

MAC Challenges and New options

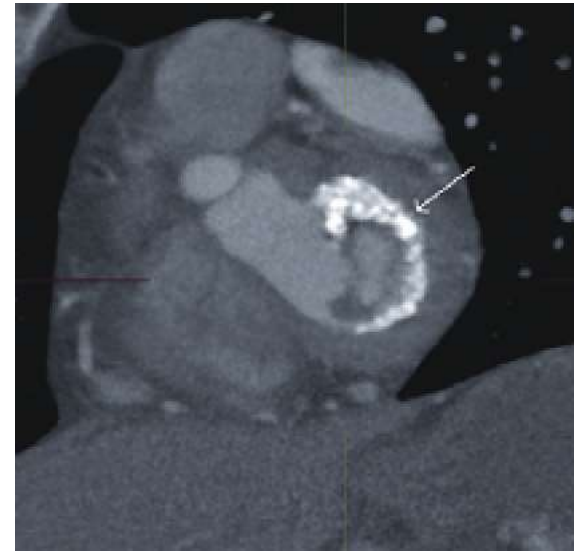
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Speaker's name : Vinayak, Bapat, New york

☑ I have the following potential conflicts of interest to report:

***: Consultant: Edwards Lifesciences
 Medtronic Inc
 Abbott
 4Tech
 4C
 Cephea***

MAC



- Severe Mitral annular calcification
 - Suture placement can be difficult
 - Valve placement can be difficult
- Calcification usually involves Posterior annulus
- Can it provide an anchor for THV?

Novel use of TAVR devices

- Three TAVI devices
 - Small in size
 - Existing delivery mechanism makes Mitral implant possible
 - Implant technique is different

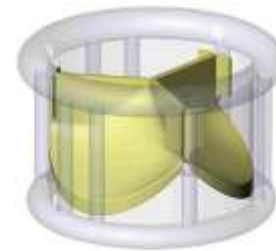
Sapien



Lotus



Directflow

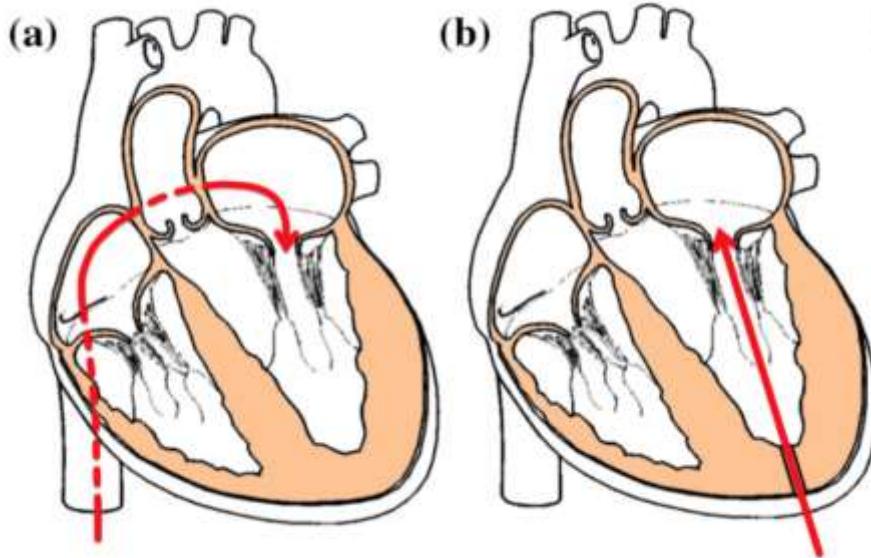


Sapien Valve

- Balloon Expandable
- Two approaches
- Two delivery systems



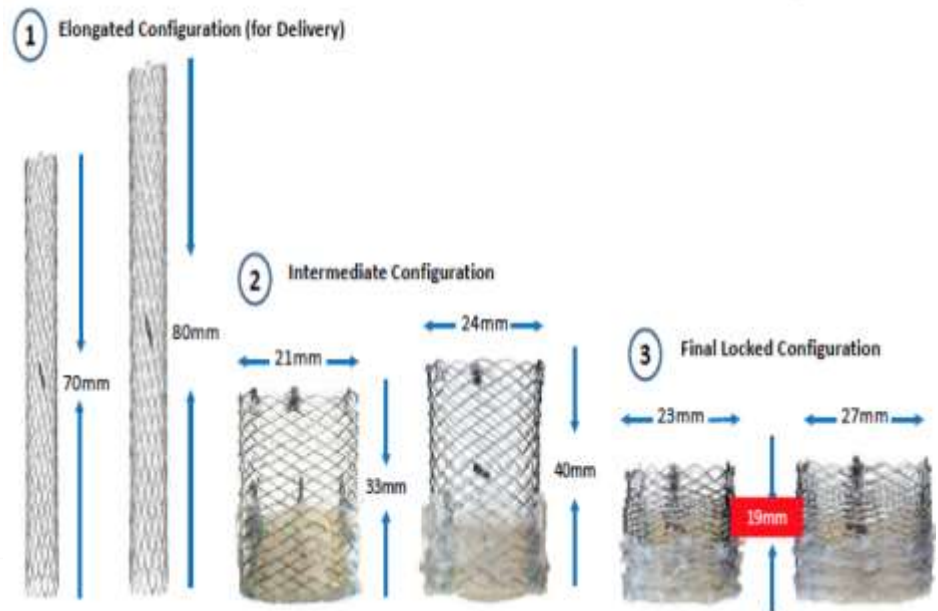
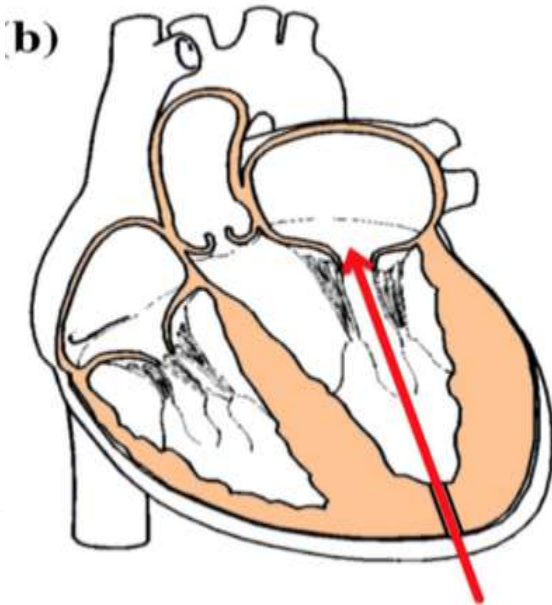
SAPIEN XT



SAPIEN 3

Lotus Valve

- Repositionable and retrievable
- One approach
- One delivery system



TRANSCATHETER VALVES

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graph TD; A[TRANSCATHETER VALVES] --> B[Trans-Spetal BEATING HEART]; A --> C[Trans-Atrial OPEN SURGERY];
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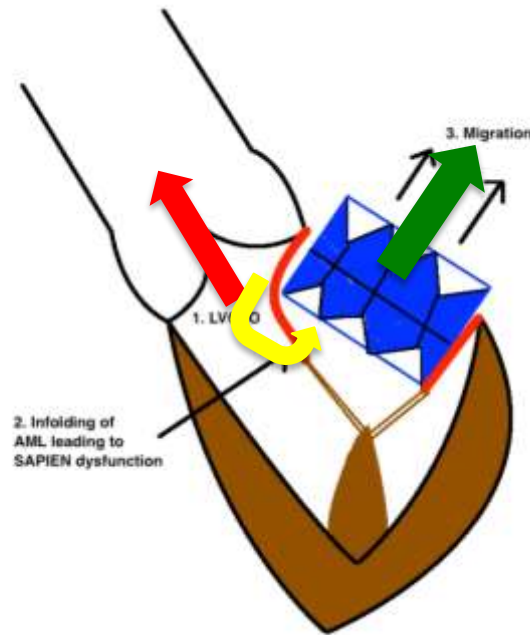
Trans-Spetal
BEATING HEART

