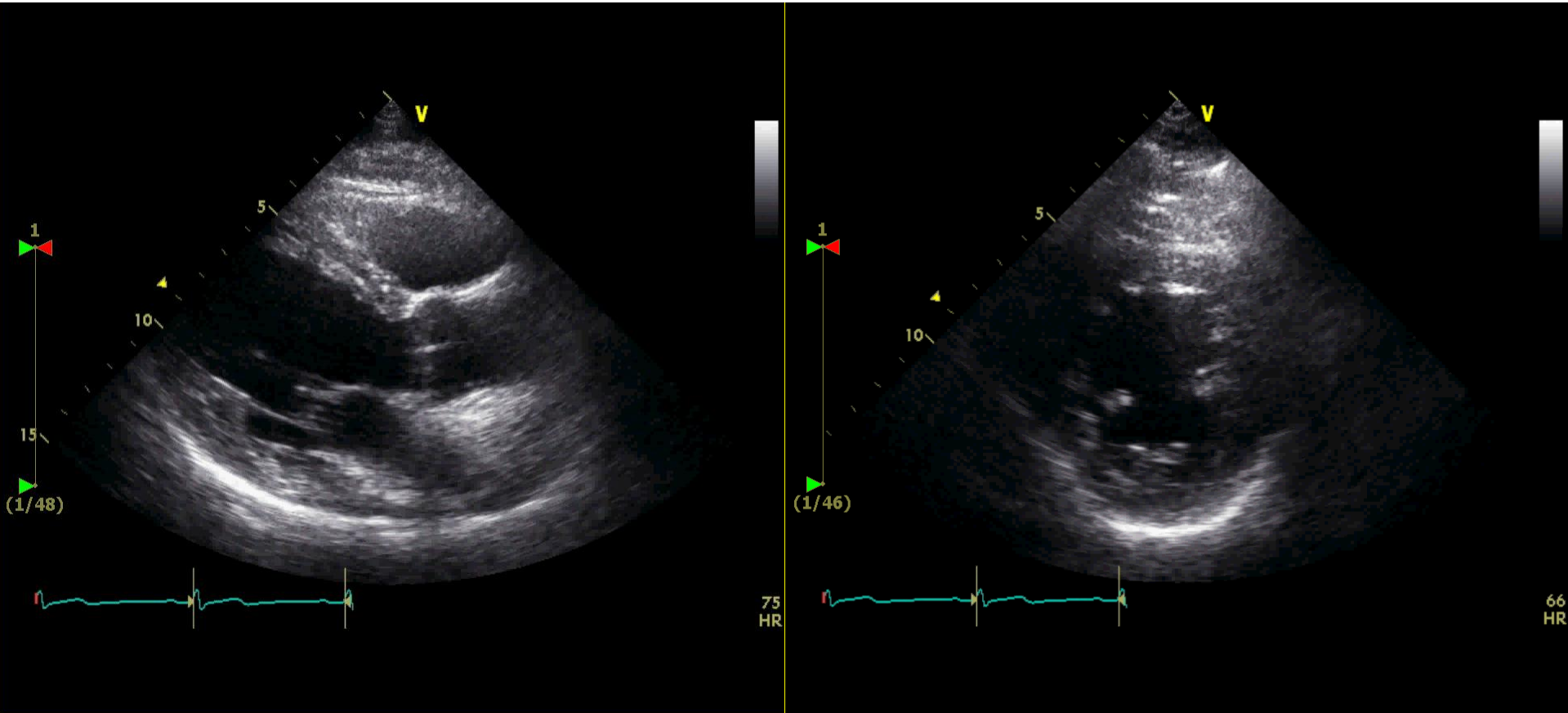


Cardiac Imaging, Echo

- **EF** systolic function
- **E/E'** diastolic function
- **WM** coronary vs. myocardial
- **Valve** congenital vs. acquired

Chest pain M/63

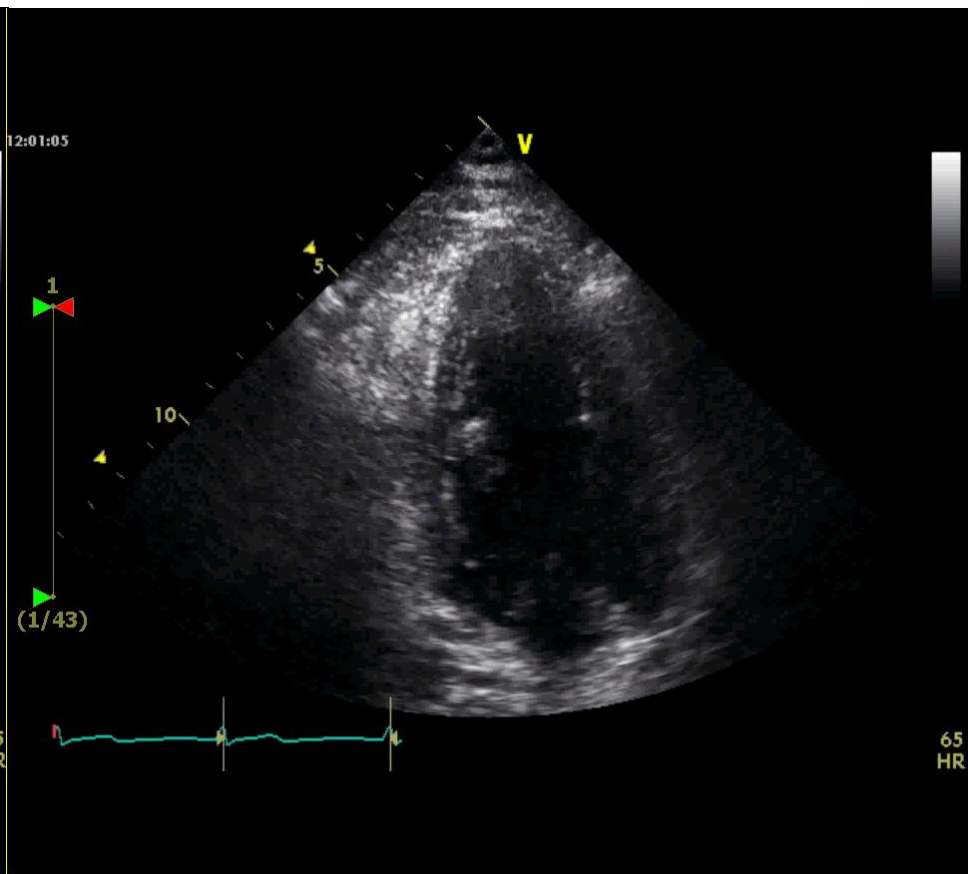
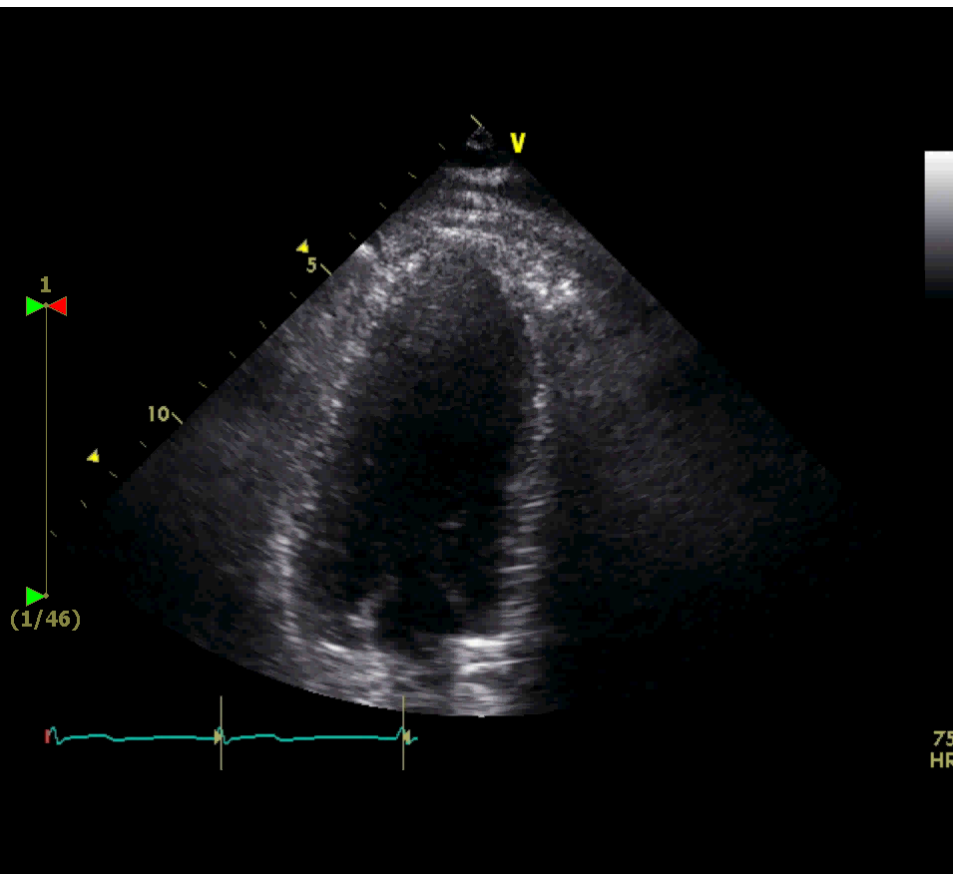
#Excellent Imaging, Echo



Mild CAD (LCx 30%, RCA minimal)

