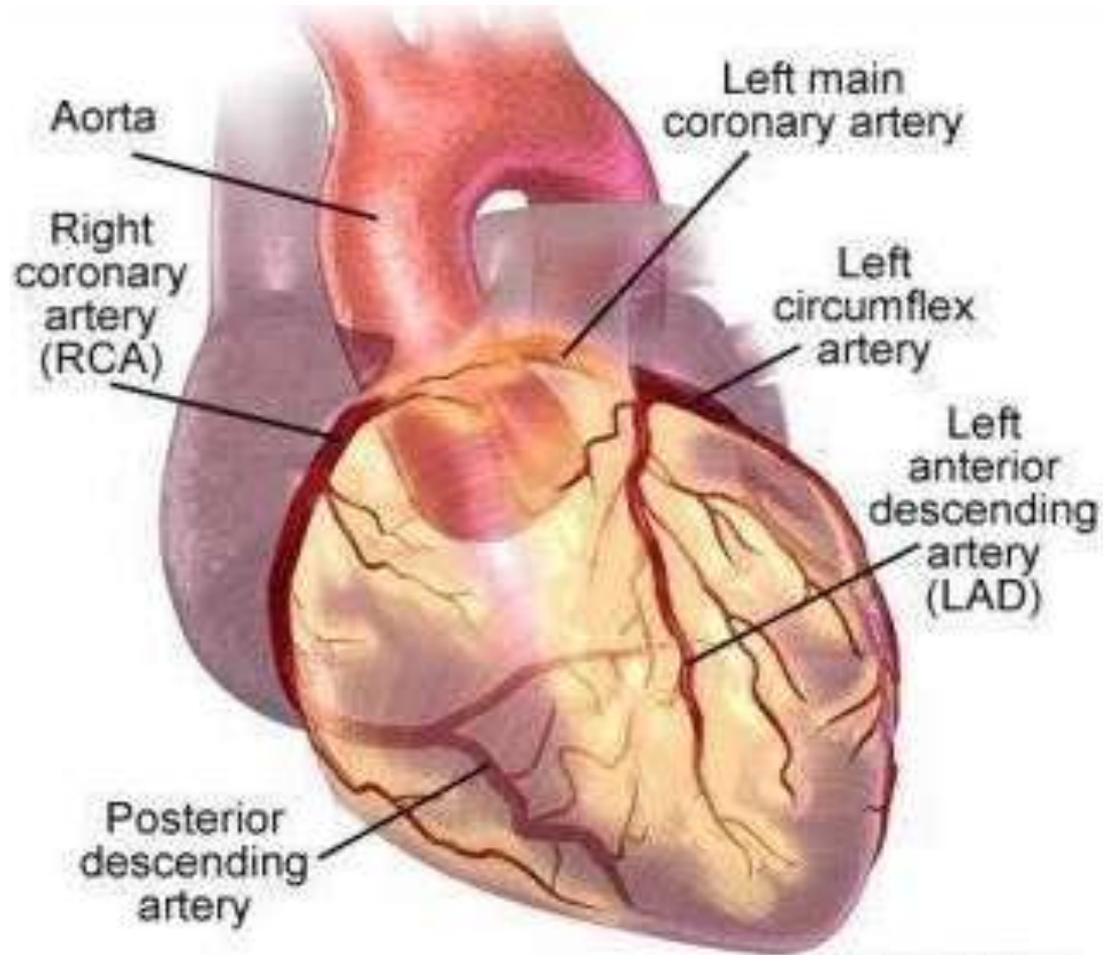


Interpretation of Coronary Angiography

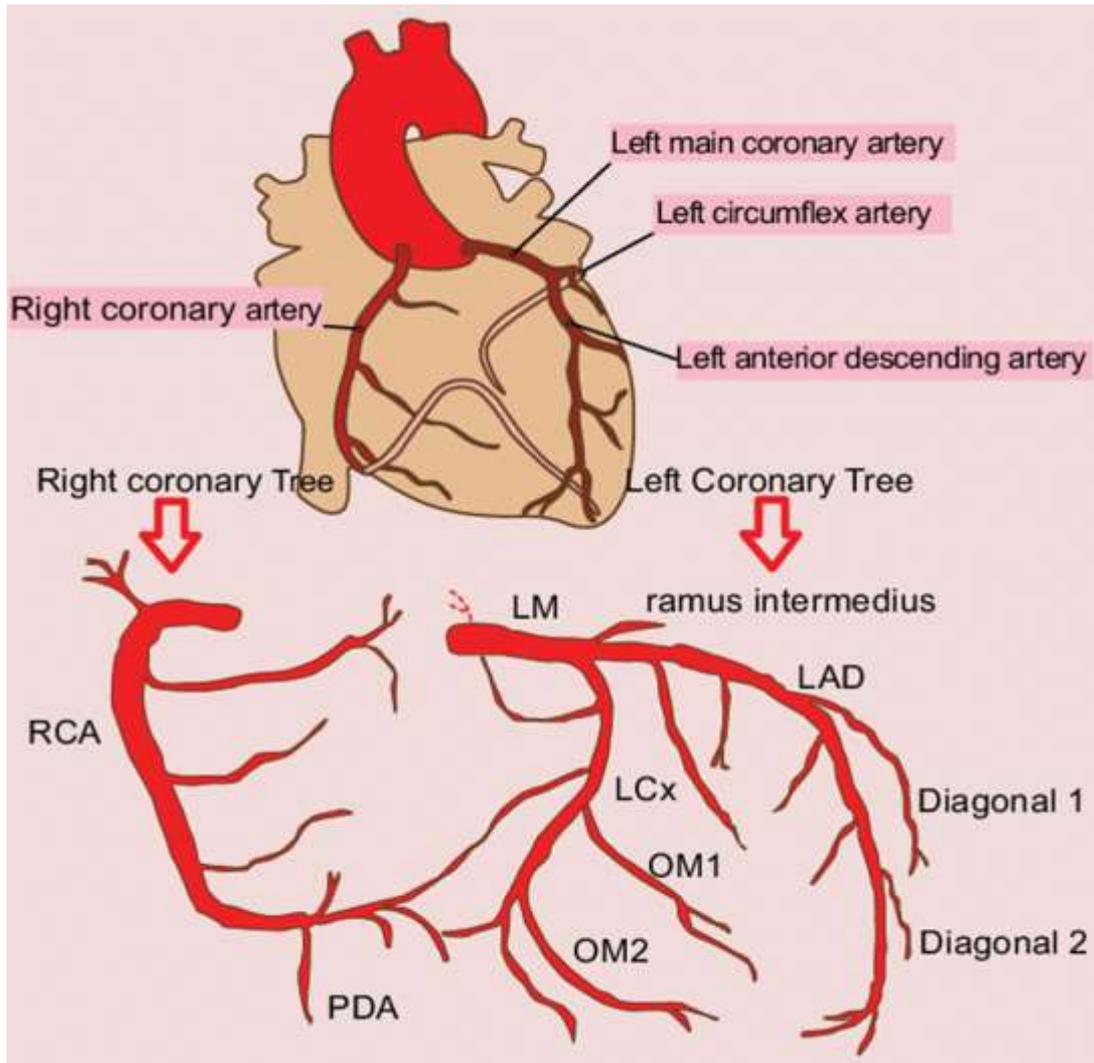


아주대학교병원 심도자실
RN, 고의영

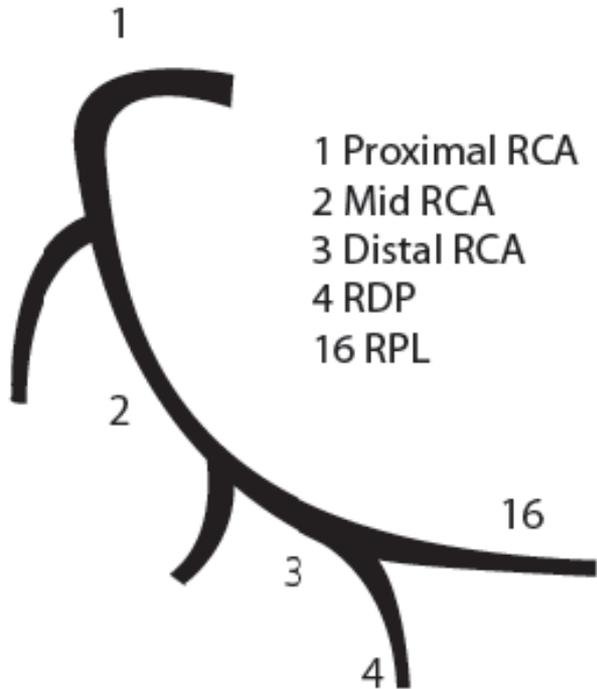
Coronary Anatomy



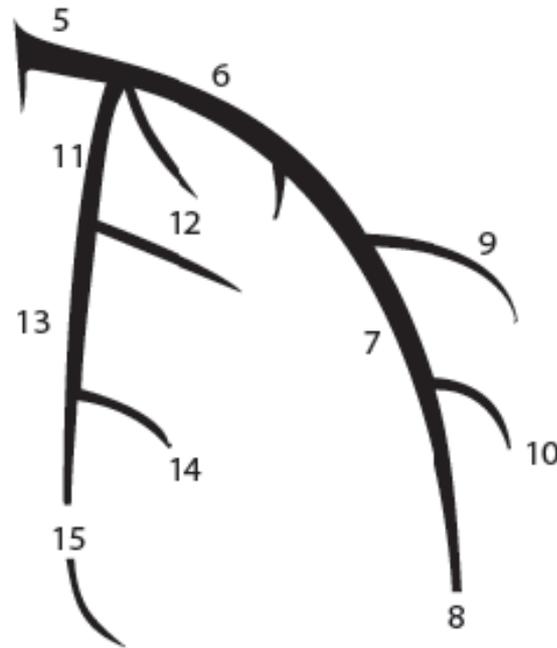
Coronary Anatomy



Coronary Anatomy

