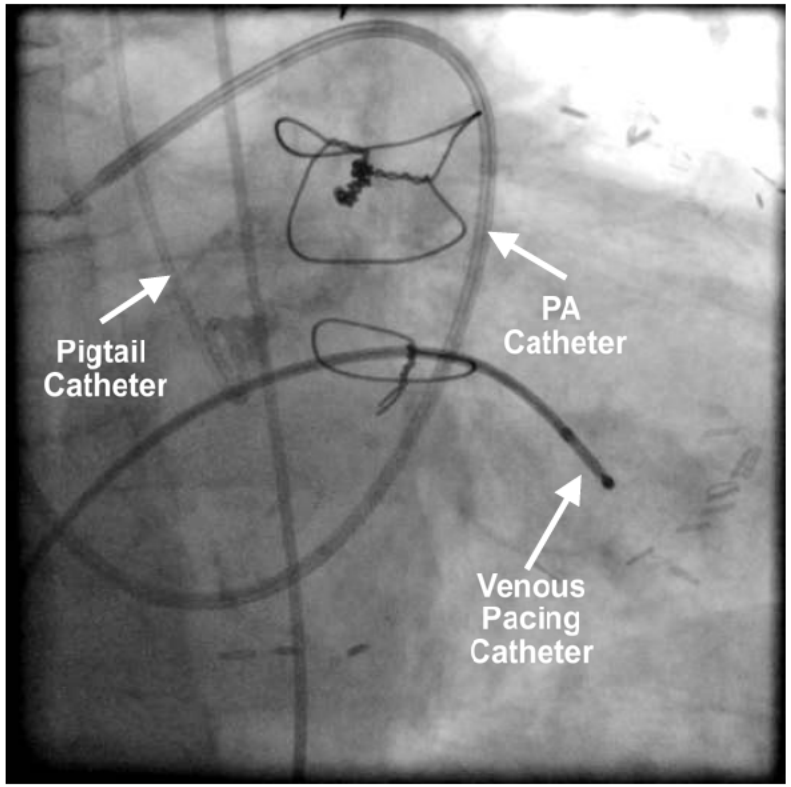
Patient Preparation

- Standard induction / monitoring for cardiac surgery
  - Invasive and non-invasive pressure monitoring
  - Central line or PA catheter
  - Foley catheter
  - Transesphogael Echo (TEE)
  - Capnography
  - Pulse oximetry
- Radiolucent defibrillation pads placed on all patients in bi-axillary position
- Patient intubated by anesthesia (if using TEE)
- Bilateral groins prepped and patient draped
  - Patient prepped from neck to knees

Patient Preparation

- Venous / arterial access obtained (suitable for venous / arterial cannulation for bypass)
- Diagnostic pigtail advanced from the femoral artery to the level of the aortic annulus for root aortography
- If using bipolar transvenous pacing catheter, track from femoral or internal jugular vein
- Check thresholds to ensure capture (unless using epicardial pacing leads)



NOTE:
When using venous pacing, observation of the pacing lead throughout the procedure is essential to avoid the potential risk of pacing lead perforation

Rapid Ventricular Pacing: Test Run

Rapid Ventricular Pacing: Test Run

Rapid Ventricular Pacing: Test Run

Rapid Ventricular Pacing: Anesthesia Considerations

- Prevent myocardial ischemia during BAV and THV deployment

Rapid Ventricular Pacing: Anesthesia Considerations

- Patients with implanted cardiac devices will require pre-procedural evaluation/reprograming

- Failure of blood pressure to recover promptly after an episode of rapid burst pacing suggests persistent myocardial ischemia or severe LV dysfunction

