Managing TAVR Complications

Jin Seok Roh, RT

Asan Medical Center, Seoul, Korea

Complications of TAVI

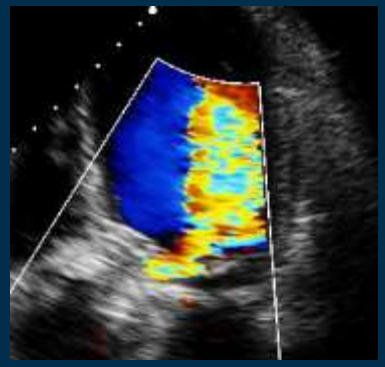
Common complications

- Vascular complications
- Conduction disturbance
- Post-TAVI AR
- Stroke

Catastrophic complications

- Coronary obstruction
- Aortic root rupture

Post-TAVI AR



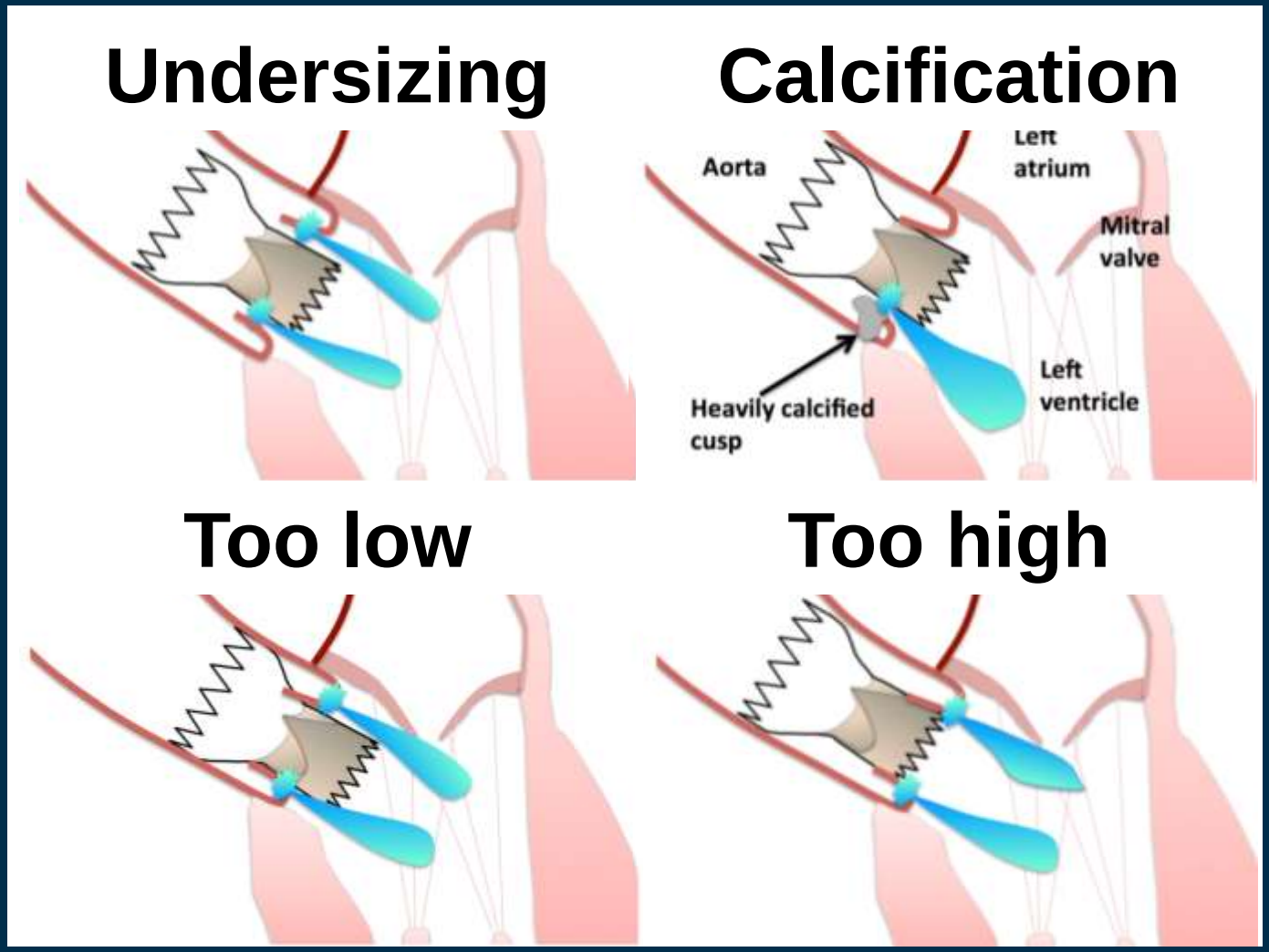
Incidence of Post-TAVI AR

- 4-15% for SAPIEN
- 10-25% for CoreValve
- < 5% for Next generation devices

Post-TAVI AR ≥ Moderate

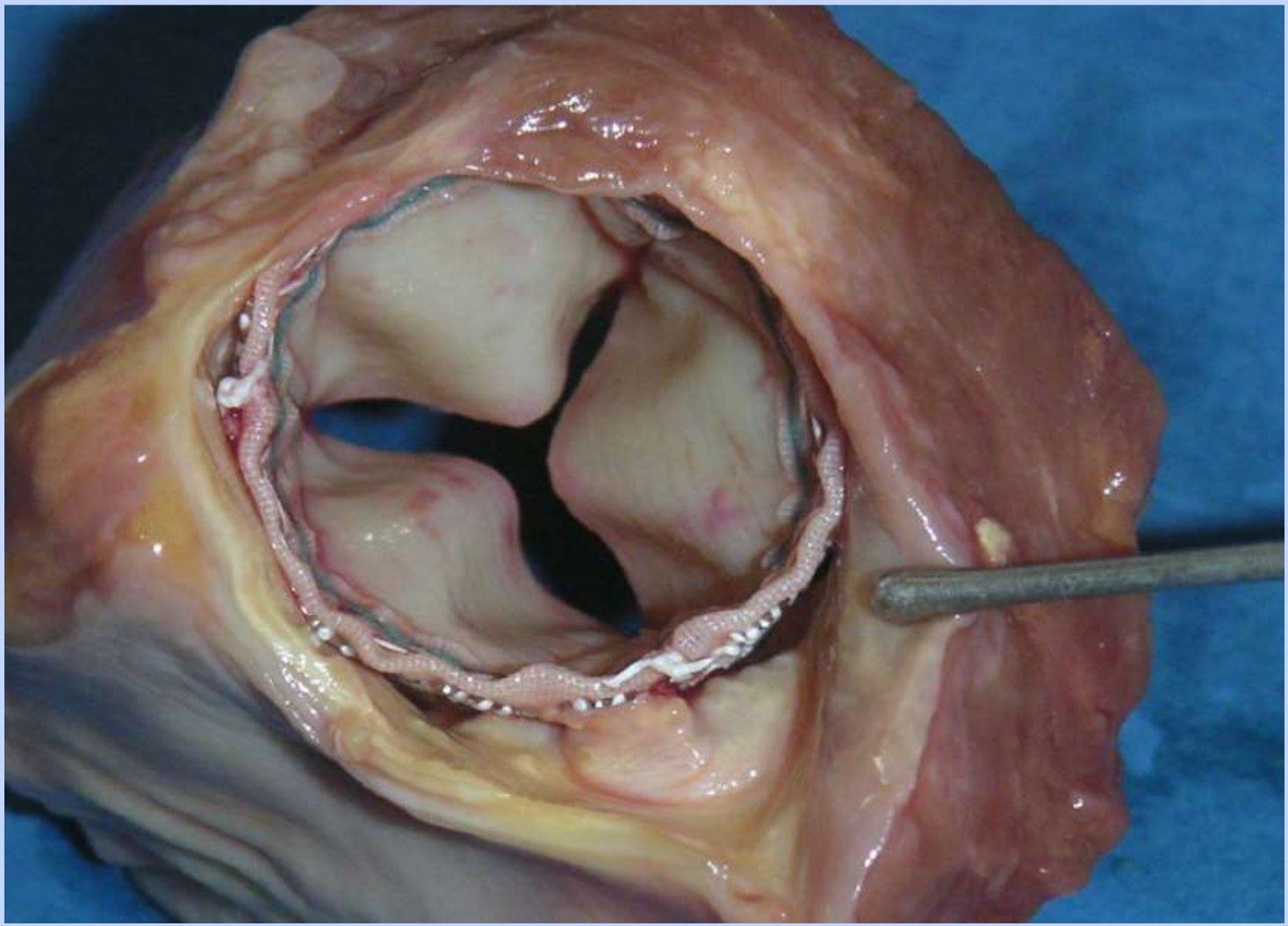
- Significant impact on Mortality

Predictors of Post-TAVI AR

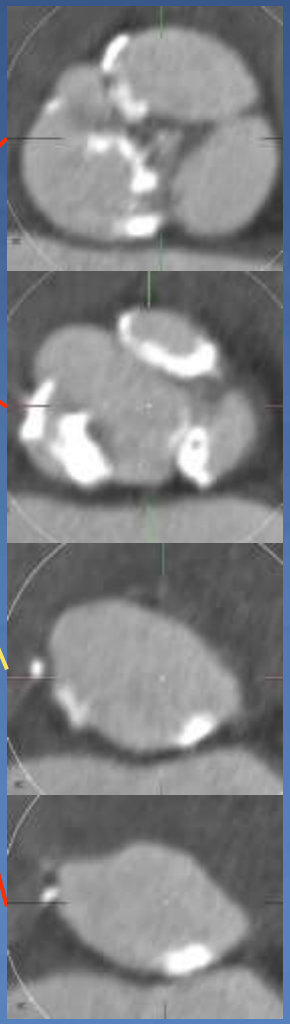


Sinning JM et al., JACC 2012

ParaValvular Leakage



Aortic Root Structure



Sinus of Valsalva

Leaflet

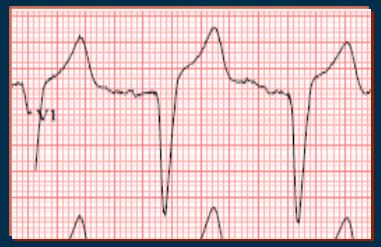
Annulus

