



# TCTAP 2023

## TAVR with AAA: Which First? How?

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# Disclosure

**Speaker's name : Mao-Shin Lin**

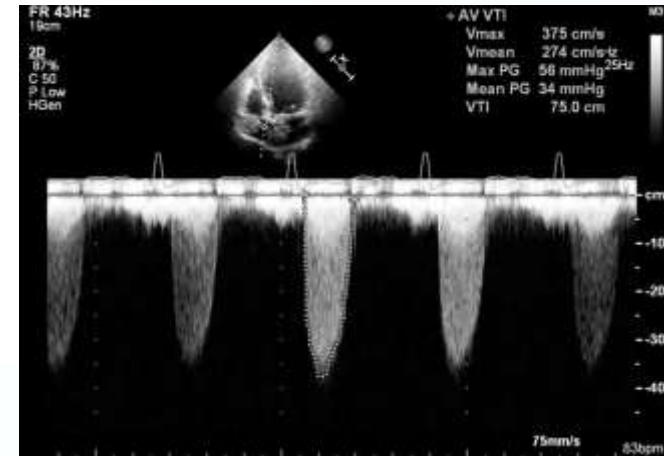
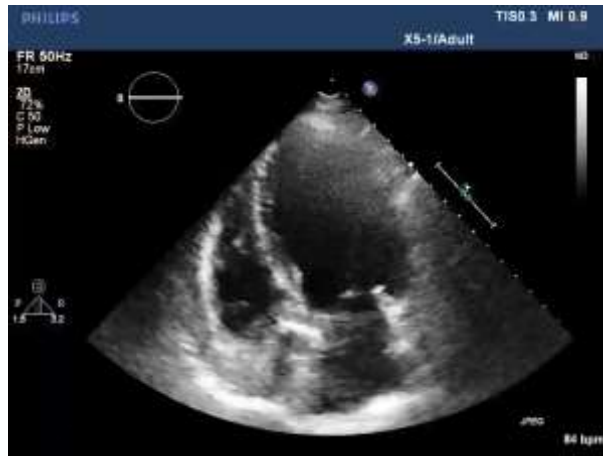
I do not have any potential conflict of interest to declare

# Brief History

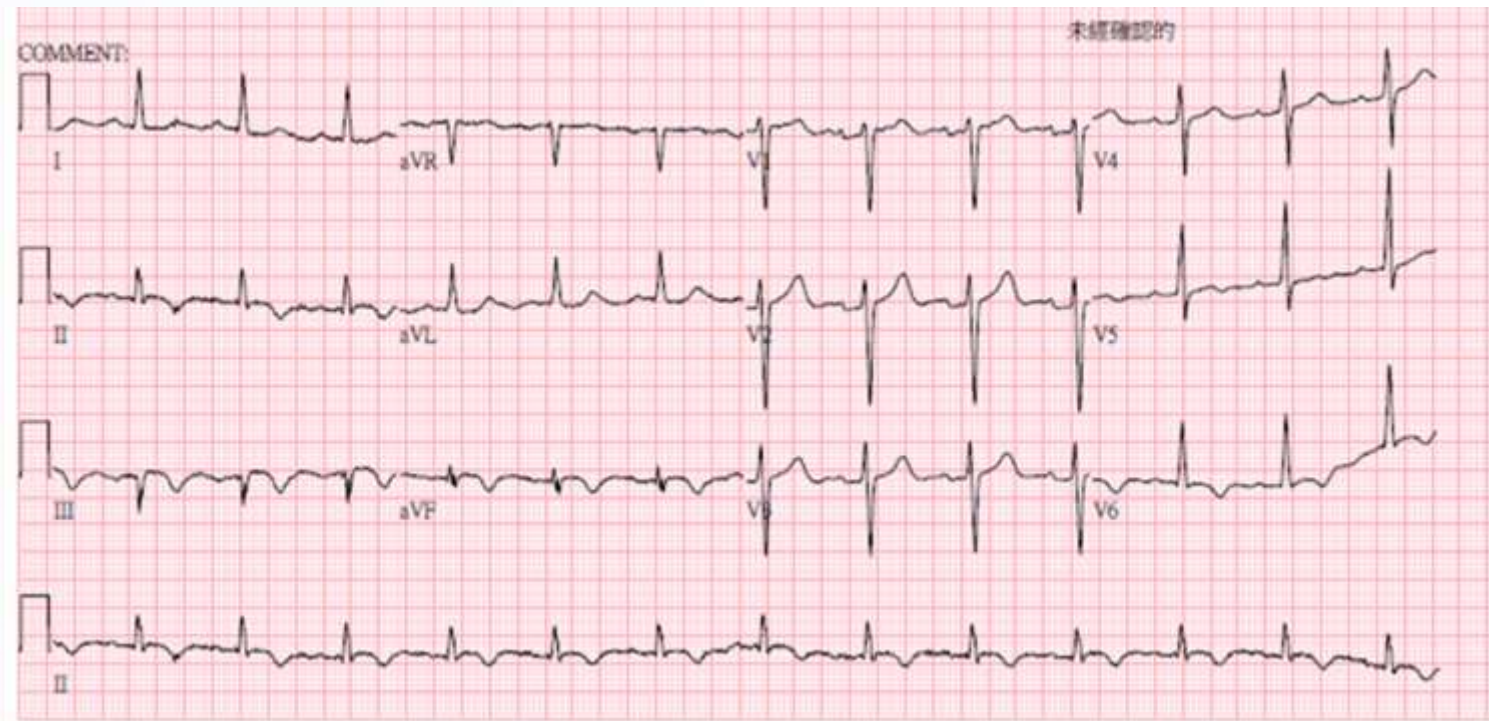
- 86 y/o woman
- Underlying disease: HTN, Hyperlipidemia, Aortic stenosis
- Feb 2016 Echo: LVEF: 72%, mean PG: 23 mmHg, AVA: 1.3 cm<sup>2</sup>
- Dec 2018 Echo: LVEF: 71%, mean PG: 23 mmHg, AVA: 1.2/0.99 cm<sup>2</sup>
- Jan 2020 Echo LVEF: 74%, mean PG: 31 mmHg, AVA: 0.98 cm<sup>2</sup>
- 8<sup>th</sup> Feb 2022 ACS with acute lung edema, received LAD & RCA stenting  
Critical aortic stenosis was found
- Transfer to NTUH for further management

# Echocardiography

- Severe aortic stenosis  
AVA: 0.47 cm<sup>2</sup>, mean PG: 34.0 mmHg, peak PG: 58.0 mmHg  
Peak velocity: 3.75 m/sec, mild AR
- LVEF: 26.5~36.2 %; Global hypokinesia
- MR, mild~moderate; TR, mild; TR PG: 18.9 mmHg

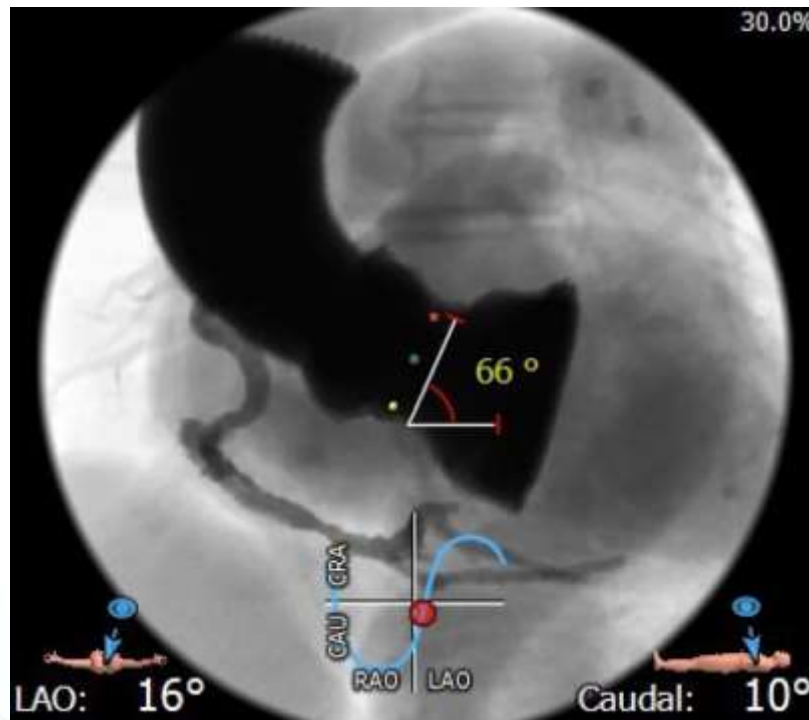
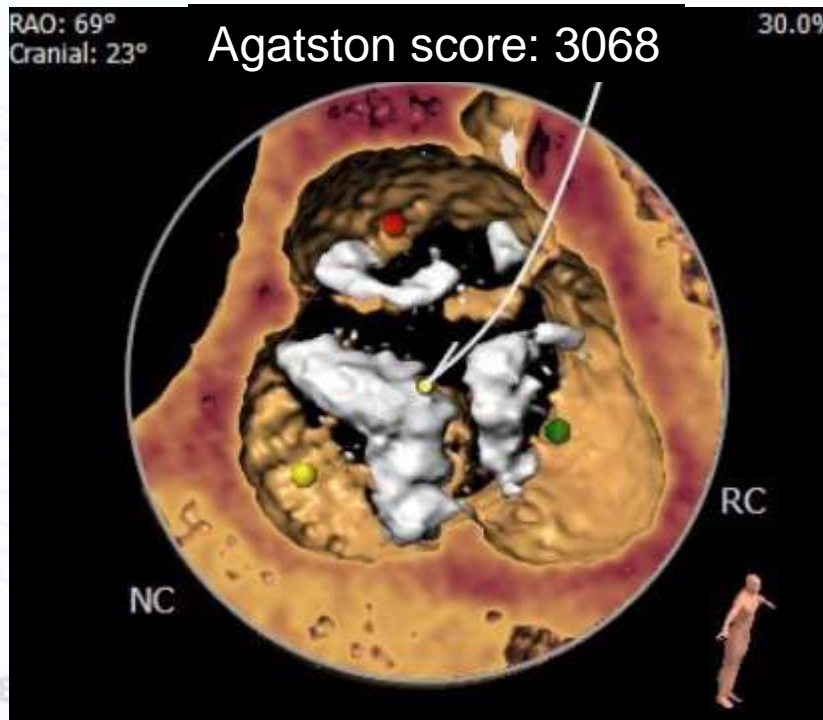
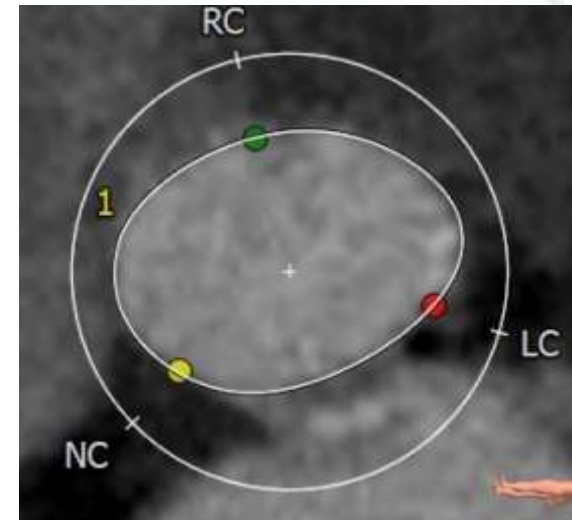