Preparing for Emergency CPB

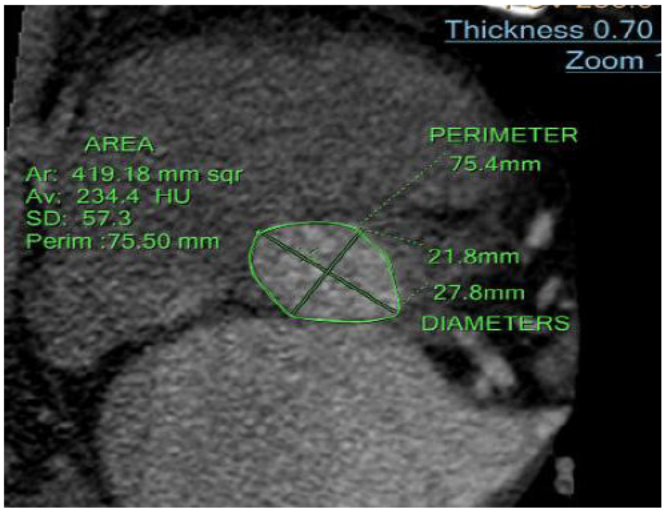
- Perfusionist and fully primed CPB circuit should be immediately available
- Based on preoperative contrast or CT angiography, identify which femoral artery will be used in case of emergency CPB

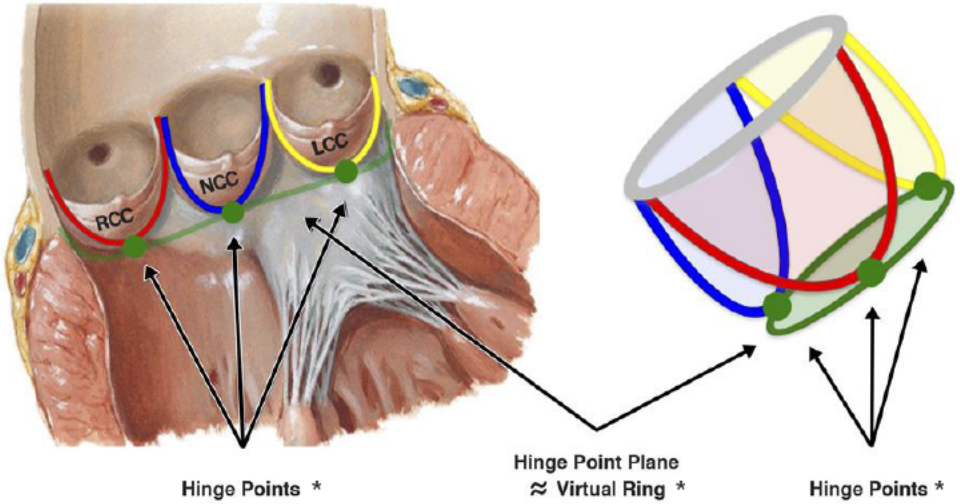
- Smaller cannula can be used due to full bypass flow not generally needed and the duration of bypass is brief (< 20 min)
  - Arterial (14-18F)
  - Venous (20-24F)
- If peripheral access cannot be achieved, central cannulation should be performed via emergency sternotomy

Transfemoral Procedure Overview

Valve Sizing

- 3D imaging is fast becoming an important component in the THV procedure for:
  - Case planning
  - Assessing annular complex size and location of calcium (LVOT, supra-annular, leaflets, etc…)
  - Selecting appropriate THV size





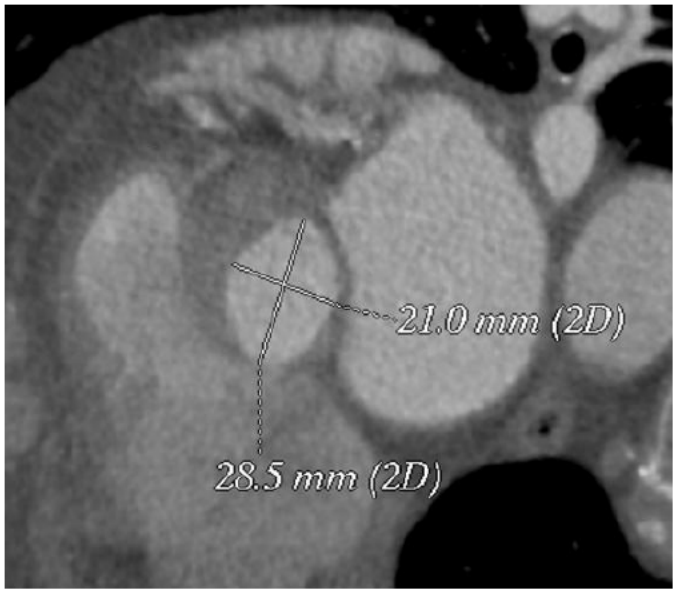
* Hinge Points = Base of Cusps for THV positioning