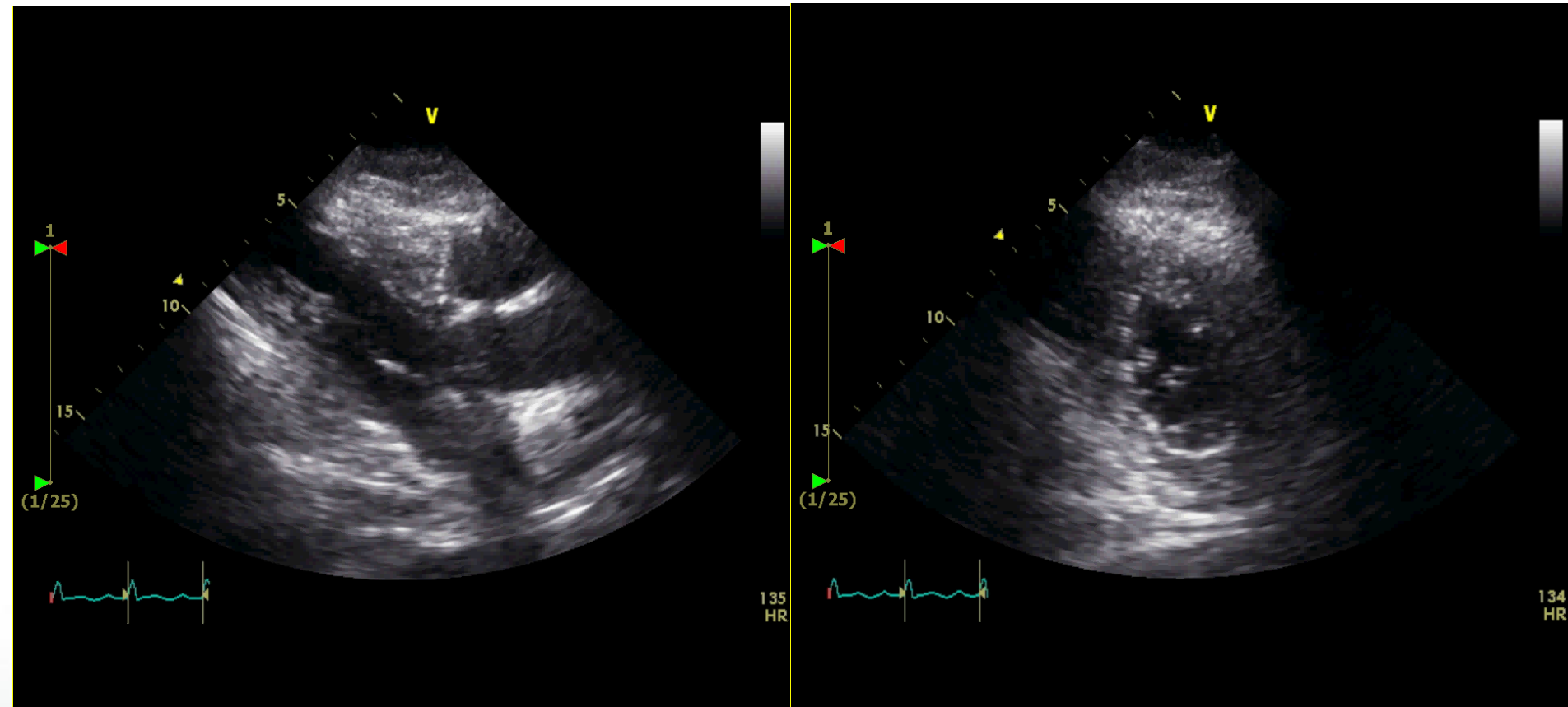


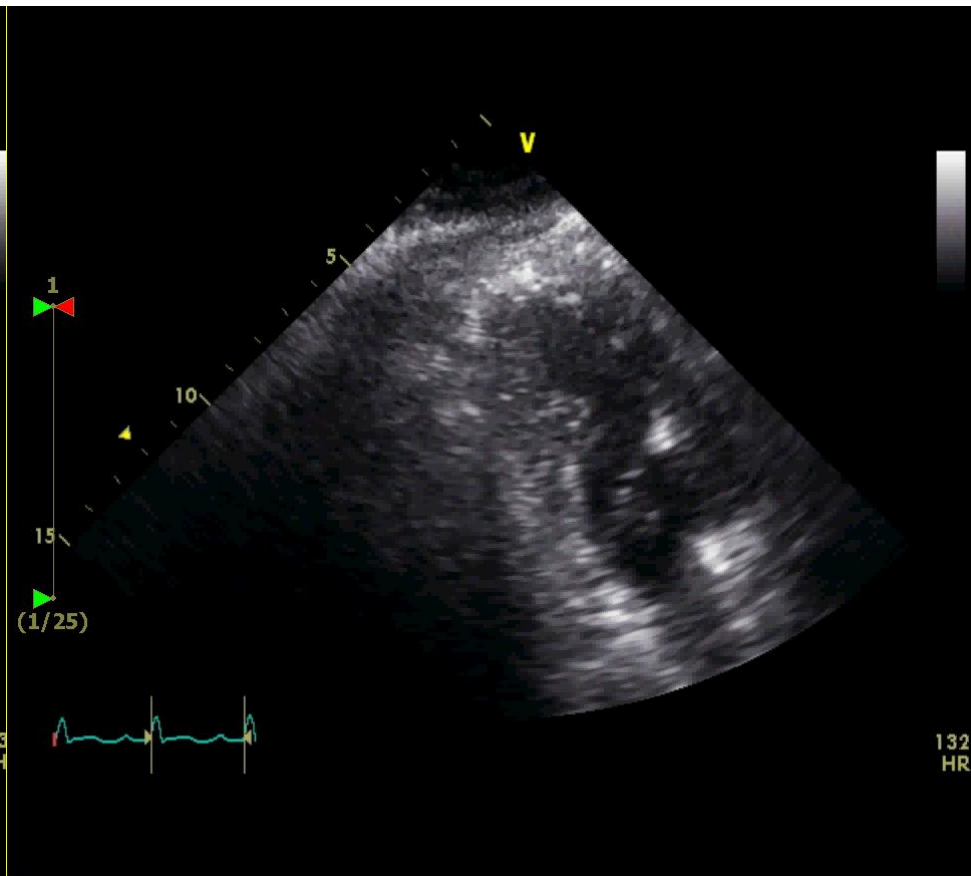
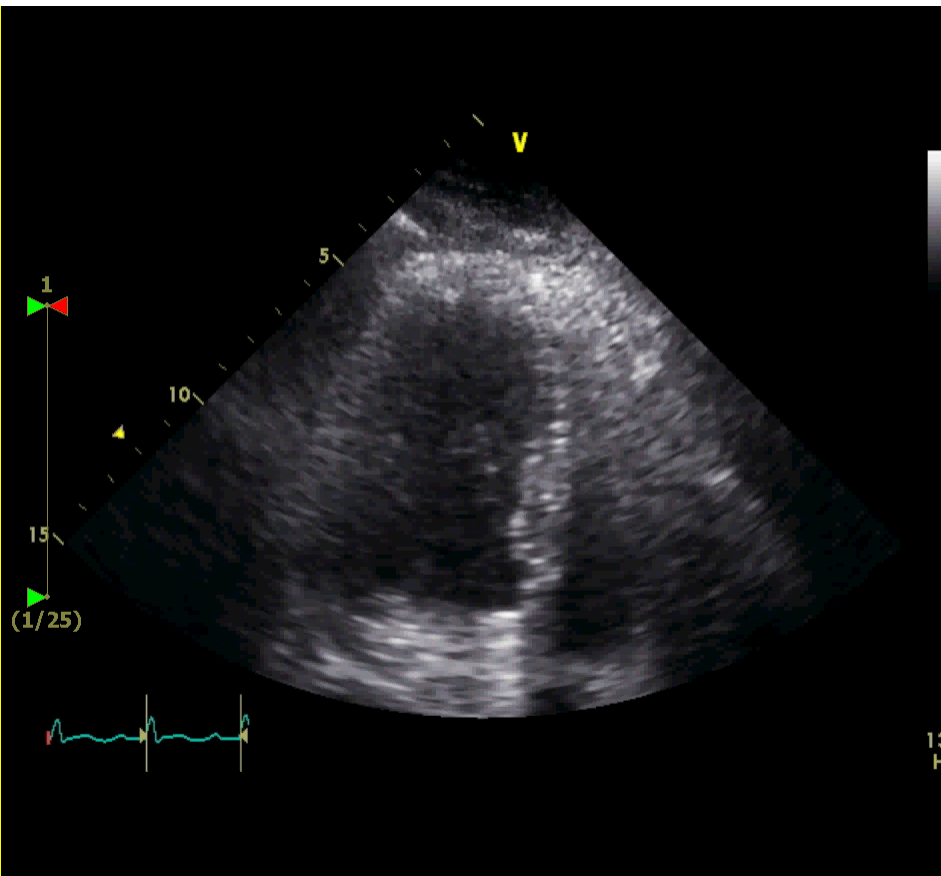
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3hrs later, Cardiac arrest

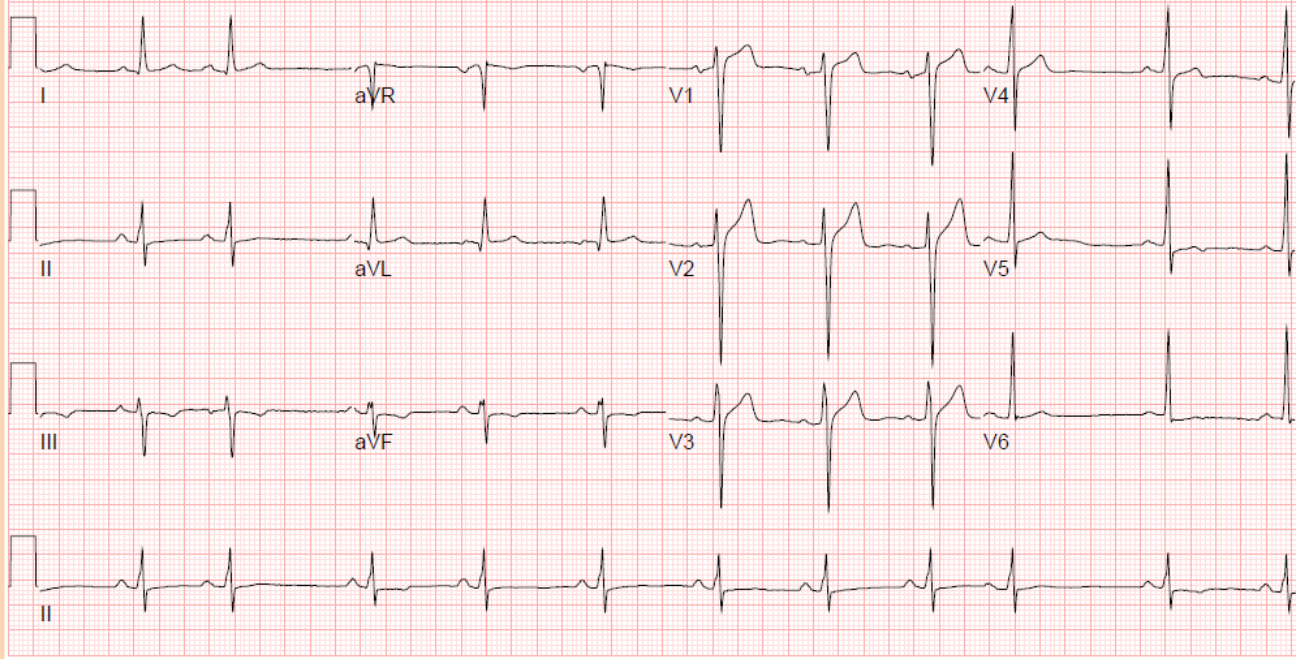




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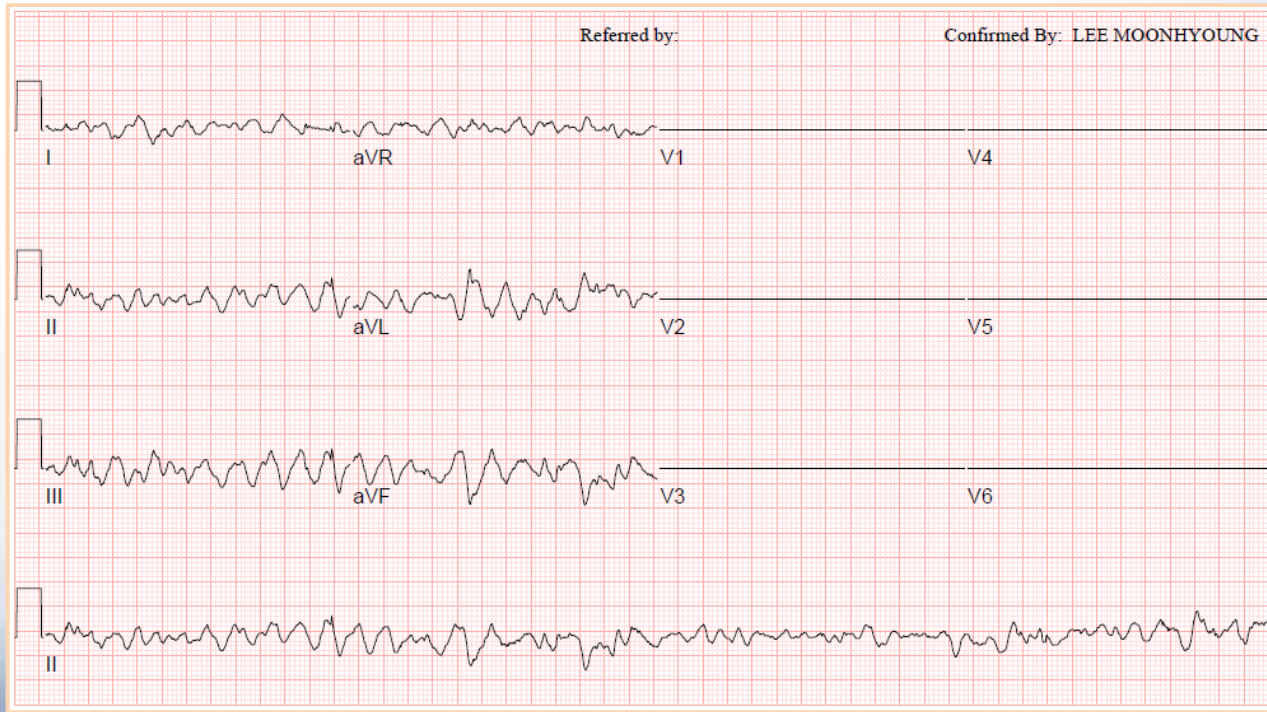
Confirmed By: MOONHYOUNG LEE



