

**Is It Suitable for TAVI?  
Using TAVI in Large Bicuspid Aortic  
Valve Under ECMO Support and Close  
the Para-Leak with Plugs**

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# History

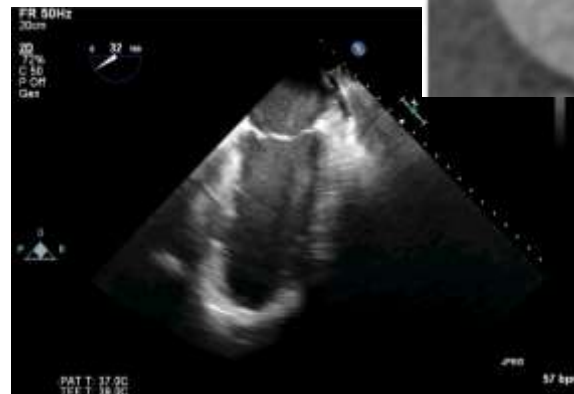
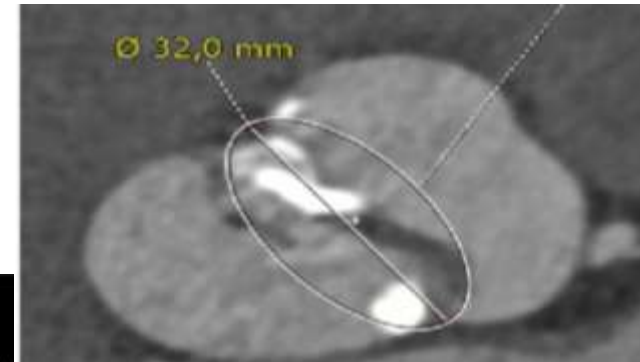
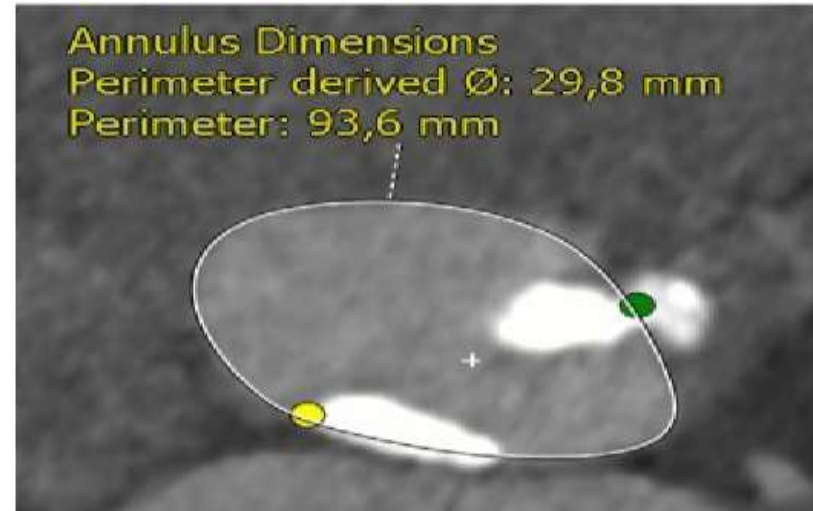
- M/82
- Diabetes, hypertension, mild renal impairment
- Severe aortic stenosis with acute lung edema in 2014, refused intervention
- Recurrent CHF
- Referred to our hospital for further management
- (time of referral: in acute heart failure with dopamine support)

- Echo (2 weeks before the referral to our hospital)
- Severe aortic stenosis, EF~30%, bicuspid AV, mean gradient: ~40mmHg
- coro: 2 vessels disease



# Progress

- Repeated echo in our hospital:
- LV EF 20%, hypokinetic over LAD territory, dilated LV, mod MR, bicuspid AV with stenosis, mean grad:25mmHg, AVA:0.90cm<sup>2</sup>, PAHT with RVSP 73mmHg
- ECG:AF
- CT: bicuspid large AV, perimeter: 93.6mm (normal sizing Corevalve for tricuspid AV: 4% only)
- **CTS: definitely not for AVR**