LVOT

Conduction Disturbance

Incidence of Permanent Pacemaker

- 4-15% for SAPIEN
- 25% for CoreValve and Lotus



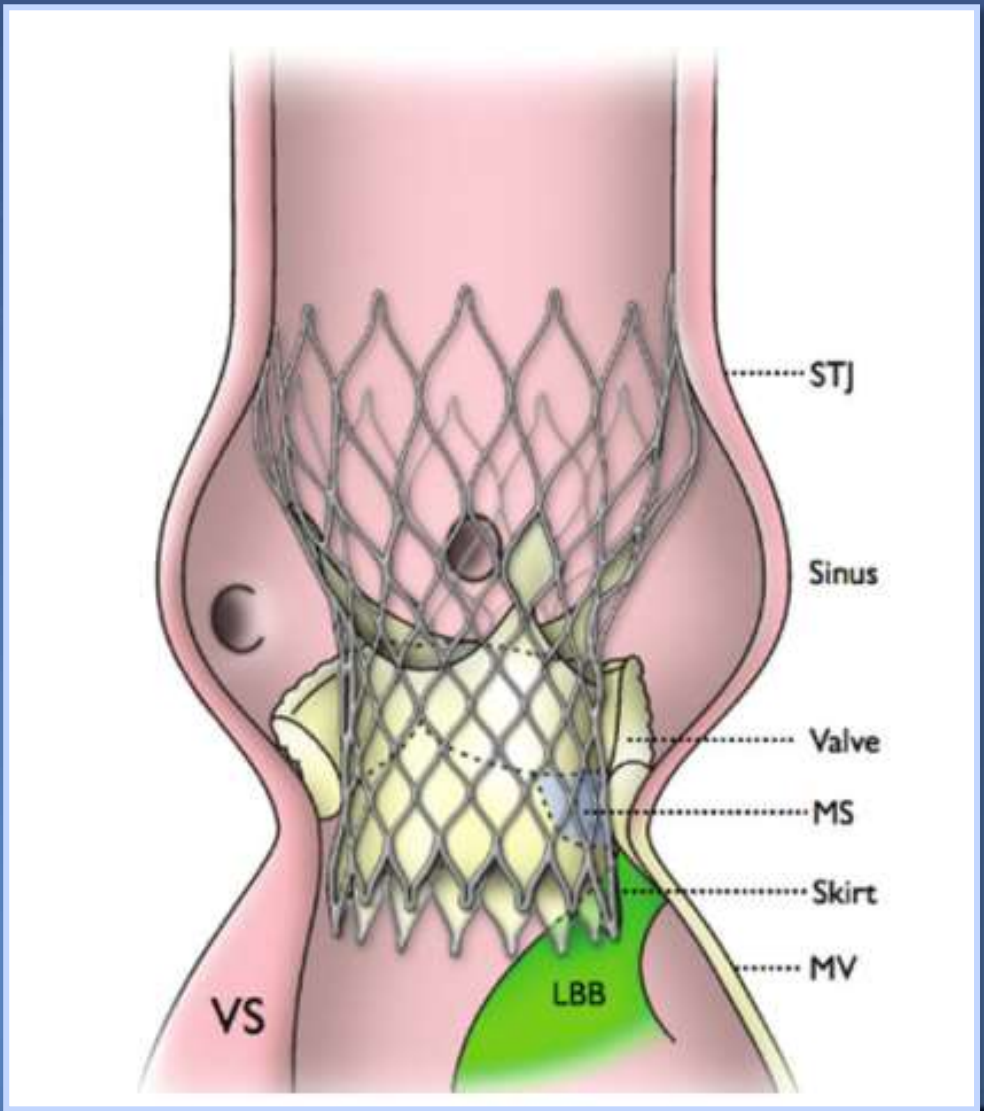
Post-TAVI PPM and LBBB

- No impact on Mortality
- Longer hospital stay

Predictors of PPM

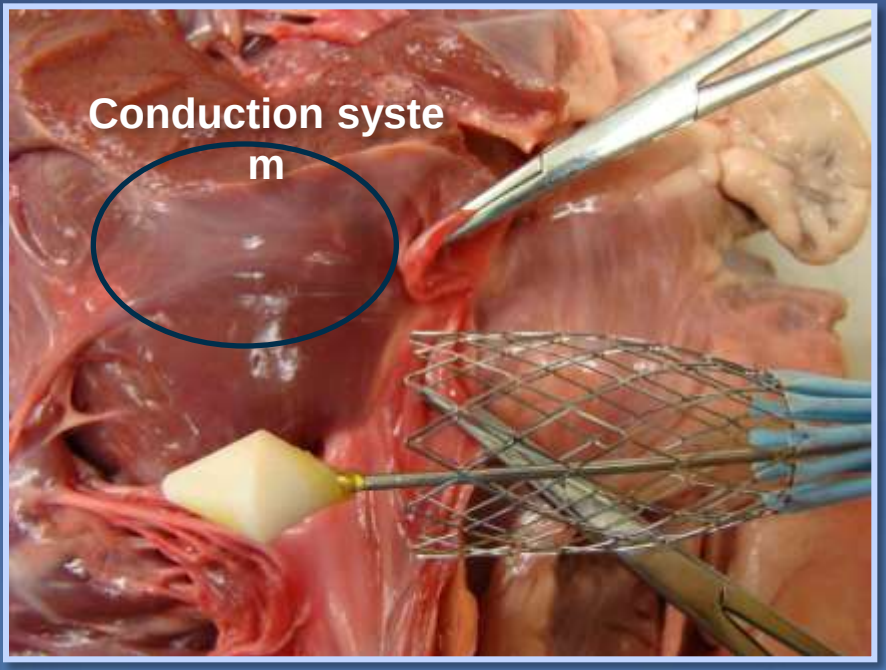
- CoreValve
- Baseline LBBB
- Implantation depth and aortic valve calcium

Conduction Disturbance

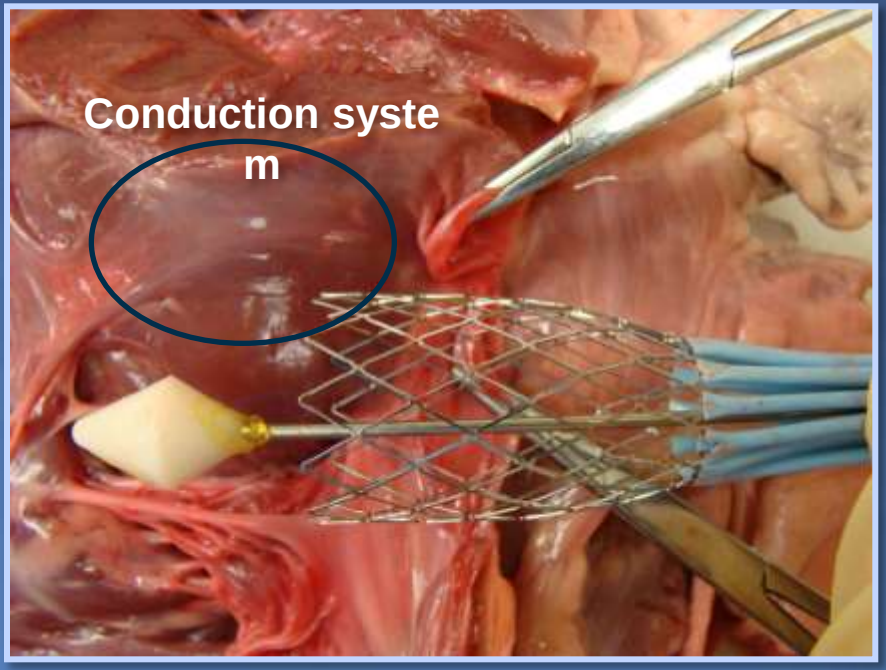


Conduction Disturbance

Depth of Device and Conduction System



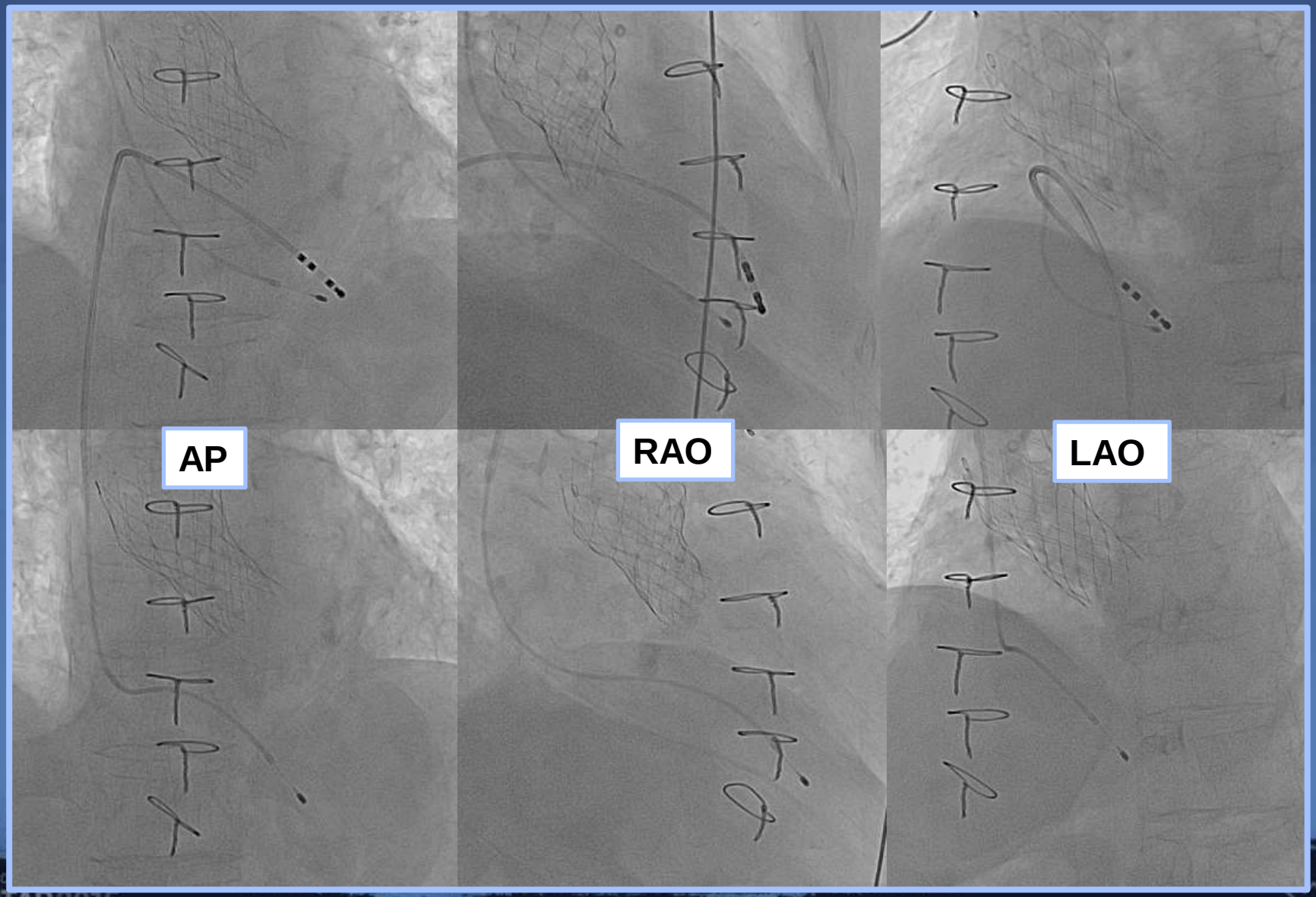
5mm past annulus



15mm past annulus

Raoul Bonan, TVT 2011

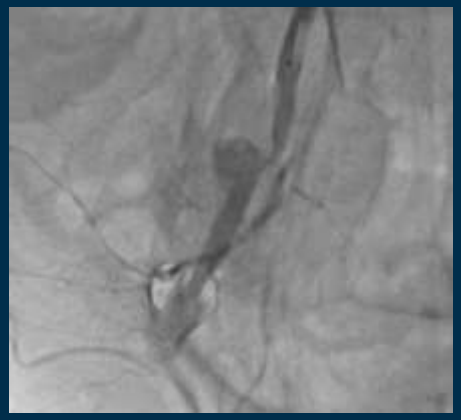
Temporary Pacemaker



Vascular complications

Type of complications

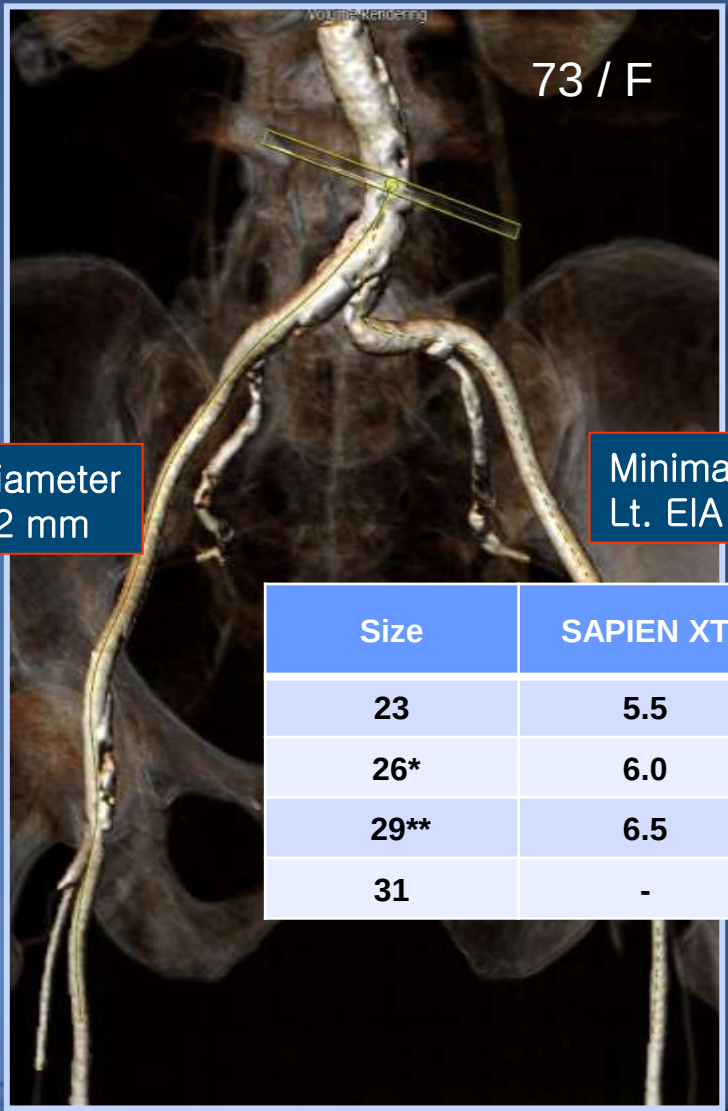
- Perforation
- Dissection
- Closure device failure