# ECG & CXR



# MSCT Evaluation

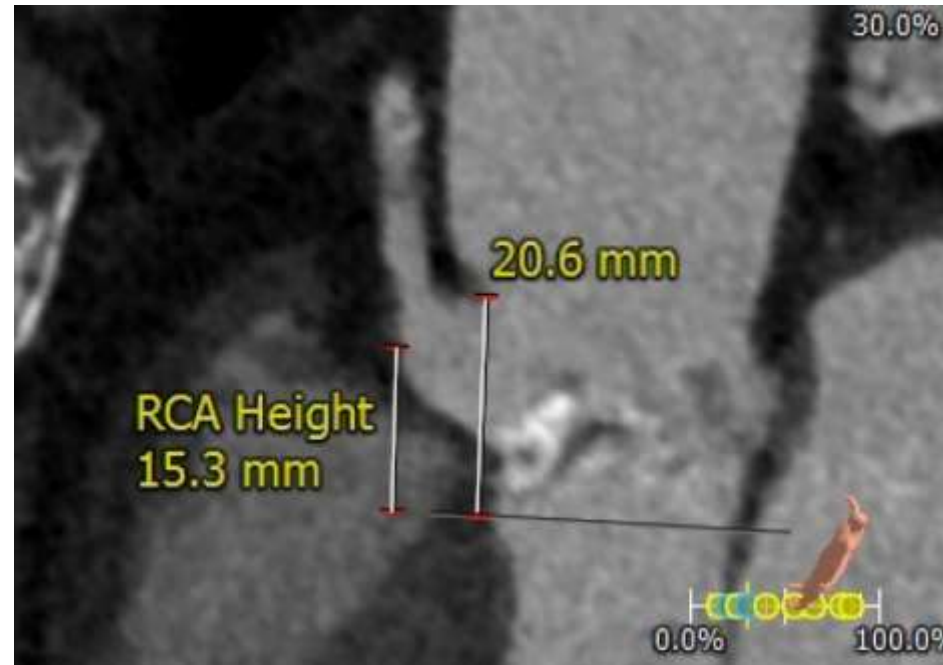
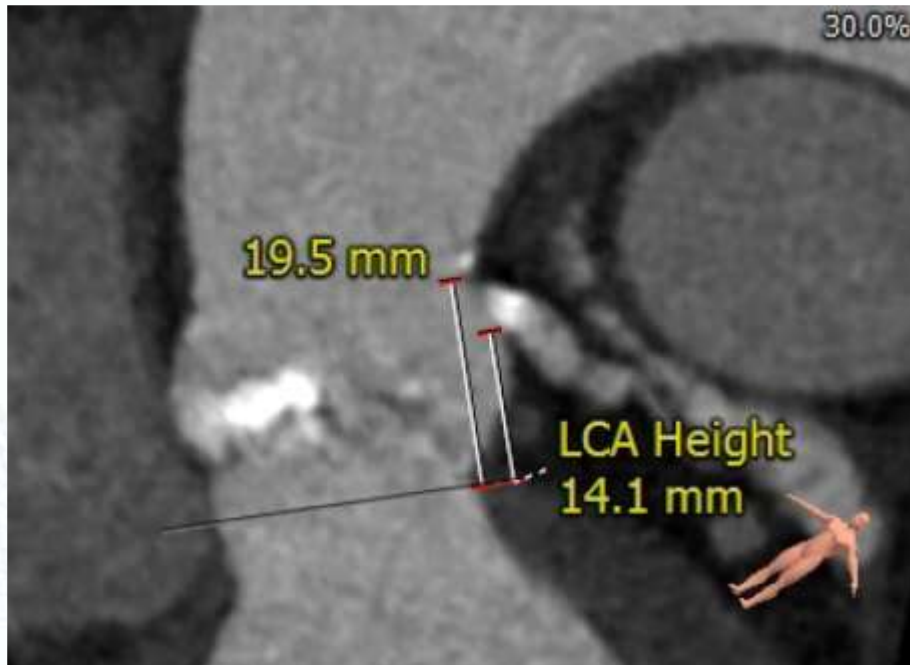
Annulus Area	421.8 mm <sup>2</sup>
Area Derived Diameter	23.2 mm
Annulus Perimeter	74.1 mm
Perimeter Derived Diameter	23.6 mm
Annulus Min Diameter	21.5 mm
Annulus Max Diameter	25.0 mm



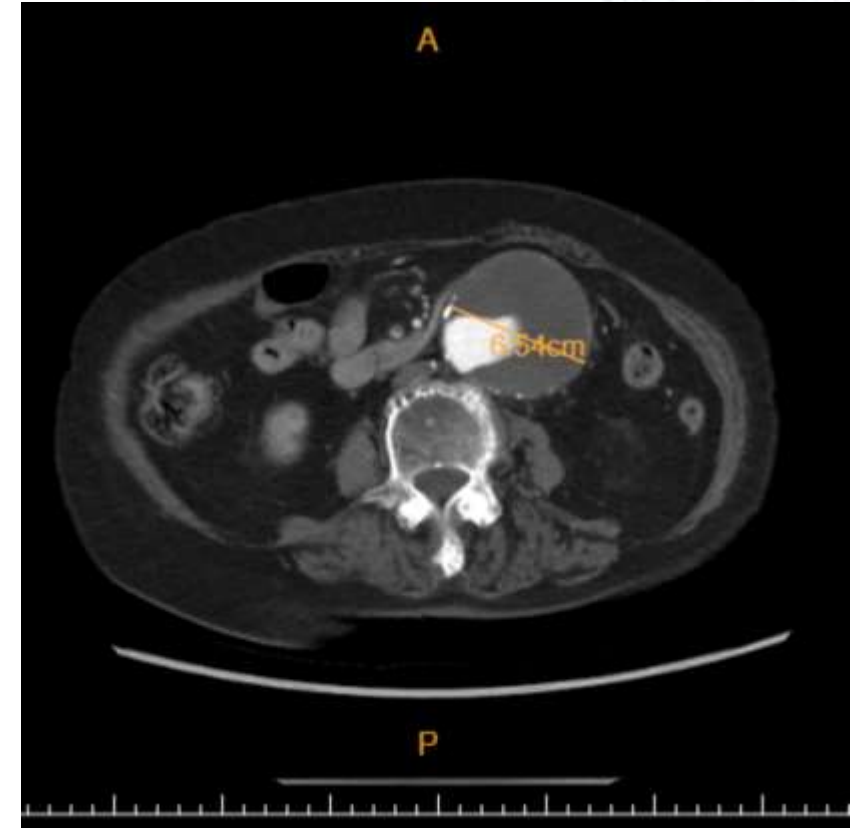
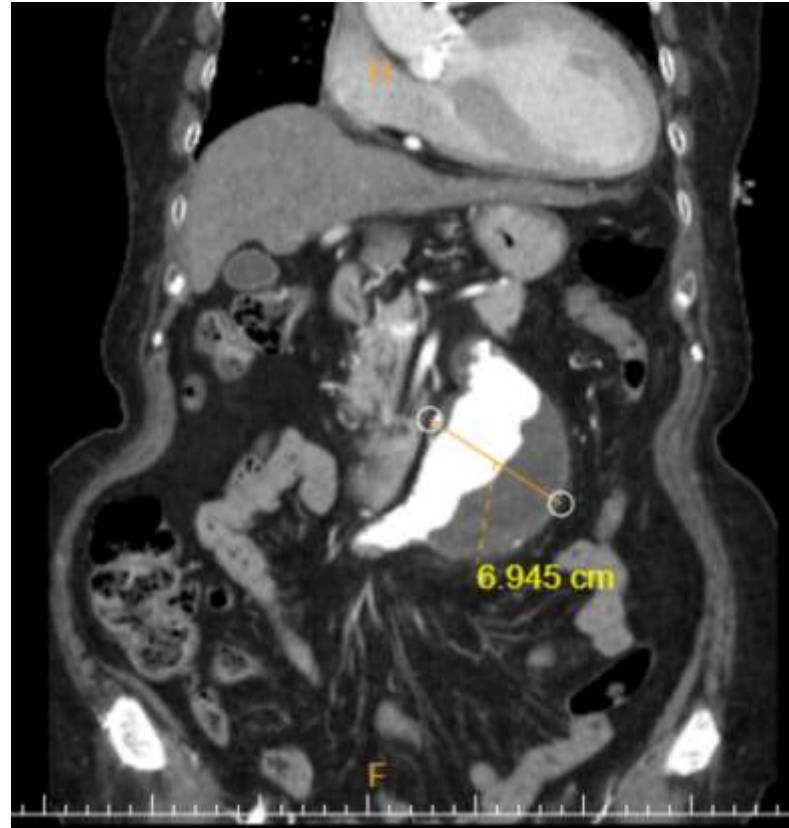
# MSCT Evaluation

Left main coronary artery: Patent.