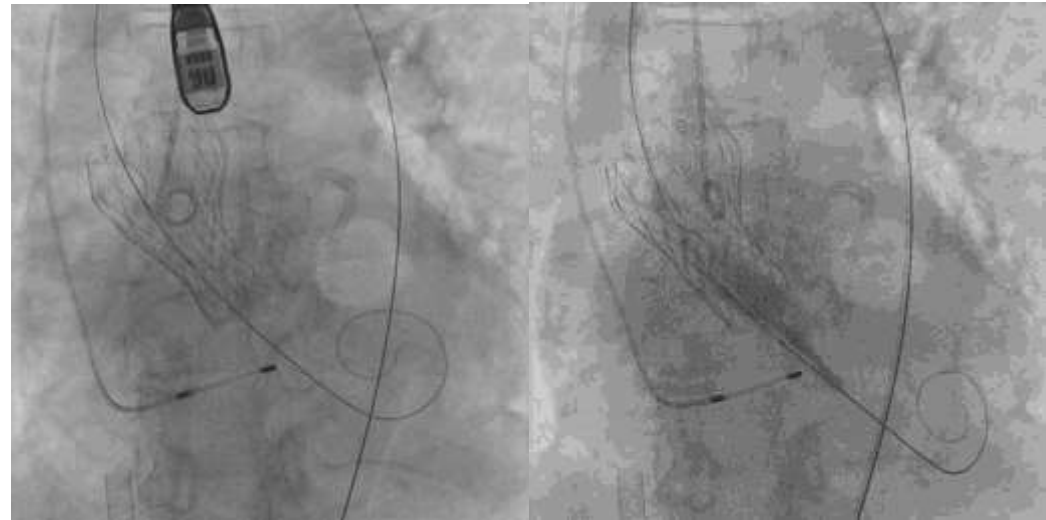


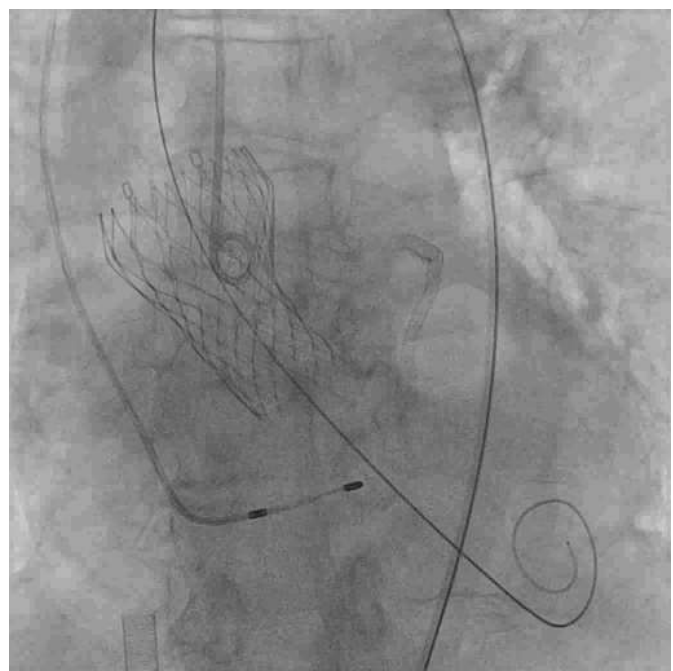
# What should we do?

- Symptomatic severe AS, poor LV function, large bicuspid valve, significant coronary artery disease
- BAV first to see progress then consider TAVI?
- TAVI without BAV/PCI
- TAVI without BAV + PCI (same time)
- TAVI without BAV + PCI (same time) with ECMO support
- Medical treatment