Trans-Atrial
OPEN SURGERY

TRANSCATHETER VALVES

Trans-Septal

Issues when performed Beating heart



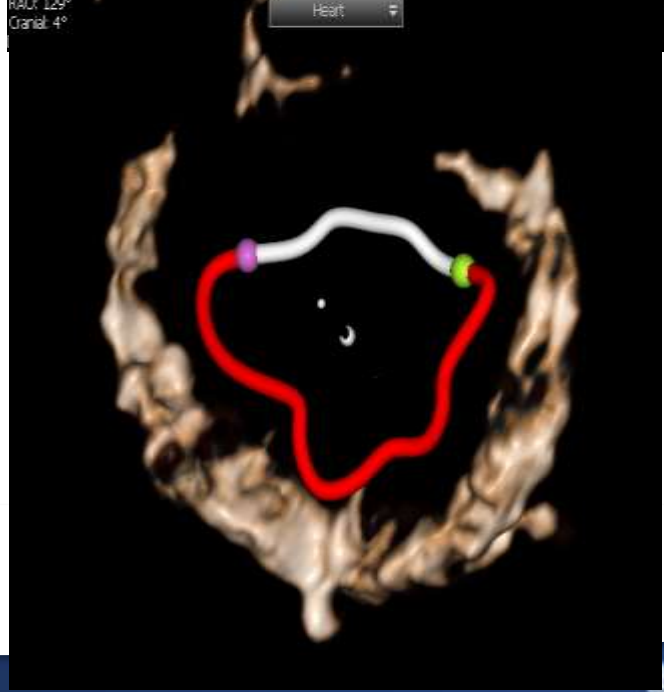
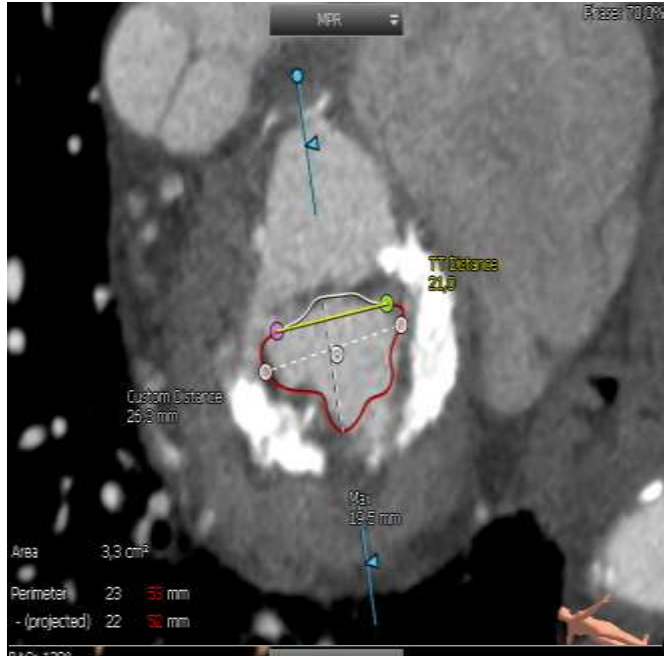
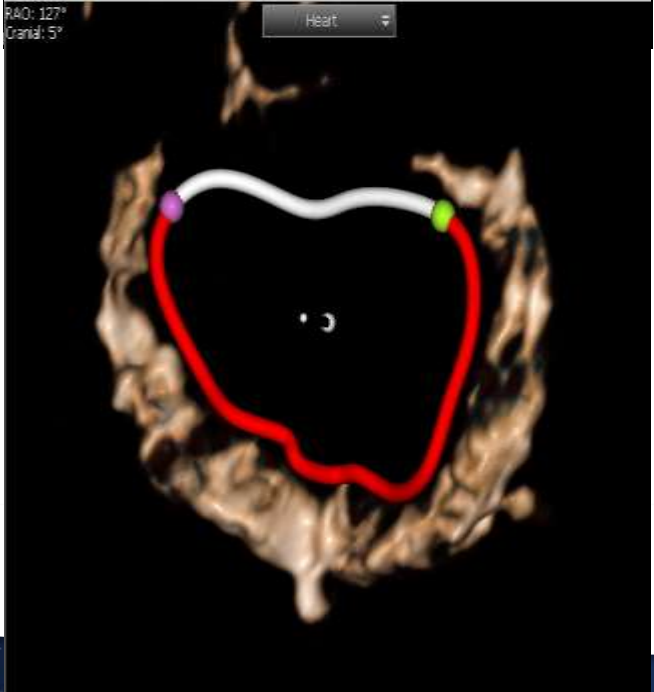
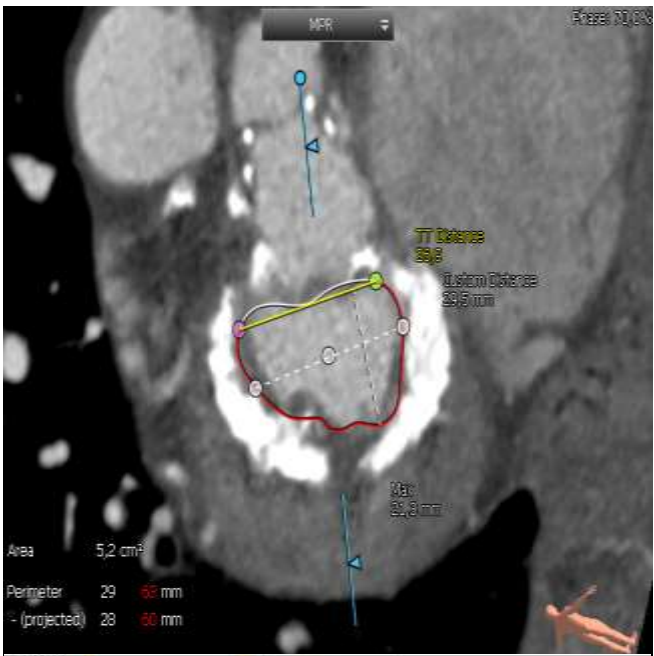
VIR & VIMac > TMVR > VIV