- LAD: Minimal (1-24%) stenosis at the pLAD with noncalcified plaque. Placement of a stent at the pLAD without definite in stent stenosis.
- LCX: Mild (25-49%) stenosis at the pLCX with noncalcified plaque.
- RCA: Placement of a stent at the mRCA without definite in stent stenosis. Minimal (1-24%) stenosis at the pRCA with partially calcified plaque.

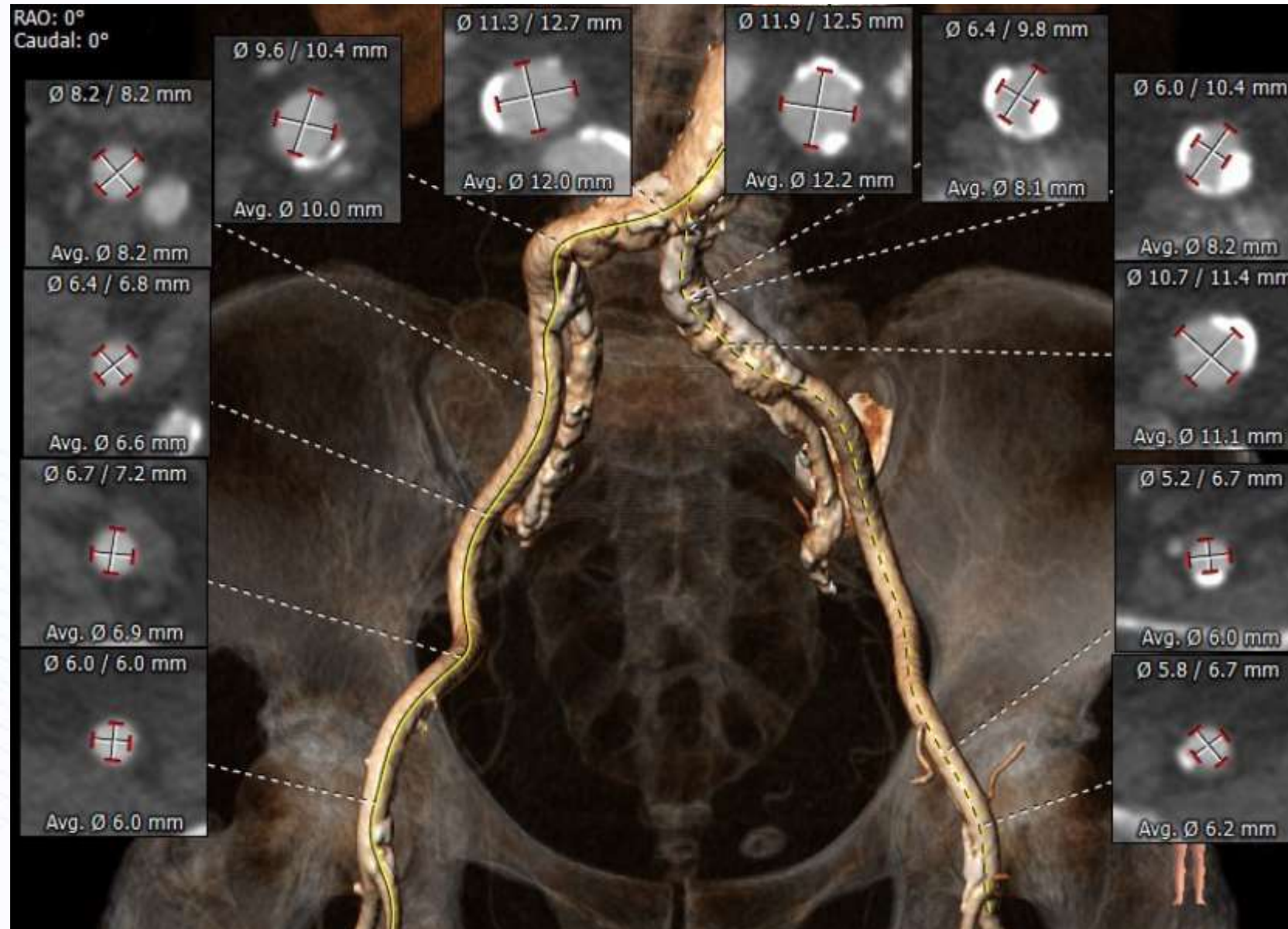


# Infra-renal Abdominal Aortic Aneurysm (AAA)





# MSCT Evaluation



# Case Summary

- Highly calcified AV with critical aortic stenosis
- Poor left ventricular function
- Abdominal aortic aneurysm with size around 6.5~7.0 cm

# 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease

**Recommendations for the Threshold for AAA Repair**  
Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
1	A	1. In patients with unruptured AAA, repair is recommended in those with a maximal aneurysm diameter of <u>≥5.5 cm in men or ≥5.0 cm in women</u> . <sup>1-6</sup>
COR	LOE	Recommendations
1	B-NR	2. In patients with unruptured AAA who have symptoms that are attributable to the aneurysm, repair is recommended to reduce the risk of rupture. <sup>7,8</sup>
2b	C-LD	3. In patients with unruptured saccular AAA, intervention to reduce the risk of rupture may be reasonable. <sup>9</sup>
2b	C-LD	4. In patients with unruptured AAA and aneurysm growth of ≥0.5 cm in 6 months, repair to reduce the risk of rupture may be reasonable. <sup>1-5</sup>

# How Should We Treat ?

- TAVR + EVAR ? or SAVR + surgical aortic repair ?
- Staged ? or concomitant procedure ?
- If TAVR + EVAR, which first ?
- How ?

# Heart Team Decision

**TAVR + EVAR ? or SAVR + surgical aortic repair ?**

- We decided TAVR + EVAR
- High surgical risk: STS score :10.346
- Old age + Frail
- Family & patient willingness



# Heart Team Decision

## Staged procedure? or concomitant procedure ?

- We decided concomitant procedure
- 2 large-bore transfemoral endovascular procedure
- Risk of vascular injury
- Wound closure