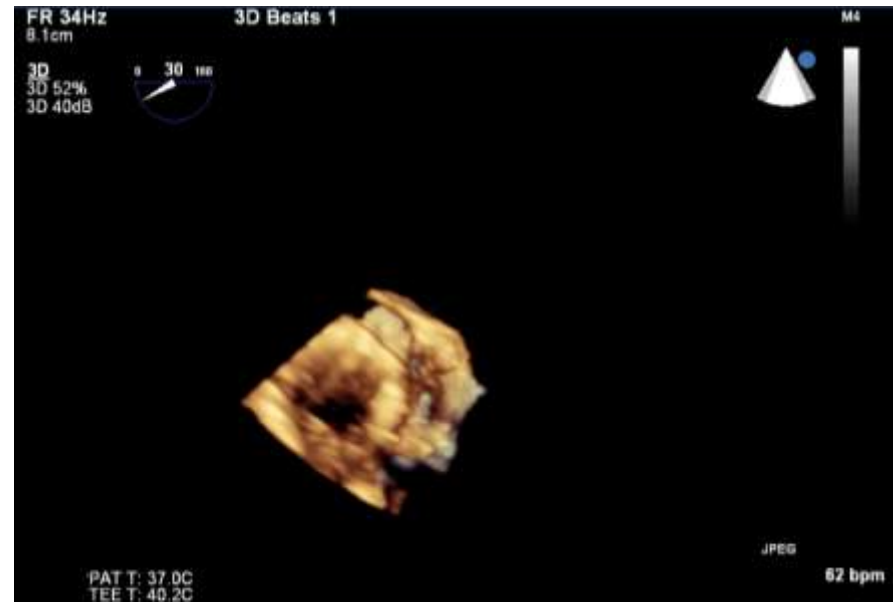
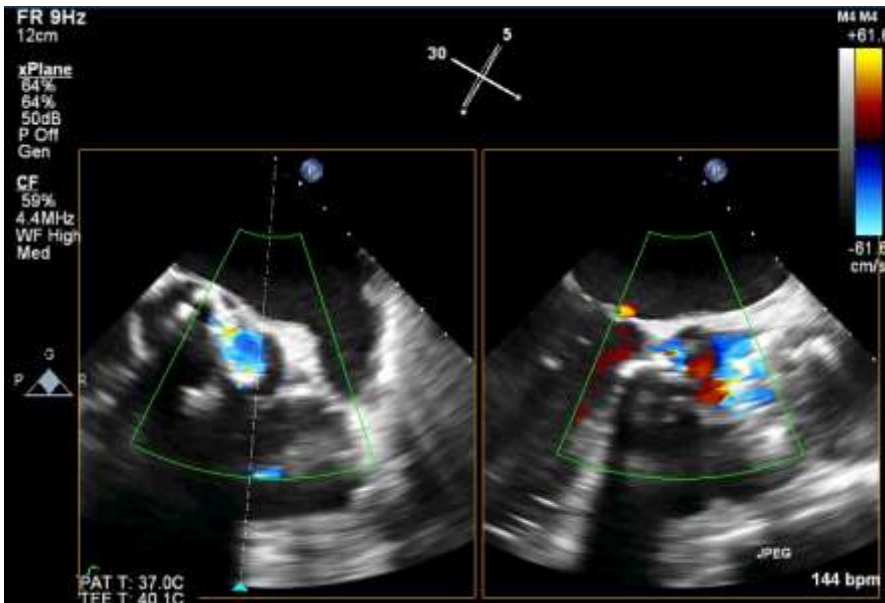
# TAVI+ PCI+ ECMO

- Cath lab, GA with TEE
- 17 fr ECMO A sheath and 21fr V sheath at LFA and LFV
- 19fr solopath at RFA, pigtail 5 fr right radial artery, temp pacing right int jugular
- PCI to LAD with 4 DES, RCA 1 DES with IVUS guidance
- No BAV
- 31mm Corevalve was deployed
- Poorly expanded Corevalve
- Post-dilatation with Nucleus balloon 28mmx4cm and 30mmx4 cm