Baseline

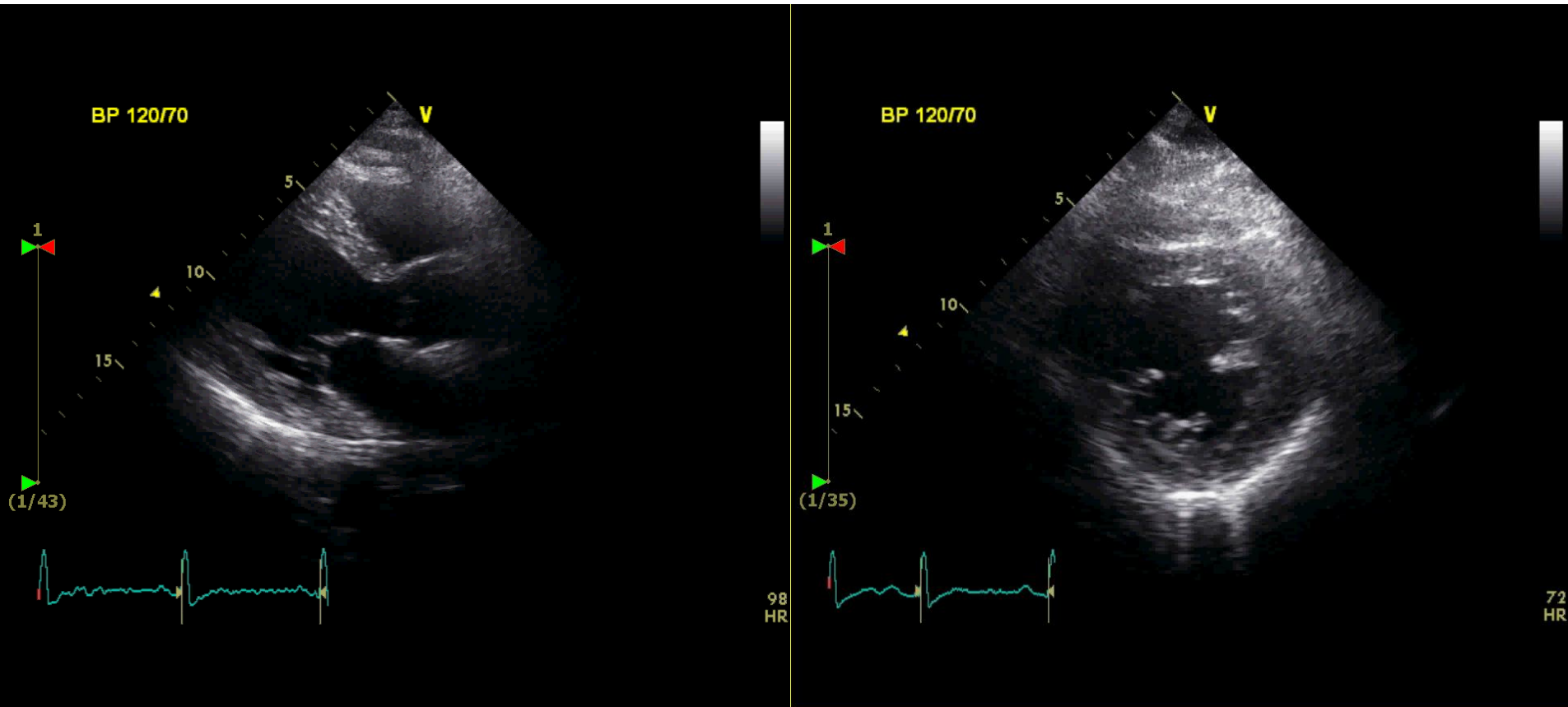
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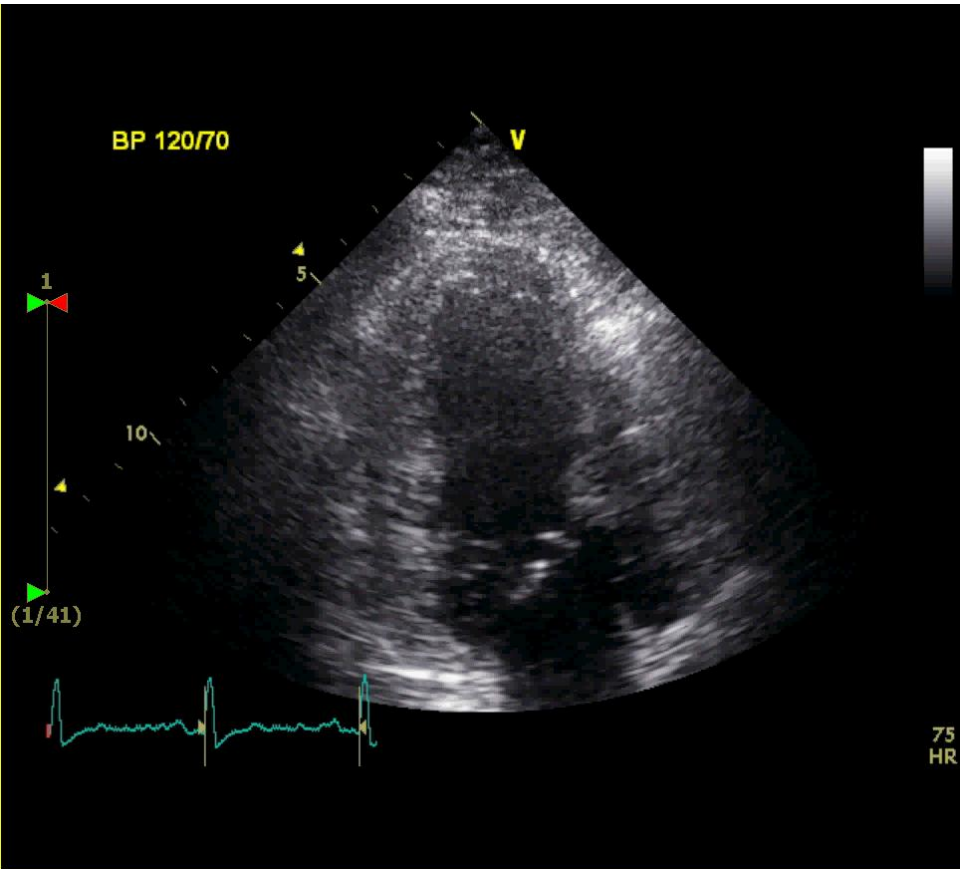
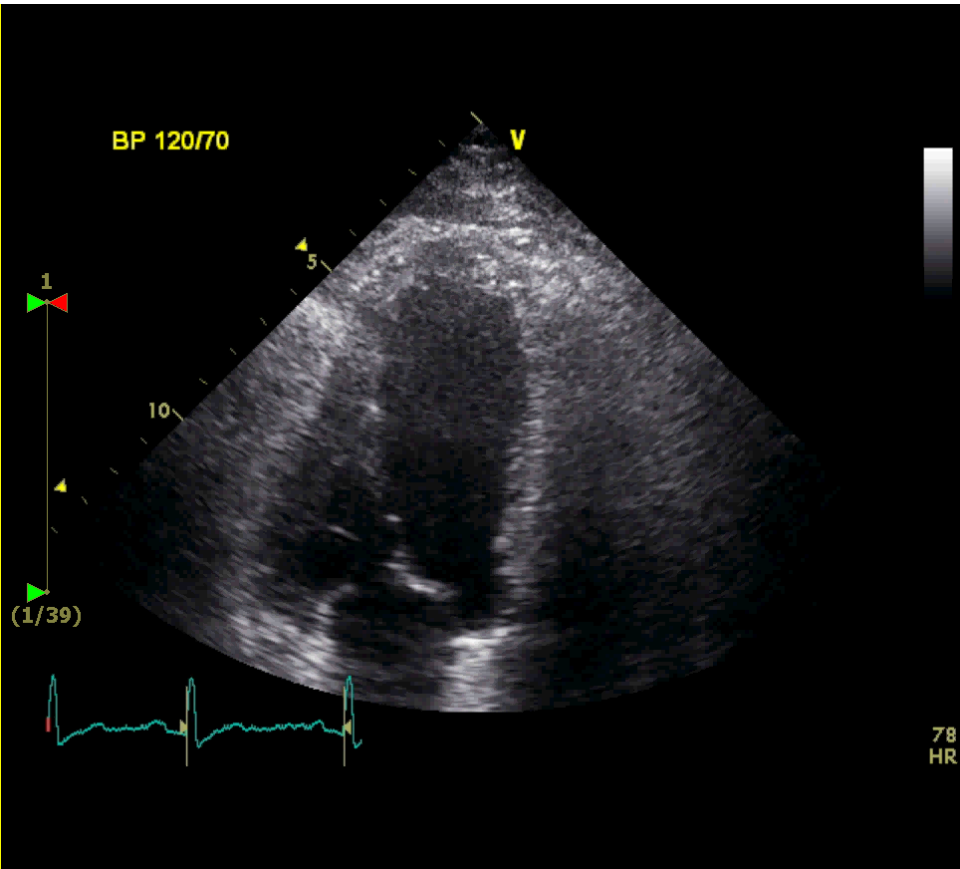
Confirmed By: LEE MOONHYOUNG



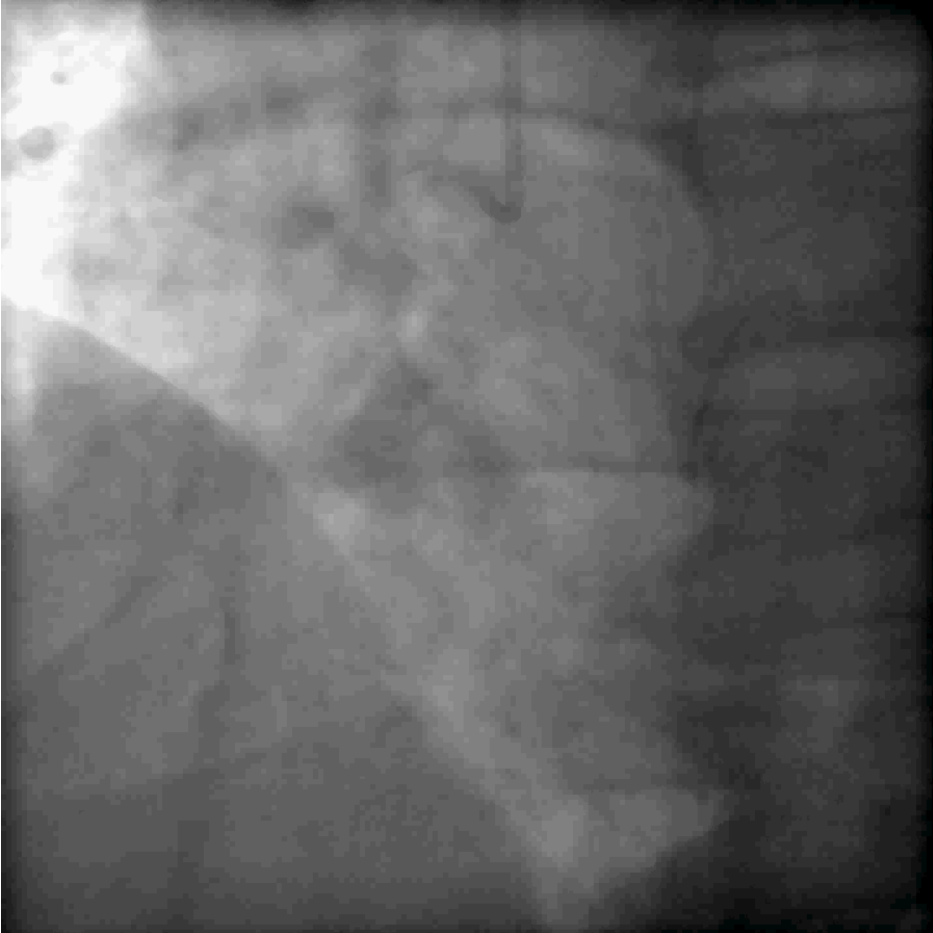
Chest pain

3days later, Recovered





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Nearly normal coronary artery

RCA spasm



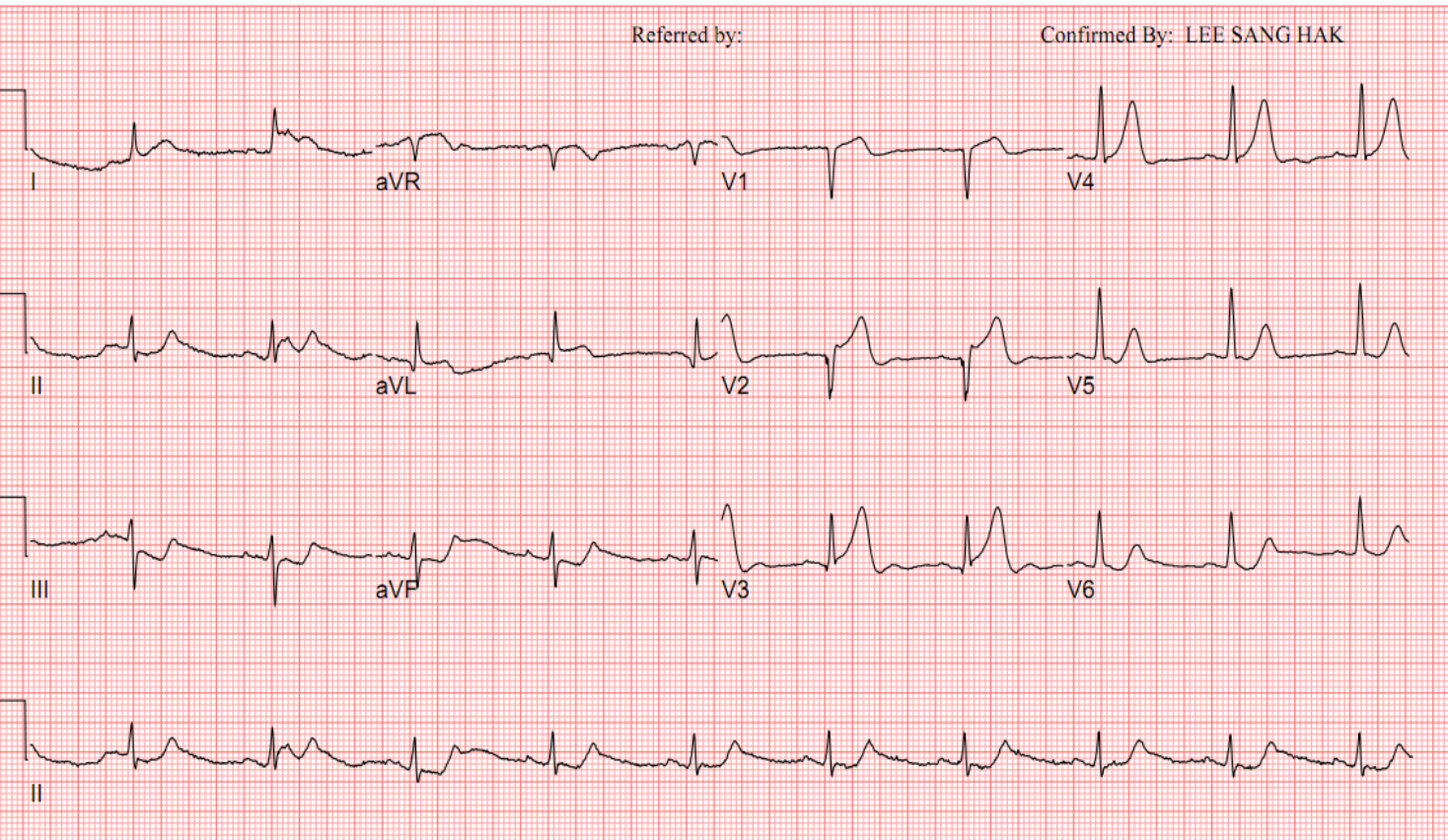
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Echo: Excellence

- Easy accessibility (bedside)
- Portability
- Repeatability
- Hemodynamic assessment
- High temporal resolution
- No radiation hazard

M/62, Chest pain

#Coronary artery disease



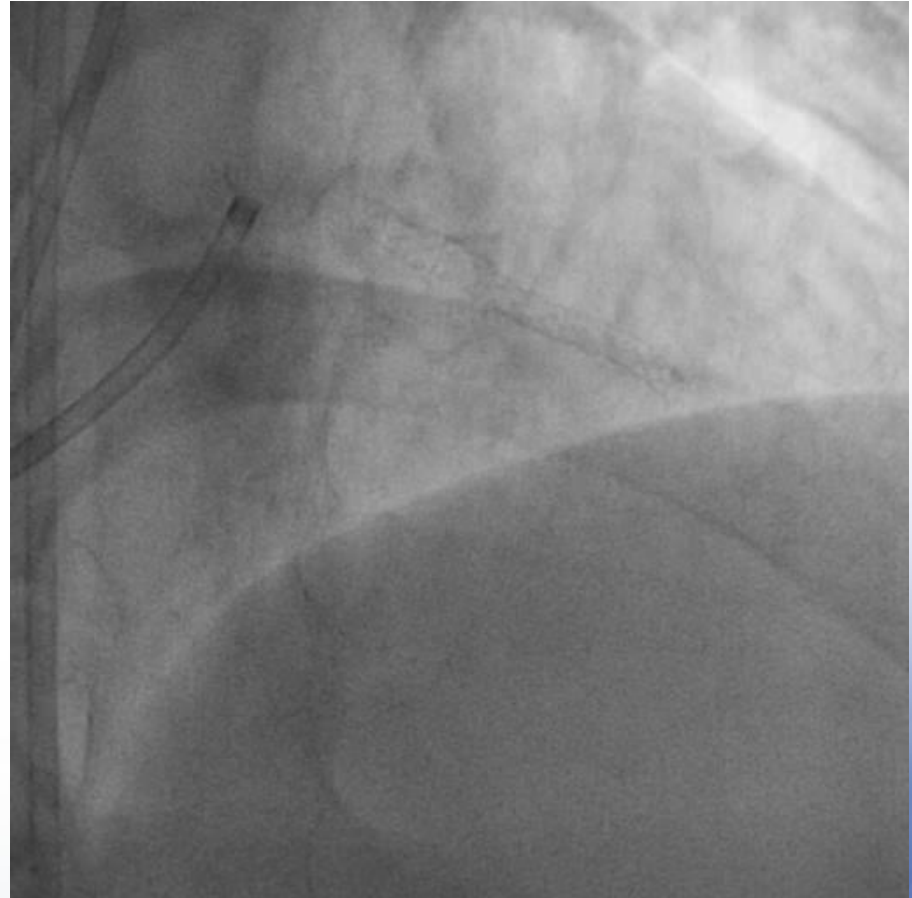
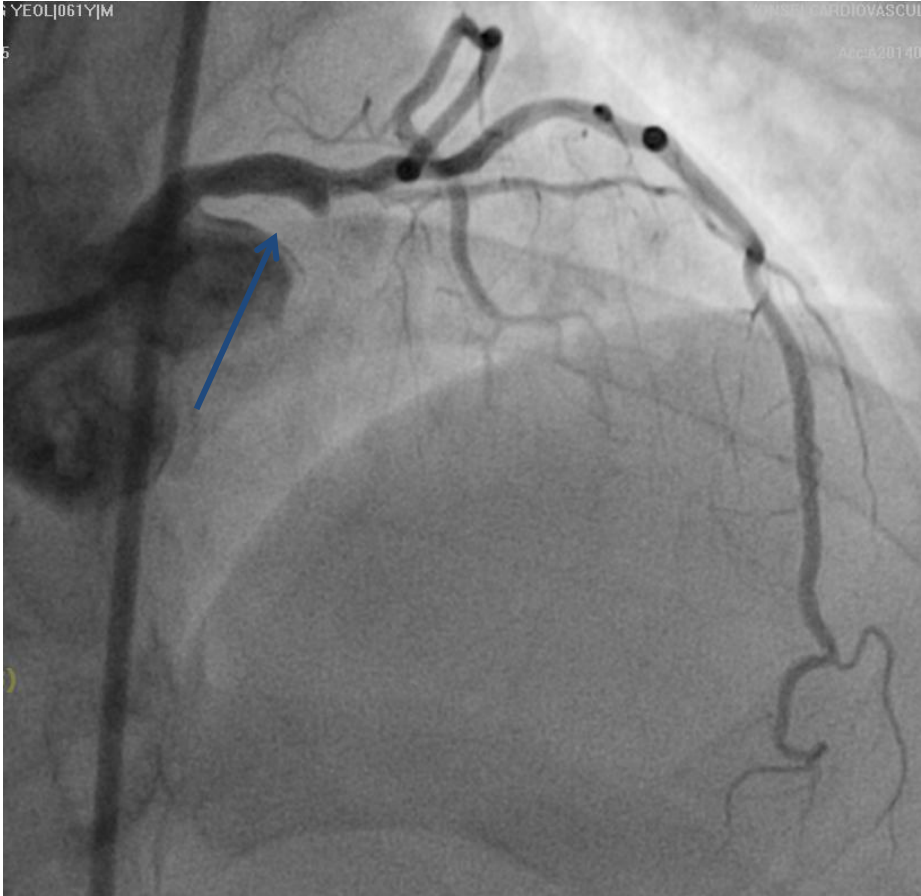
Troponin-T 0.025