Assessment

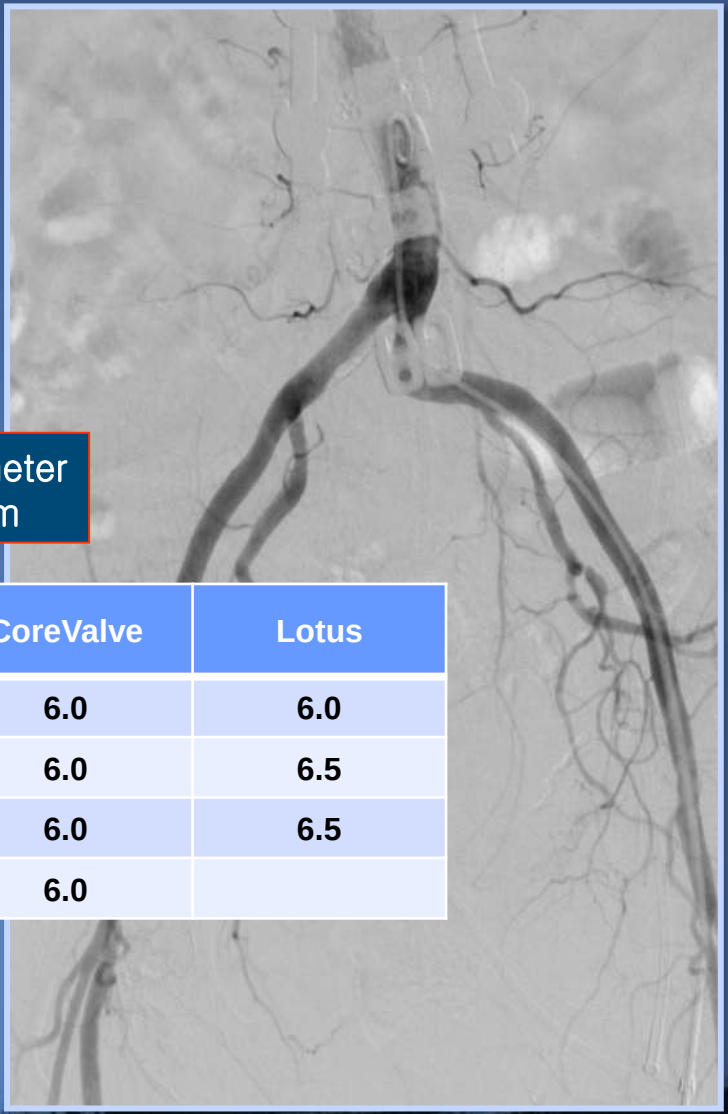
- Diameter
- Calcification
- Tortuosity

Vascular Complication



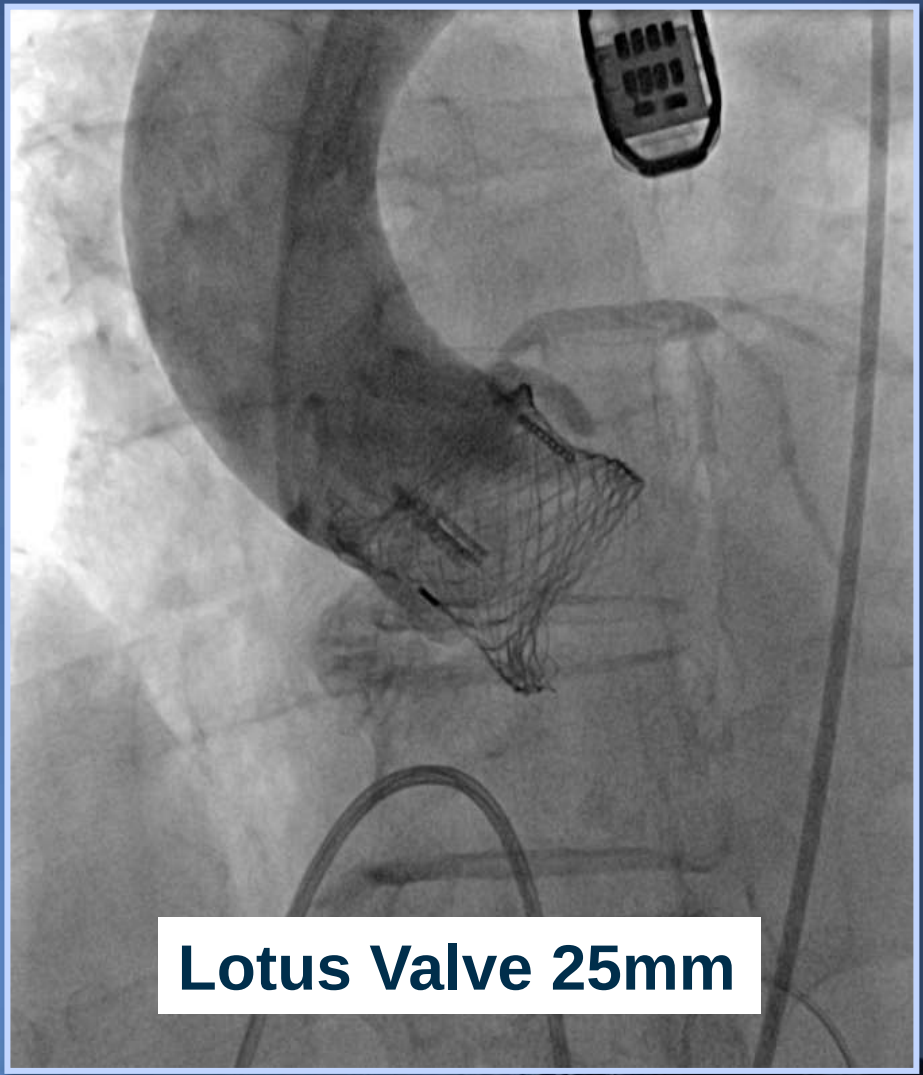
Minimal diameter
Rt. EIA 6.2 mm

Minimal diameter
Lt. EIA 6.7mm

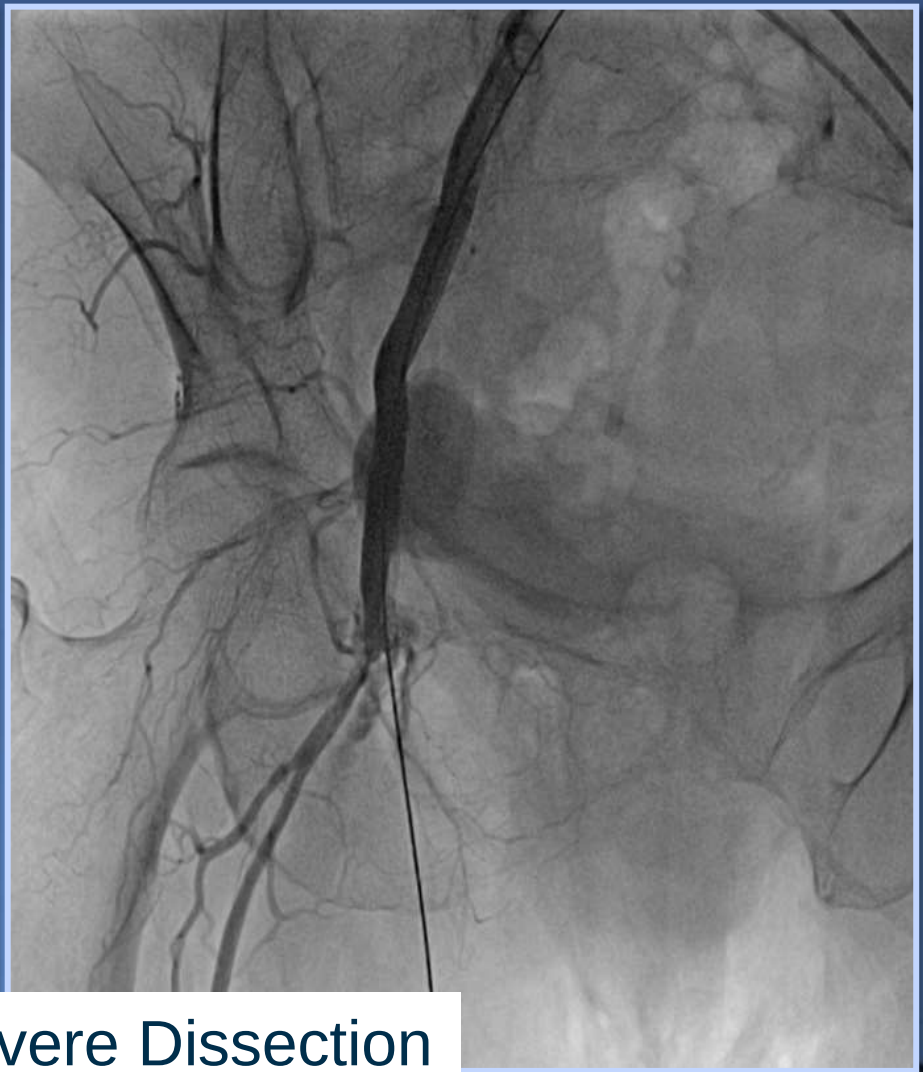


Size	SAPIEN XT	CoreValve	Lotus
23	5.5	6.0	6.0
26*	6.0	6.0	6.5
29**	6.5	6.0	6.5
31	-	6.0	