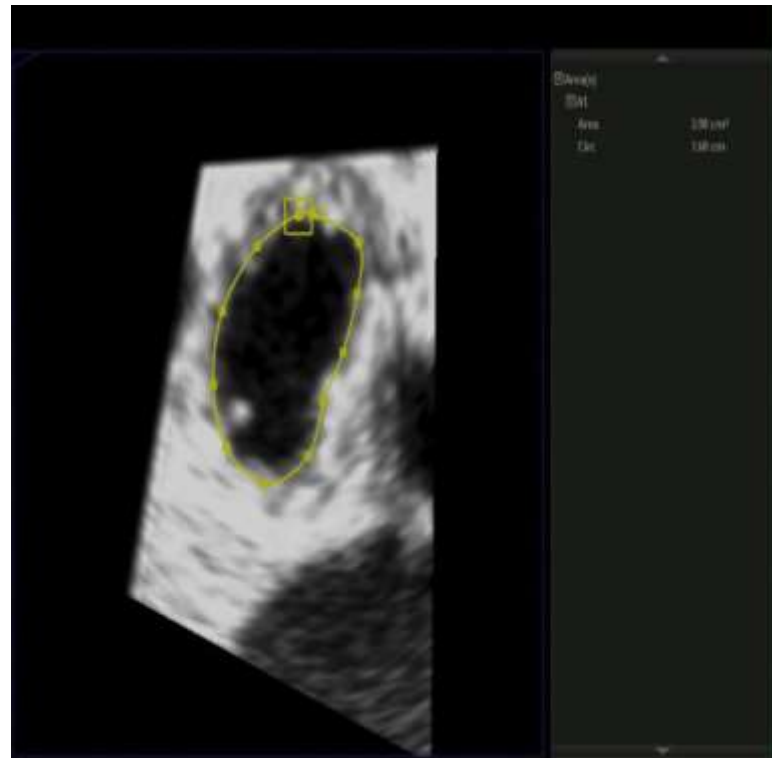
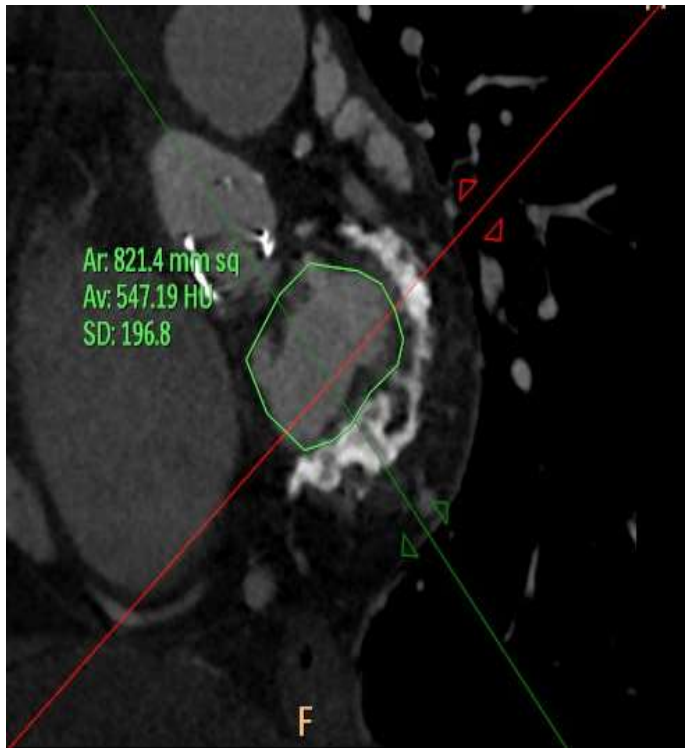
Selecting right patient

- Sizing: Largest size THV available is 29 Sapien 3
- Anchoring: Pattern of Calcification:
 - Circumferential/patchy
 - Commissures?
 - Aortic prosthesis?
- Risk of LVOT obstruction

MAC: THV Sizing

- Which modality? Echo or CT
- What are we measuring?
- How does it translate in to result?
- Amount of oversize needed?
- Risk of Annular trauma?
- Which devices can be used?



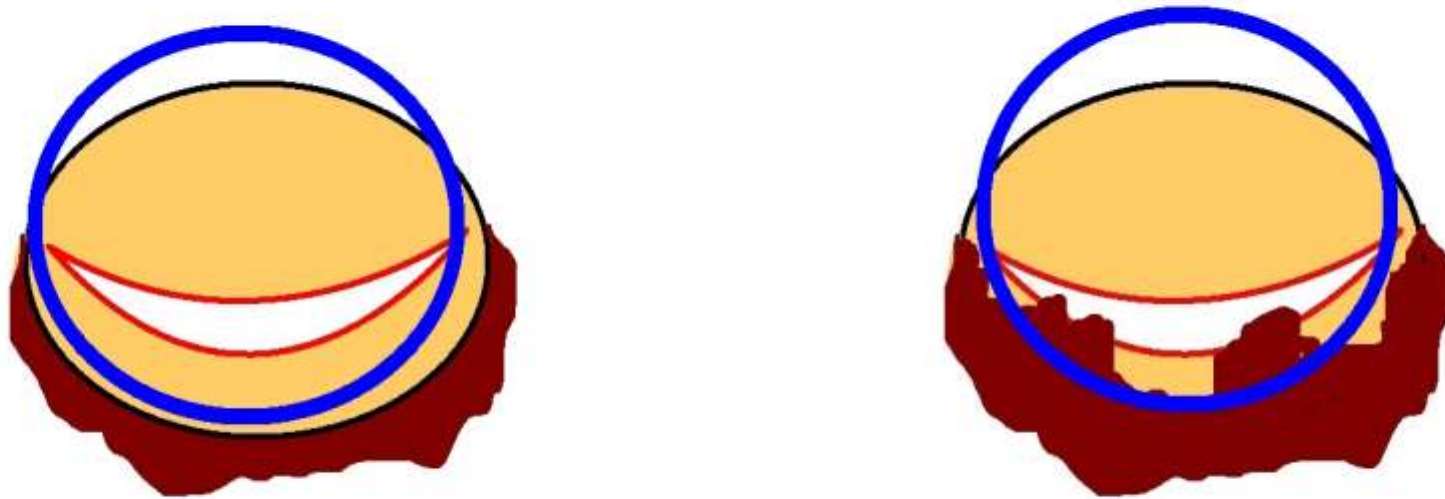


Correct way to measure it?



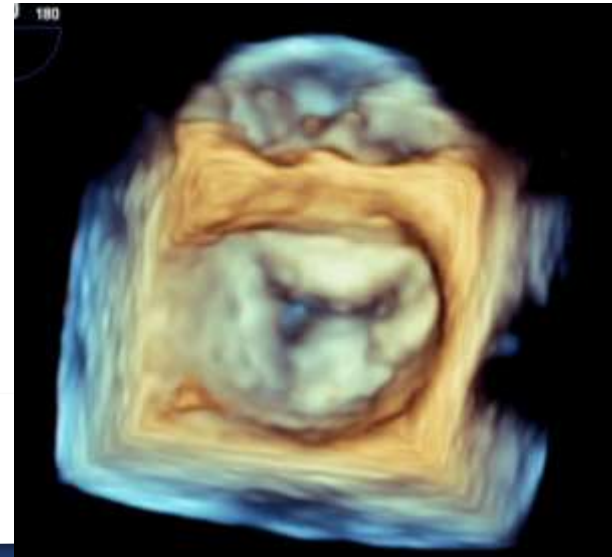
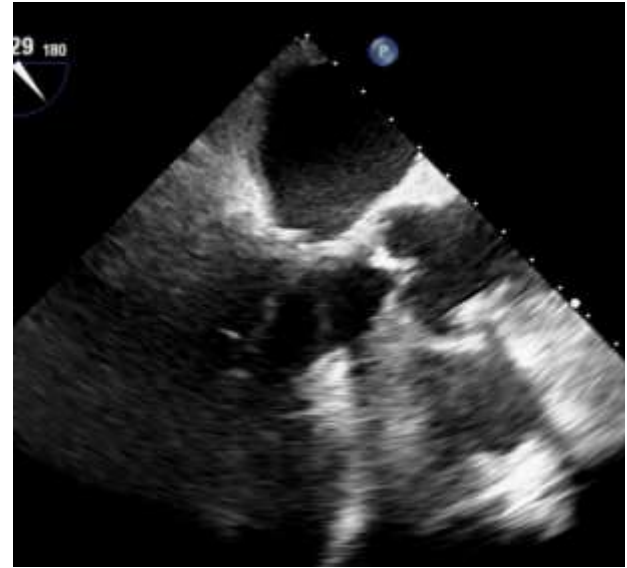
Observe the GAP between the Device and the MAC