# Heart Team Decision

## TAVR + EVAR, which first ?

- If EVAR first

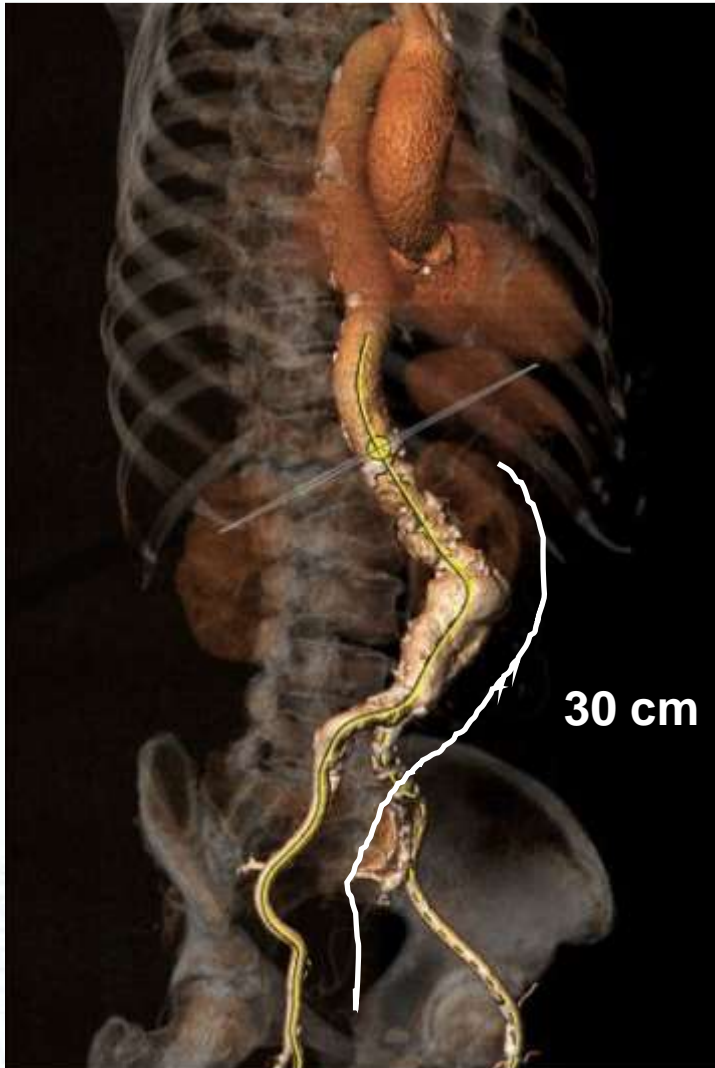
Concern: Interfere of THV pass

- If TAVR first

Concern: Disrupt AAA thrombus → distal embolization

# Heart Team Decision

## Minimizing disruption to AAA thrombus during TAVR



The length from puncture site to supra-AAA segment: 30 cm

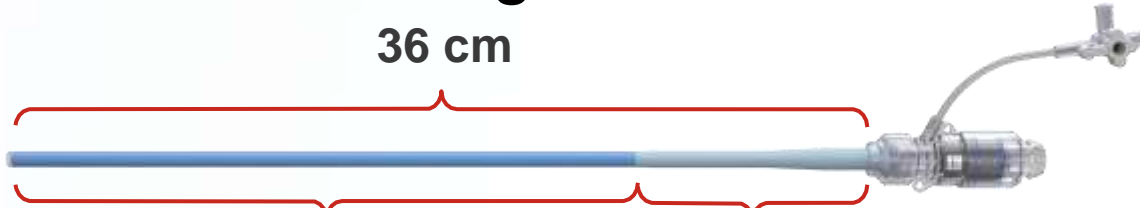


# THV Choice

## Balloon Expandable Valve

- e-sheath length

36 cm



Fully Expandable  
(26.5 cm)

Partially Expandable  
(9.5 cm)



Horizontal Aorta  
Heavily calcification AV

## Self-expanding Valve

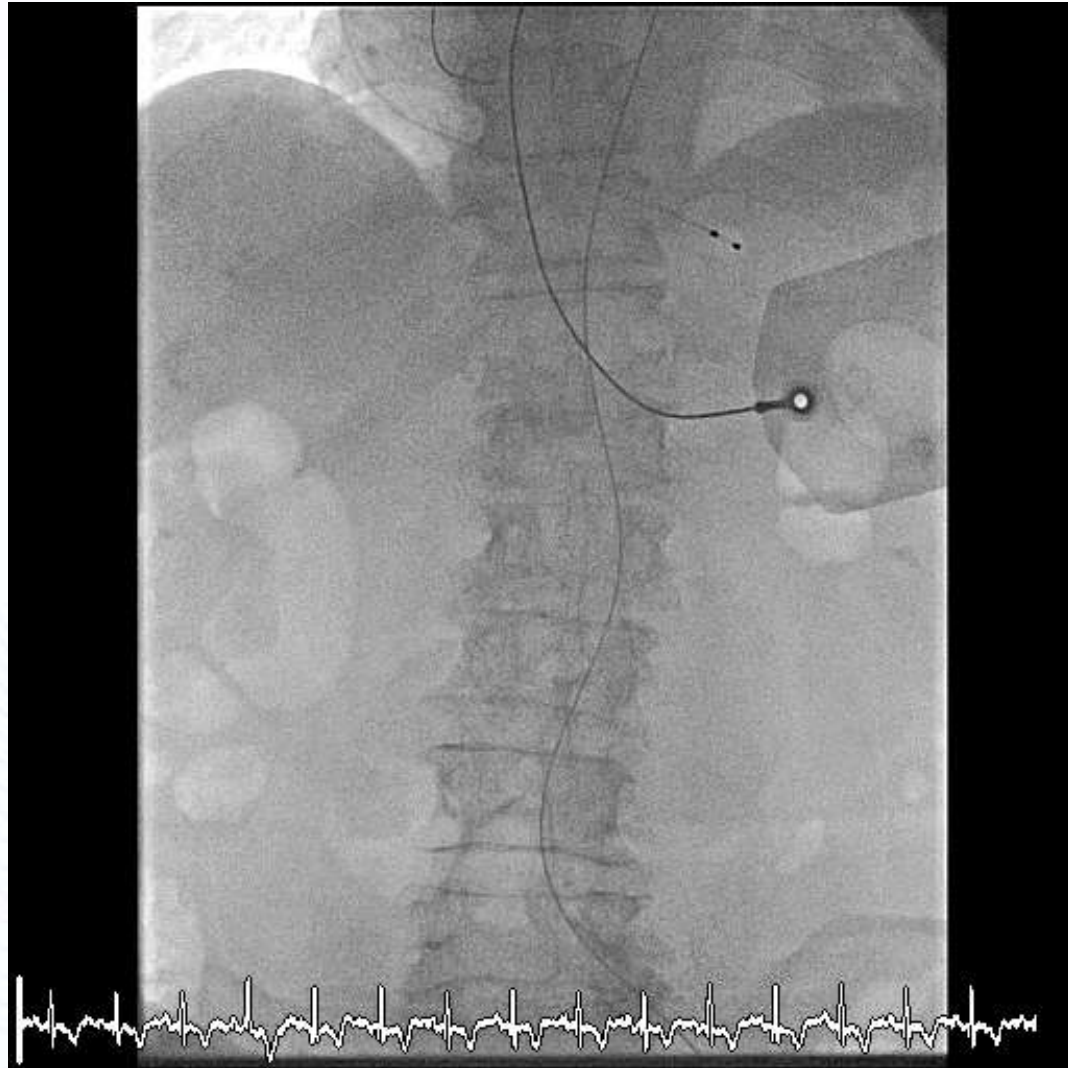
- Avoid in-line sheath
- Use 45 cm or 60 cm sheath



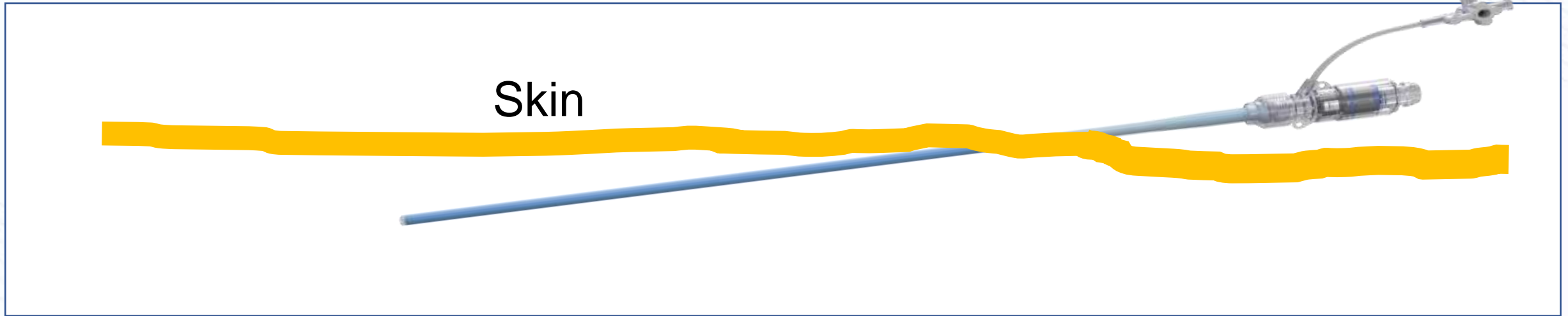
# Treatment Strategy After Heart Team Meeting

- TAVR + EVAR
- TAVR first → EVAR under conscious sedation
- Bilateral femoral artery pre-sutured with one Perclose Proglide
- BAV before TAVR
- SAPIEN 3 valve 23 mm, overfill 1 c.c., oversized 2.5%
- EVAR with Endurant