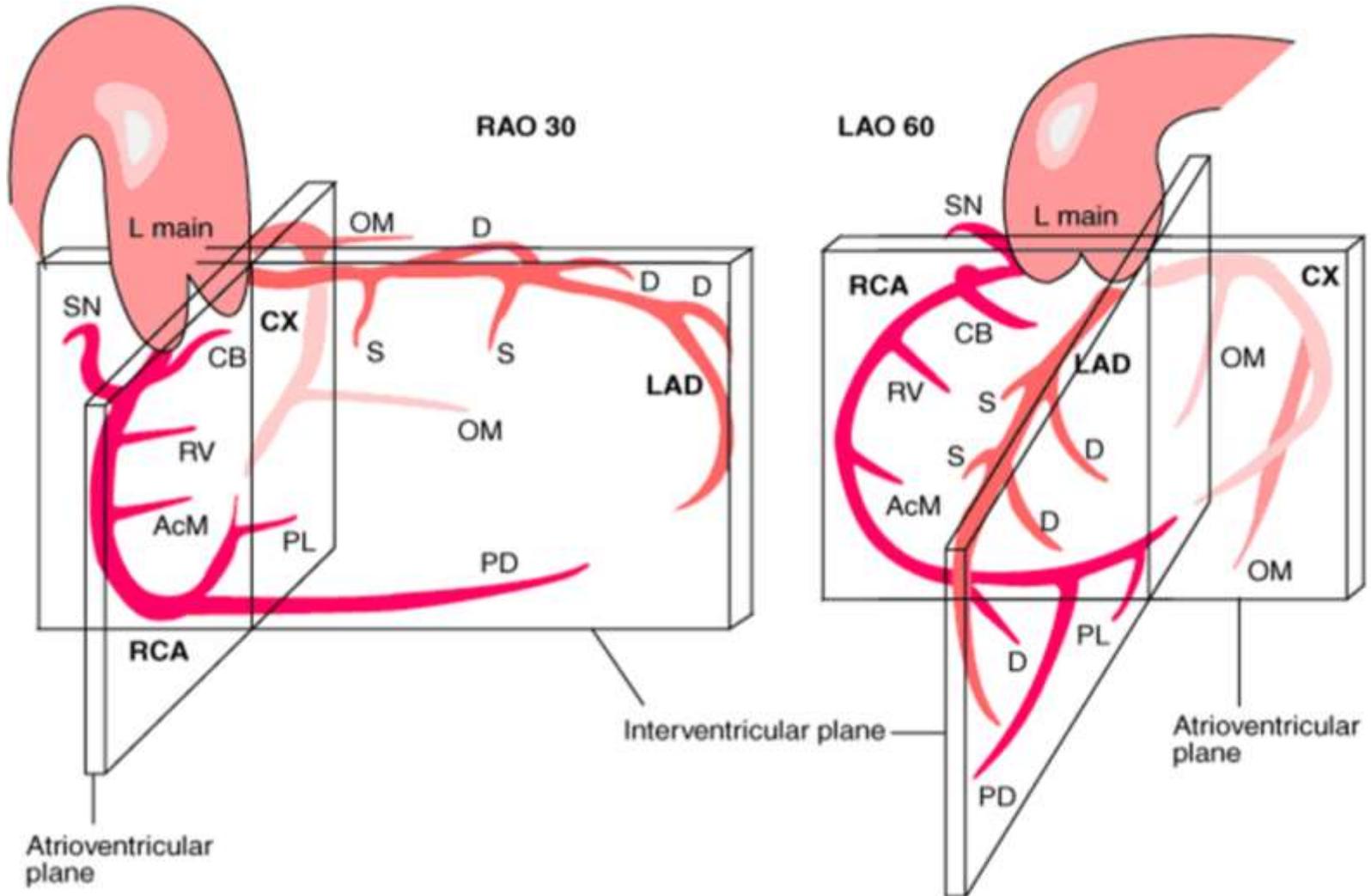


- 1 Proximal RCA
- 2 Mid RCA
- 3 Distal RCA
- 4 RDP
- 16 RPL

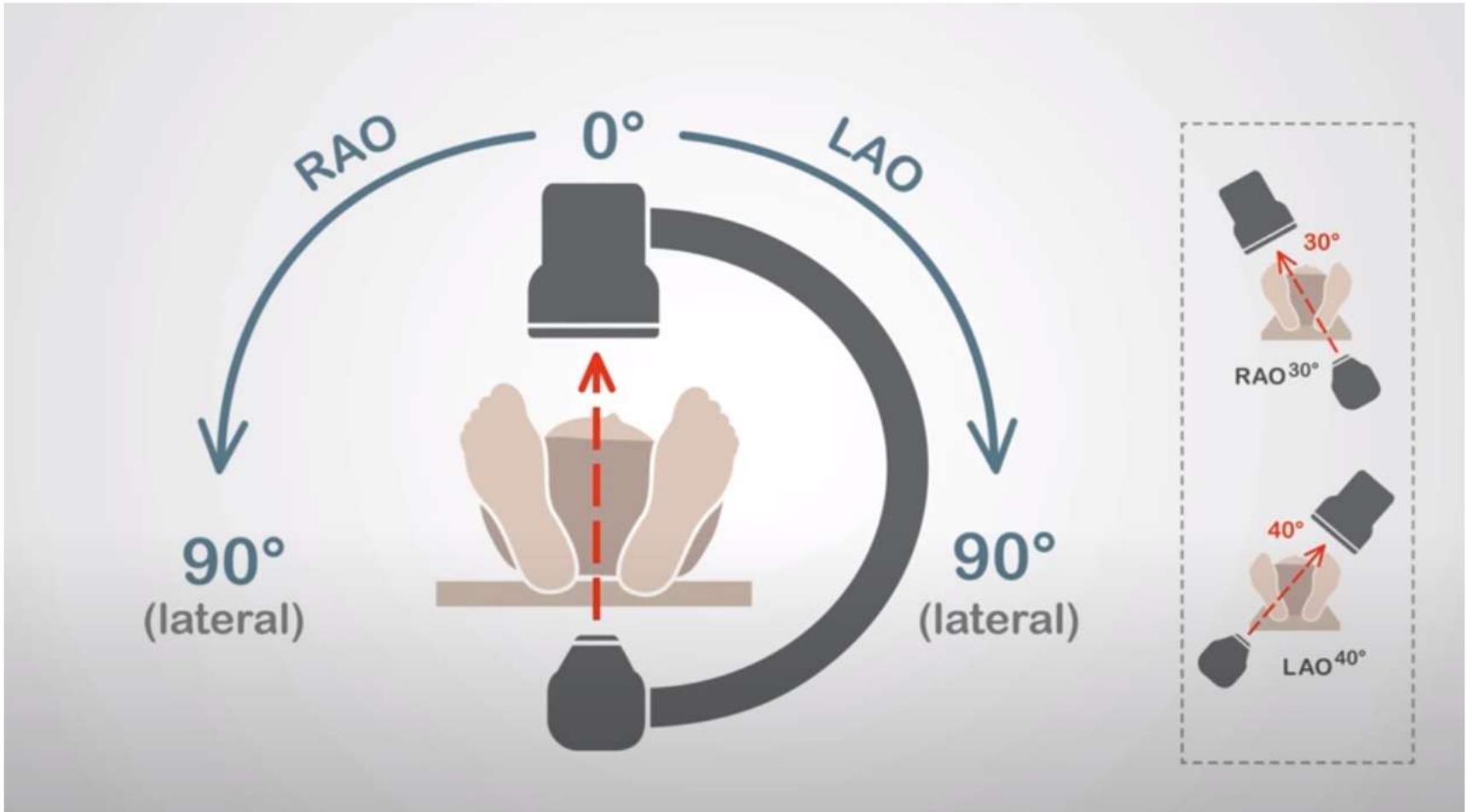


- 5 Left main
- 6 Proximal LAD
- 7 Mid LAD
- 8 Distal LAD
- 9 D1
- 10 D2
- 11 Proximal RCX
- 12 Intermediate / M1
- 13 Mid RCX
- 14 MO2
- 15 MO3