Vascular Complication

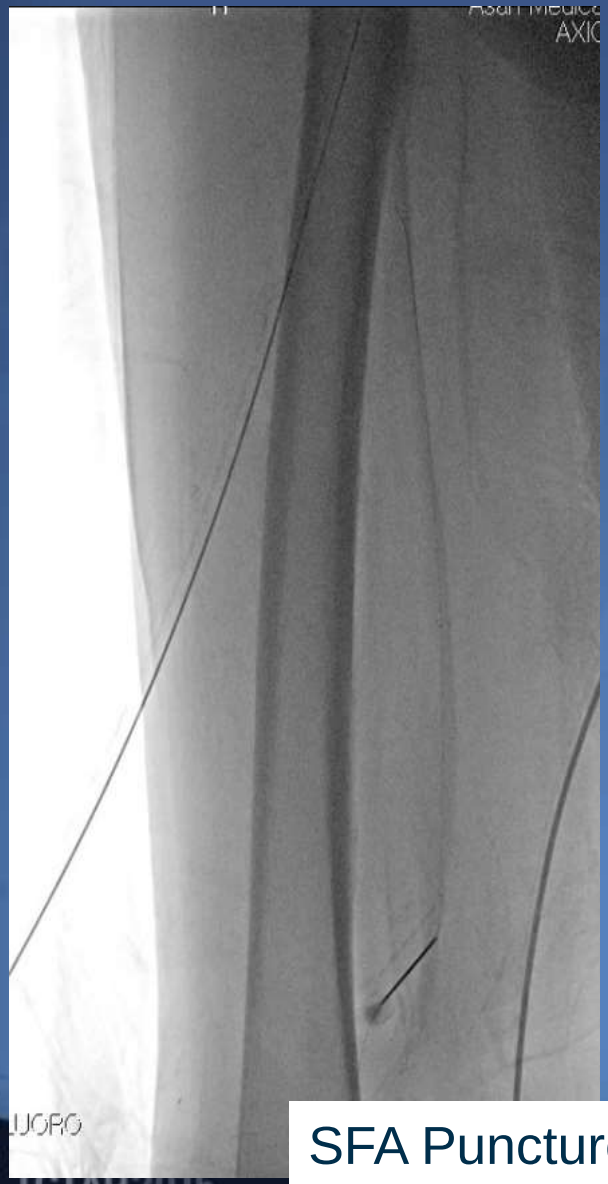


Vascular Complication



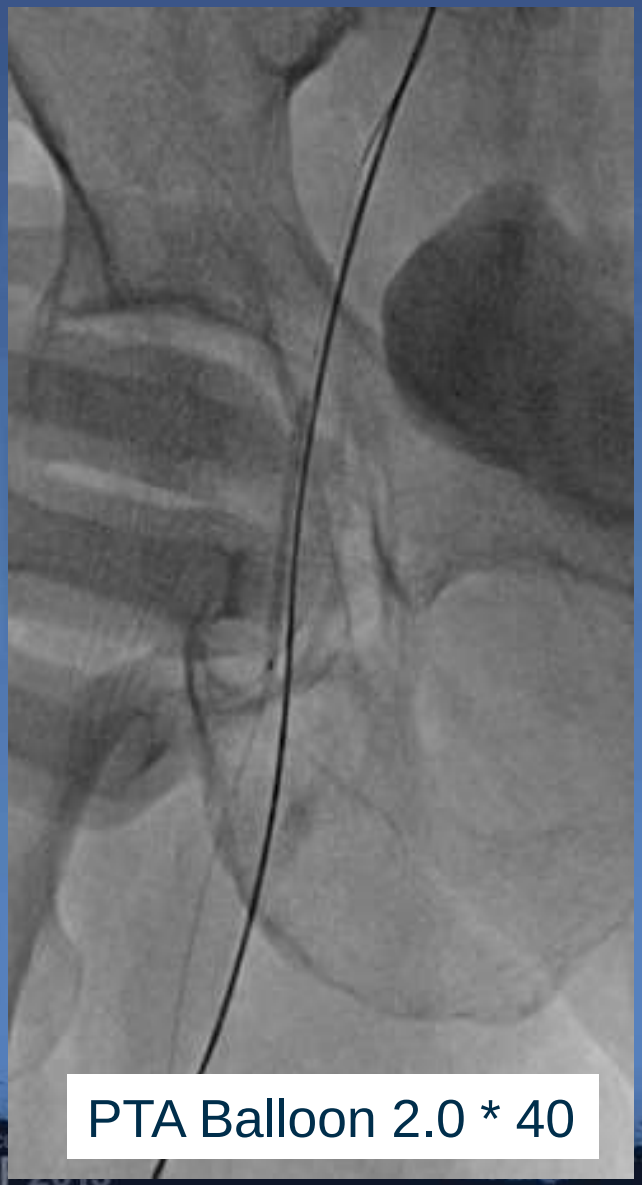
Access Site Severe Dissection

Vascular Complication



SFA Puncture - 0.014” PTA Wire / Micro Catheter

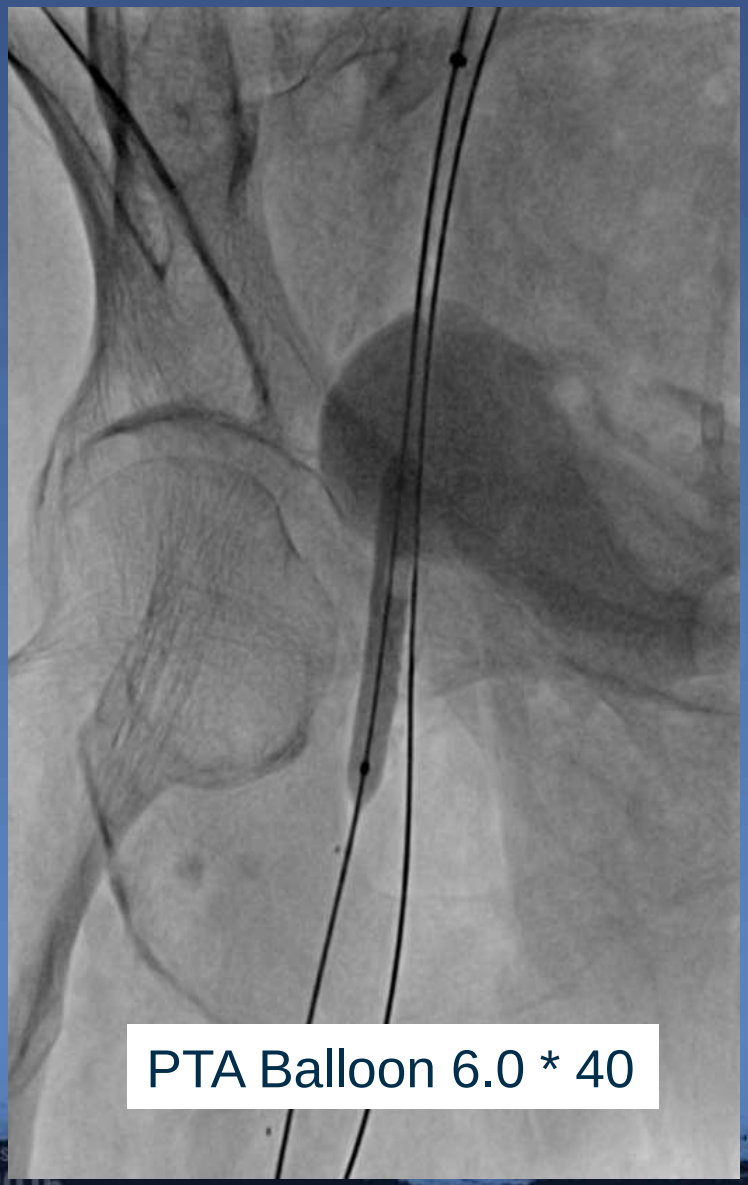
Vascular Complication



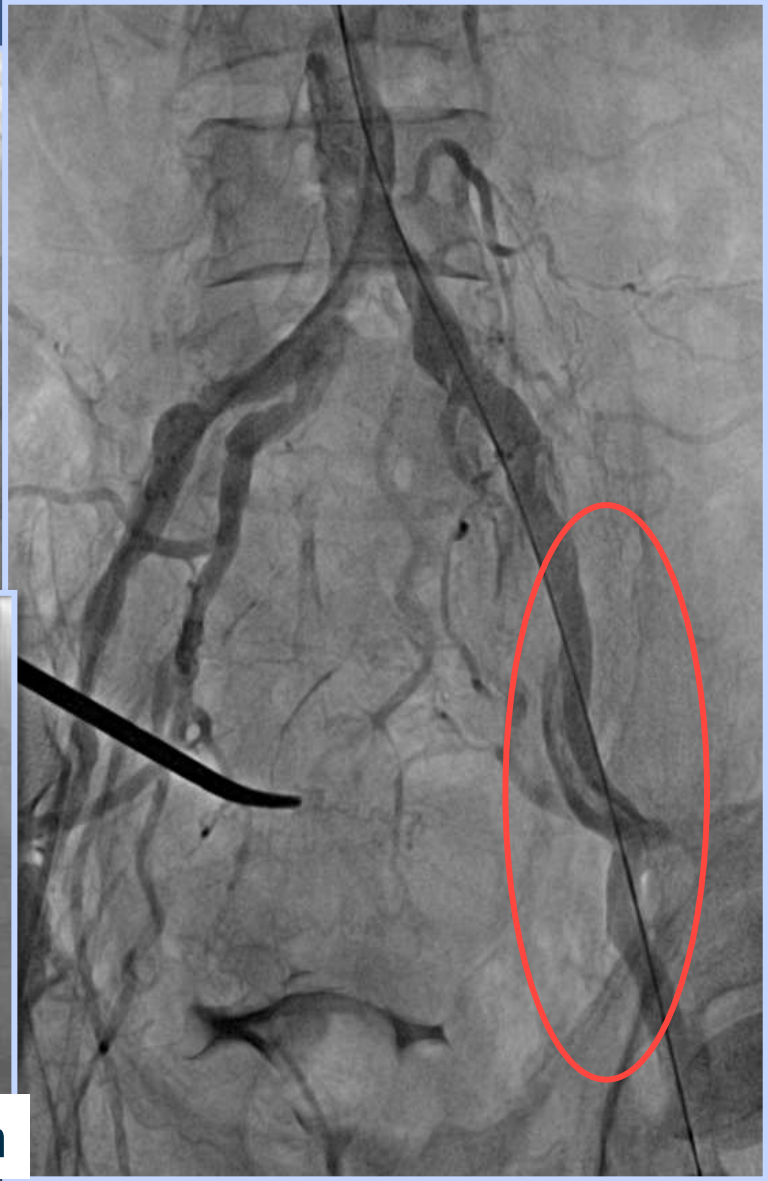
PTA Balloon 2.0 * 40

0.014” PTA Wire – Antegrade Approach

Vascular Complication



Vascular Complication



CoreValve 29mm

Vascular Complication

PTA STENT 8.0 * 60

PTA STENT 9.0 * 80

Vascular Complication

Vascular Complication

Aortic Root Injury

Incidence

- 0.5-1% for SAPIEN
- Rare for CoreValve (without balloon-dilation)

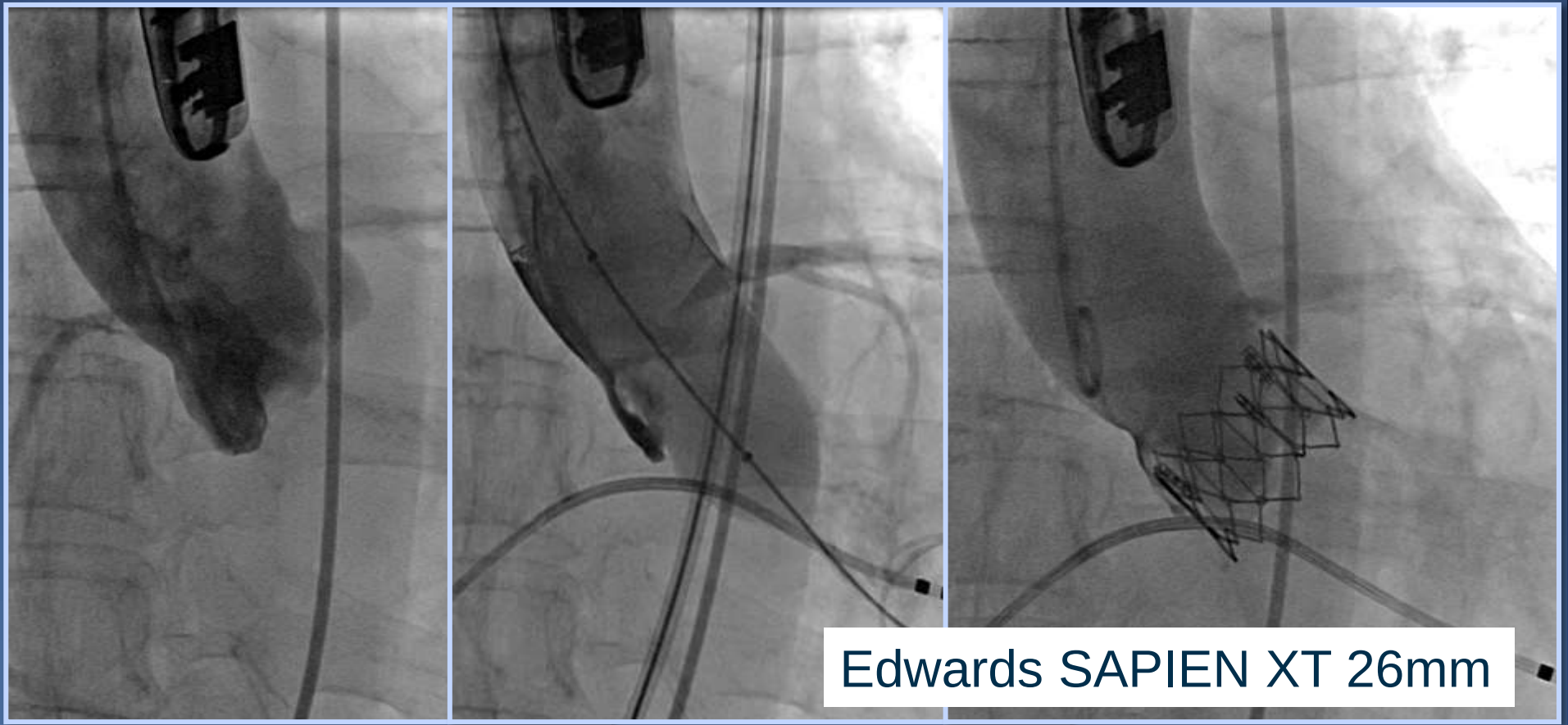
Impact

- High mortality for Annulus rupture, dissection
- Subclinical Aortic root injury (L-R shunt)