CK-MB 65.9

통증강도 7(VAS)

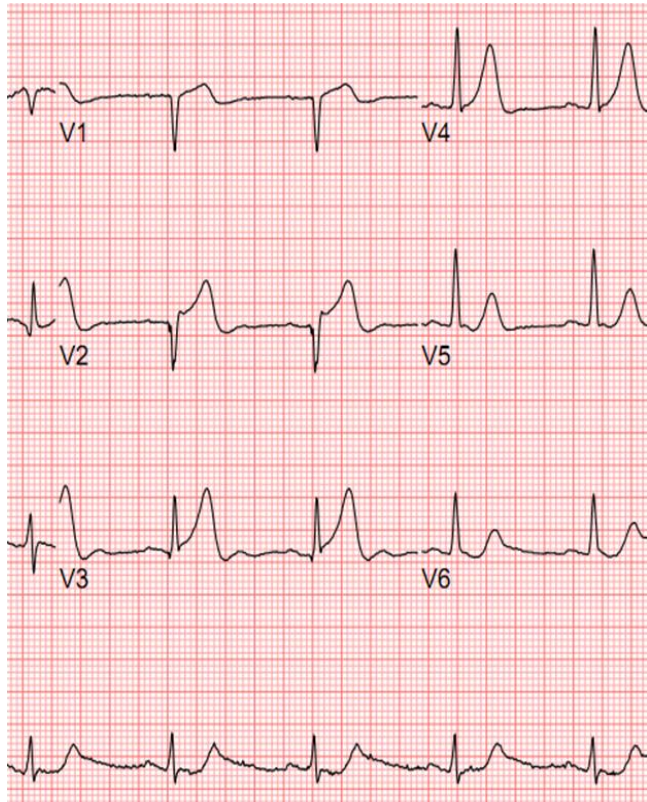
**STEMI (V2~4): S/P Direct PTCA with stent at p-LAD
(Door to balloon time 20분)**

Coronary angiography

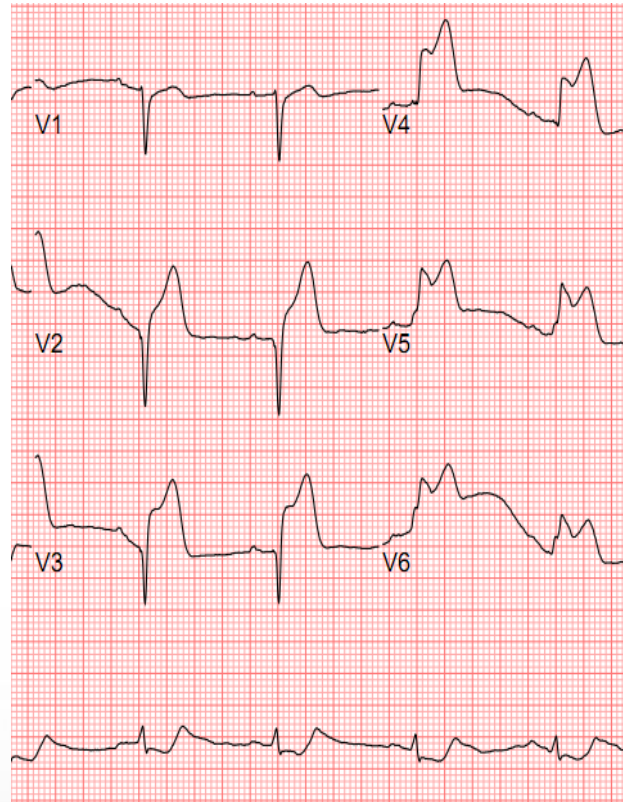


**S/P Direct PTCA with stent at p-LAD(Biomatrix flex)
(Door to balloon time 20분)**

1 hour later, PEA arrest



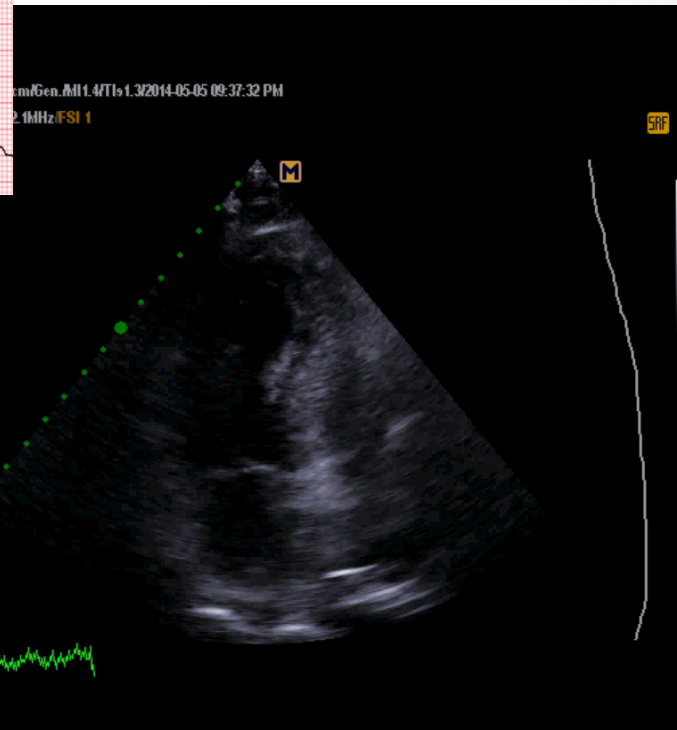
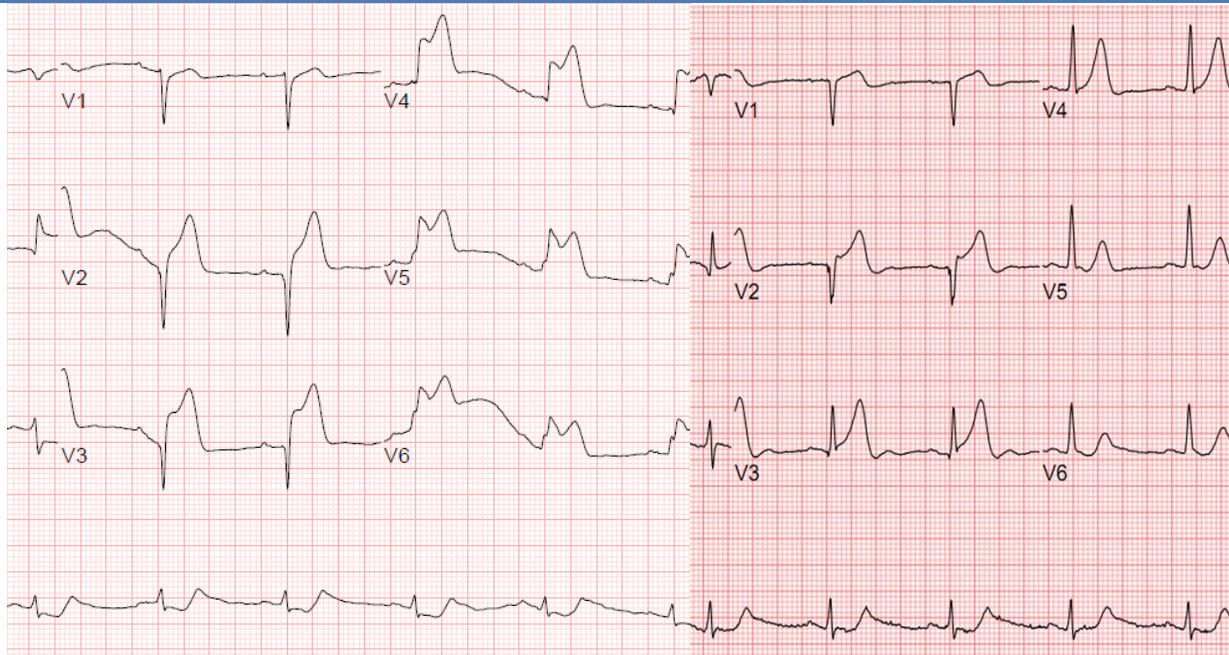
ER(pre PTCA)



CCU(post PTCA)

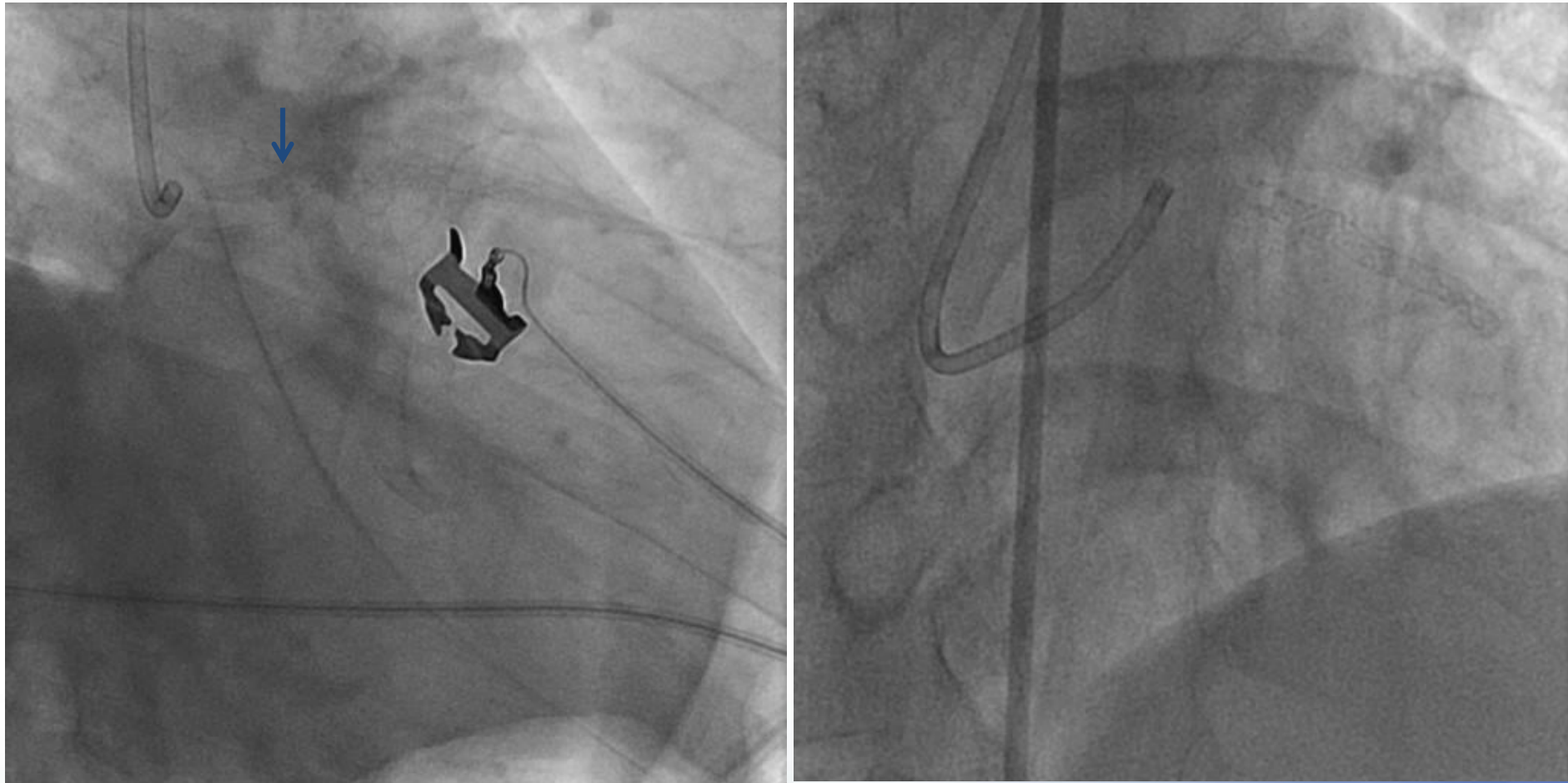
- 17:47 PTCA
- 17:59 CCU Adm
- 18:00 Chest pain (NPIS: 5, 쑤심) morphine 2mg
- 18:05 Chest pain (NPIS: 5, 쑤심) morphine 3mg
- 18:10~45 Chest pain (NPIS: 5, 쑤심) observation
- 18:50 Chest pain (NPIS: 5, 쑤심) morphine 3mg
- 18:55 HR 30BPM
- 18:56 PEA

Baseline?!