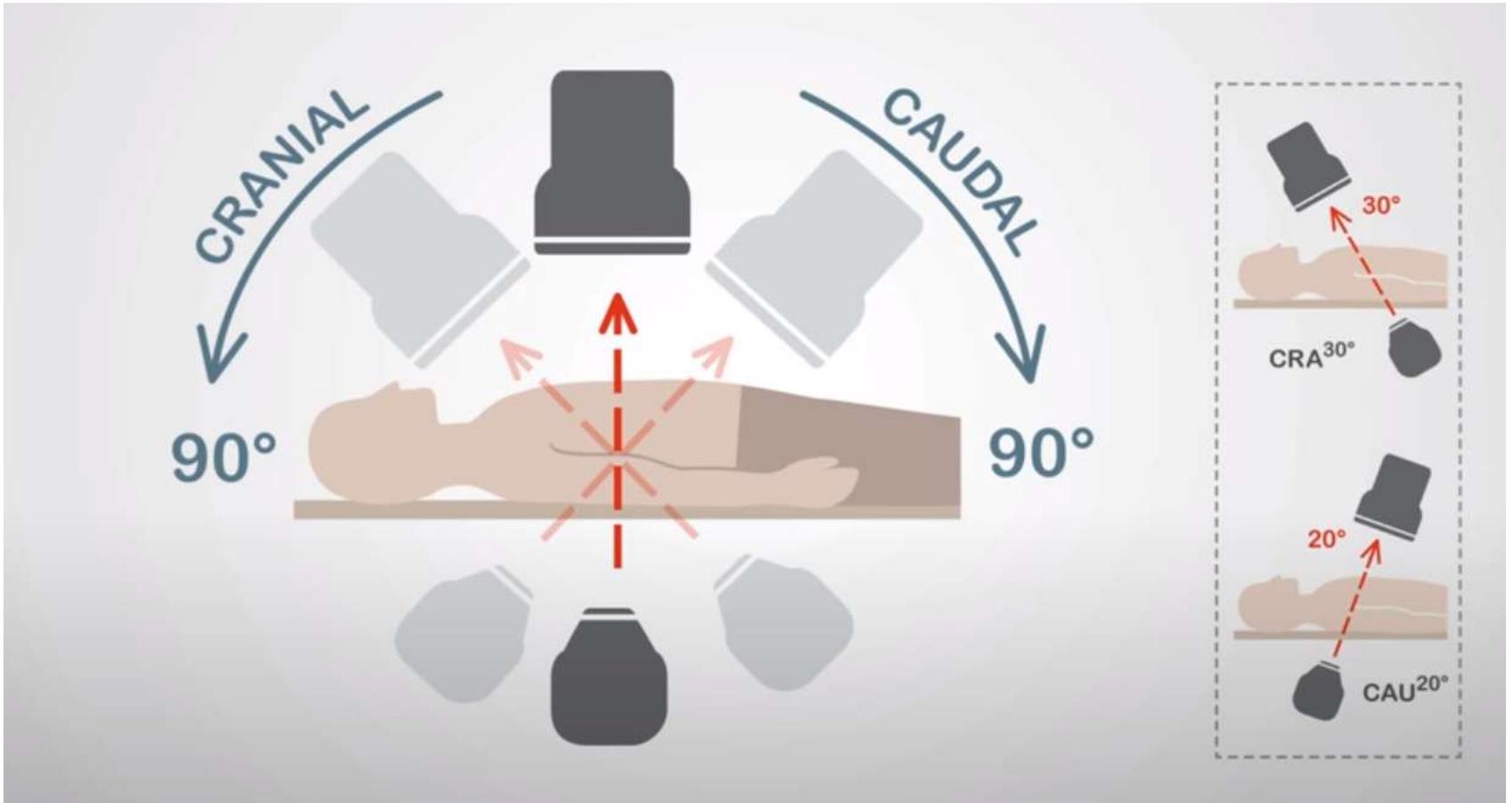
Coronary Anatomy



Coronary angiography



Coronary angiography

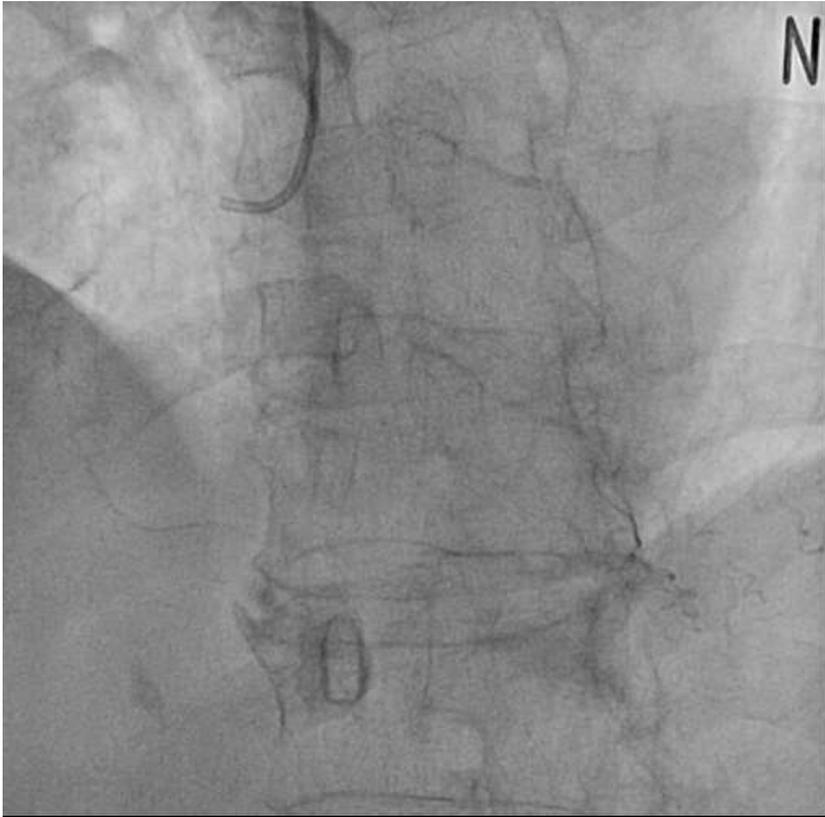


Coronary angiography

LAO cranial



Right Coronary angiography

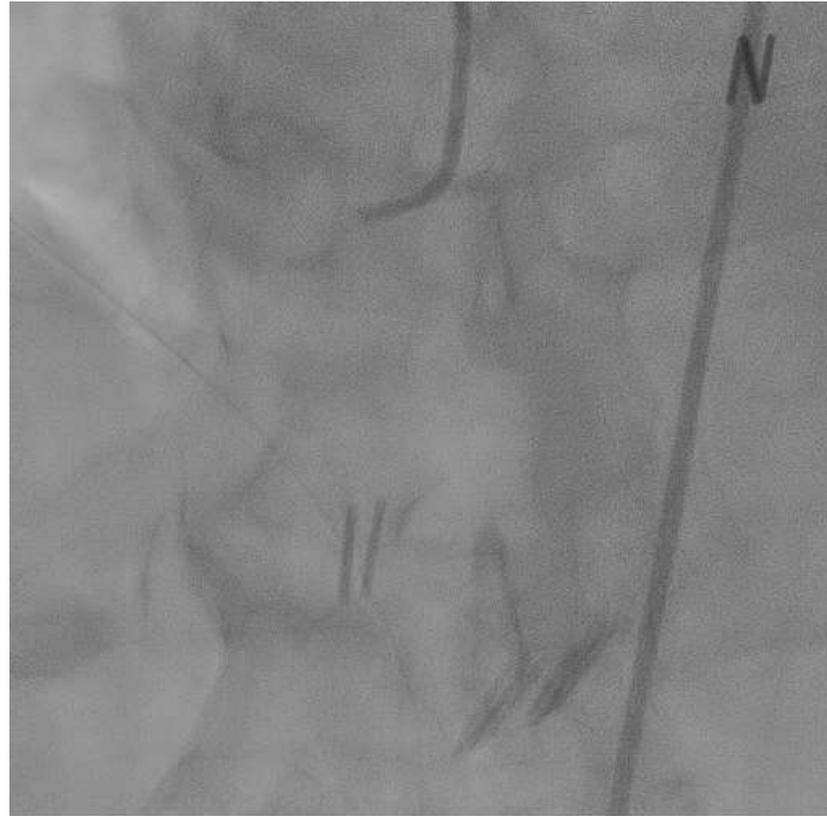


LAO view



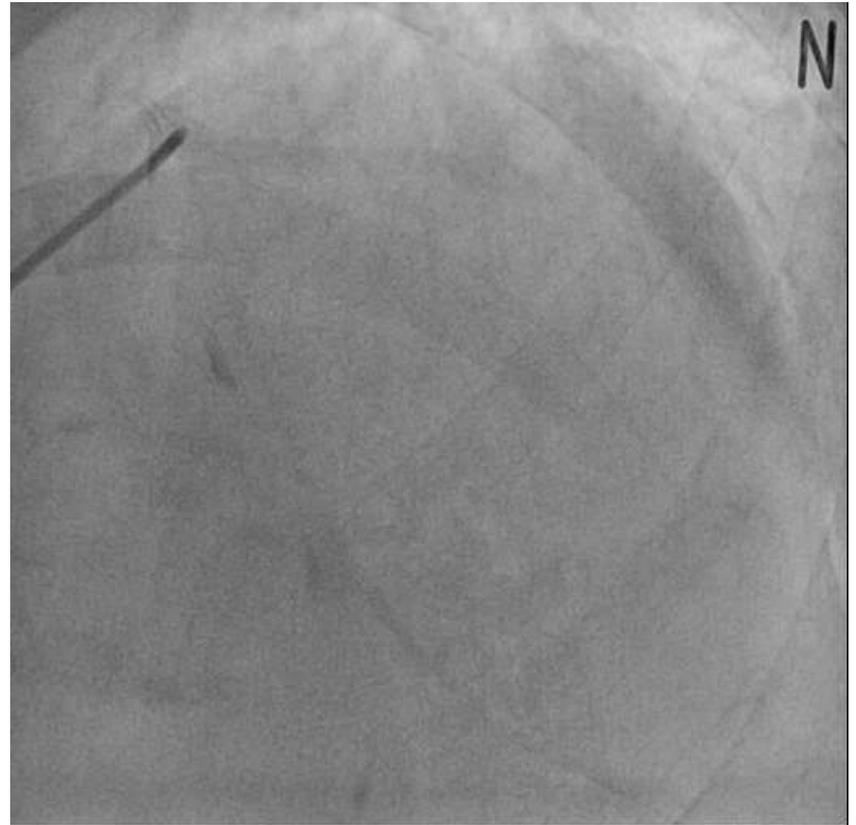
RAO view

Right Coronary angiography