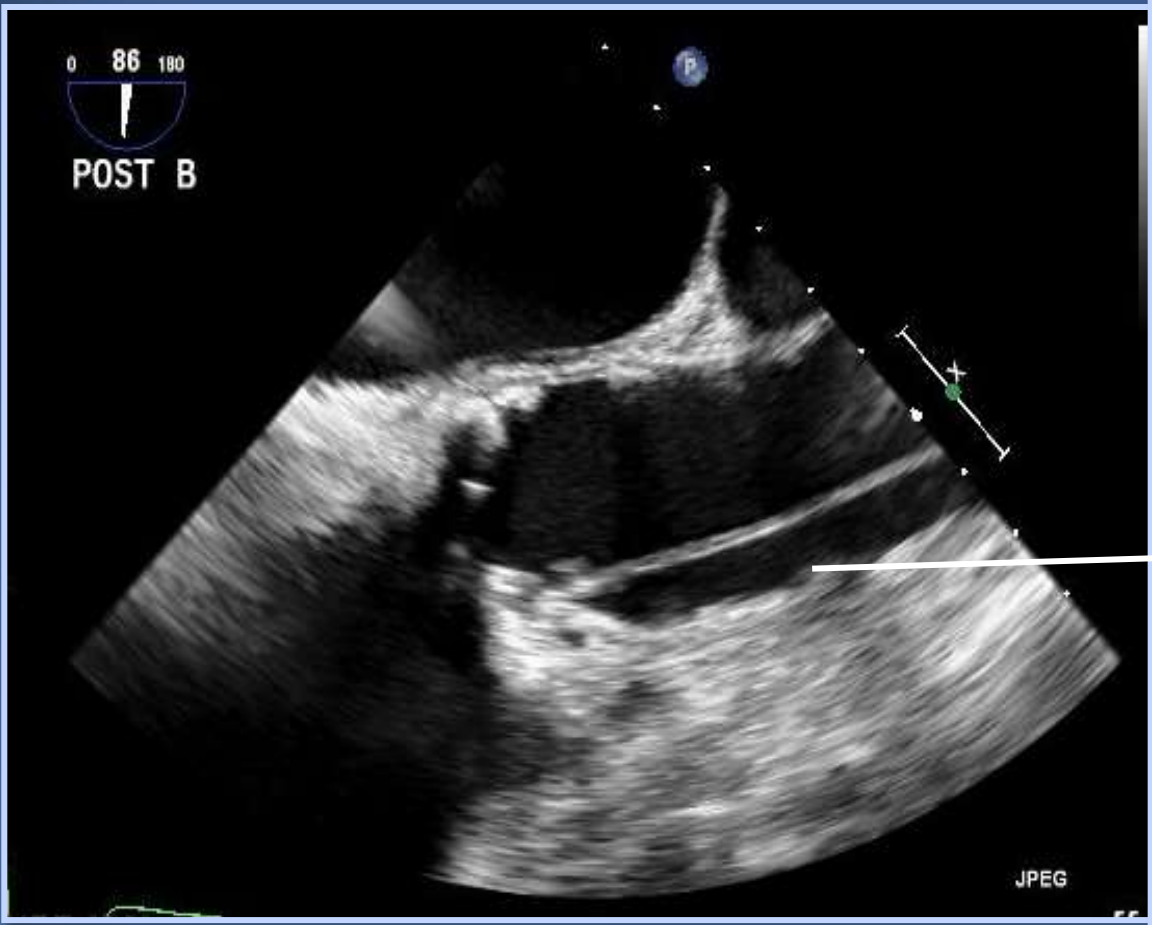
Predictors

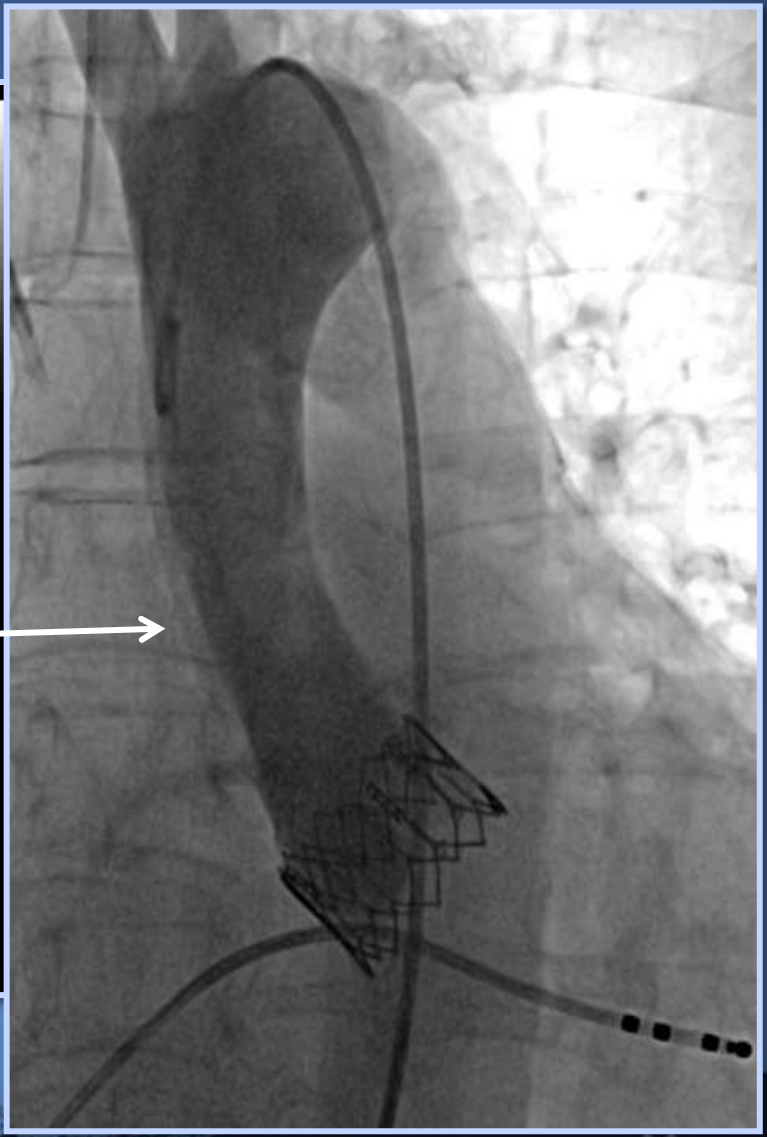
- Extreme oversized device of SAPIEN
- LVOT Calcification