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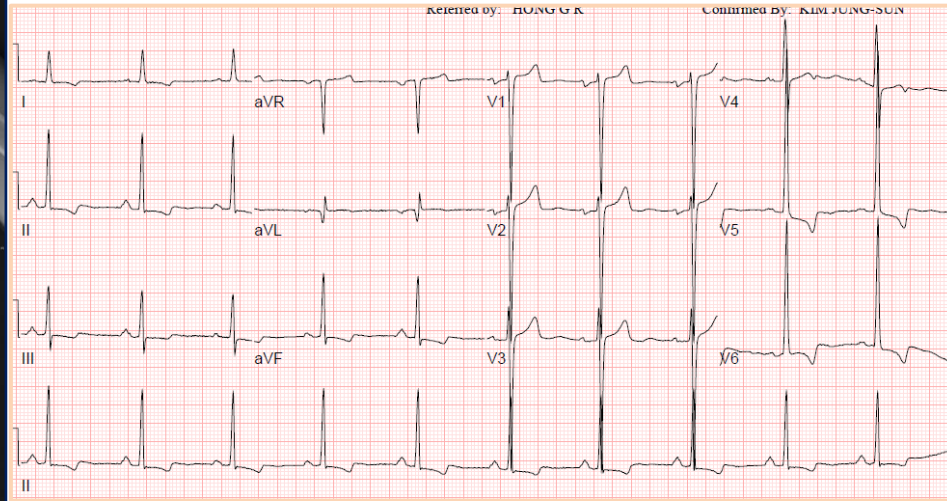
Coronary angio (1hr)



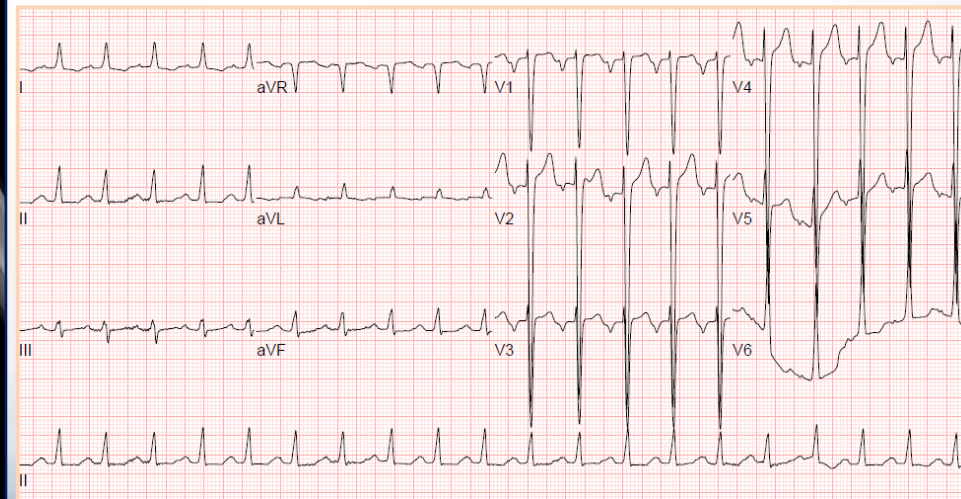
**Acute stent thrombosis: Aspiration and ballooning
→ Importance of monitoring**

M/84, Dyspnea, Chest pain

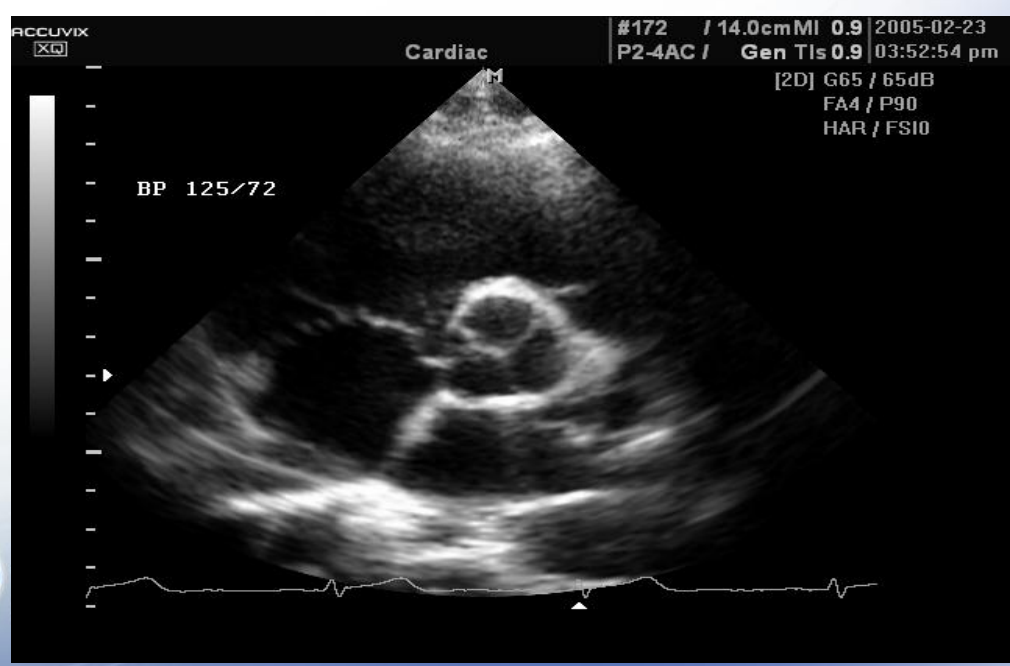
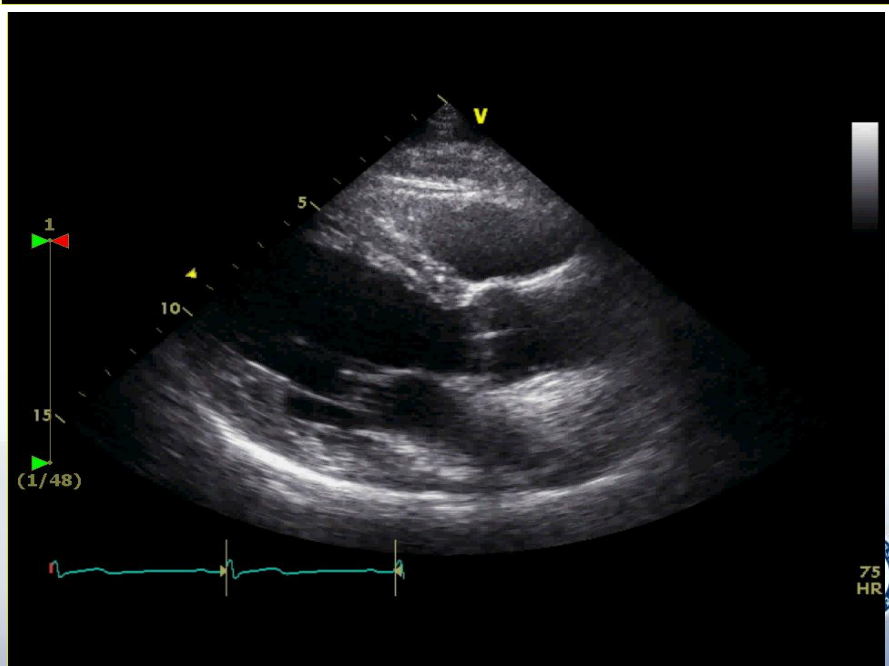
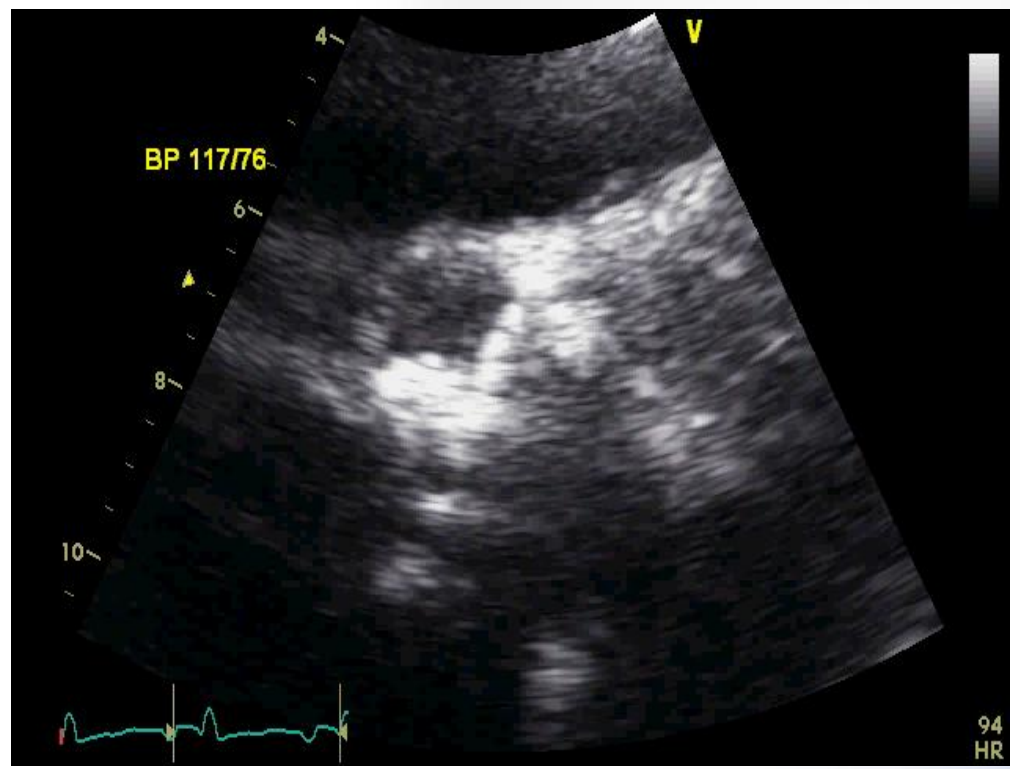
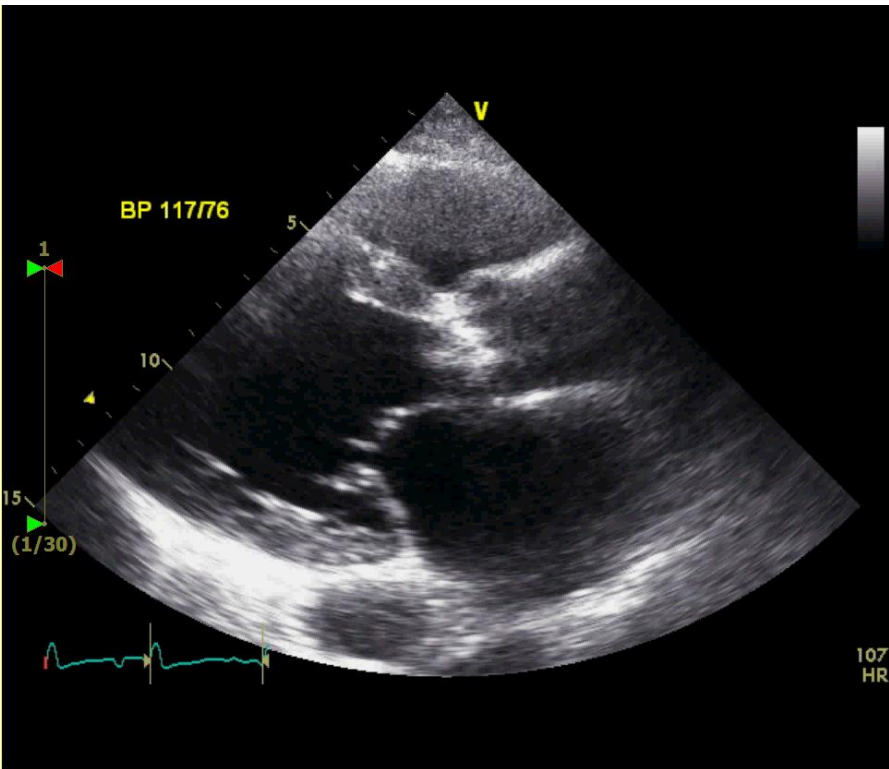
#Valvular heart disease