AP Cranial view

Left Coronary angiography

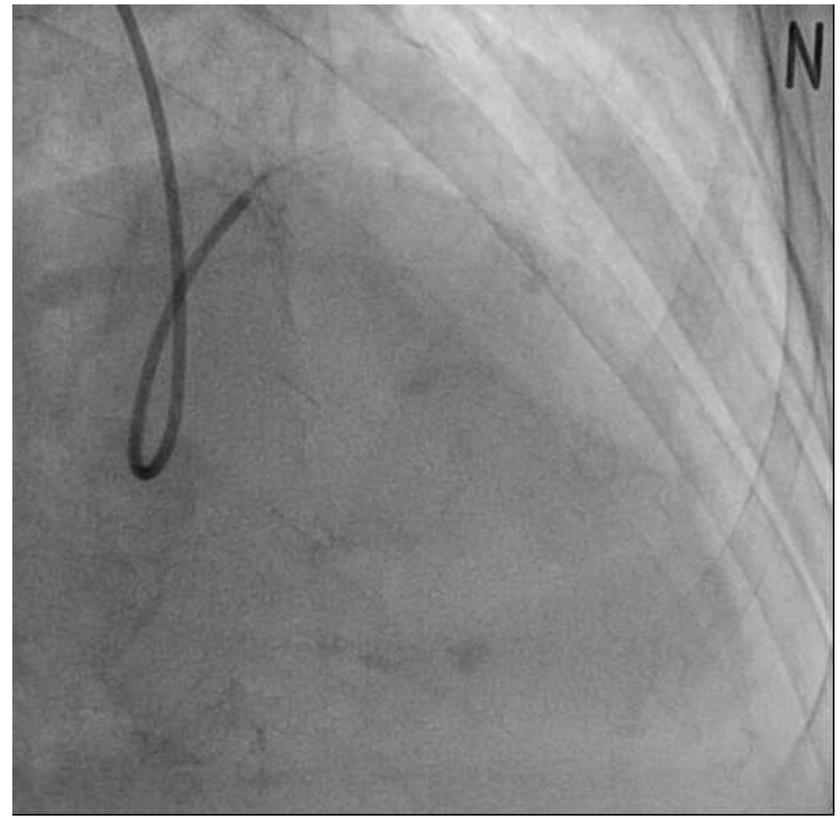


AP Cranial view

Left Coronary angiography

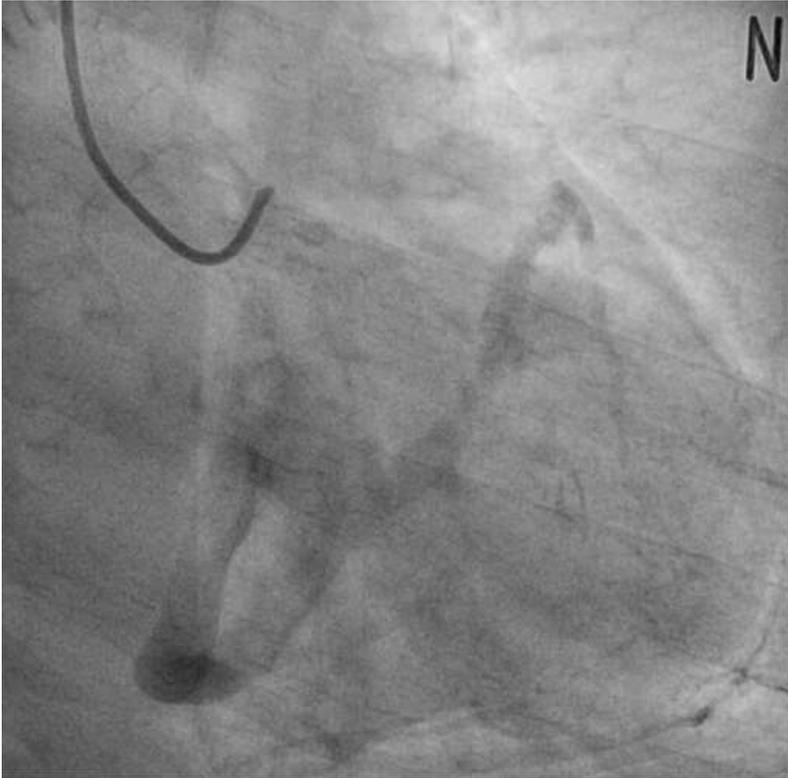


LAO Cranial view

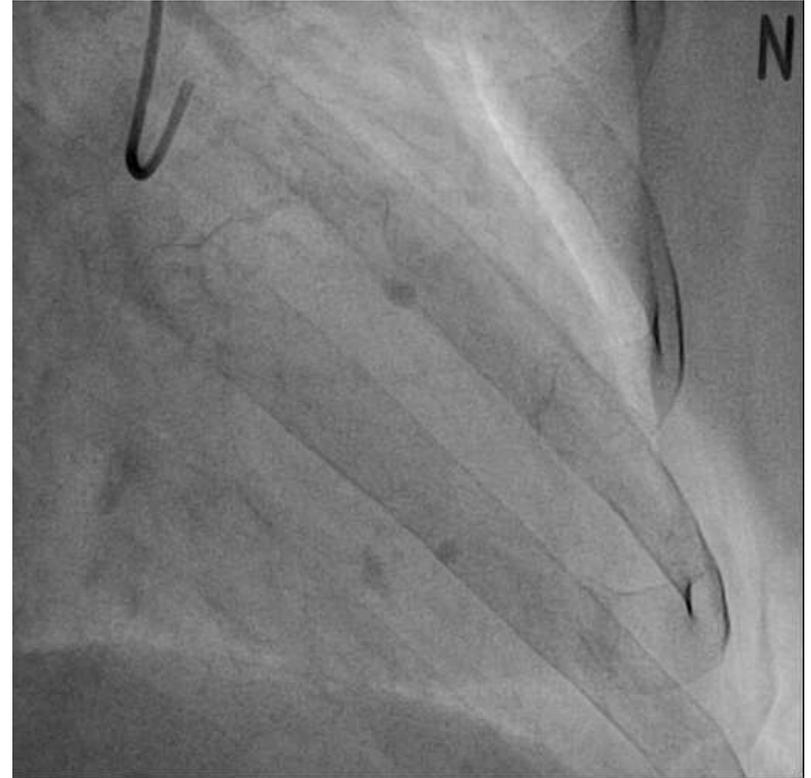


RAO Cranial view

Left Coronary angiography

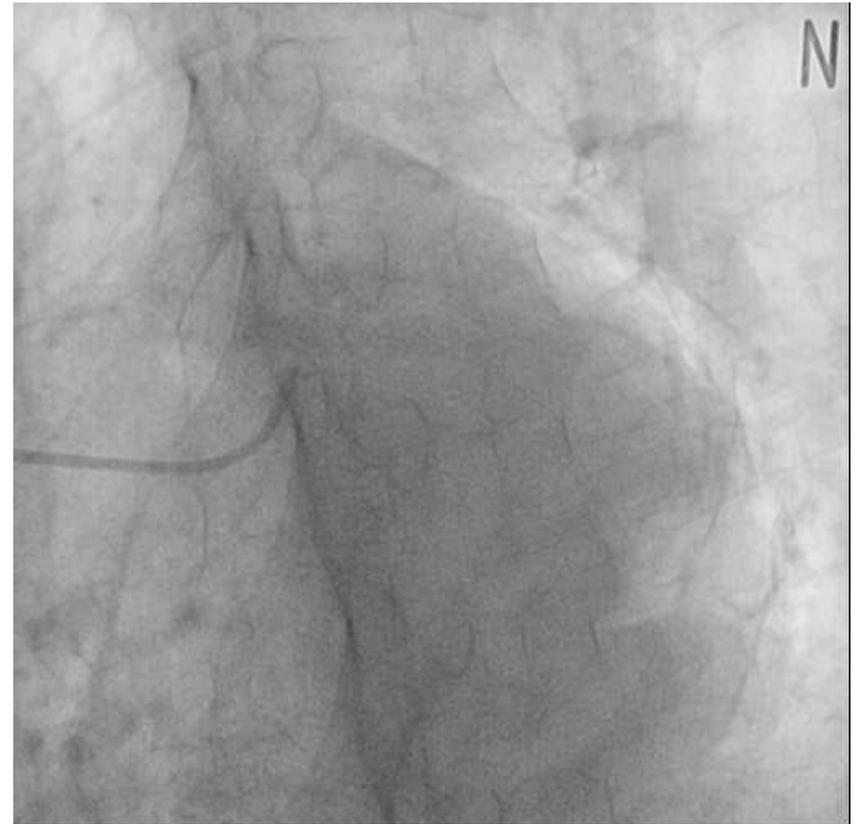
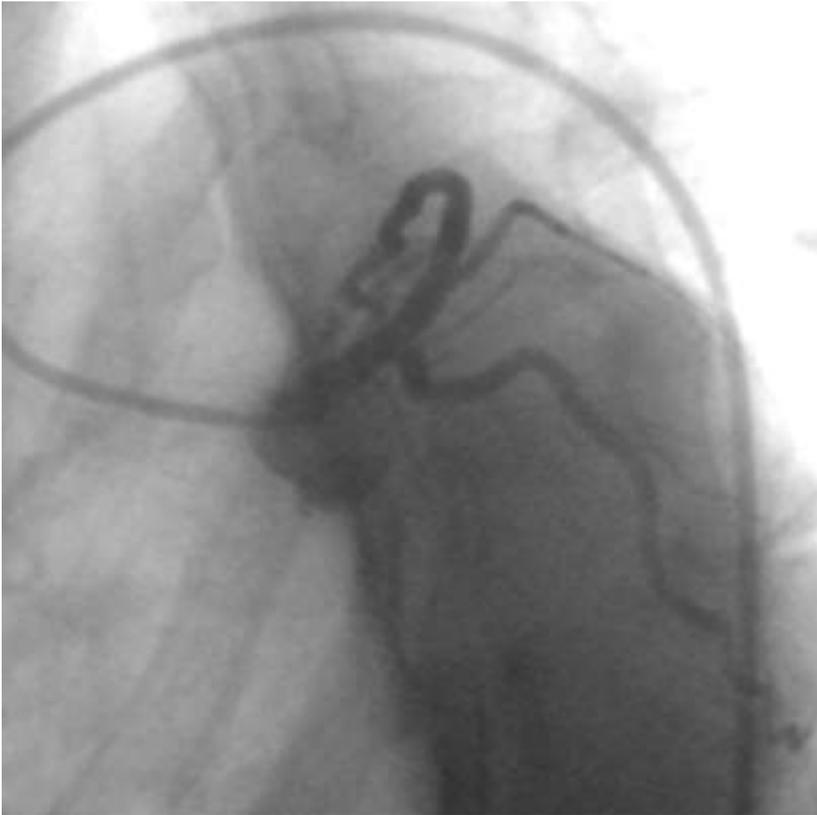