Aortic Dissection

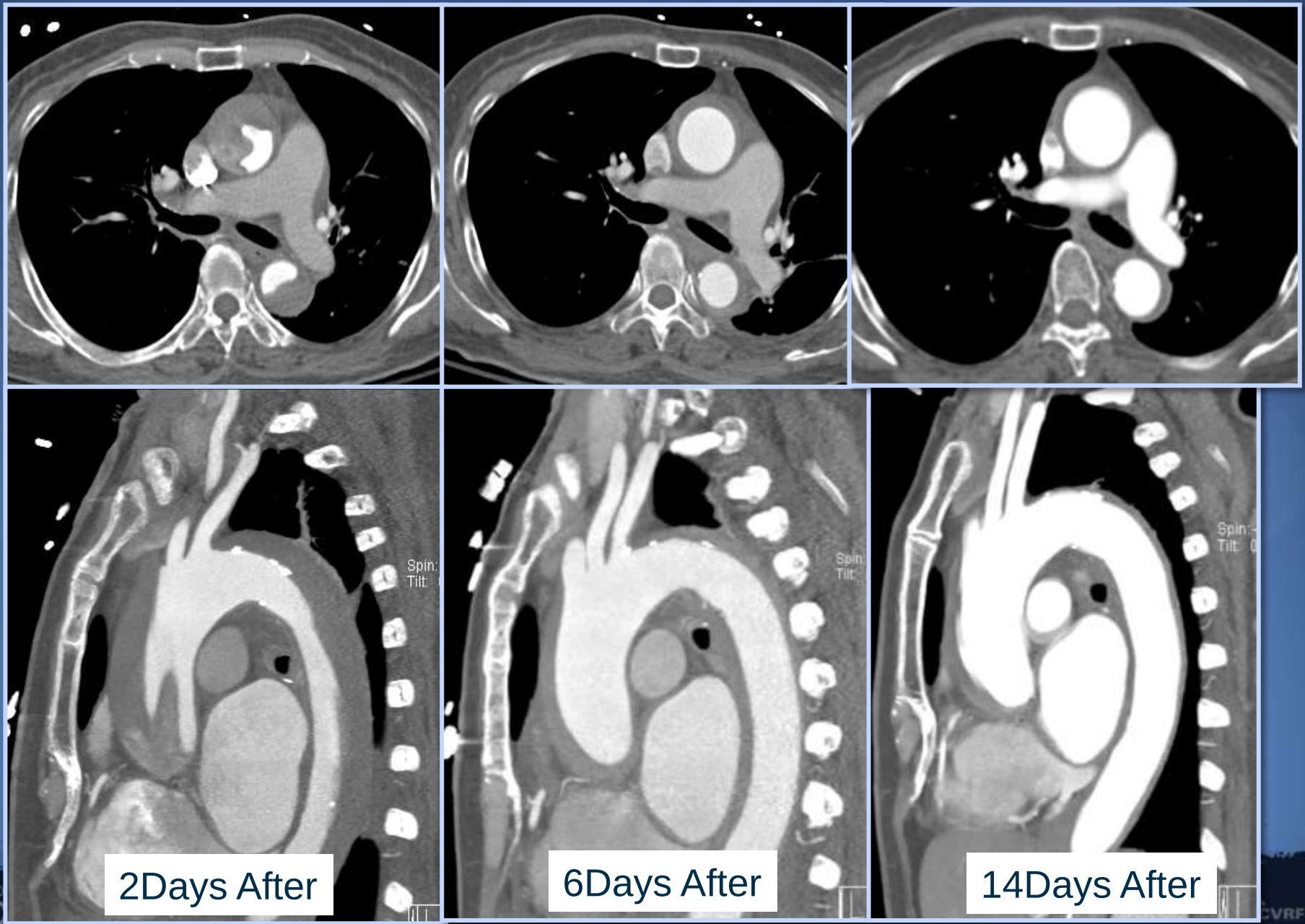


Aortic Dissection

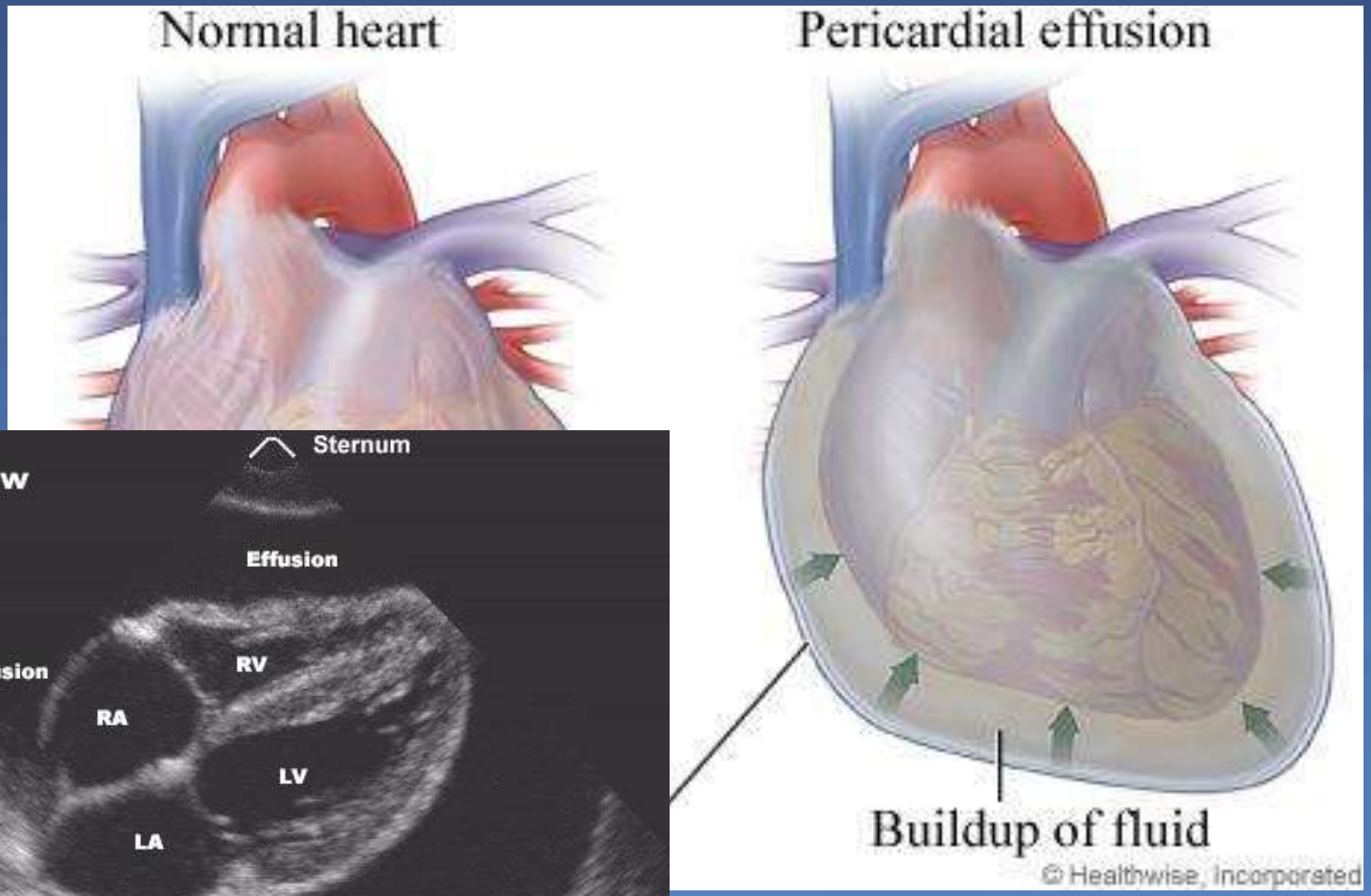


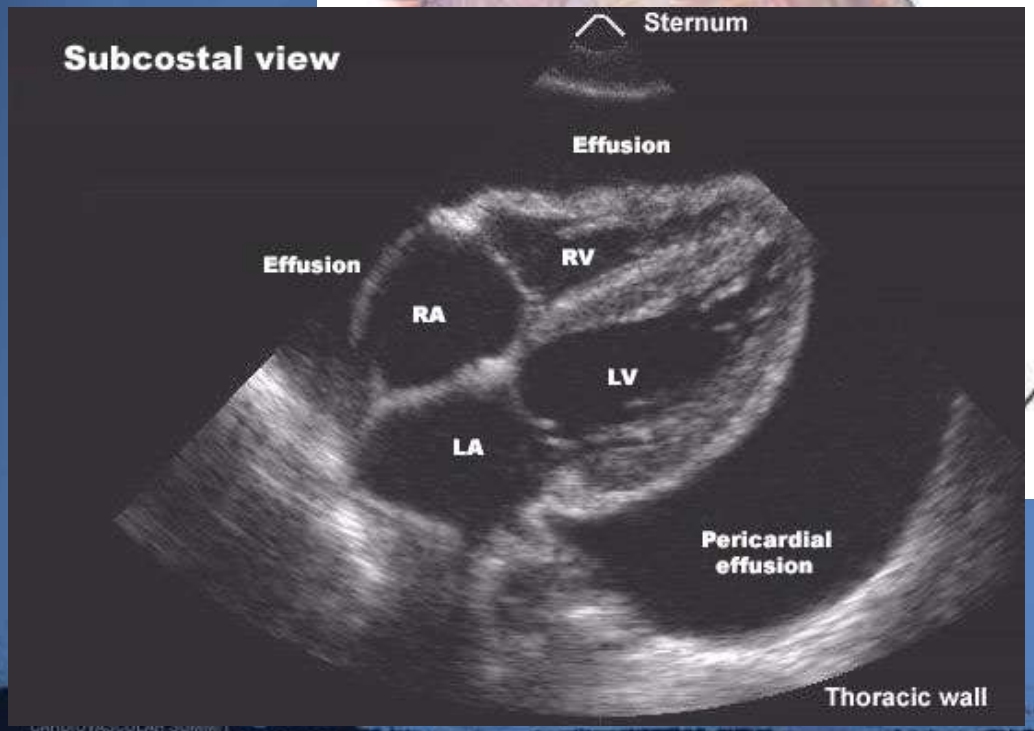


Aortic Dissection

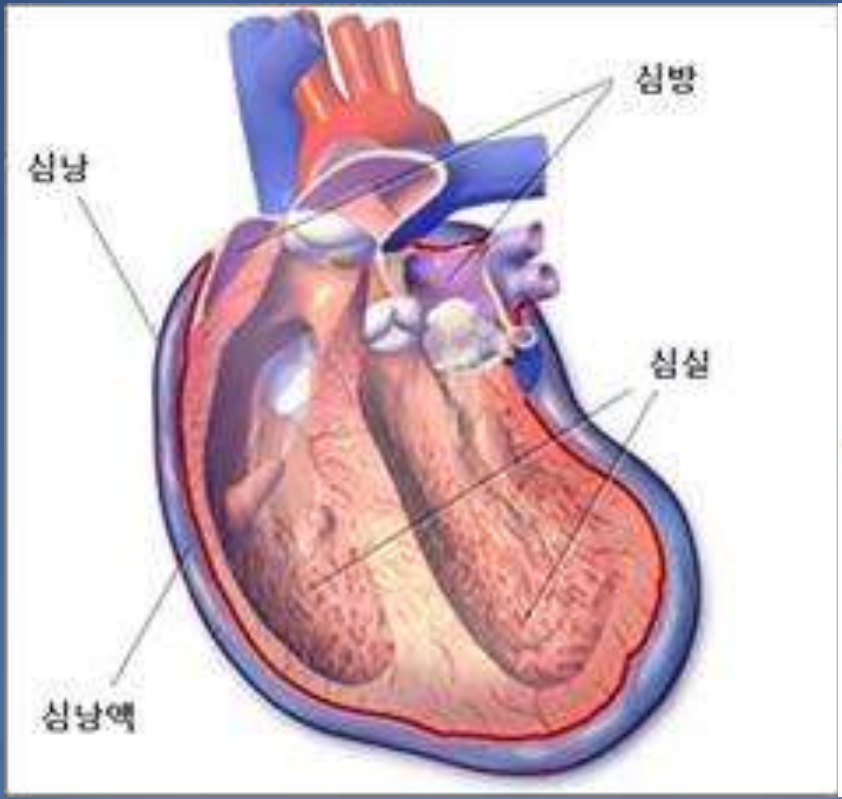


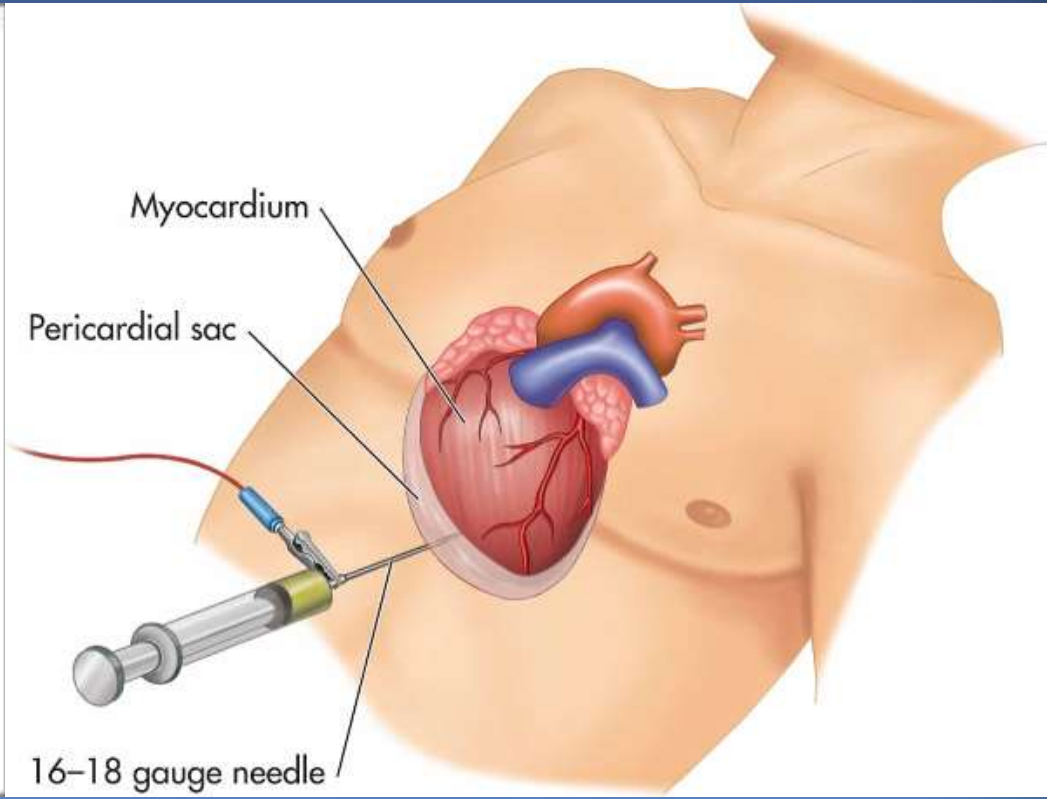
Pericardial effusion



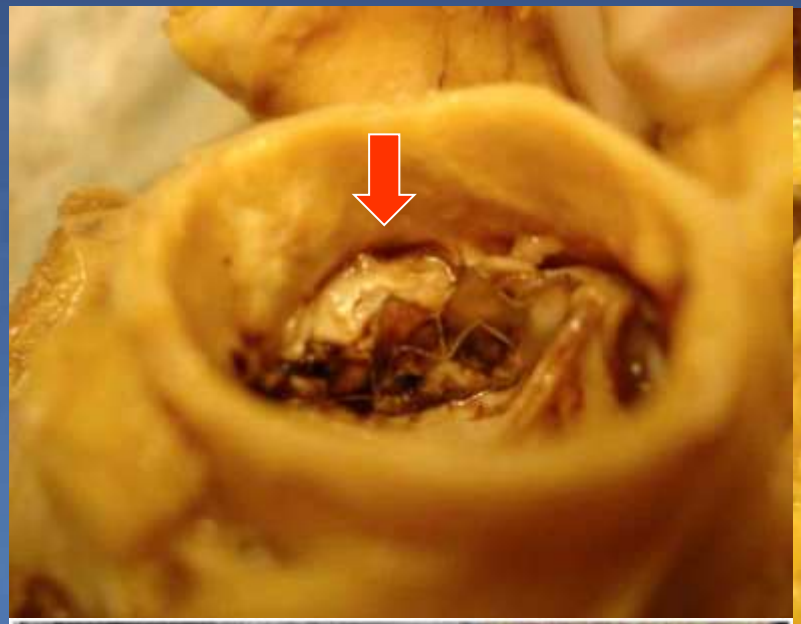


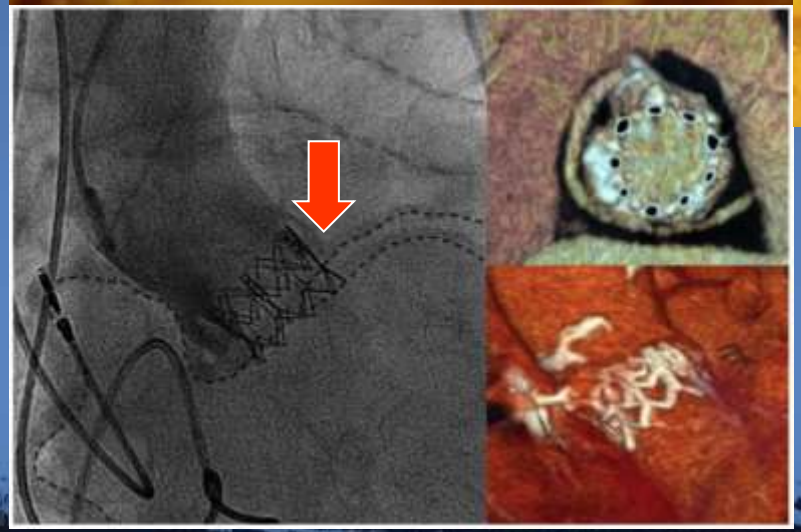
Pericardiocentesis





Coronary Obstruction



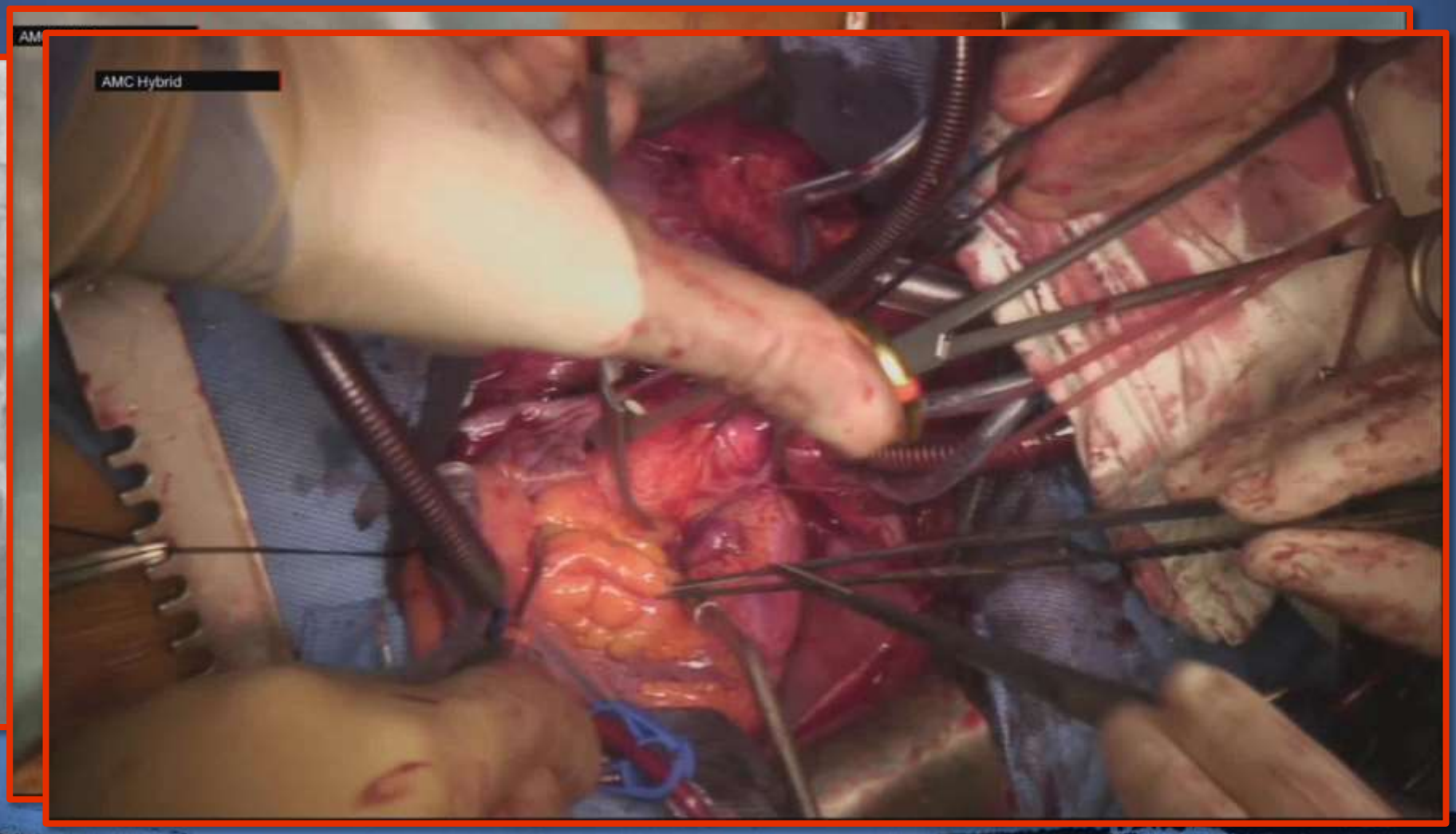


Coronary Height

LCA : 8.3 mm

Coronary Height - 8.3mm

TAVI ► Wire Perforations ► AVR



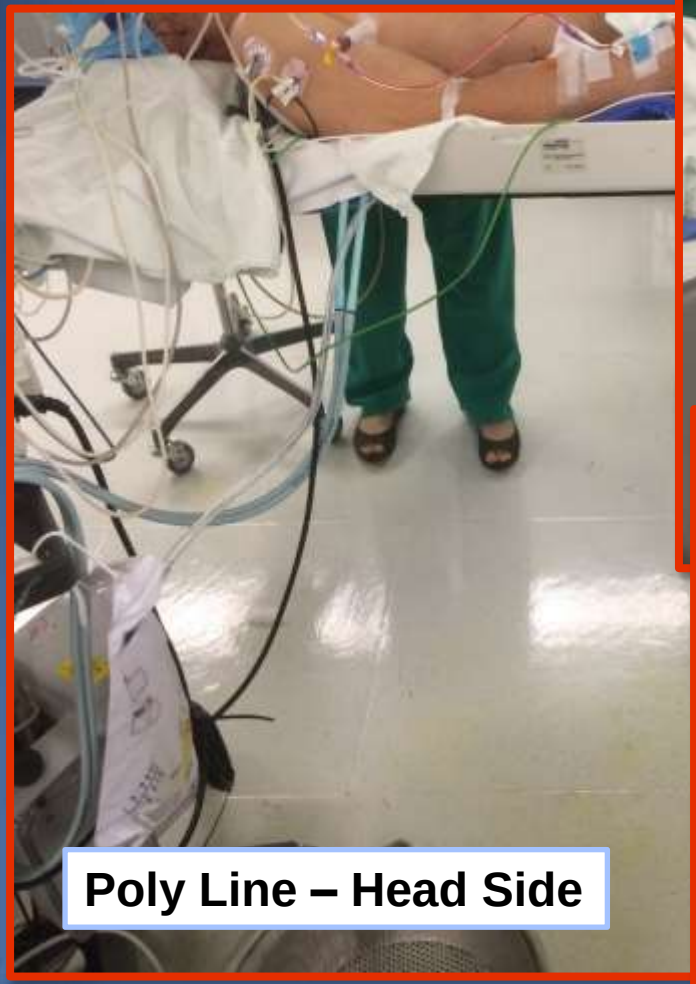
Preparation for OP

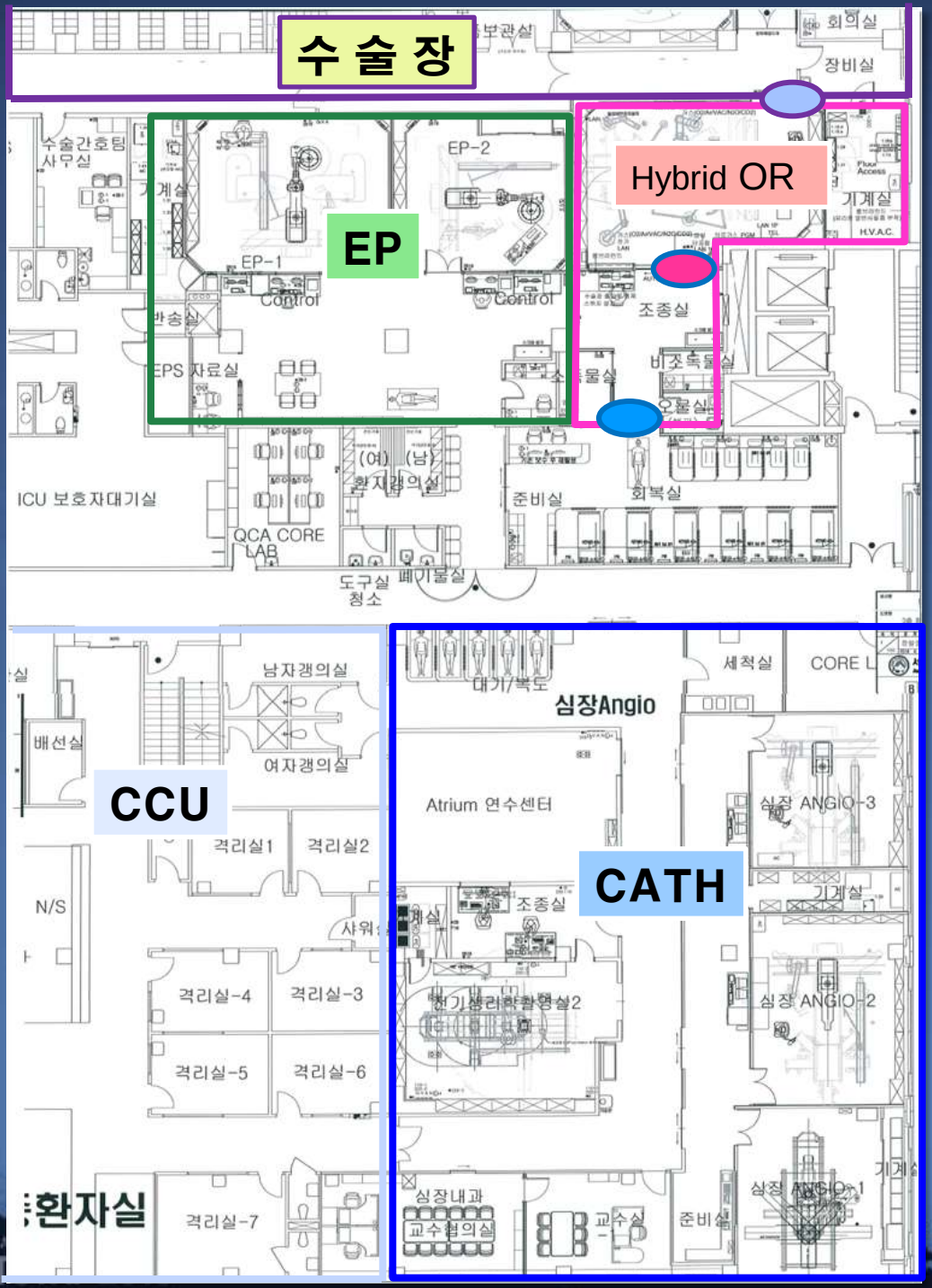