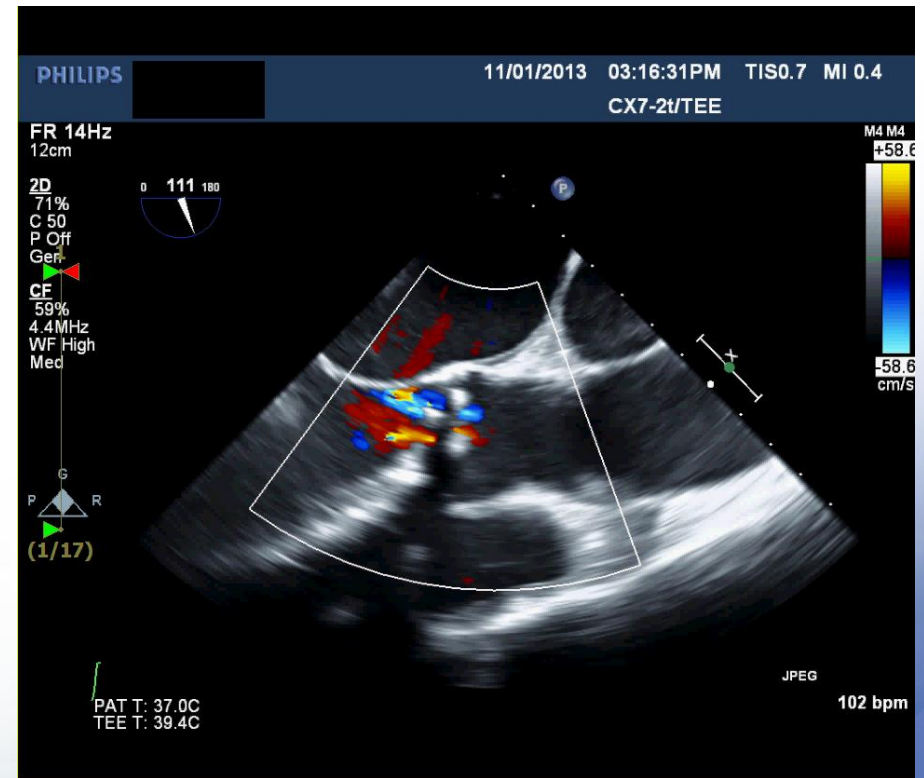
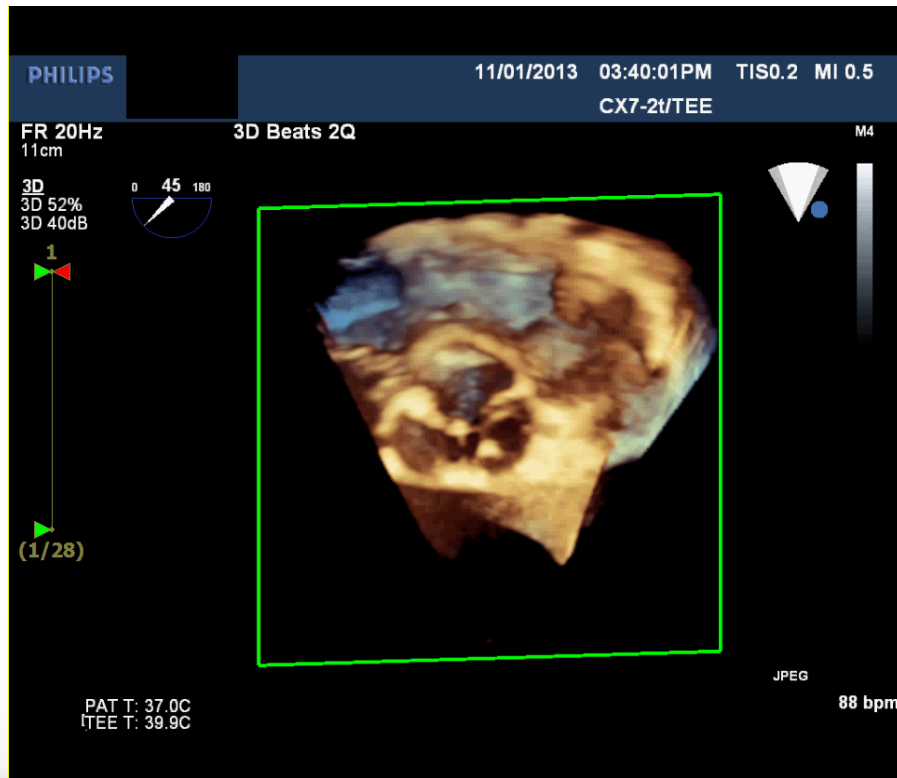
Severe AS
TAVR 예정
시술 연기

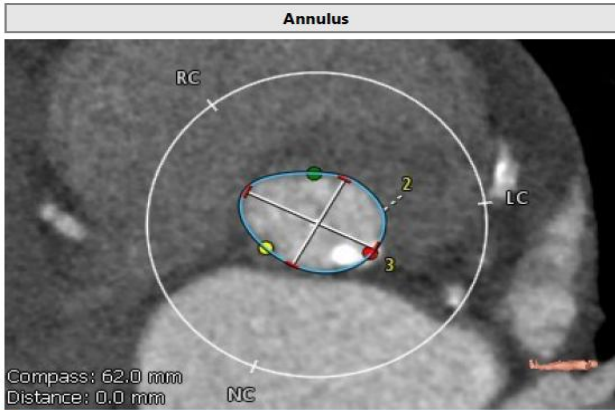


6개월 후
ER
CCU 입원



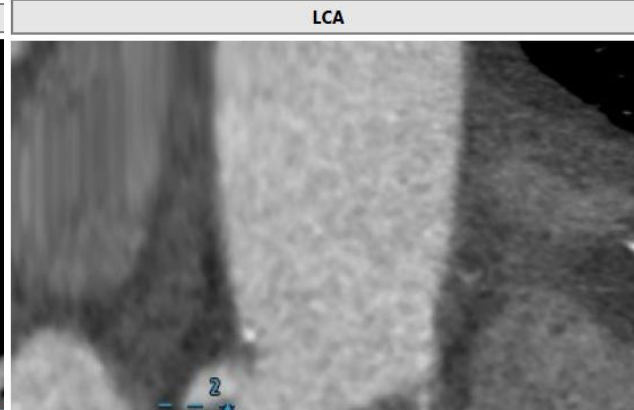
Pre evaluation: TEE, CT



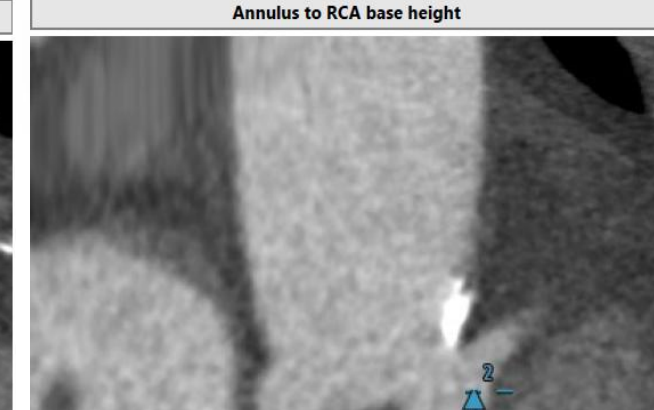


ID Type	Label	Value
2 Polygon	Area derived Ø	22.7 mm
	Perimeter derived Ø	23.2 mm
	Area	405.0 mm ²
	Perimeter	73.0 mm
3 Distance (Min/Max)	Min. Ø	19.8 mm
	Max. Ø	26.0 mm

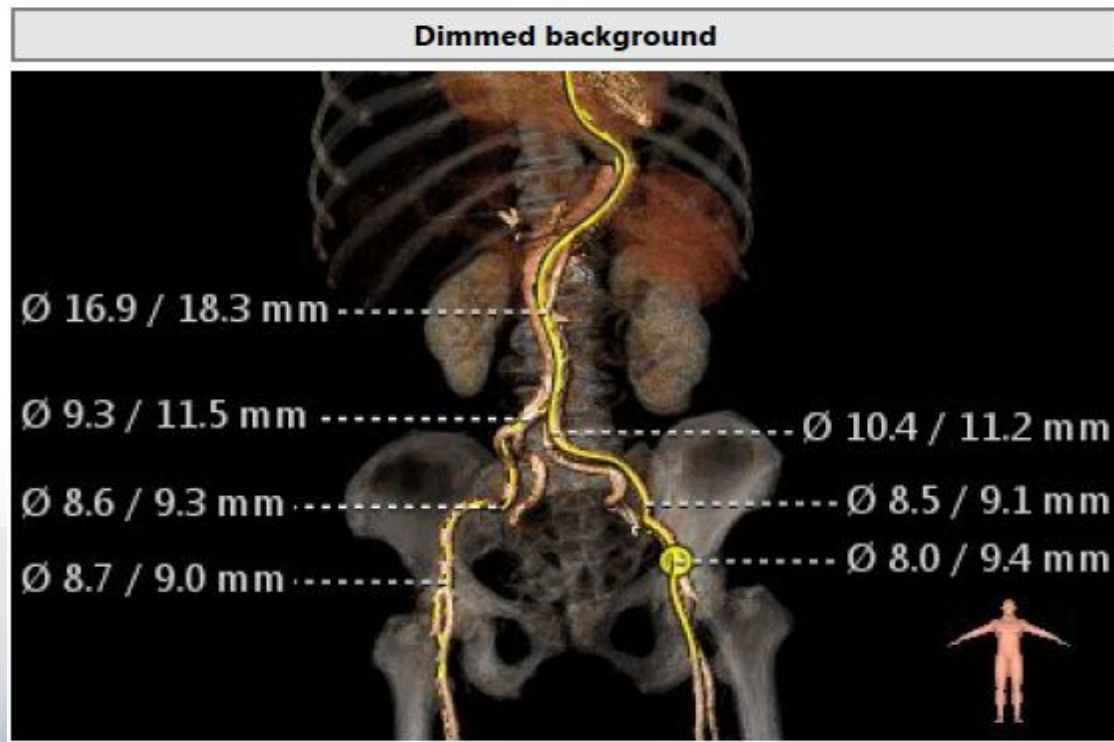
Sizing chart 23/25mm



ID Type	Label	Value
2 Vessel Length	Annulus to Left Coronary Ostium	12.2 mm



ID Type	Label	Value
2 Vessel Length	Annulus to Right Coronary Ostium	13.5 mm

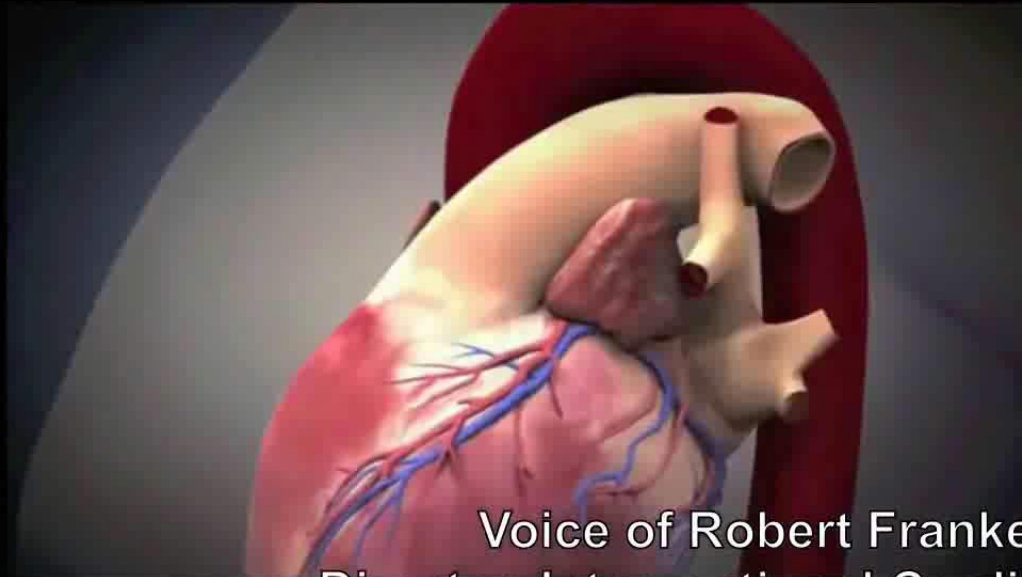


Aorta CT



Peripheral artery CT



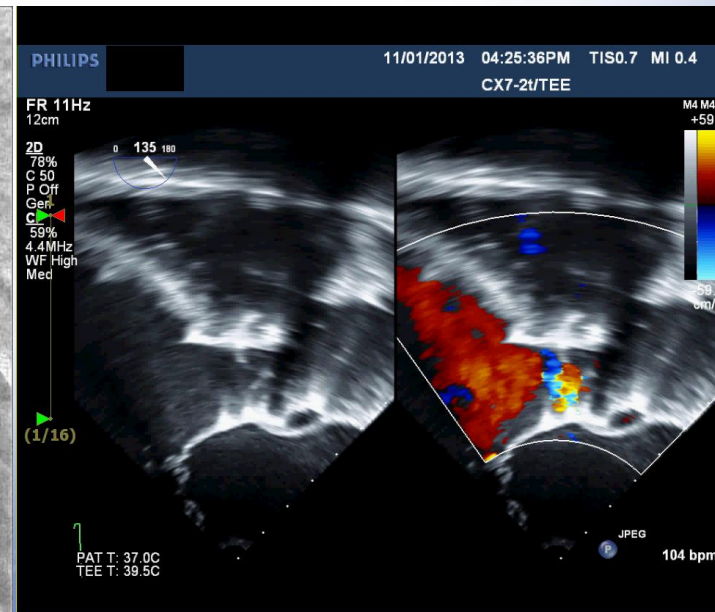
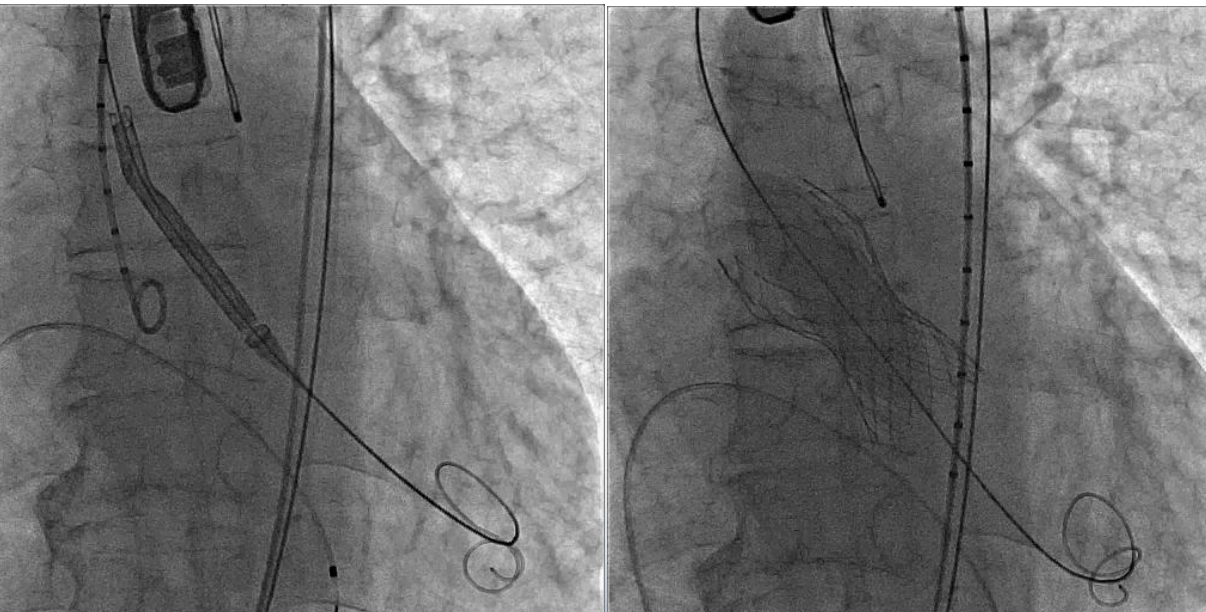
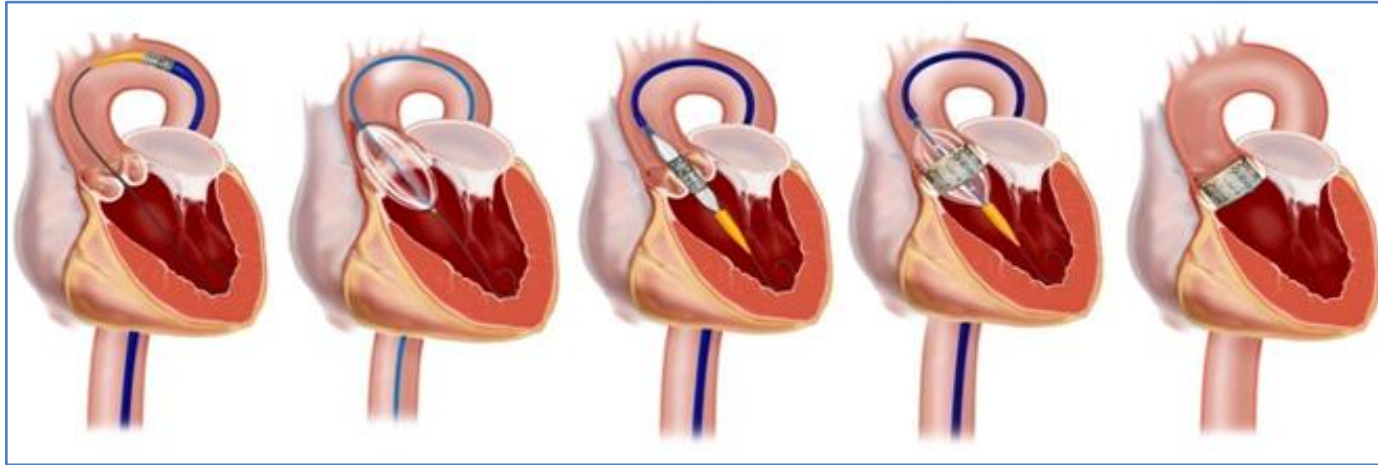