AP Caudal view



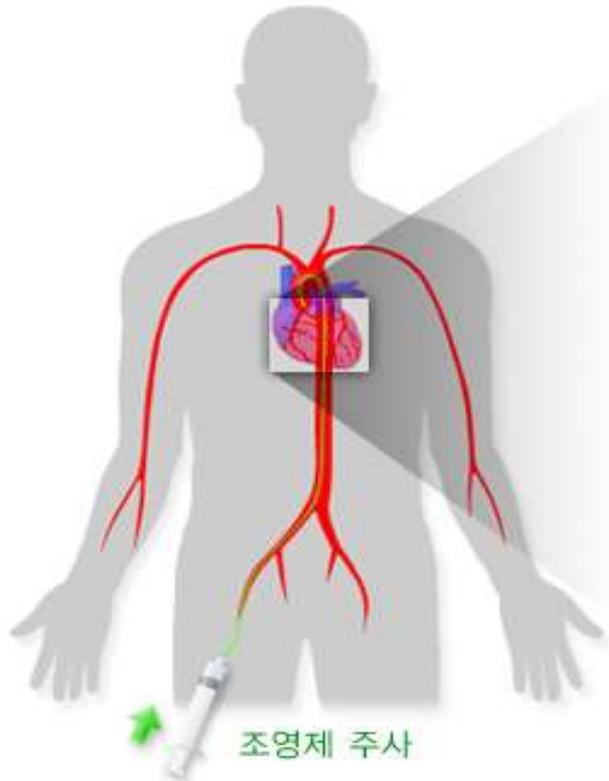
RAO Caudal view

Left Coronary angiography



LAO Caudal view

Coronary angiography



Clinical Diagnostic

ACS

:STEMI, NSTEMI, Unstable angina

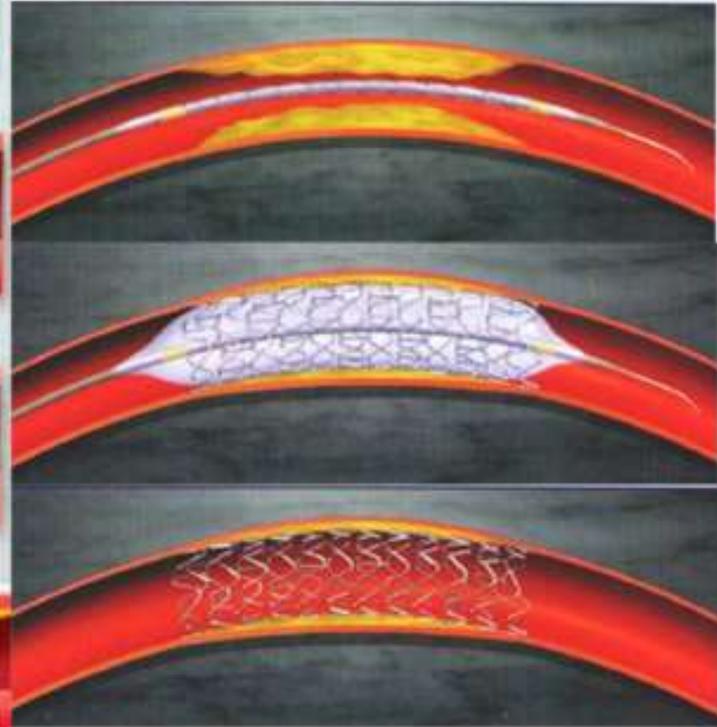
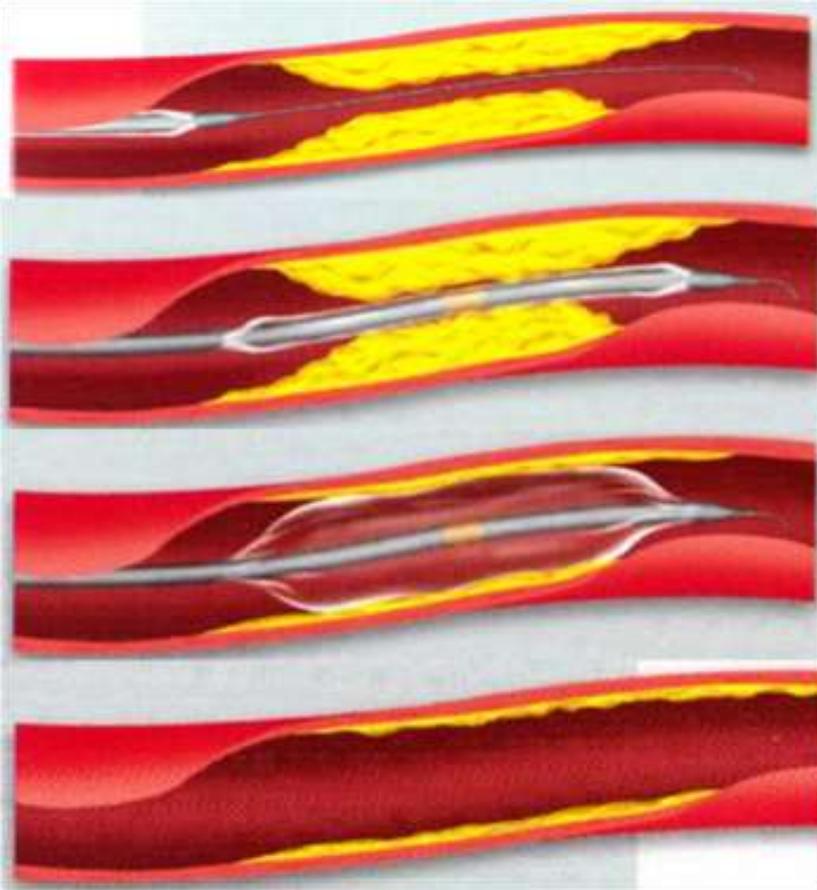
Stable angina

Atypical chest pain

Silent ischemia

Femoral or Radial artery access

Coronary Intervention



Intervention CASE

M/68
과거력 없음
Chest pain 호소

chest pain

Chest pain profiles

Site	<input checked="" type="checkbox"/> substernal <input type="checkbox"/> retrosternal <input type="checkbox"/> epigastric <input type="checkbox"/> Lt, chest <input type="checkbox"/> other		
Character	<input type="checkbox"/> squeezing <input checked="" type="checkbox"/> pressing <input type="checkbox"/> burning <input type="checkbox"/> crushing <input type="checkbox"/> soreness		
Duration (lasting)	3hrs		
Situation	<input checked="" type="checkbox"/> rest <input type="checkbox"/> exertion <input type="checkbox"/> other		
Associated symptom	<input type="checkbox"/> none <input checked="" type="checkbox"/> nausea <input type="checkbox"/> vomiting <input type="checkbox"/> palpitation <input type="checkbox"/> dyspnea <input type="checkbox"/> drowsiness <input type="checkbox"/> confusion <input type="checkbox"/> headache <input type="checkbox"/> dizziness <input type="checkbox"/> other		
Radiation	<input checked="" type="radio"/> N <input type="radio"/> Y		
Aggravating factor	<input checked="" type="radio"/> N <input type="radio"/> Y		
Relieving factor	<input checked="" type="radio"/> N <input type="radio"/> Y		
NTG response	<input checked="" type="radio"/> N <input type="radio"/> Y <input type="radio"/> no try		
1st attack	2021년 초	Last attack	금일 새벽 3시
Risk factor	<input checked="" type="checkbox"/> age <input type="checkbox"/> HTN <input type="checkbox"/> DM <input type="checkbox"/> smoking <input type="checkbox"/> dyslipidemia <input type="checkbox"/> obesity <input type="checkbox"/> IHD/CVA Hx, <input type="checkbox"/> FHx <input type="checkbox"/> other		

Brief Hx

상기 68세 남환 non smoker로 특이 가족력 없으며, 2011년 BPH 진단받고 medication 중인것 외 특이 병력 없는 자로,

2021년초부터 substernal area에 배근한 양상의 흉통(NRS 1~2점, 5분 지속)이 지금까지 3번 정도 있었다고 하며, 내원 2일전 NRS 4점 정도로 흉통 발생했으나 5분 이내로 바로 호전되어 경과관찰 하였고, 내원일 새벽 3시경 이전과 비슷한 양상의 흉통이나 NRS 7-8점으로 강도 심해지며 3시간 이상 흉통 지속되며 nausea 있어 ER 내원하였으며, 내원하여 시행한 V/S stable하나 EKG상 V1-3 ST elevation 소견보여 STEMI(ant, Killip I) 진단하 emergency PCI 진행 후 post PCI care 위해 ICU arrange 및 순환기내과 입원합니다.

Past Hx

없음 모름 DM HTN Pul,tbc
 Hepatitis

Medication

N **Y** (BPH medication (Avodart))

Name:

ID:0734109

09-MAR-2021 08:01:12

AJOU UNIVERSITY HOSPITAL-ER3 ROUTINE RETRIEVAL

68 yr
Male

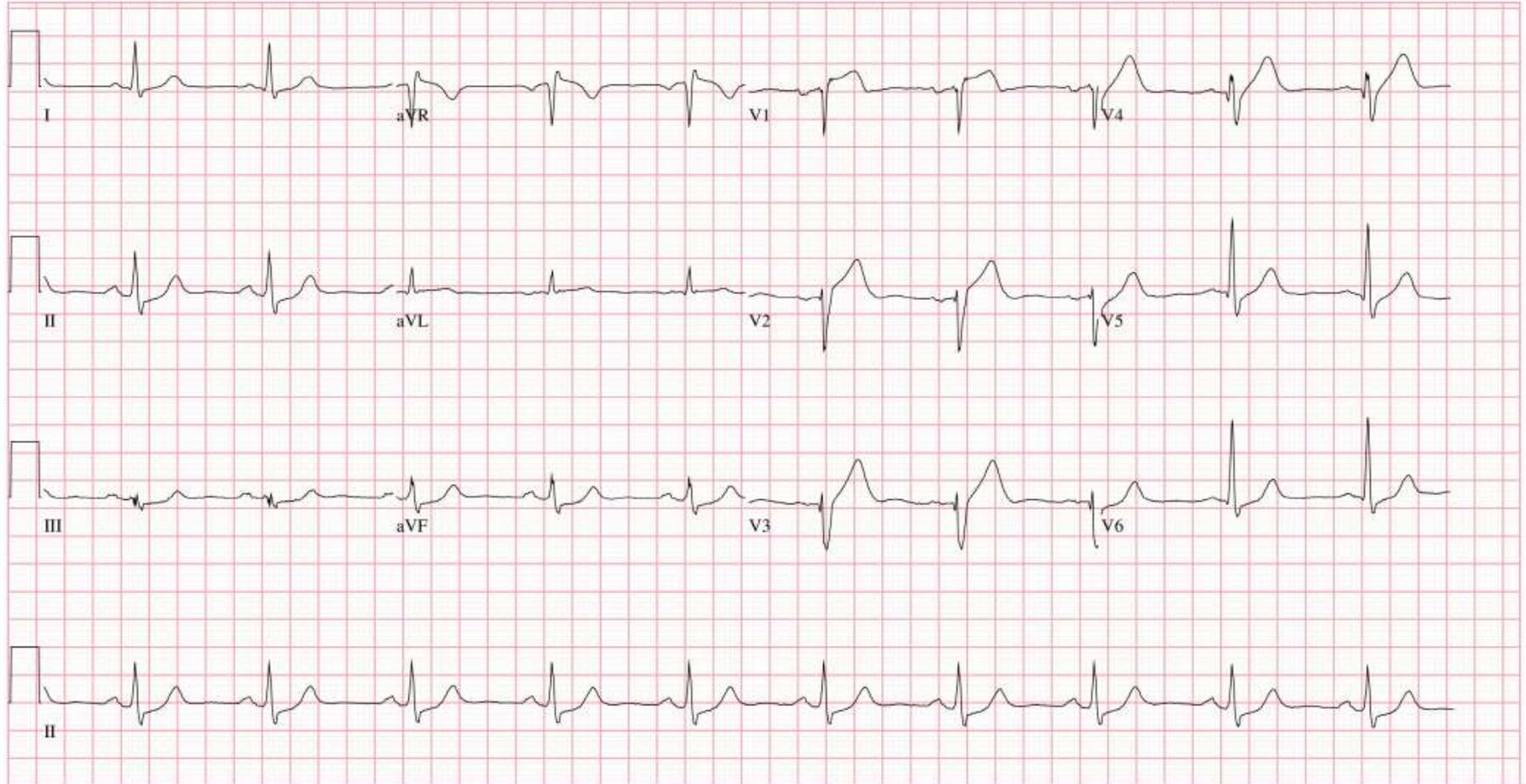
Vent. rate	62	BPM
PR interval	172	ms
QRS duration	106	ms
QT/QTc	426/432	ms
P-R-T axes	72 22	45

Normal sinus rhythm
 Anterior infarct , possibly acute
 ** ** ACUTE MI / STEMI ** **
 Abnormal ECG