# Bilateral Sheath Pass

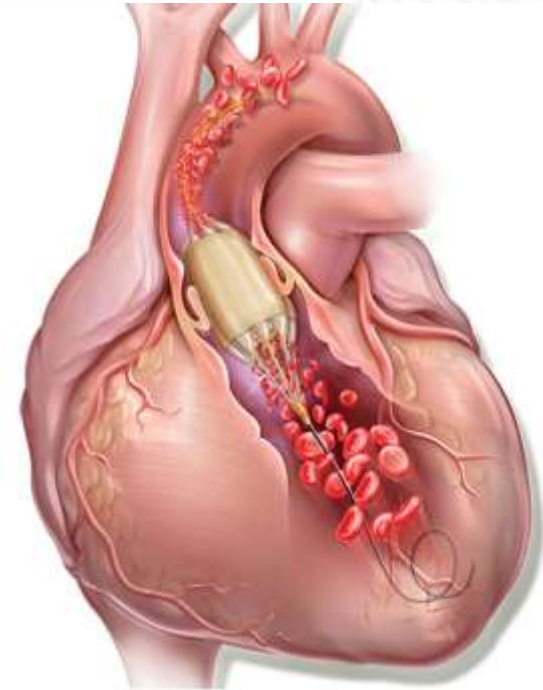
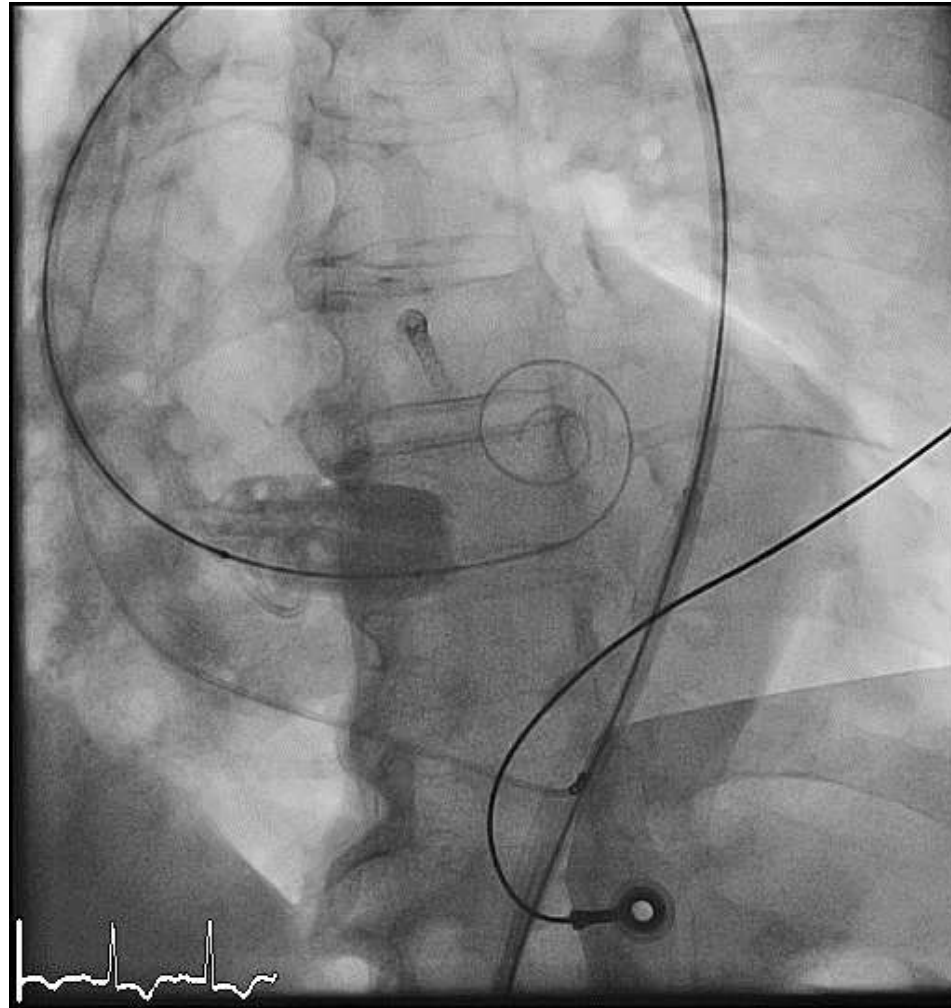
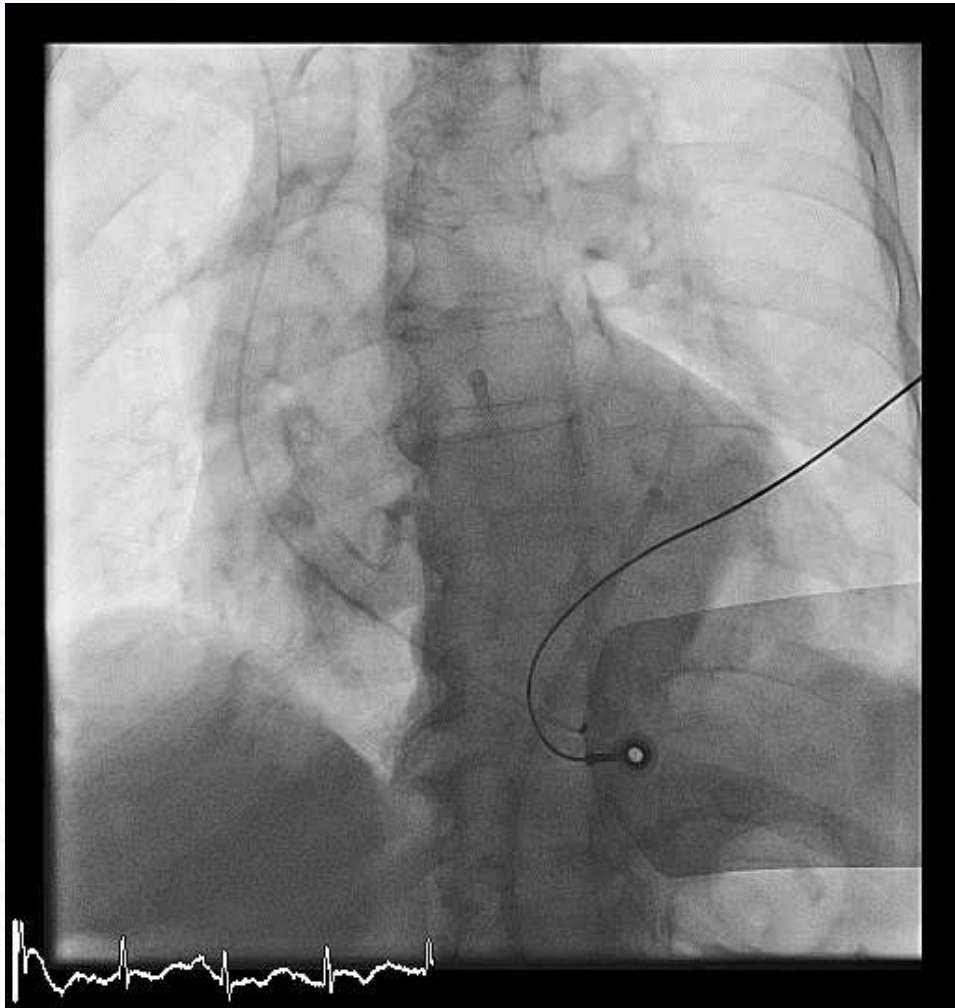


# Bilateral Sheath Pass



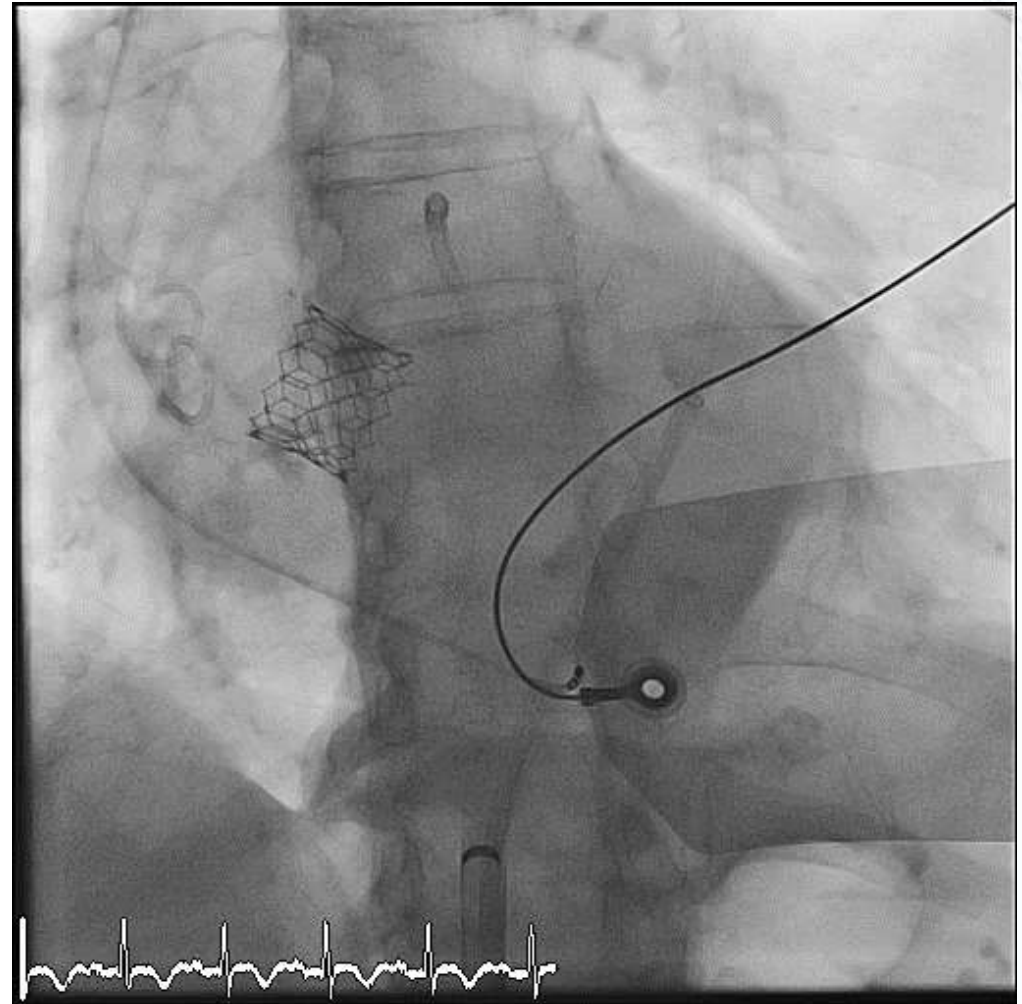
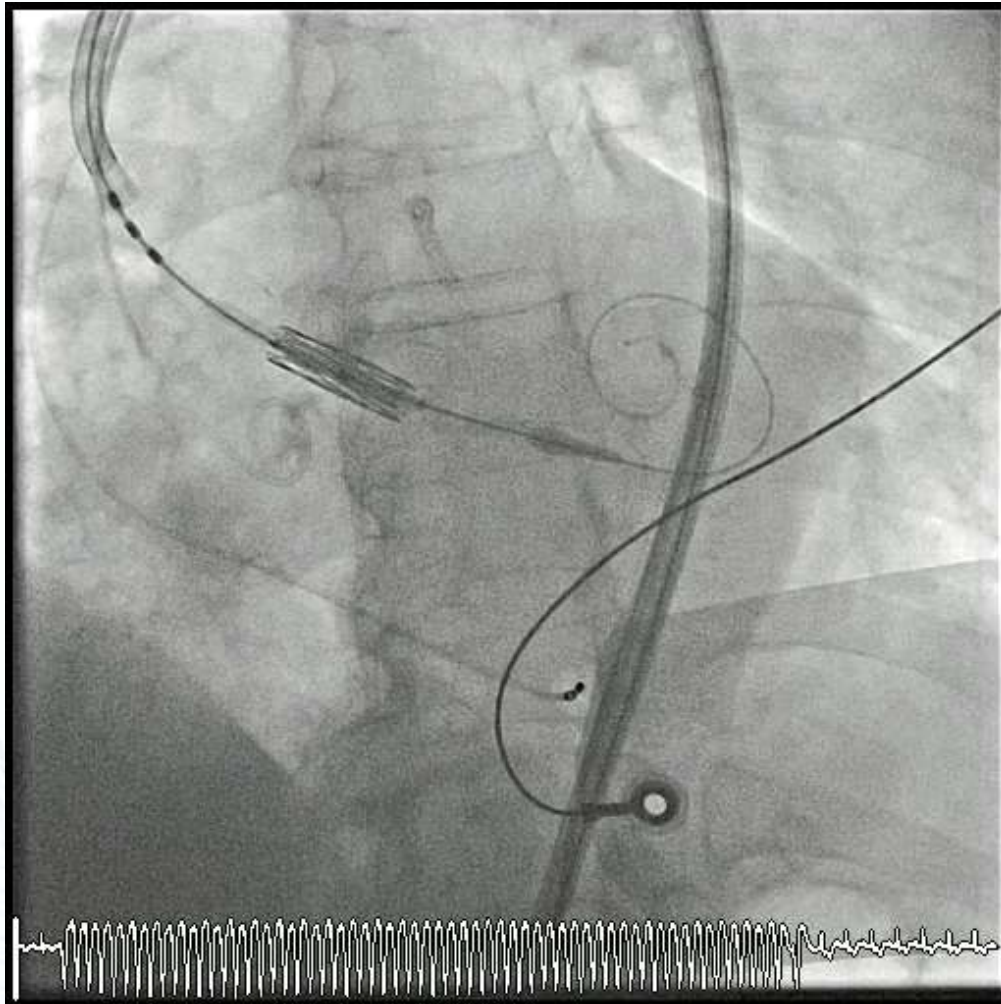
# TAVR