Voice of Robert Frankel, MD
Director, Interventional Cardiology

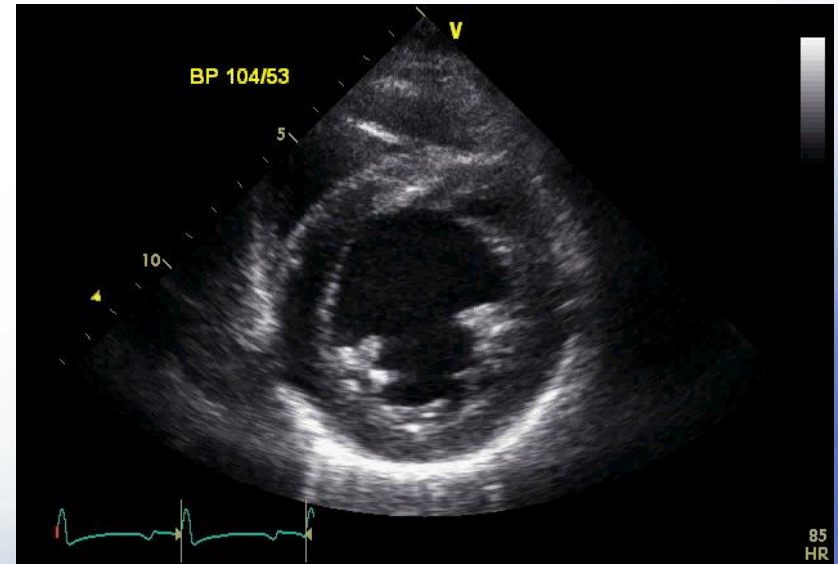
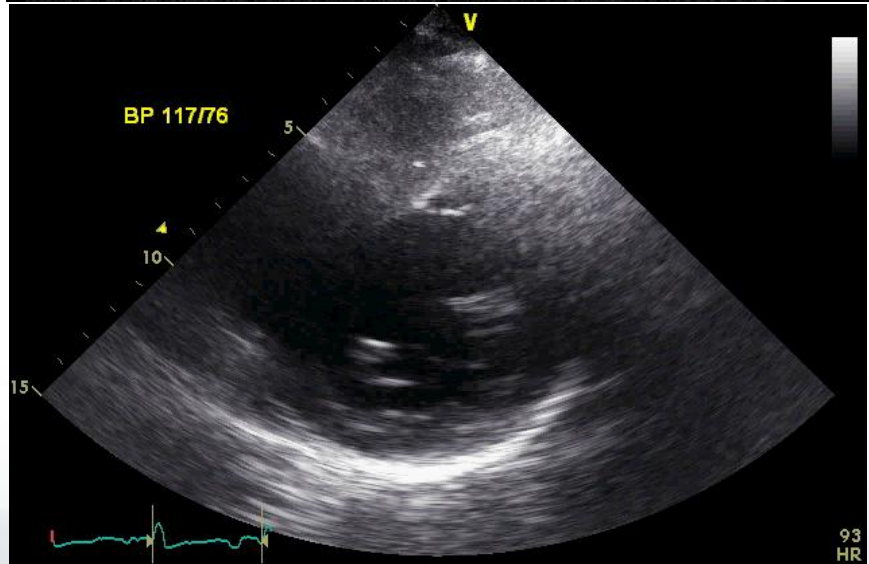
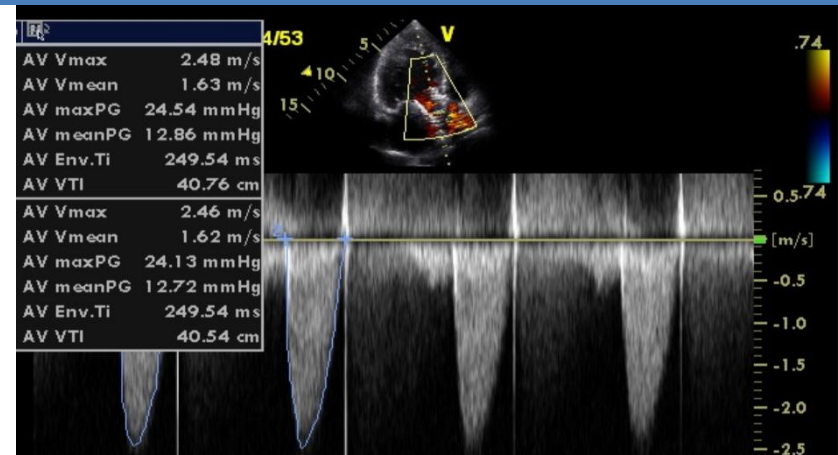
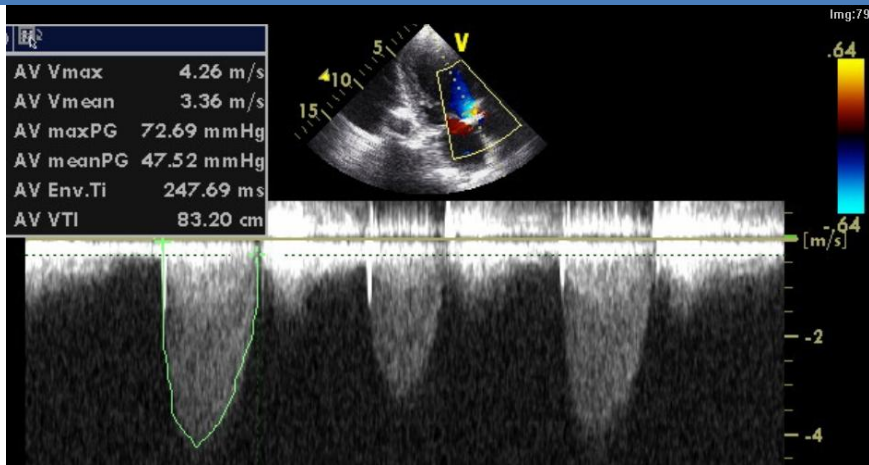


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TAVR guided by TEE



Successful TAVR



Before TAVR



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After TAVR

M/72, AF, Recurrent stroke

#Arrhythmia(AF)

'04 Lacunar infarction

'11.11 Lt basal ganglia infarction

'11.12 Both middle artery infarction, mental change (본원, ER)

AF (warfarin 2.5mg, INR 1.3, Pradaxa 150mg 2회/일)

'12.3 S/P DC cardioversion,

'12.6 S/P RFA

'15.1 CVA->TIA

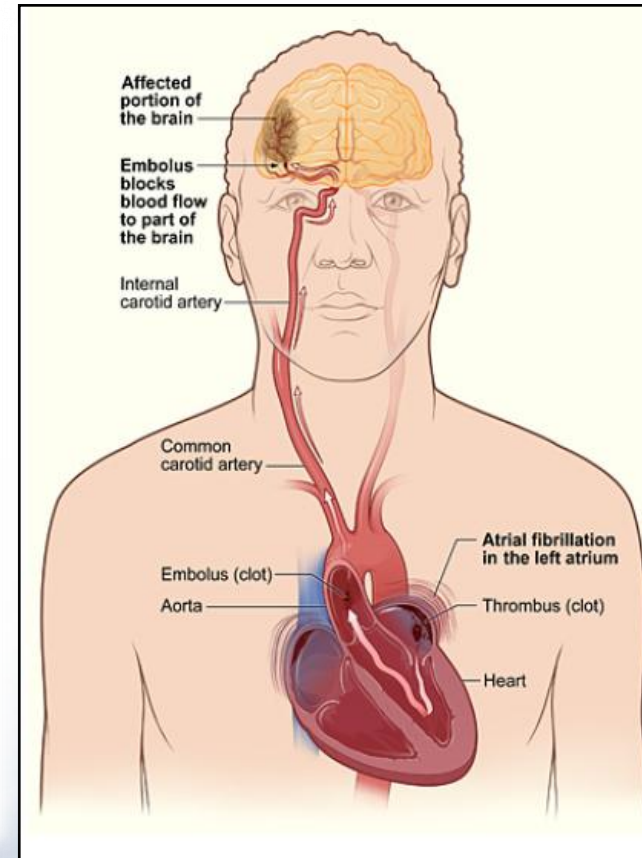
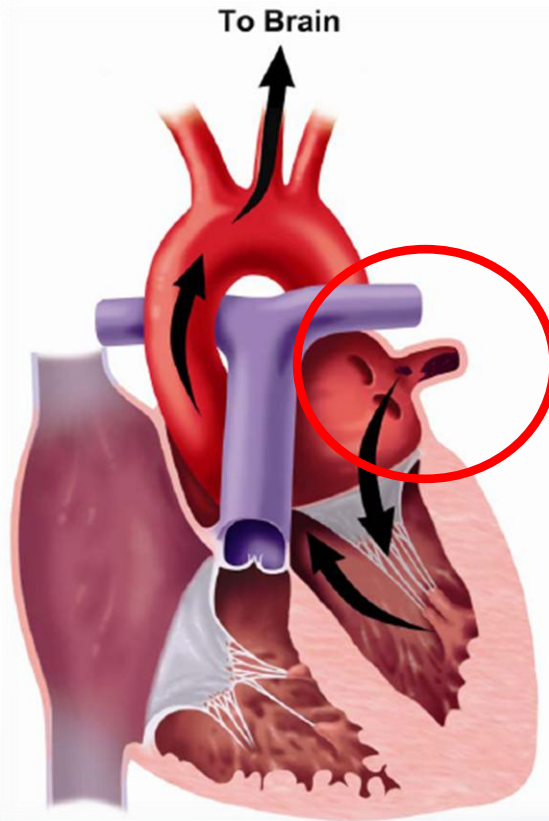
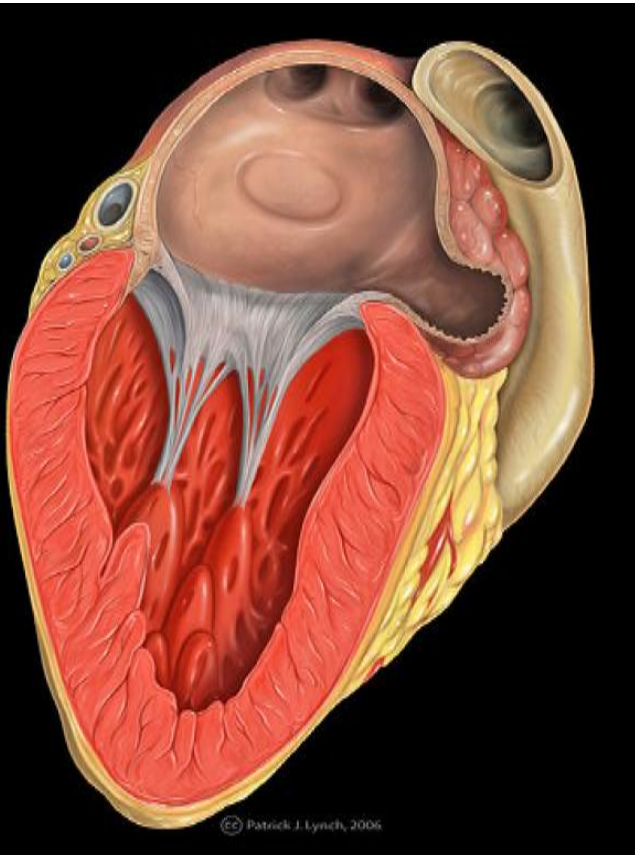
CHA2DS2-VASc Score for Atrial Fibrillation Stroke Risk: 4