Effect of MAC on THV shape and PV leak

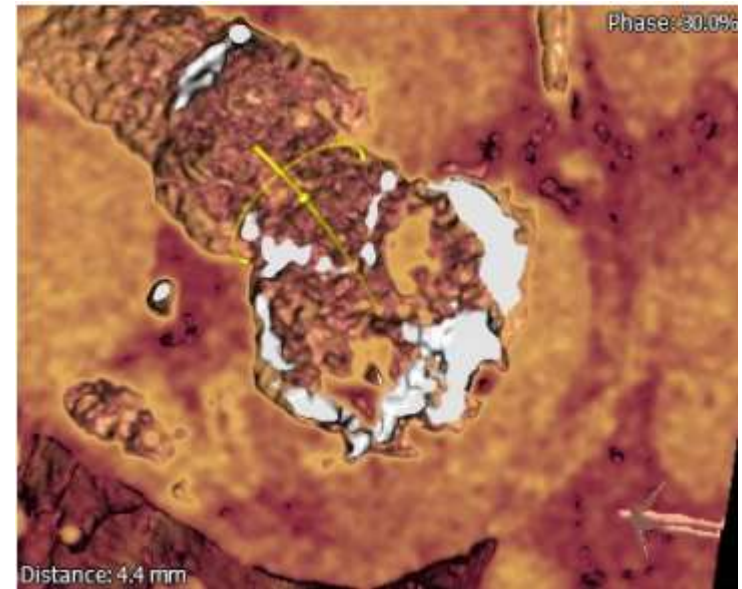
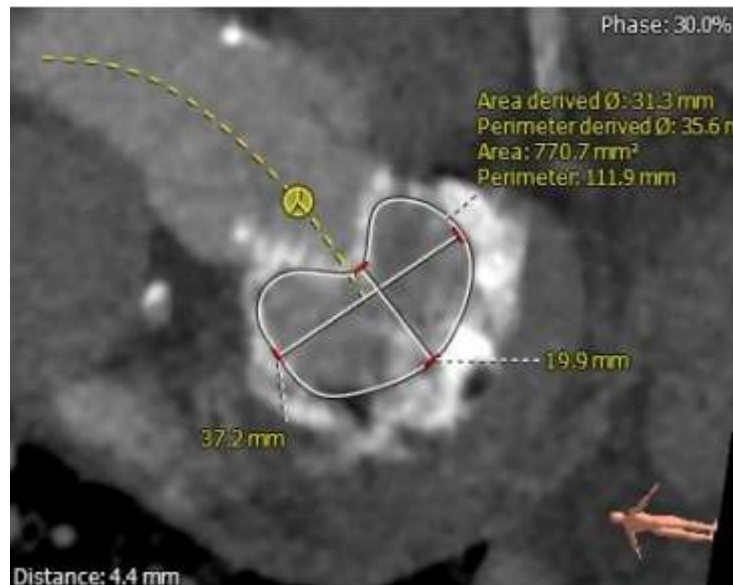


Sizing and related issues

- 70 year old female
 - Pulmonary fibrosis on home O²
 - Type II DM on insulin
 - Atrial Fibrillation
 - CKD
 - Morbid Obesity
- Presents with worsening DOE



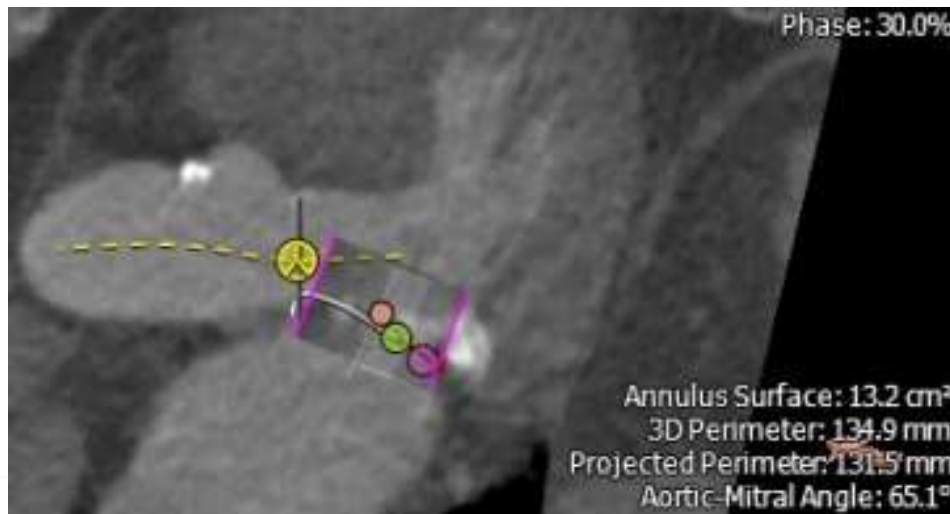
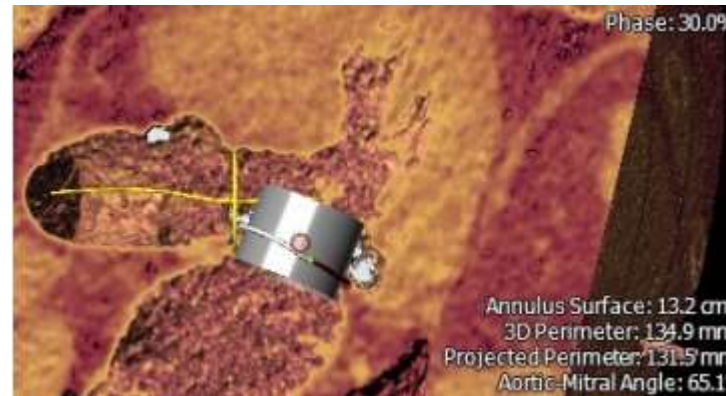
Sizing and related issues



- Area 770mm², Perimeter 111
- Scattered “popcorn” calcium
- Greater asymmetry
- No support aorto-mitral curtain

LVOT Measurements

Simulated
29mm S3



Valve Deployment



29 mm Edwards Sapien S3

Rocking of Valve



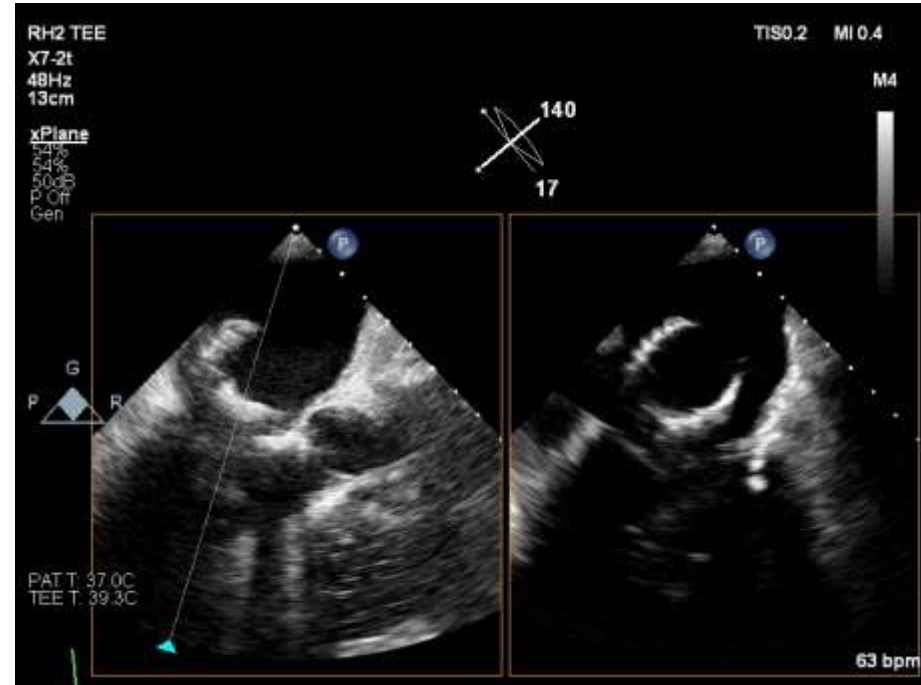
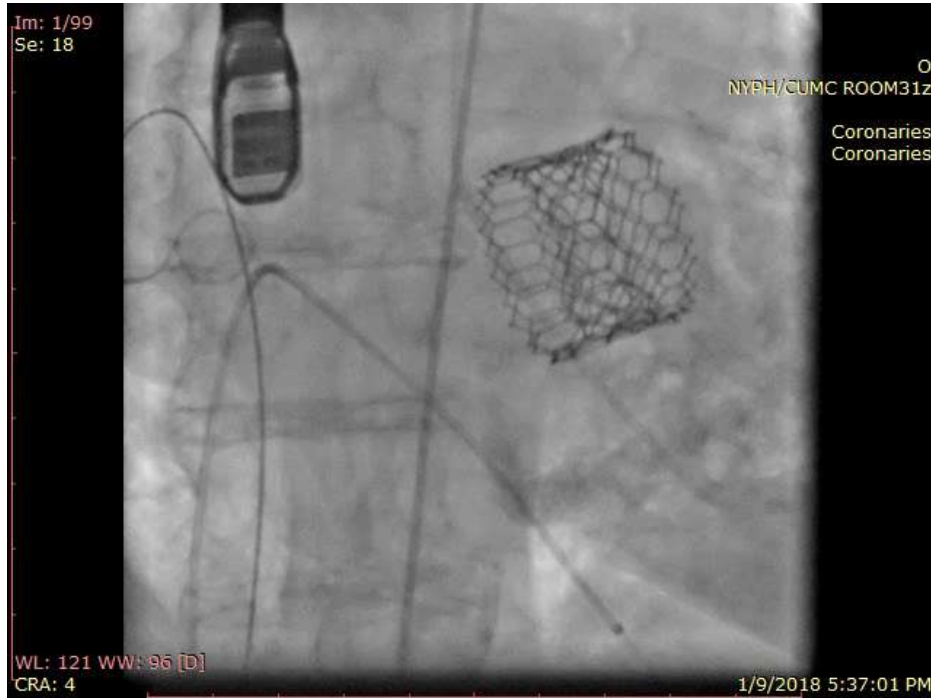
Initial frame height above the mitral annulus of 1.0cm increased to 1.2cm by TEE