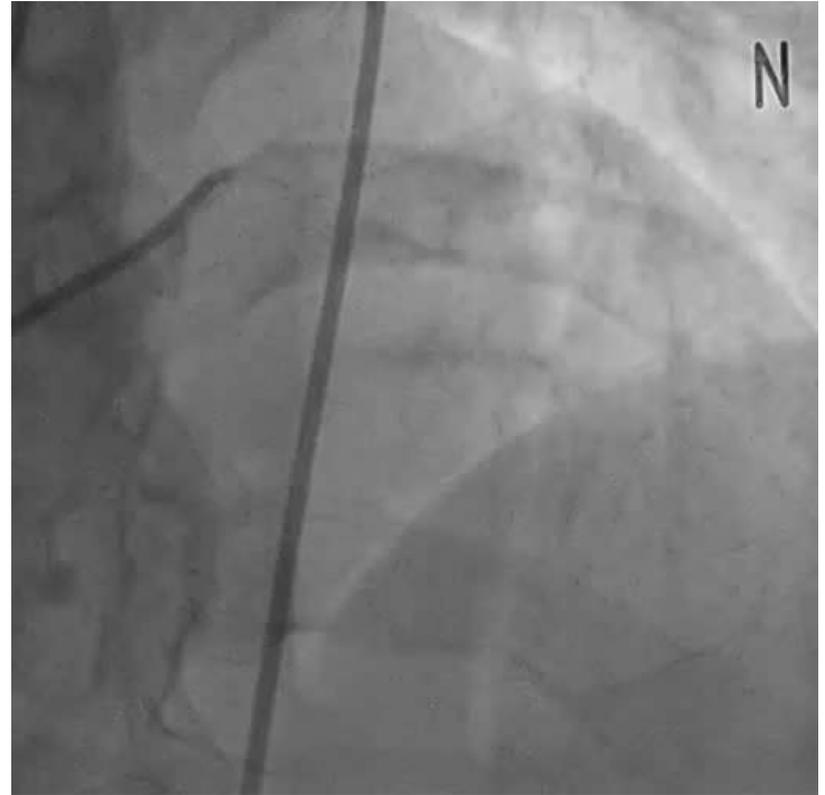
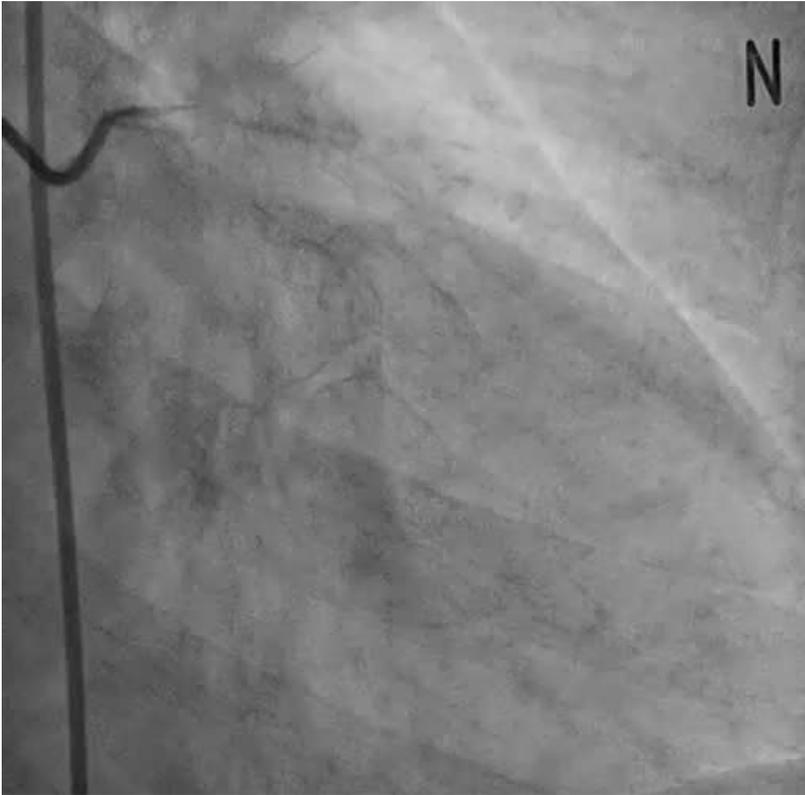
Room:
Loc:17

Technician:
Test ind:

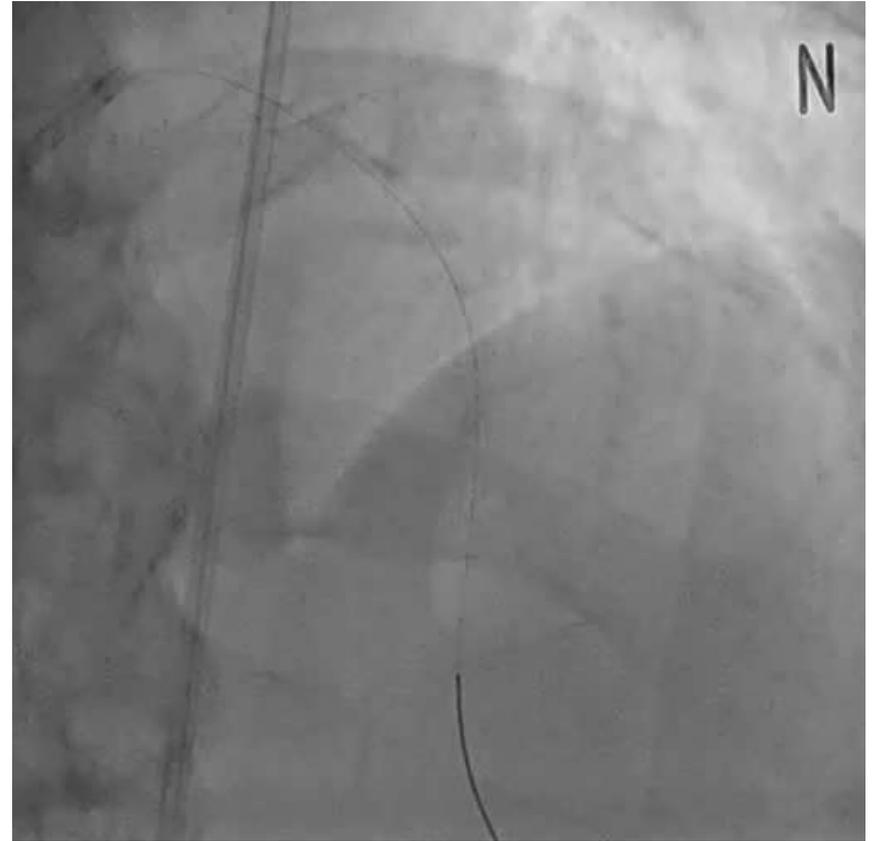
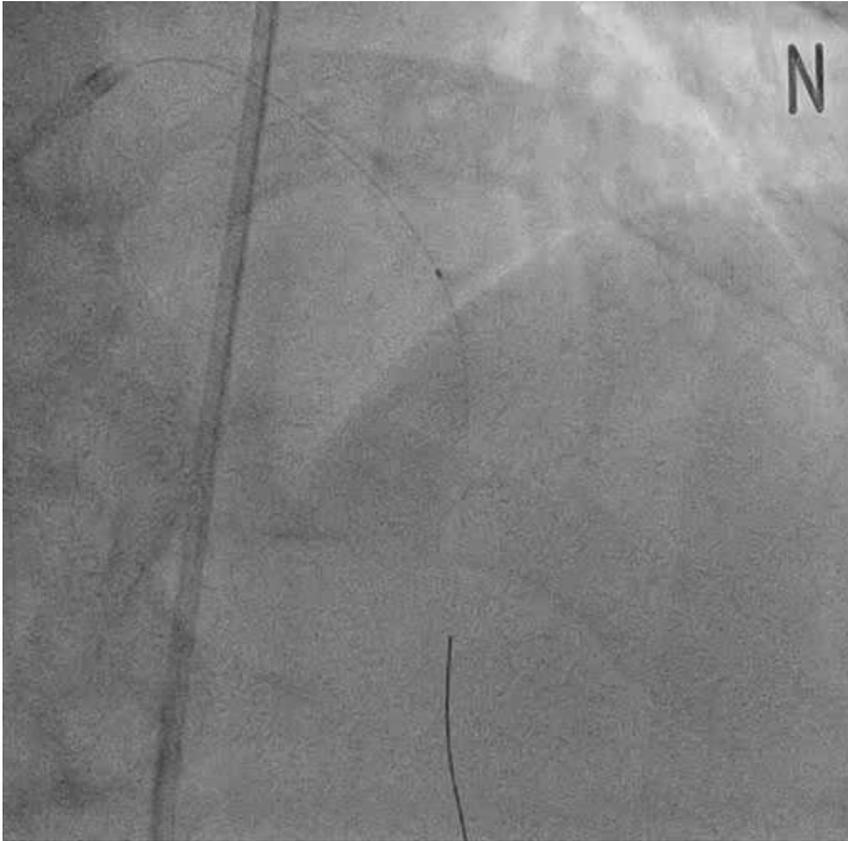
Confirmed By: LIM HONG SEOK