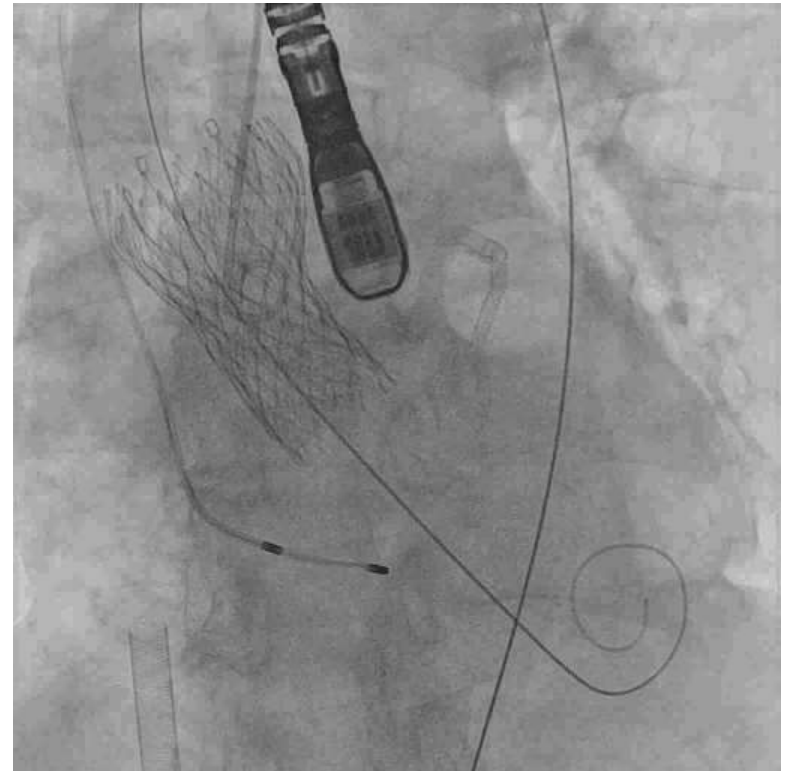
Valve much expanded but with significant leakage