*Pre-dilatation with TrueFlow Balloon 18 X 40 mm*



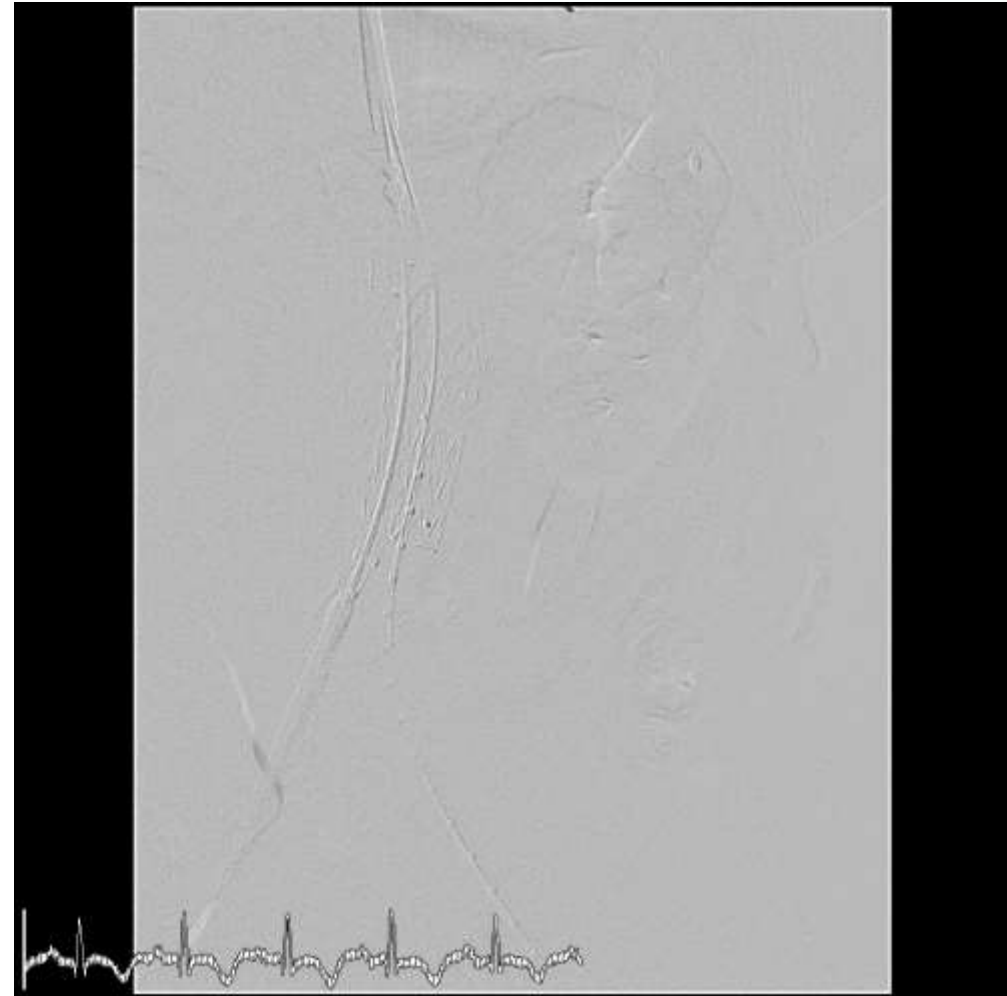
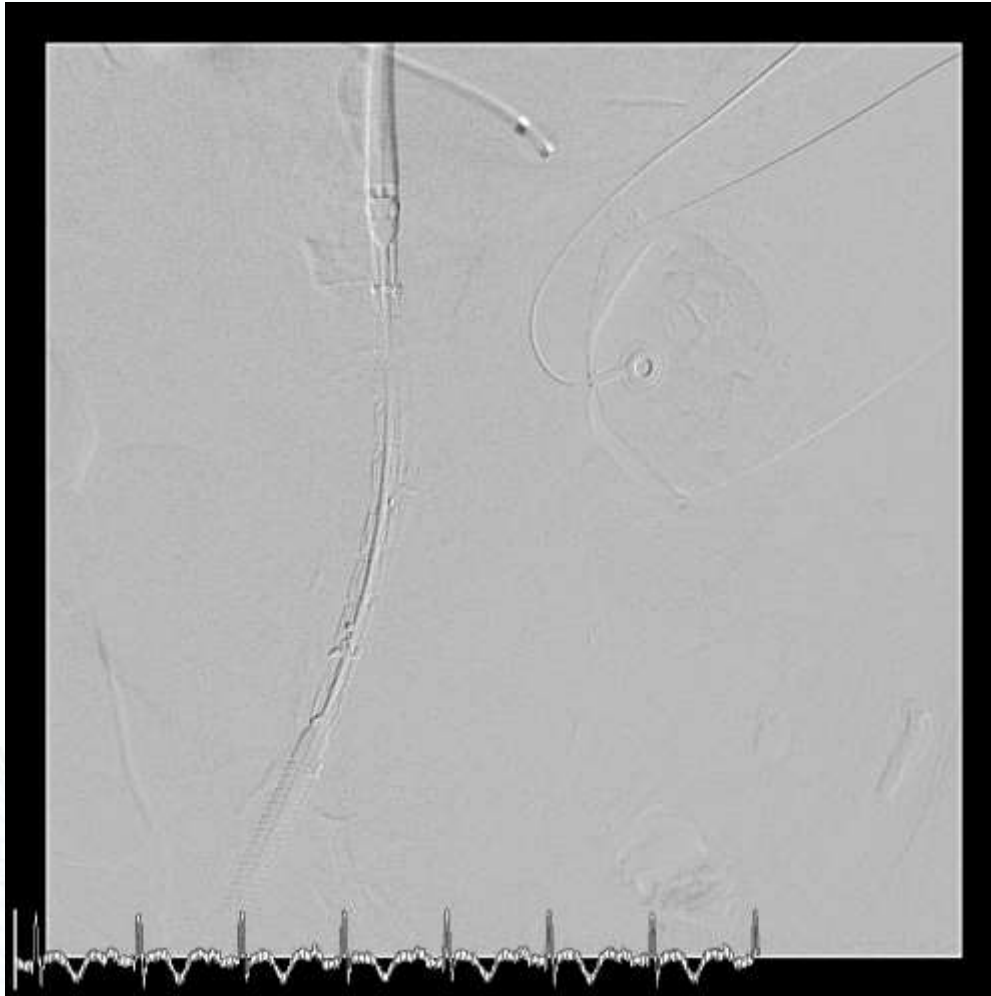
# TAVR