29mm S3 #2

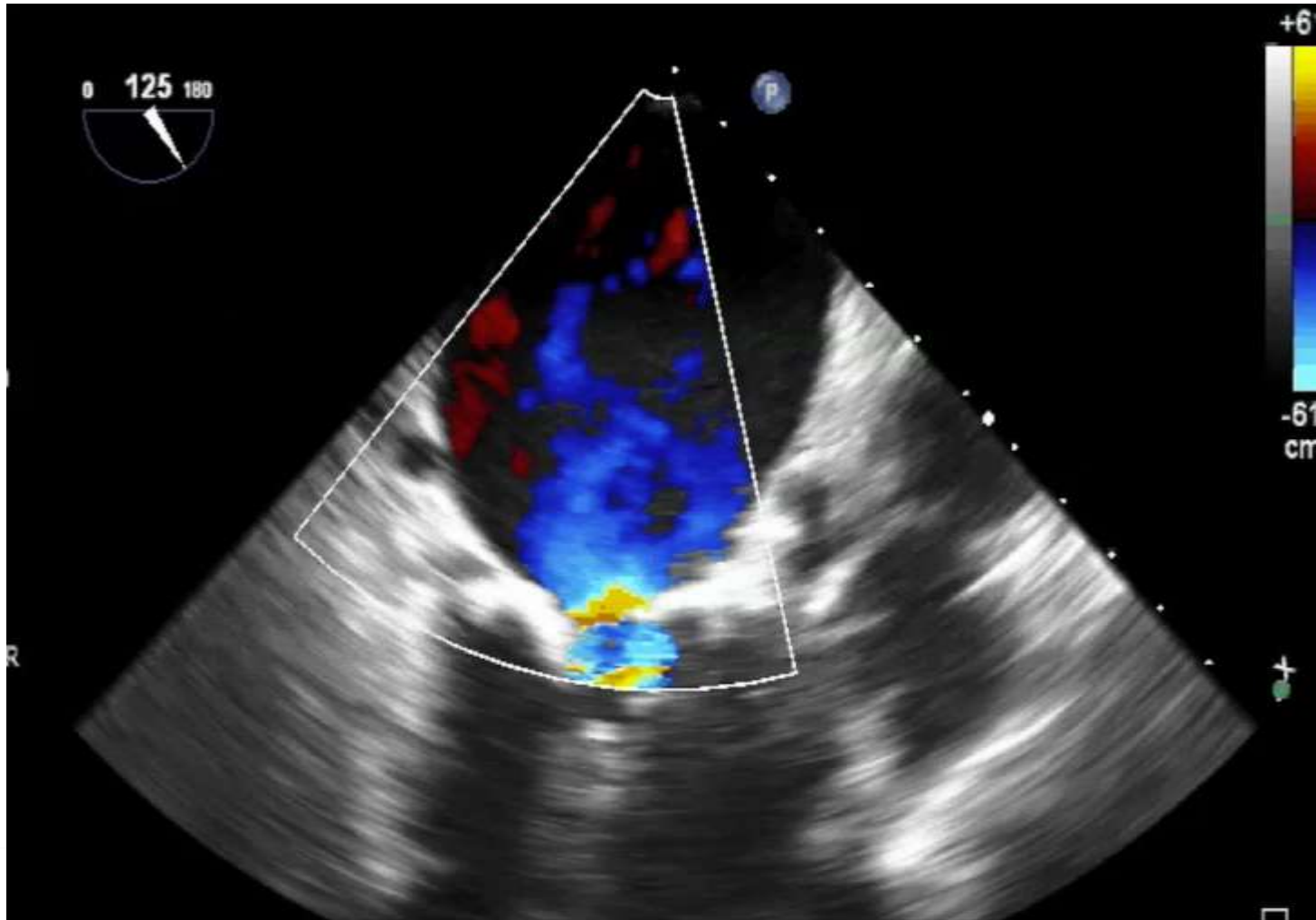


Extra 10cc of contrast in deployment balloon

Valve Embolization



**79 year old patient with Aortic stenosis and Mitral regurgitation with MAC
Euroscore: 38**

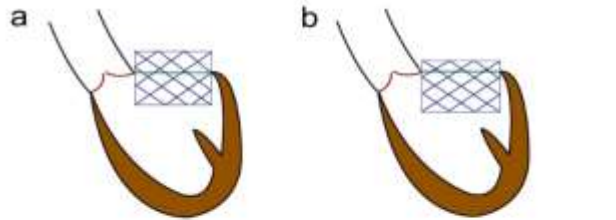


LVOTO

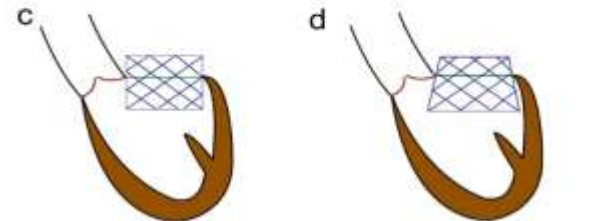
Is a possibility after Mitral

1. VIV
2. VIR
3. MAC
4. TMVR

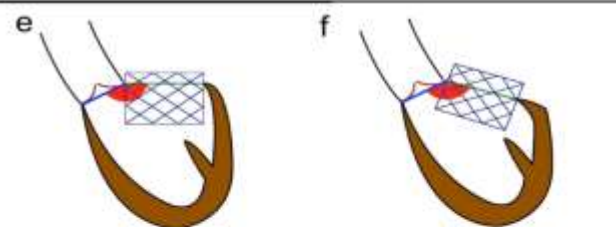