Intervention CASE



Coronary Intervention



Thrombosuction

Intervention CASE



Lacrosse 2.5/20mm

Intervention CASE



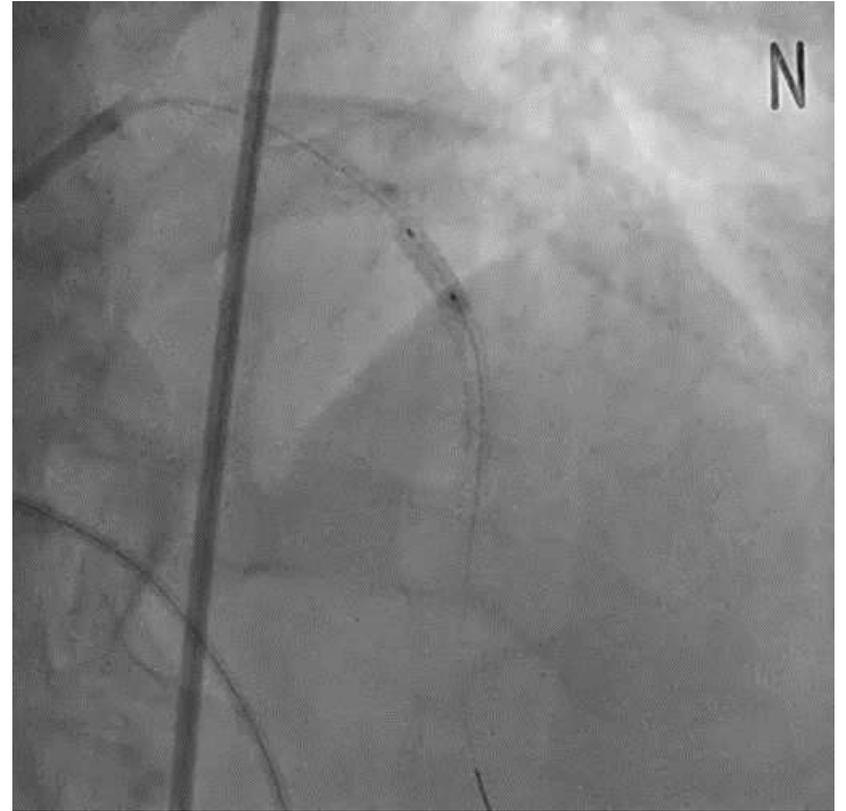
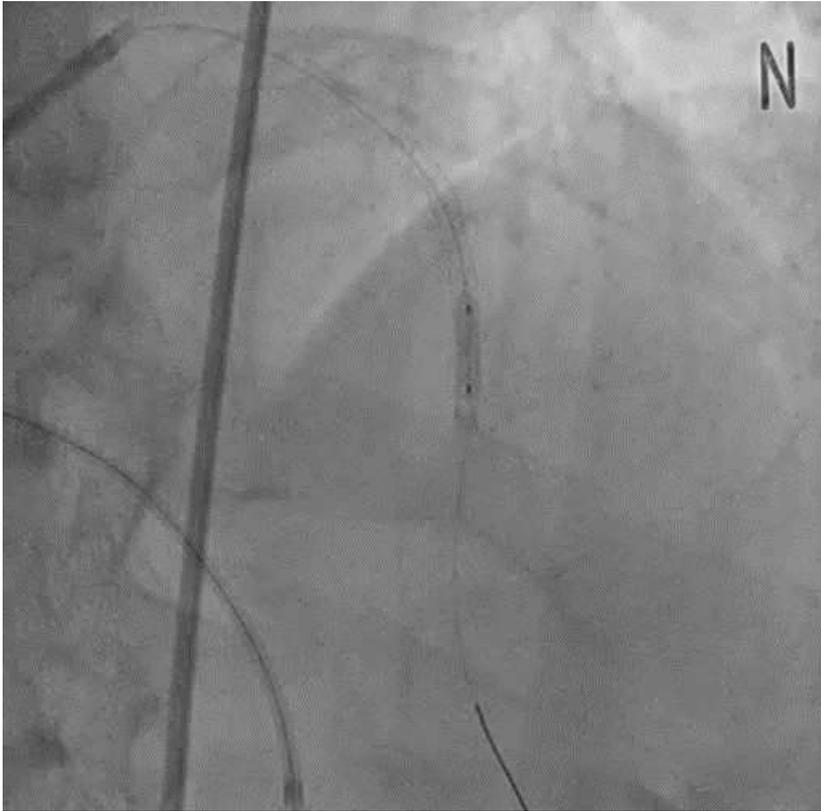
Synergy 3.5/16mm

Intervention CASE



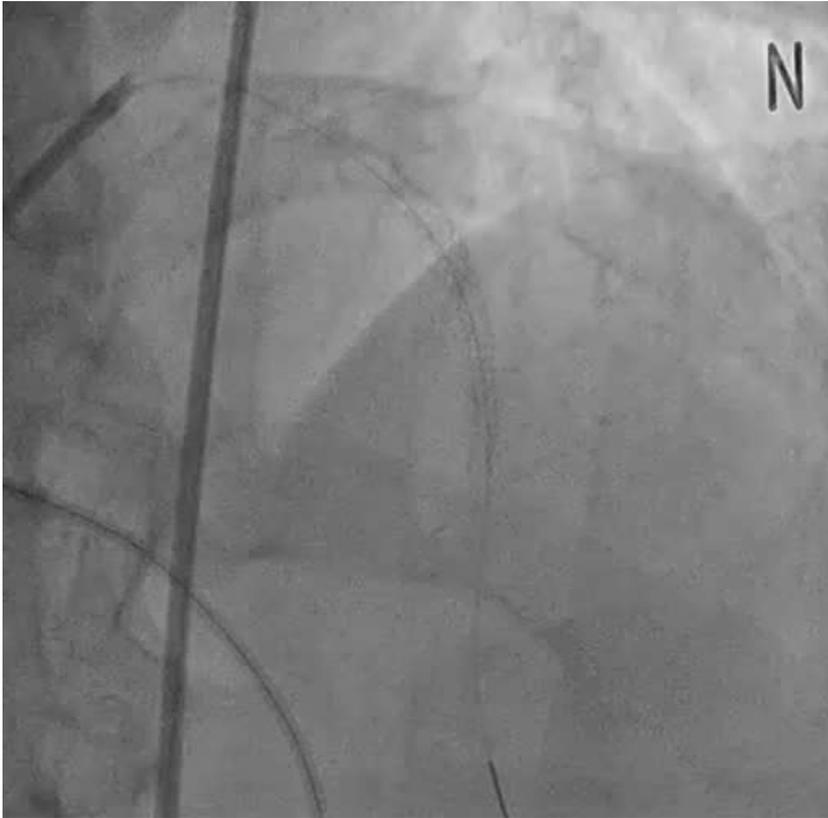
Synergy 3.0/20mm

Intervention CASE



P. Lacrosse 3.5/10mm

Intervention CASE



Slow flow

PCI report

Coronary angiography and PCI/QCA report-QCAT [202...



Coronary angiography & PCI

Diagnostic CAG

1. Rt. Femoral artery approach
2. JL 6/4F JR 6/3.5F catheters were used
3. Findings
 - 1) LM: minimal with calcium
 - 2) LAD: pLAD: total occlusion with TIMI 0 severe calcium
 - 3) LCX: diffuse minimal dLCX 35%
 - 4) RCA: abnormal origin, minimal

PCI Descriptions

1. EBU 7/3.5F, Runthrough wire temporary pacemaker inserted due to dAVB
2. pLAD: Thrombosuction with 6F ReBirth catheter
 - >red/white thrombus aspirated
 - >Lacrosse 2.5/20mm(8atm)
 - >Synergey 3.5/16mm(11atm)
 - >P.Lacrosse 3.5/10mm(16atm)mLAD: Lacrosse 2.5/20mm(6atm)
 - >Synergey 3.0/20mm(11atm)
 - >P.Lacrosse 3.5/10mm(8atm)

*slow flow -->IC adenosine --> slightly improved

3. Successful PCI without complications

Clinical diagnosis STEMI NSTEMI UA SA Silent ischemia PCI-other

기타질환

Angiographic diagnosis CAOD 1VD CAOD 2VD CAOD 3VD

Intermediate CAD Minimal CAD

Normal

LM Disease N Y

Complication N Y

The amount of blood loss <10ml

Plan 외래추적 관찰 V/S 관찰 시술 후 합병증 관찰

구토/오심 관찰 시술부위 관찰 방광팽창 관찰

Conclusion

Primary PCI for STEMI(ant)

CAOD 1VD

-->thrombosuction, PTCA and stent at pLAD and mLAD

PCI report

Total Occlusion : TIMI 0 or 1

3. Findings

1) LM: minimal with calcium

2) LAD: pLAD: total occlusion with TIMI 0
severe calcium

TIMI Flow

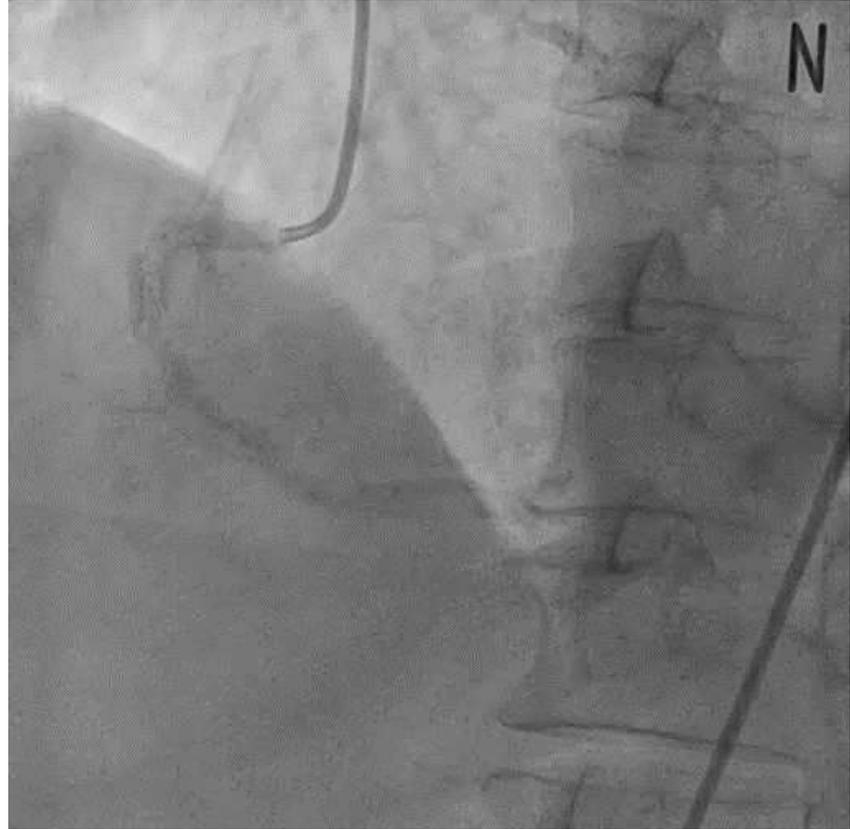
1. Grade 0: 앞으로 가는 flow가 전혀 없이 완전히 막힌 경우
2. Grade 1: 앞으로 가는 flow가 있기는 하나 혈관 끝까지 다 못가는 경우
3. Grade 2: 혈관 끝까지 flow가 다 가기는 하나 조영제가 가는 속도나 없어지는 속도가 다른 혈관에 비하여 뚜렷이 느린 경우
4. Grade 3: 혈관 끝까지 flow가 다가고 속도의 저하가 없는 경우

Lesion calcification

1. None or mild: 조영제 투여 후에야 석회화 유무를 알 수 있는 경우
2. Moderate: 조영제 투여 전 석회화 소견이 관찰되며 심장의 움직임에 따라 변화는 소견
3. Severe: 조영제 투여 전 석회화 소견이 관찰되며 심장의 움직임 여부와 관련없이 석회화가 있음을 육안적으로 알 수 있는 경우