*SAPIEN 3 valve 23 mm, overfill 1 c.c., predicted oversized 2.5%*



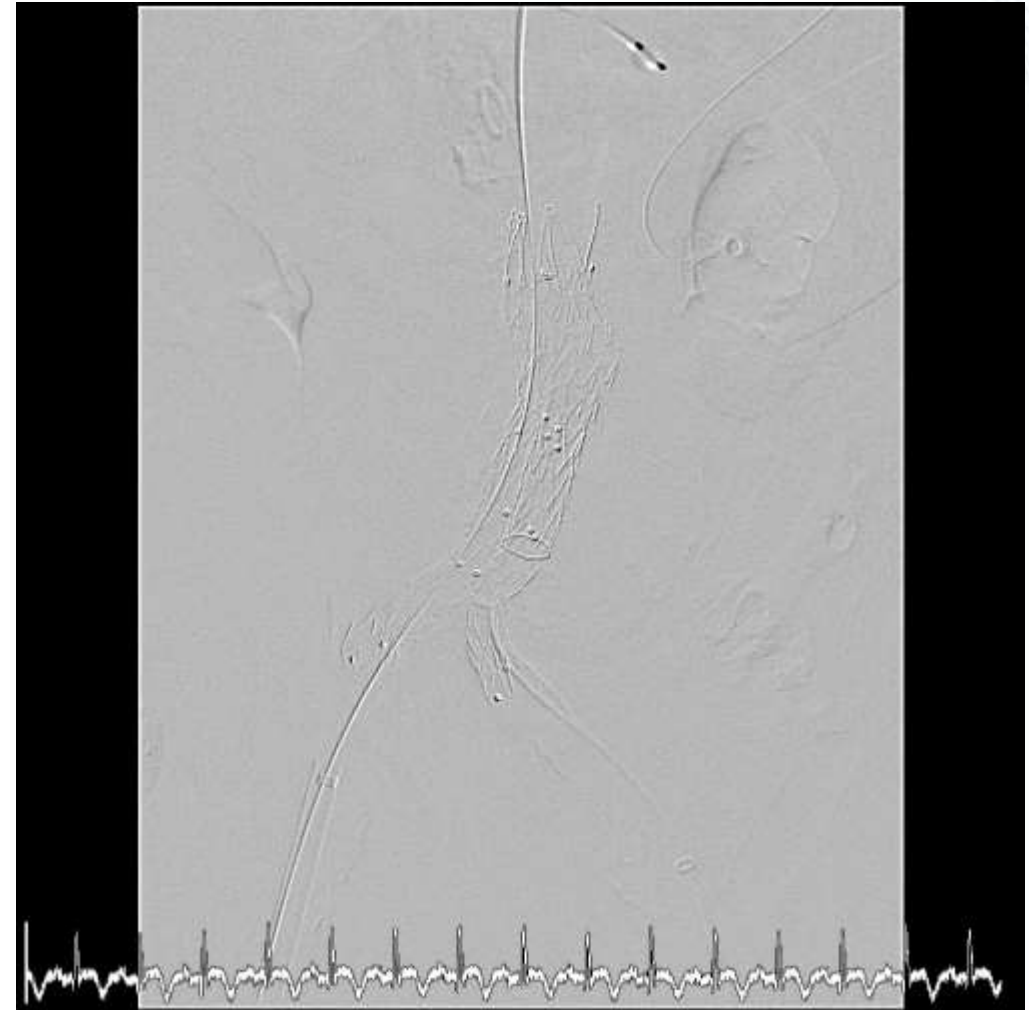
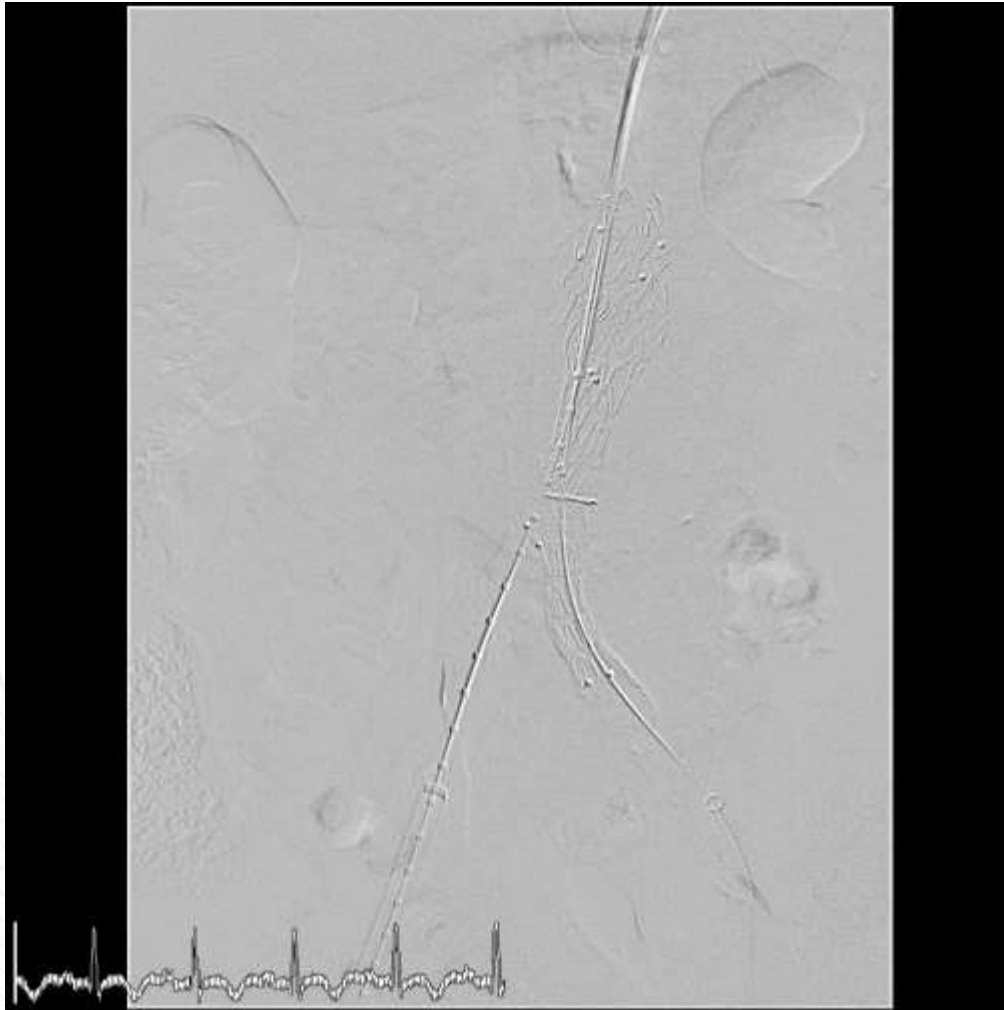
# Percutaneous infra-renal endovascular aneurysm repair (P-EVAR)

*Endurant*



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*Endurant*



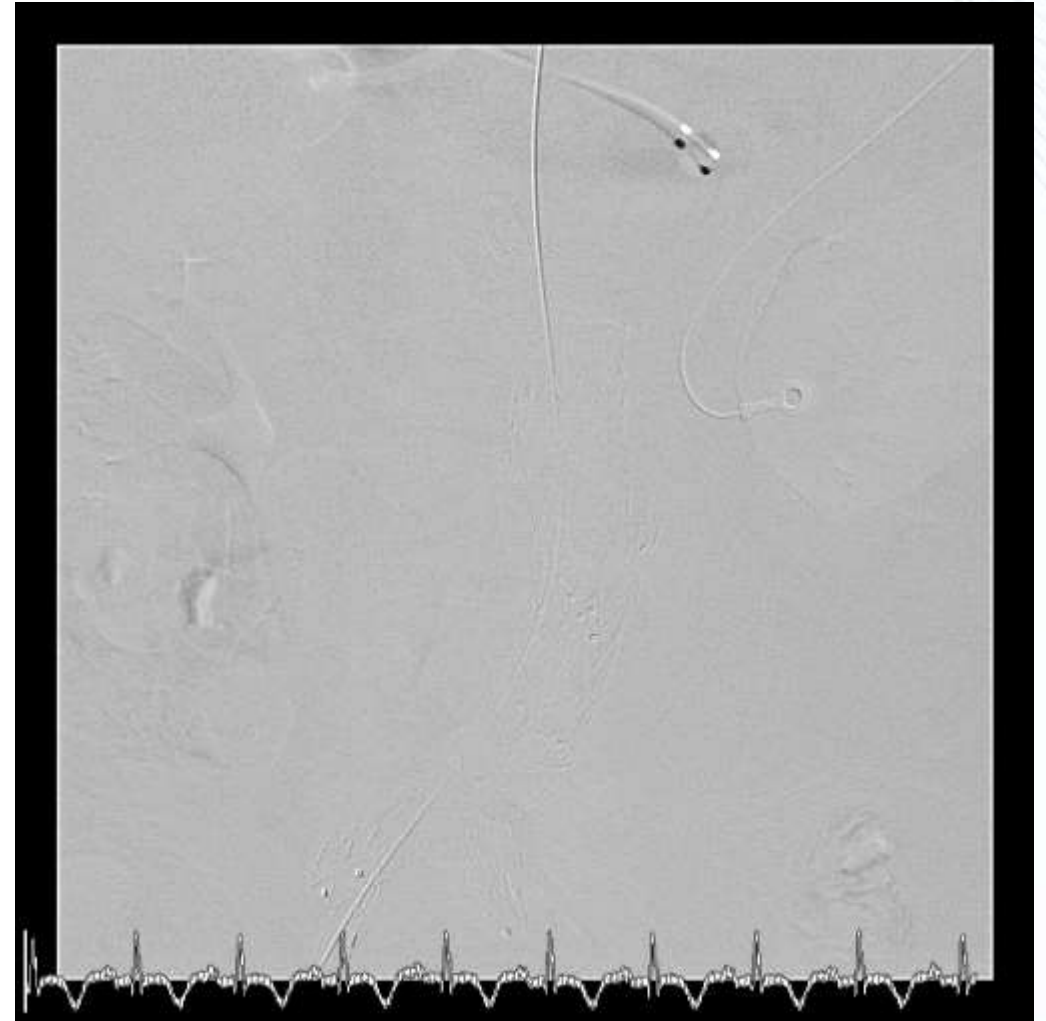


# Percutaneous infra-renal endovascular aneurysm repair (P-EVAR)

*Reliant Balloon*



*P-EVAR Final*



# Post-Procedural Course

- ICU stay: 1 night
- No new conduction disturbance
- No distal embolization
- Discharged 3 days after procedure