Anesthesia screen holder

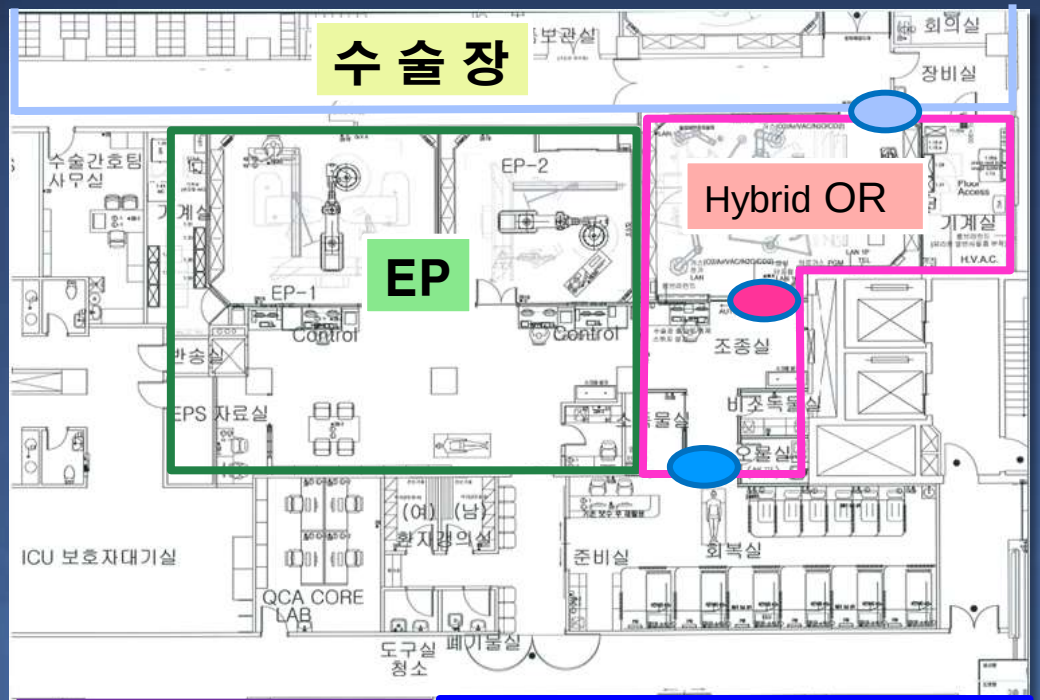
Bovie Plate / Blanketrol

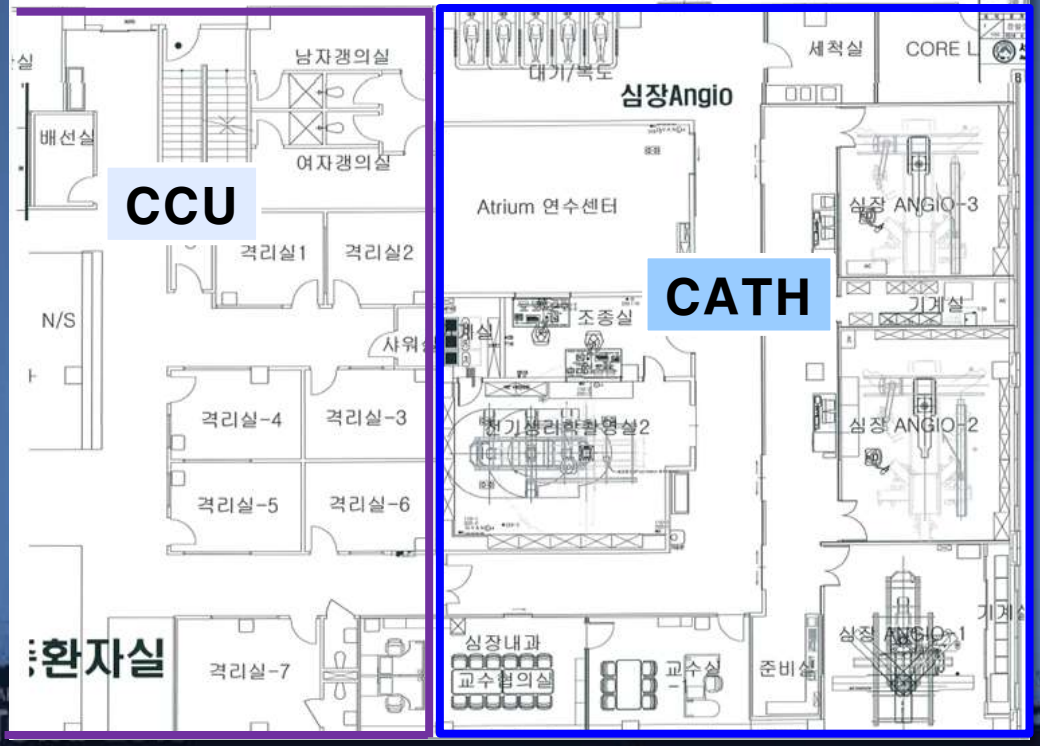
CS OP Preparation

Preparation for OP




수 술 장
보관실
회의실
장비실
수술간호팀 사무실
EP-2
EP
EP-1
Control
Control
Hybrid OR
기계실
조종실
EPS 자료실
ICU 보호자대기실
(여) (남)
환자갱의실
준비실
회복실
QCA CORE LAB
도구실 청소
폐기물실
남자갱의실
배선실
여자갱의실
CCU
격리실1
격리실2
N/S
격리실-4
격리실-3
격리실-5
격리실-6
환자실
격리실-7
대기/복도
심장Angio
세척실
Atrium 연수센터
심장 ANGIO-3
CATH
조종실
기계실
심장 ANGIO-2
심장내과 교수협의실
교수실
준비실
심장 ANGIO-1

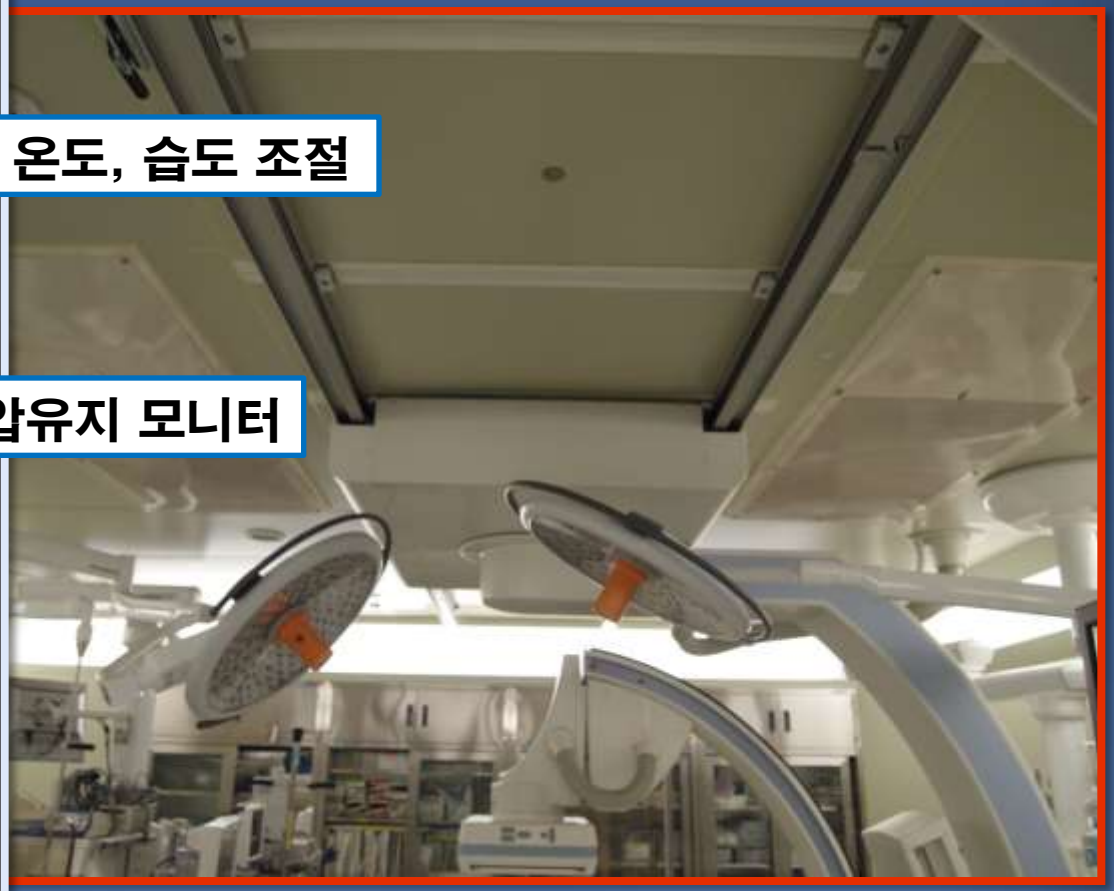

수 술 장
회의실
장비실
수술간호팀 사무실
EP-2
EP
EP-1
Control
Control
Hybrid OR
기계실
조종실
비조혈물실
오물실
EPS 자료실
ICU 보호자대기실
(여) (남)
환자갱의실
준비실
회복실
QCA CORE LAB
도구실 청소
폐기물실