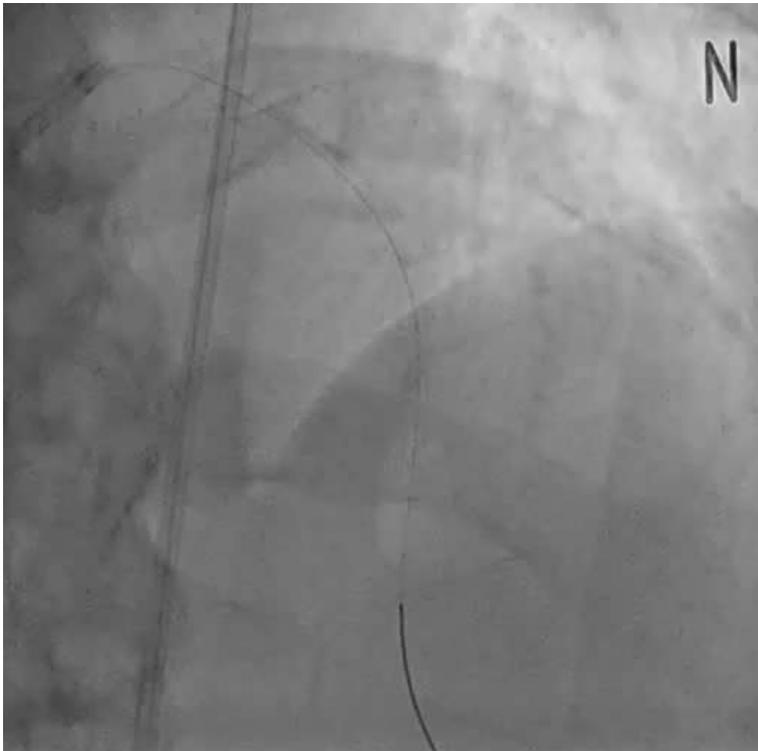
PCI report

Severe calcium



PCI report

Thrombus



Thrombosuction

PCI report

Lesion Description

Lesion length

1. Discrete: <10mm in length
2. Tubular: 10~20mm in length
3. Diffuse: >20mm in length

3)LCX diffuse minimal
dLCX 35%
LAD: abnormal origin minimal
LAD: severe calcium

PCI report

No reflow

*slow flow --> IC adenosine --> slightly improved

Stent가 잘 삽입되었고 시술 관련된 뚜렷한 합병증이 없음에도 불구하고 전방으로 향하는 flow가 거의 없을 때

*TIMI 2 인 것은 일반적으로 'slow flow' 로 정의

PCI report

Number of vessel diseased

1. LAD or any major branch vessel (DI, RI, septal)
2. LCX or any major branch vessel (OM)
3. RCA or any major branch vessel (PDA, PL)
4. LM
5. Bypass graft (LIMA, SVG)

Clinical diagnosis STEMI NSTEMI UA SA Silent ischemia PCI-t
 기타질환

Angiographic diagnosis CAOD 1VD CAOD 2VD CAOD 3VD
 Intermediate CAD Minimal CAD
 Normal

LM Disease N Y

Diseased vessel이란 diameter stenosis>50% 인 경우로 크게 위의 5개의 category

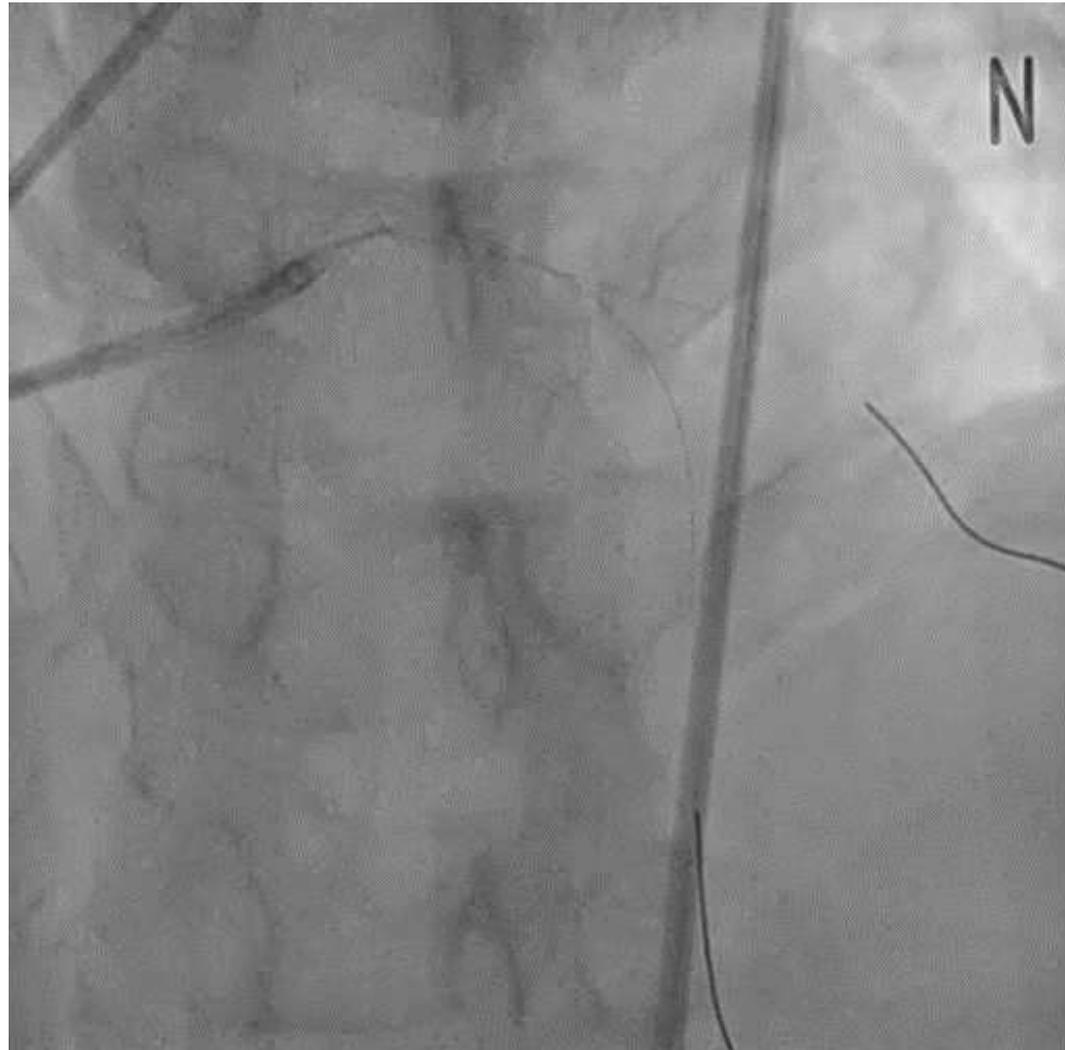
*diseased vessel로 counting 할 때는 병이 있는 혈관이 최소 직경이 2mm 이상

예) RCA 병이 있고, PCI를 할 수 없는 1mm 정도의 작은 diagonal branch에 병이 있다면 이는 one vessel disease

LM에 병이 있으면 two vessel disease에 해당

PCI report

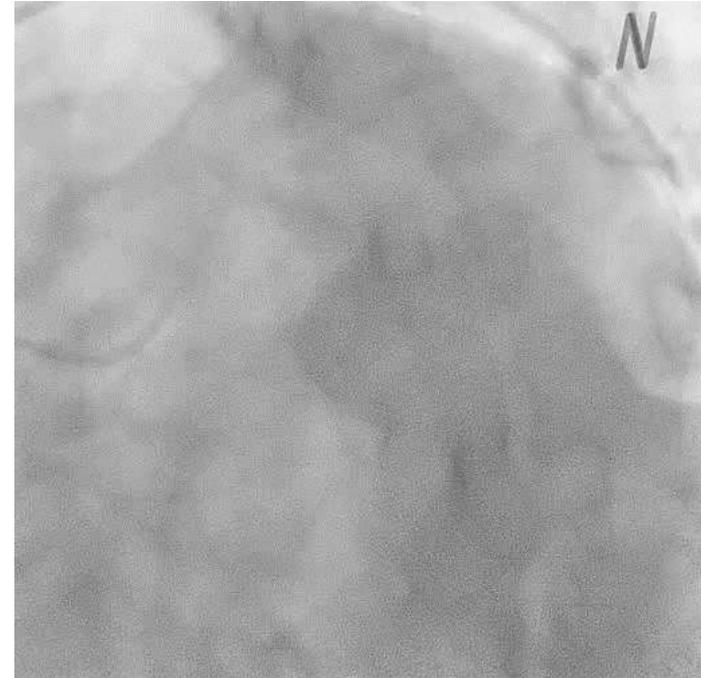
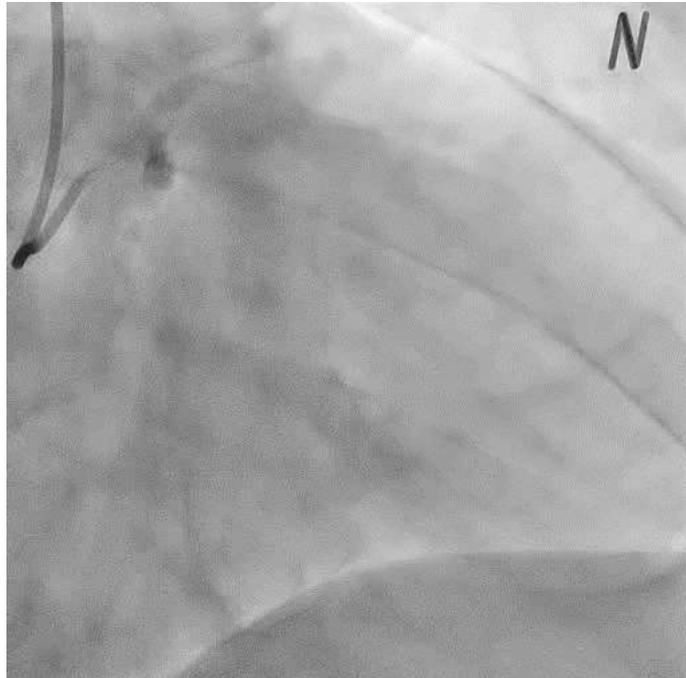
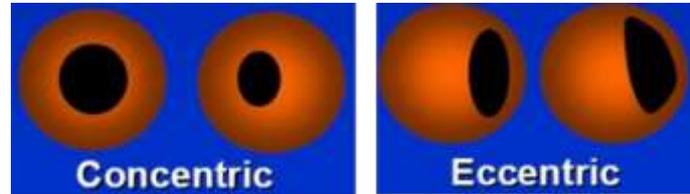
Dissection



PCI report

Eccentricity

1. Concentric: 병변의 축이 중간 50% 이내에 있는 경우
2. Eccentric: 병변의 축이 양쪽 side로 각각 25%씩 바깥쪽에 있는 경우





경청해주셔서 고맙습니다