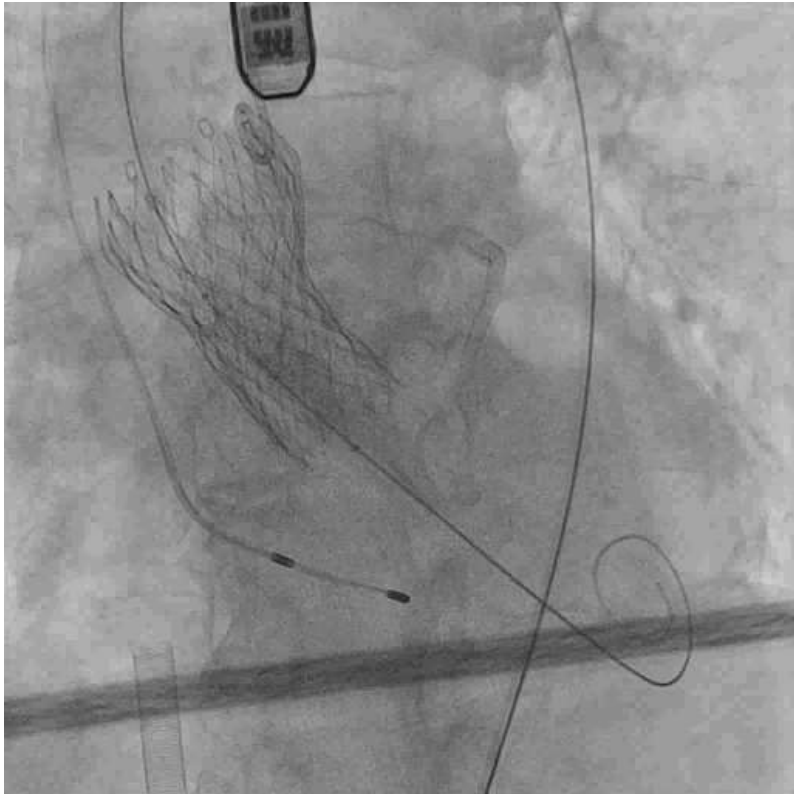


Significant leakage on x-plane view and on 3D TEE

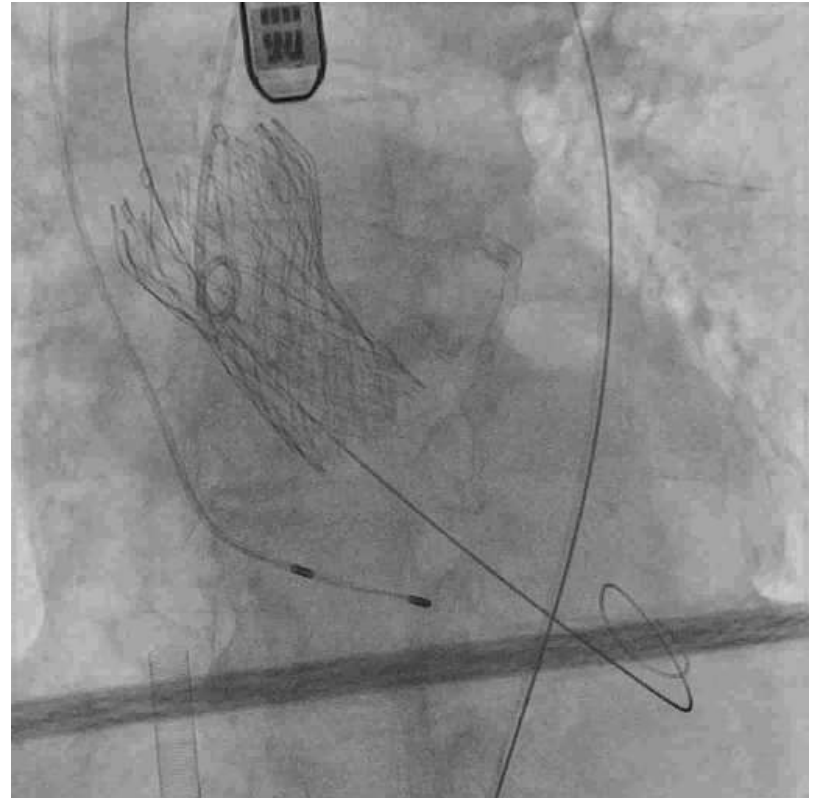
# TAVI+ PCI+ ECMO

- Valve expanded but resulted in significant PVL at left side and valve shifted upwards
- Second 31mm Corevalve was deployed at lower position and post dilated with nucleus 30mmx4cm as still significant leakage (LVEDP = AO diastolic pressure)





**Post-dilatation with Nucleus 30mmx4cm balloon**

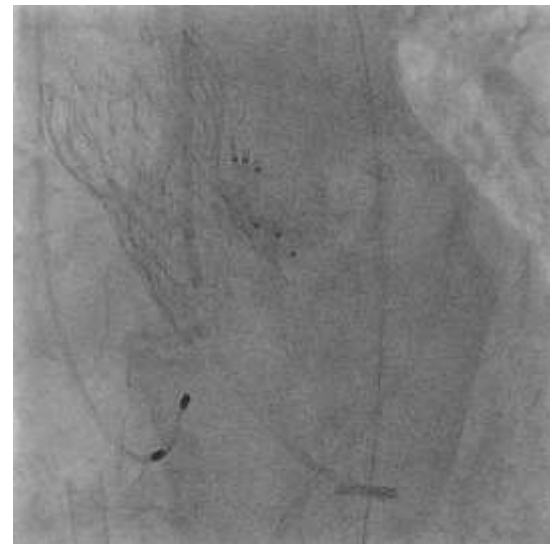
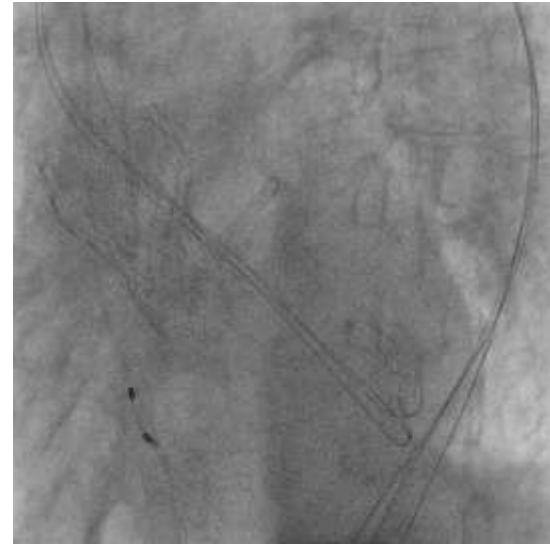