HAS-BLED Score for Major Bleeding Risk: 4

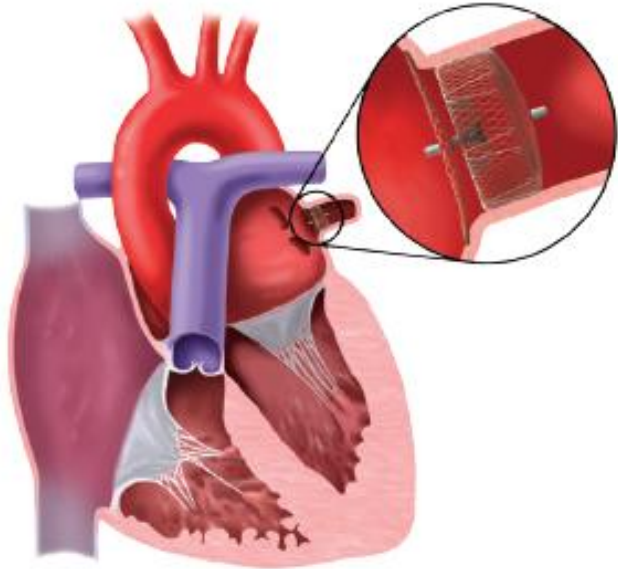
'15.2 WATCHMAN intervention



LAA clot & Stroke

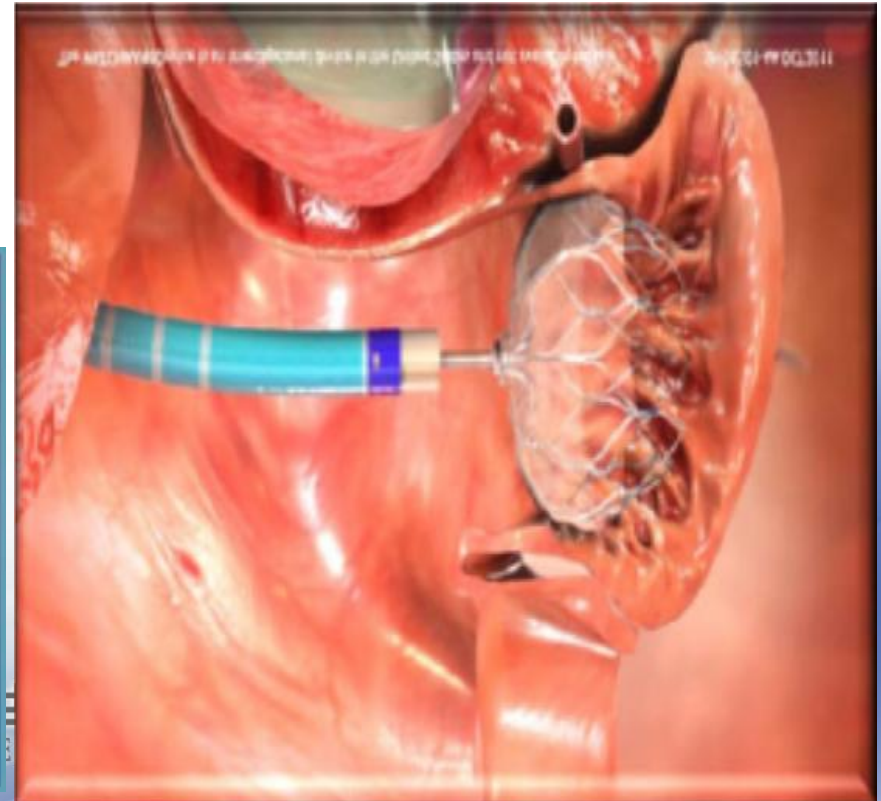
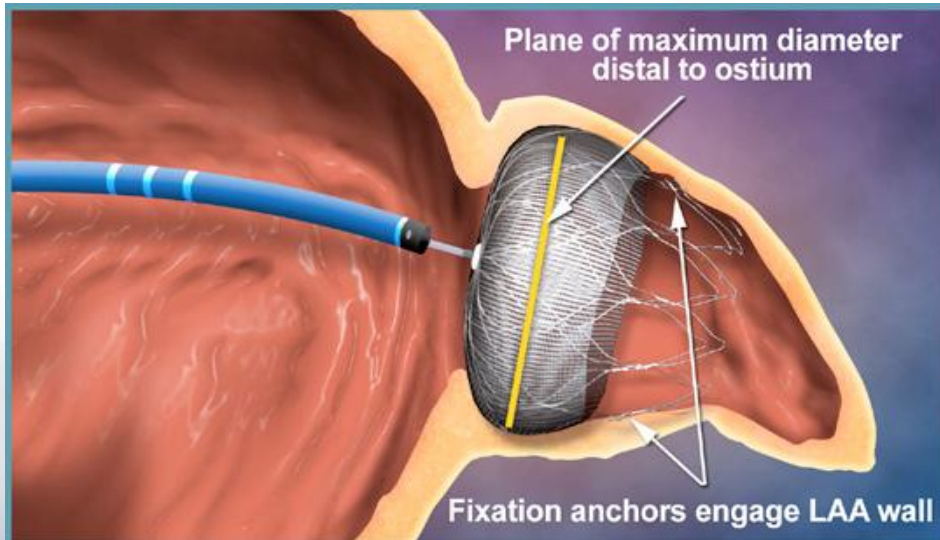


LAA occlusion-Watchman

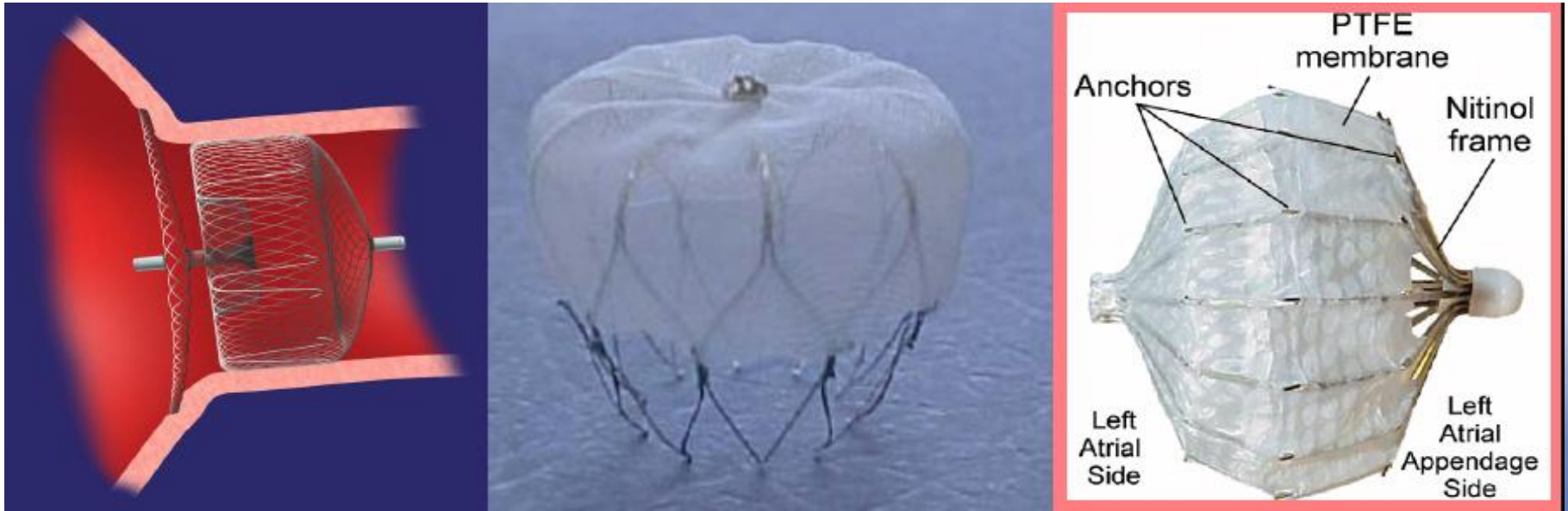


❖ Indication

- Chronic AF
- Stroke
- Anticoagulation complication



LAA occluder device





The WATCHMAN®Device is an investigational device in the United States and not available for sale

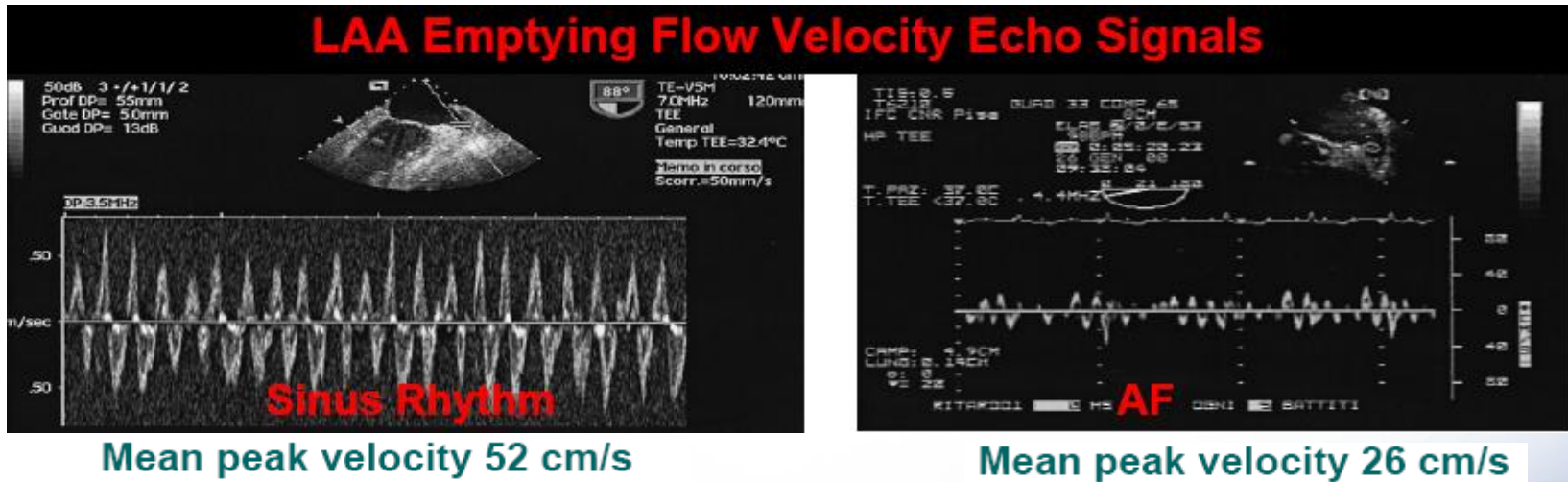
SH-36501-AB JAN2012



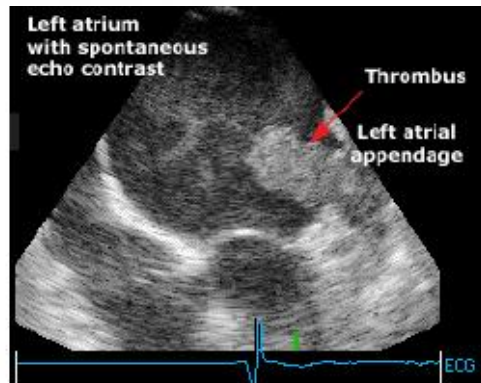
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Pre evaluation: TEE, CT

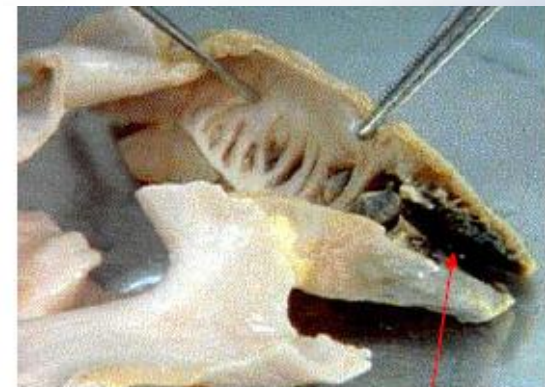
LAA swirling, velocity for thrombus formation



Clot in the LAA on MRI

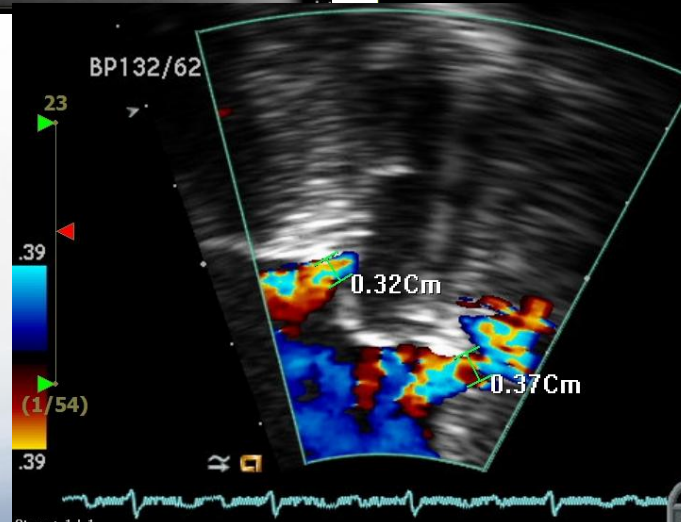
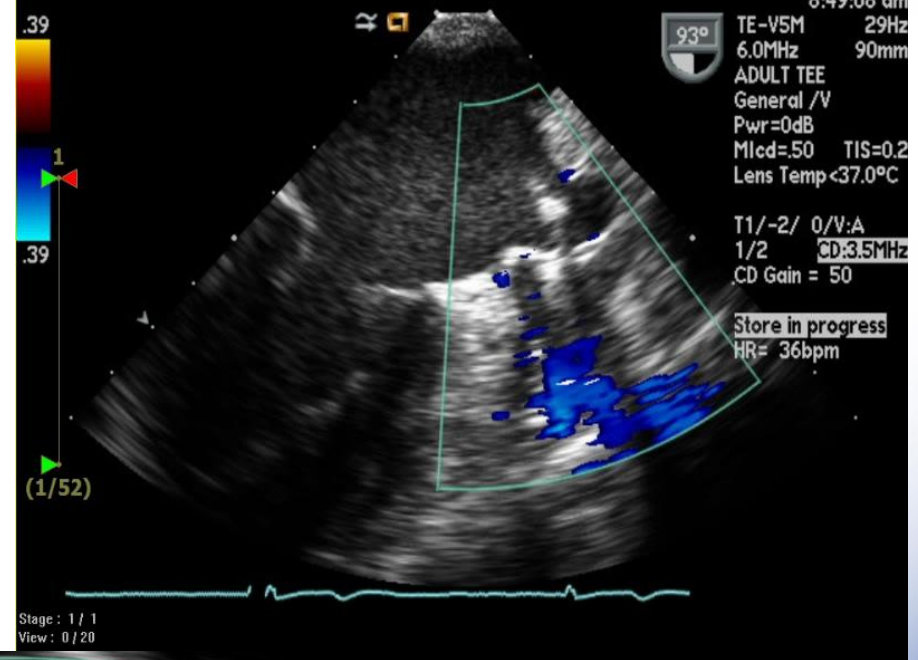


Clot in the LAA on Echo



Thrombus

Watchman implantation guided by TEE



Take Home Message

Expand Nursing Specialty...





감사합니다