Factors Influencing LVOTO



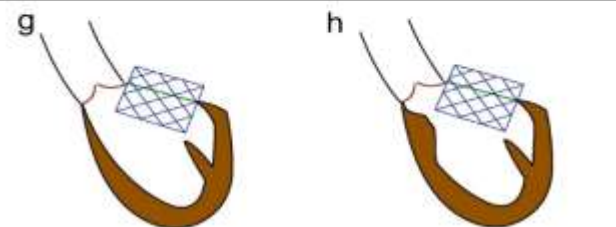
Deeper placement in LV



Flaring

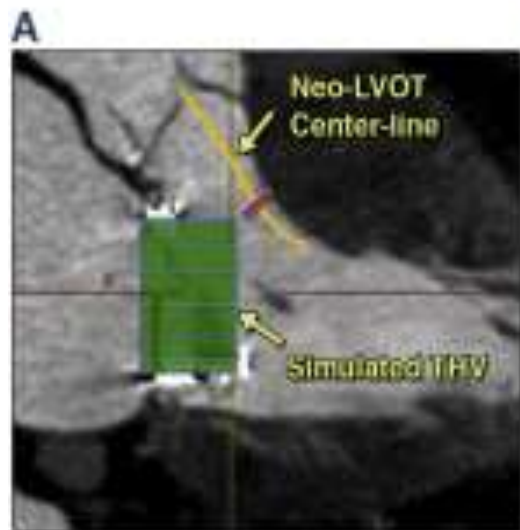


AMA angle

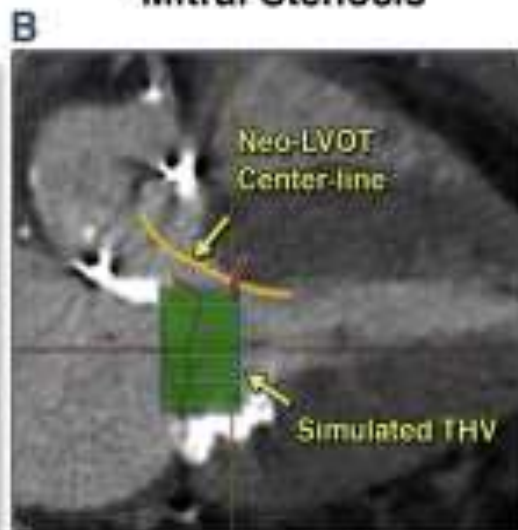


Septal bulge

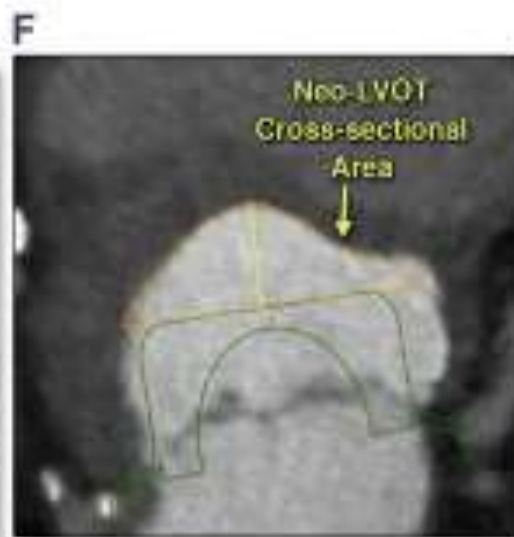
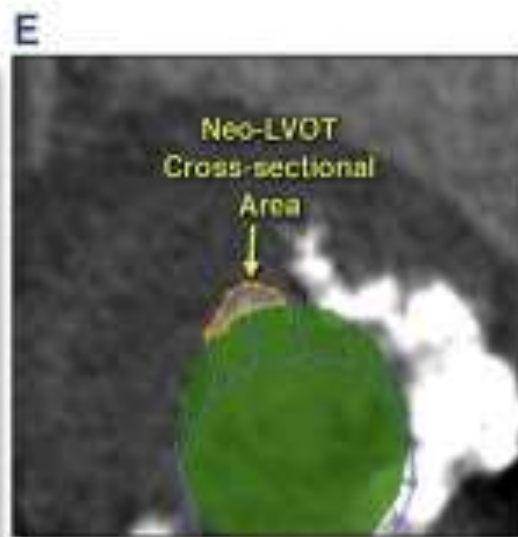
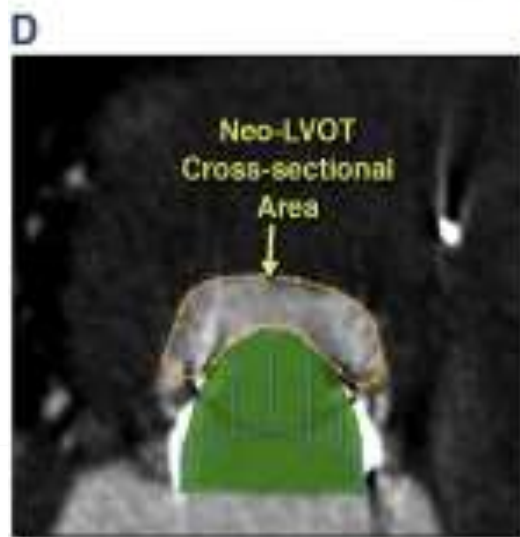
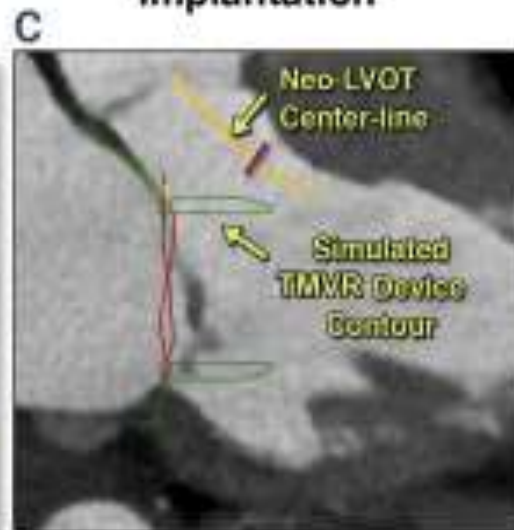
Valve-in-Valve