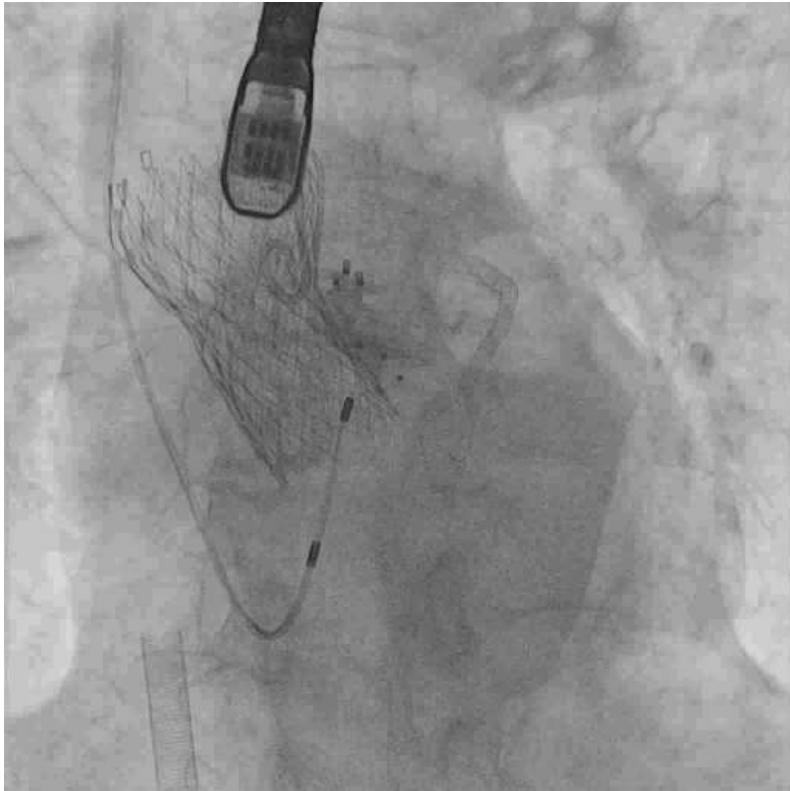
**Still severe leakage with equalized LVEDP and AO diastolic pressure**



# Percutaneous PVL closure

- 0.035 J wire with 4 Fr MPA via the leakage site to LV
- Changed with confida wire
- Vascular plug II 10x7mm x2 and 8x7mmx1 were deployed sequentially into the defect via 7Fr MPA
- TEE: PVL much improved to mild to moderate
- LVEDP: 22mmHg (baseline: 25mmHg)
- AO diastolic pressure: 31mmHg (baseline: 60mmHg)

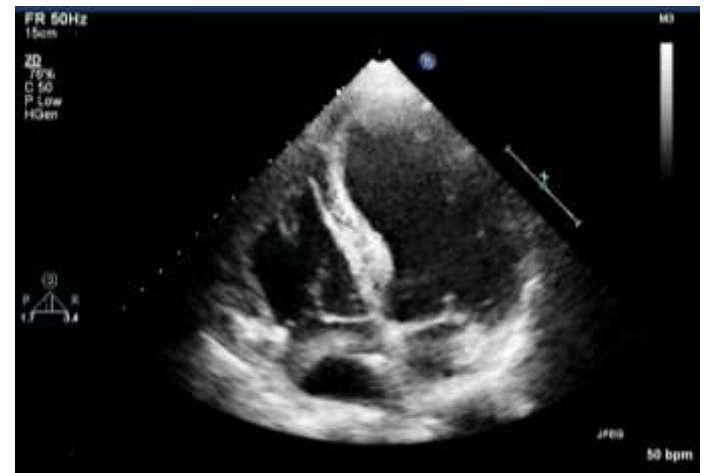




**After 3 vascular plugs deployment**

# Progress

- ECMO was weaned off on day 1
- SOB much improved
- No heart block
  
- TTE 1 year:
- Borderline LV size (decreased cf before), LV EF35%, no PAHT (RVSP: 29mmHg), trivial MR
- Mean grad across Corevalve: 8.1mmHg, AVA:2.2cm<sup>2</sup>, no PVL



# Conclusion

- TAVI definitely provides an option to the patients who had no option in the past
- Extra-circulatory support is needed in special circumstances like poor LV function, significant CAD
- Bicuspid AV is still a challenge in TAVI
- Sizing of bicuspid valve is less aggressive than tricuspid AV
- Percutaneous PVL closure should be thought to reduce the PVL esp if the leak is related to the localized calcium or the valve is already fully expanded with good position

**Thank you**