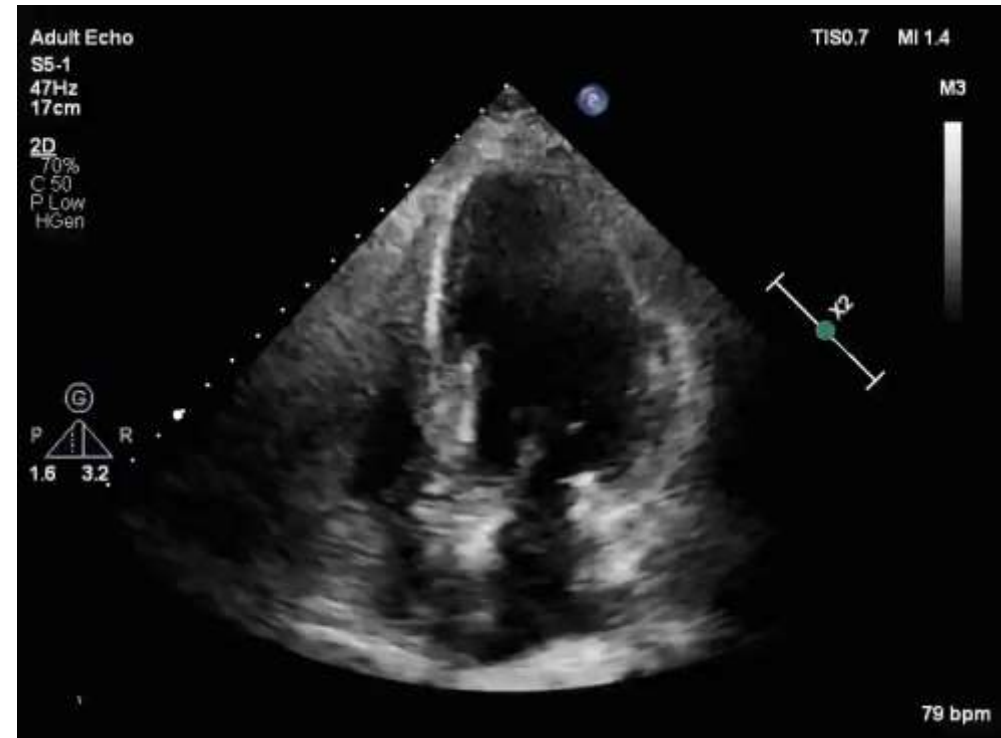
# 6 Month Echocardiography

- NYHA Fc: I-II
- LVEF: 63.2 %; RWMA (+)
- AVA: 1.4 cm<sup>2</sup>, mean PG: 12.7 mmHg
- Trace PVL
- MR, mild-moderate



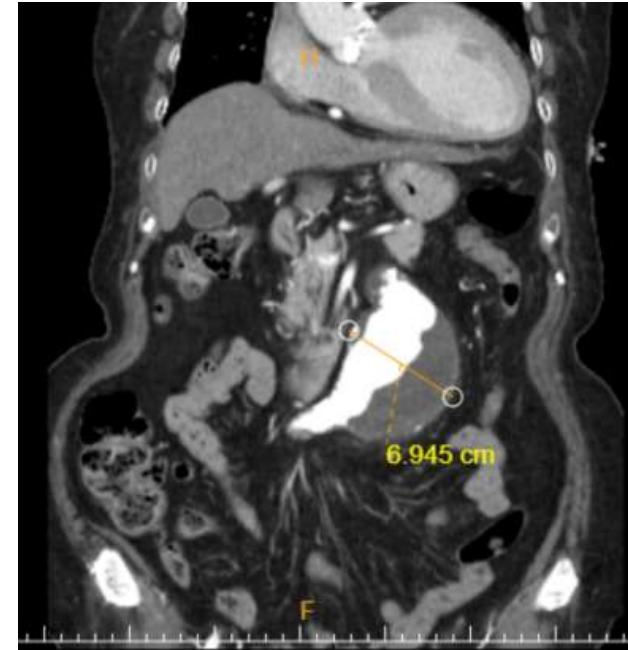
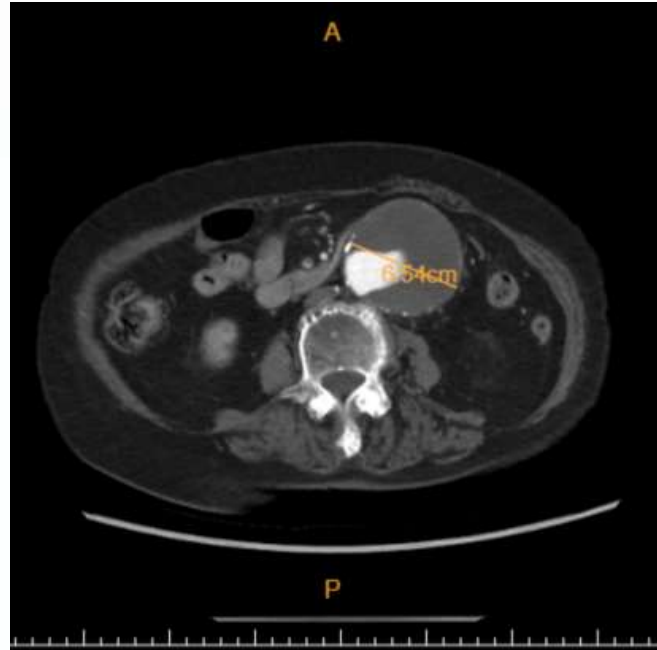
# 1 Year Echocardiography

- NYHA Fc: I-II
- LVEF: 63.7 %; RWMA (+)
- AVA: 1.4 cm<sup>2</sup>, mean PG: 13.7 mmHg
- Mild PVL
- MR, mild-moderate

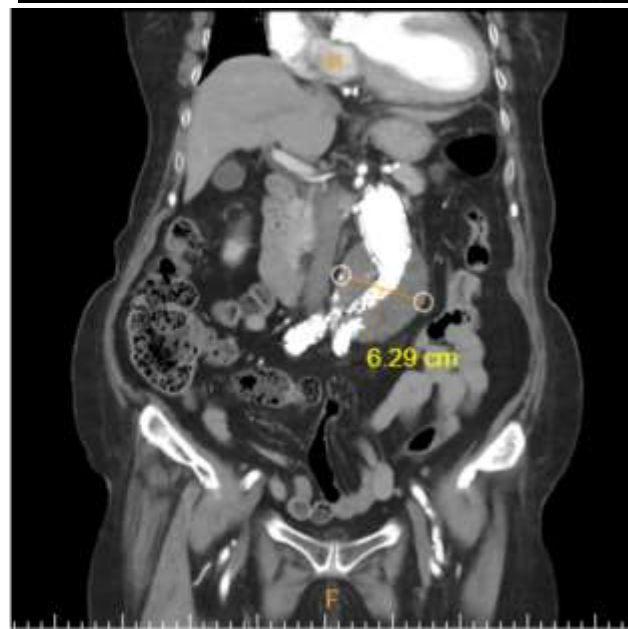
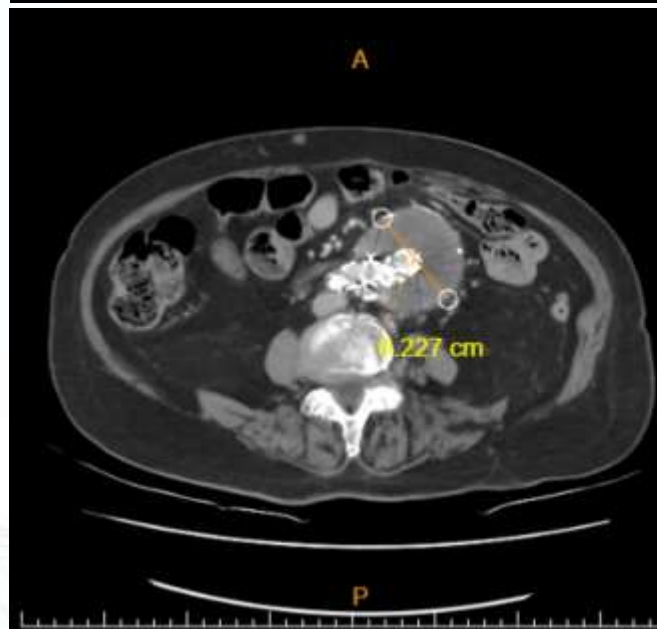


# 1 Year Abdominal CT Follow-up

*Pre*



*1 Year*



# Conclusion

- An old age case combined with critical aortic stenosis and large abdominal aortic aneurysm
- Heart team strategy
- Fully cooperation between interventional cardiologist and vascular surgeon in one index procedure