THV in Calcific Mitral Stenosis

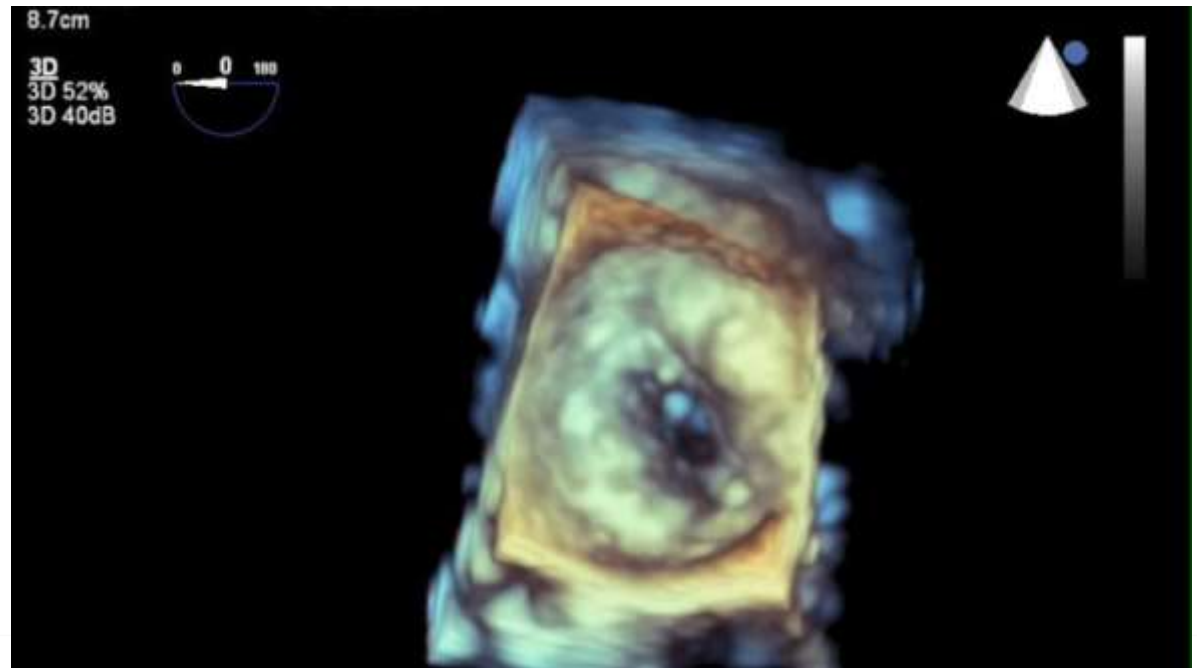


Transcatheter MV Implantation



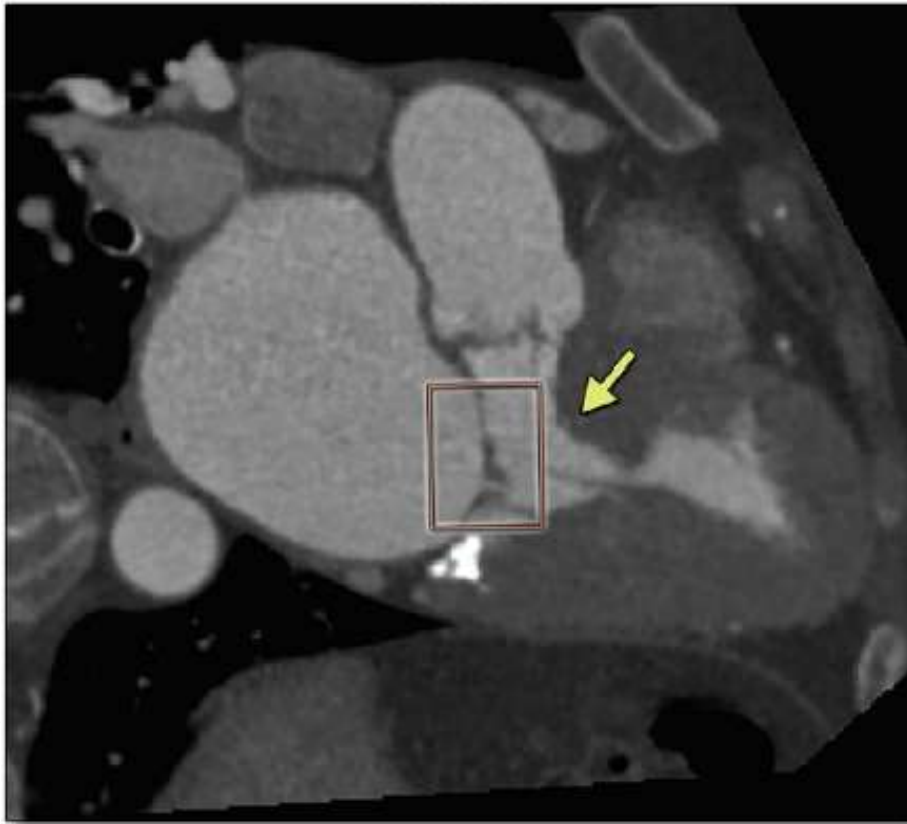
One Solution

Use a repositionable and recapturable device

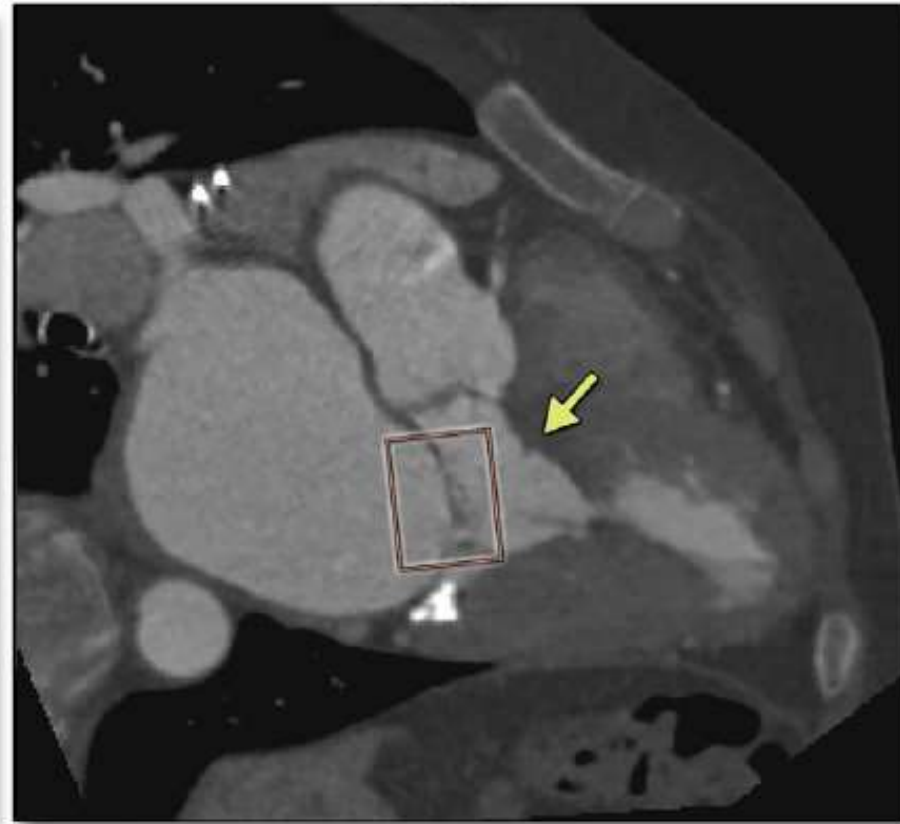


Alcohol Septal ablation

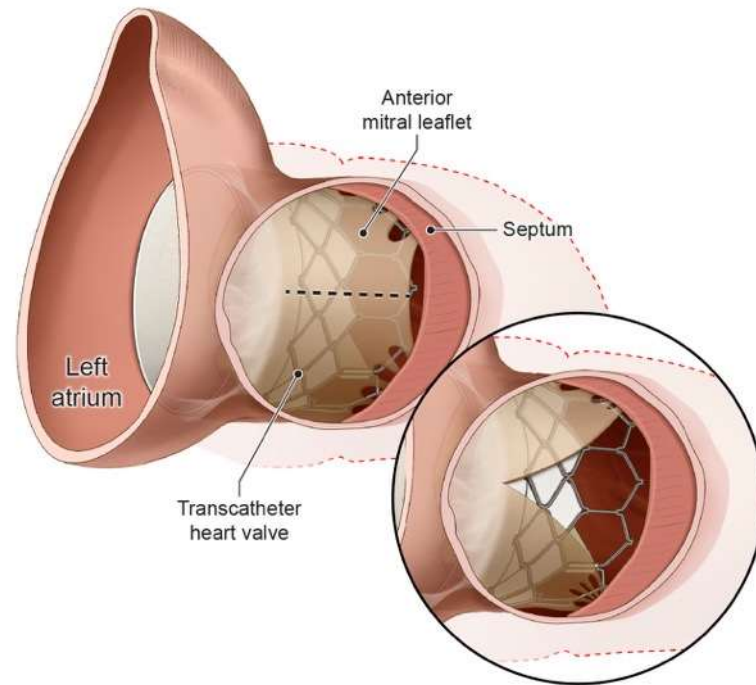
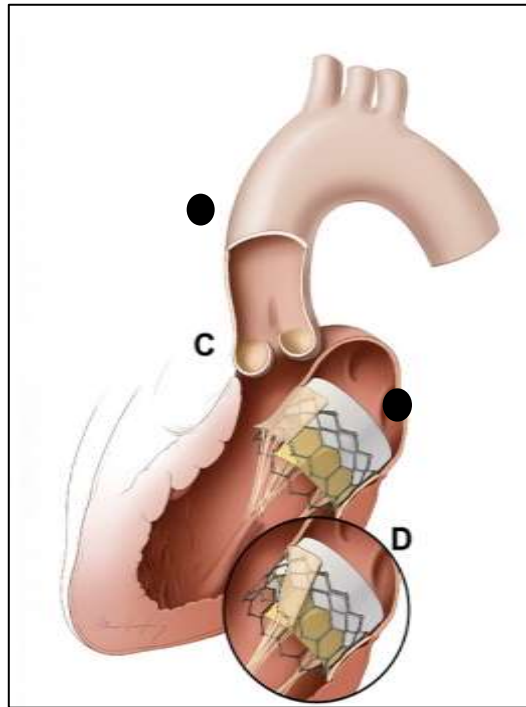
Pre