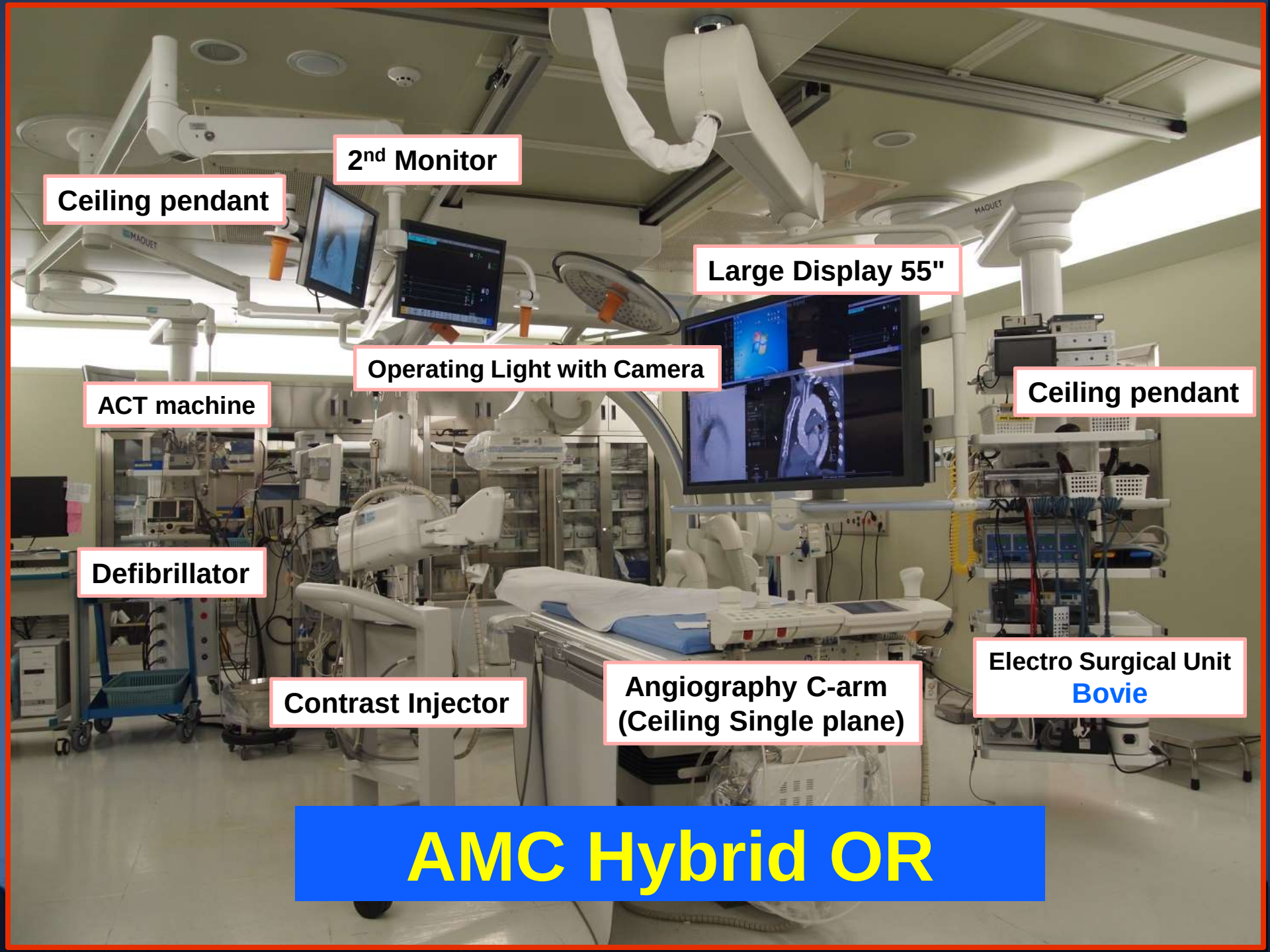

남자갱의실
배선실
여자갱의실
CCU
격리실1
격리실2
N/S
격리실-4
격리실-3
격리실-5
격리실-6
환자실
격리실-7
대기/복도
심장Angio
세척실
CORE L
Atrium 연수센터
심장 ANGIO-3
조종실
CATH
기계실
심장 ANGIO-2
심장 ANGIO-1
심장내과 교수협의실
교수실
준비실

하이브리드 수술실

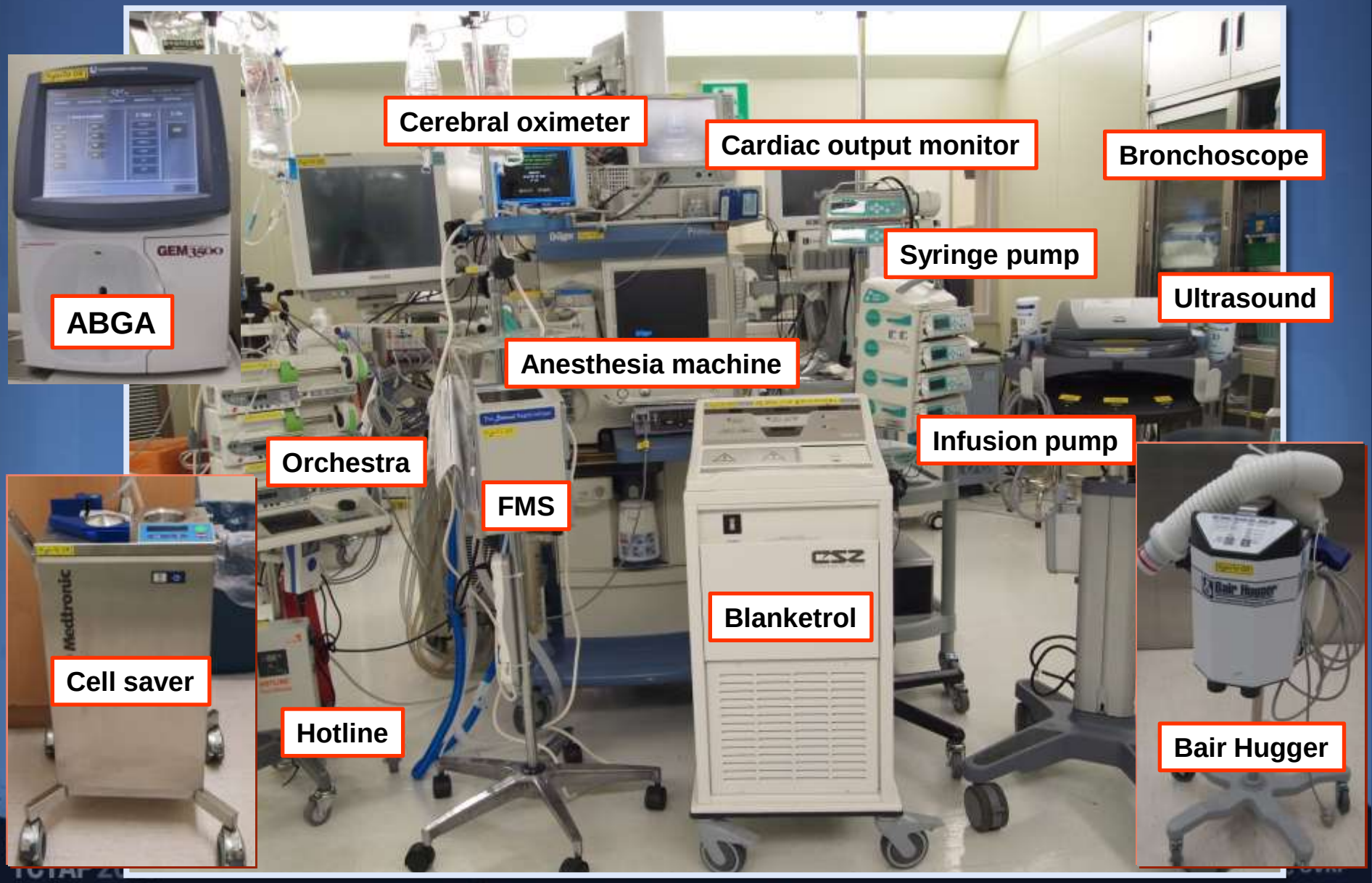
하이브리드 수술실

HEPA Filtration & Fresh Air Ventilation

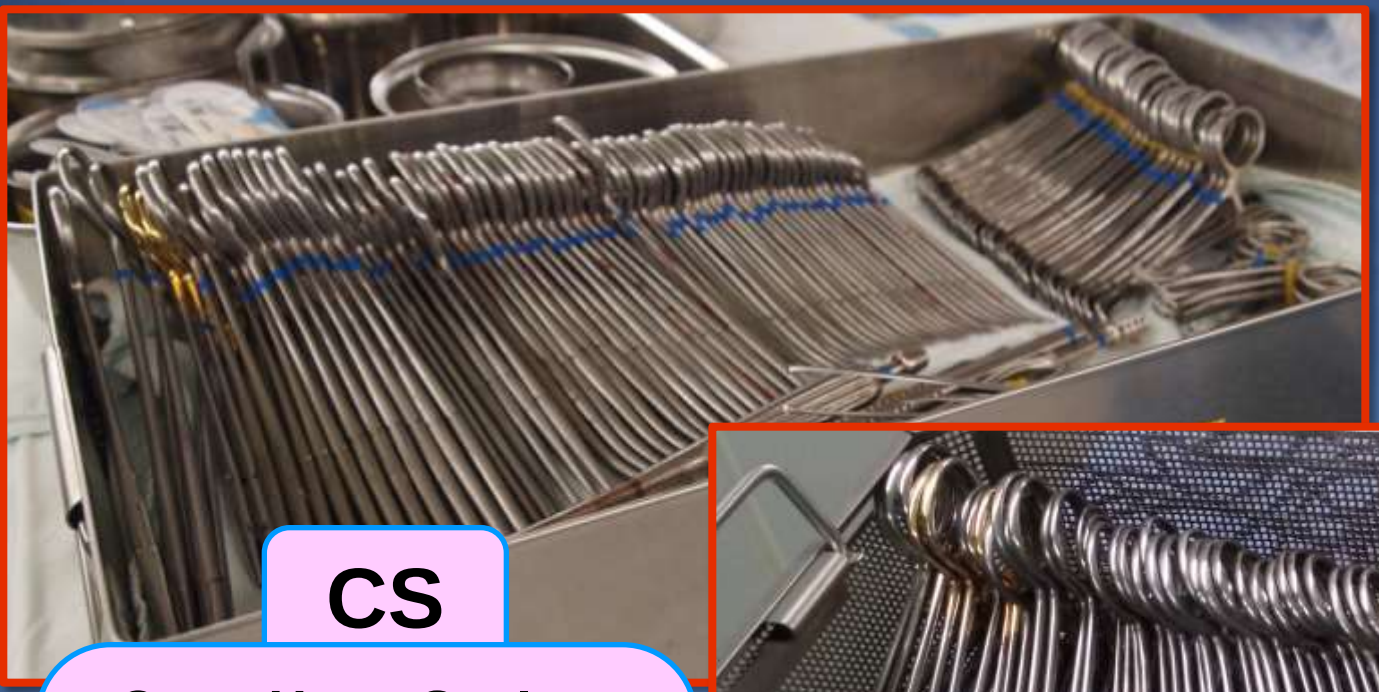



2nd Monitor
Ceiling pendant
Large Display 55"
Operating Light with Camera
ACT machine
Ceiling pendant
Defibrillator
Electro Surgical Unit
Bovie
Contrast Injector
Angiography C-arm
(Ceiling Single plane)
AMC Hybrid OR

Anesthesia Equipment



Instrument Set



VAS

- Biopsy Set
- Basic Set
- AVF Set
- Micro Set
- Major Set

CS

- Open Heart Set I
- Open Heart Set II
- Valve Set
- Aesop Set
- Vascular Clamp Set
- Aesculap Saw

Conclusion

- Prepare TAVI procedure
- Prepare for TAVI Complication
  - PCI, PTA
  - Vascular OP
  - CS OP (Open Sternotomy)