Post



Transcatheter Mitral Valve Implantation risks LVOT Obstruction



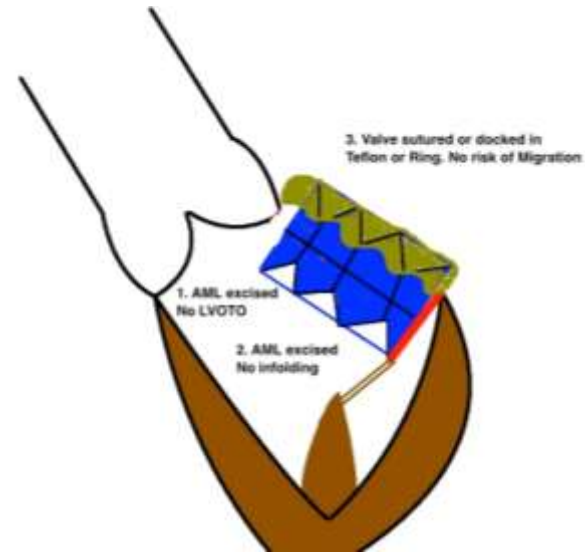
JM Khan, JACC Cardiovasc Interv. 2016; Sep 12, 9(17):1835

THV for MAC

OPEN SURGERY

If risk of LVOTO
and/or
Embolisation

Open heart



1. Excise the AML
Eliminate LVOTO
Eliminate leaflet in folding
2. Fix the TAVI valve
Eliminate embolisation

Examples

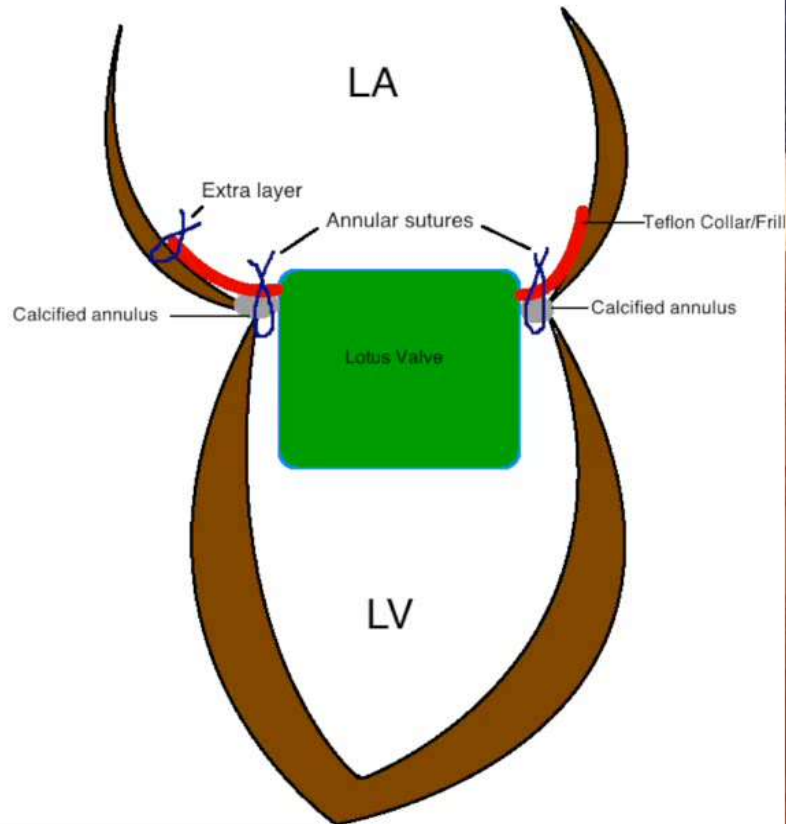


Courtesy: Dr. Jorg Kemfert, Berlin



Courtesy: Dr. Matt Williams, NYU

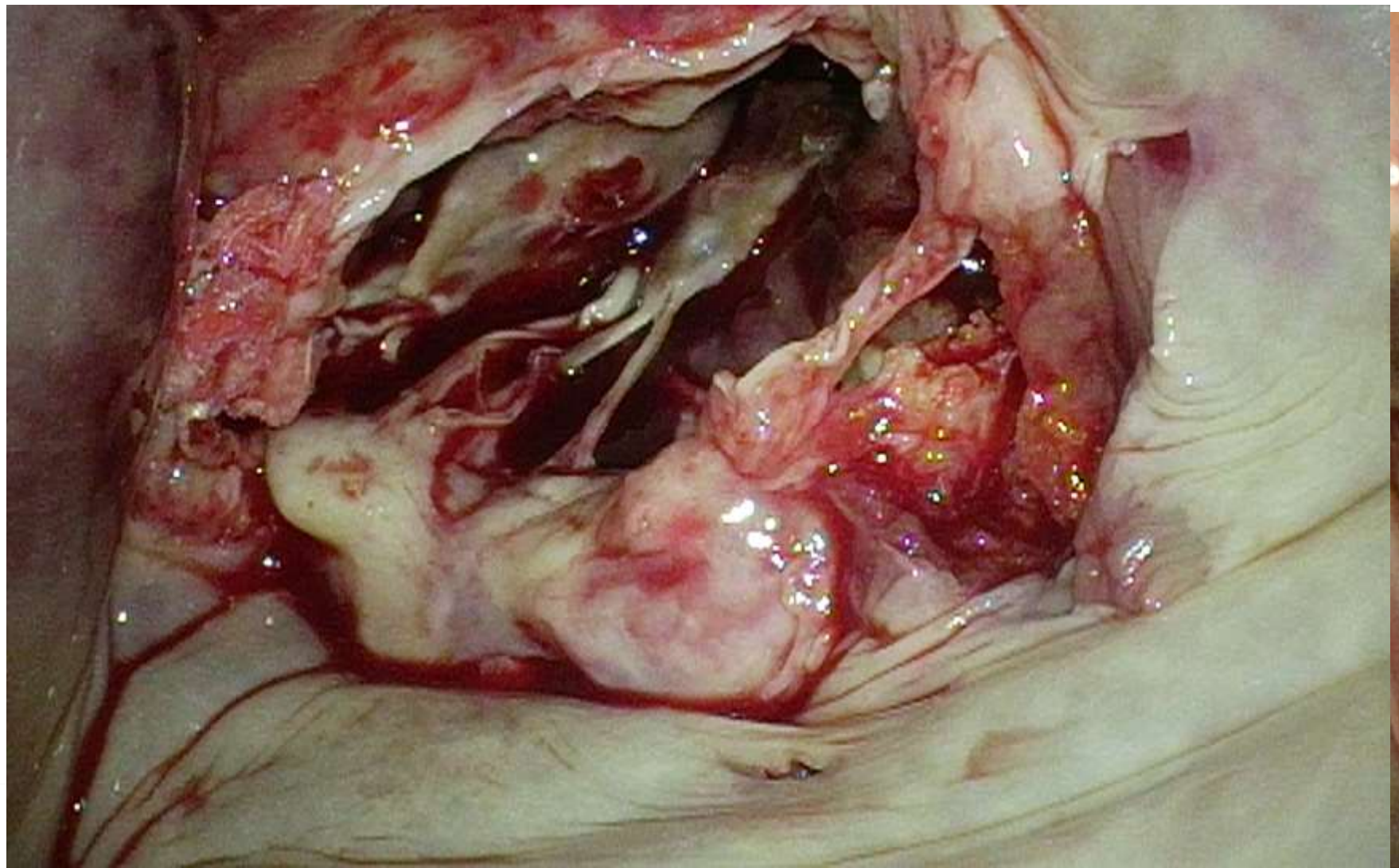
THV with Teflon Collar



Sapien XT or 3



Oversizing



Tricks to use SAPIEN

- Excise AML
- Size with balloon
- Use Certitude system
- Mark Commissures
- Flex the system
- 20% inflation-stop-adjust-proceed
- Watch the atrial portion as it foreshortens

Conclusion

- THV in MAC is a reasonable option
- Patient selection is critical – Anatomic
- Understanding current limitations is critical