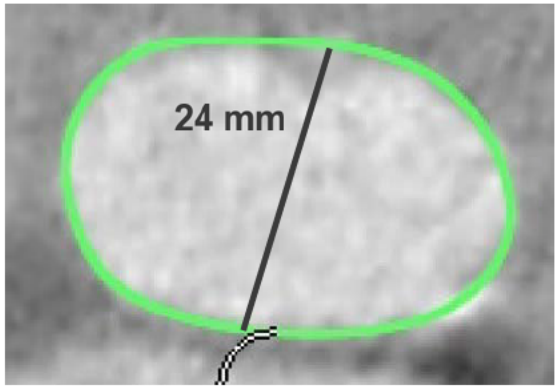
Source: Kasel, A.M. et al; Standardized Imaging for Aortic Annular Sizing

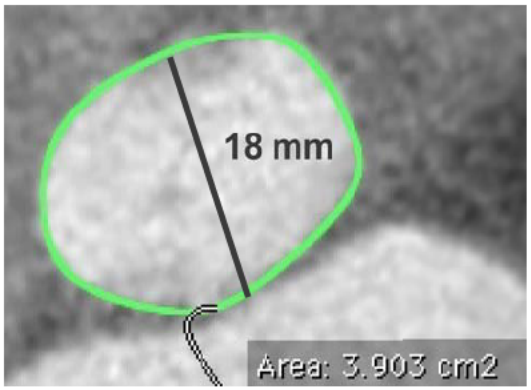
Valve Sizing

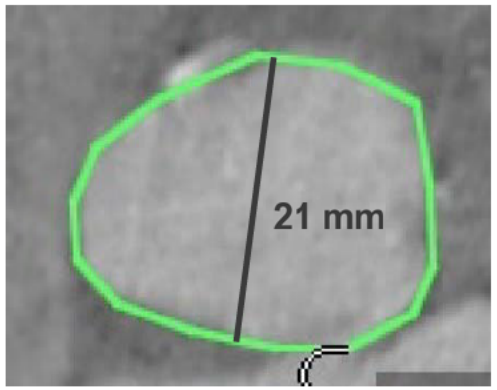
Non-Circular Annuli: Why we need 3D

Any single diameter cannot completely characterize the annulus "size" due to its non-circular shape





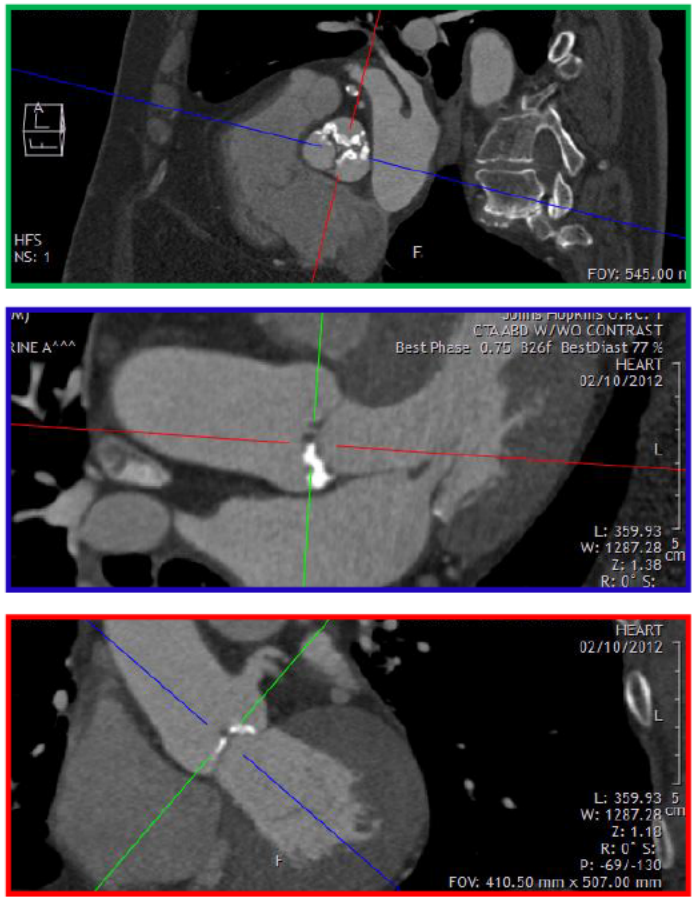




Valve Sizing: CT

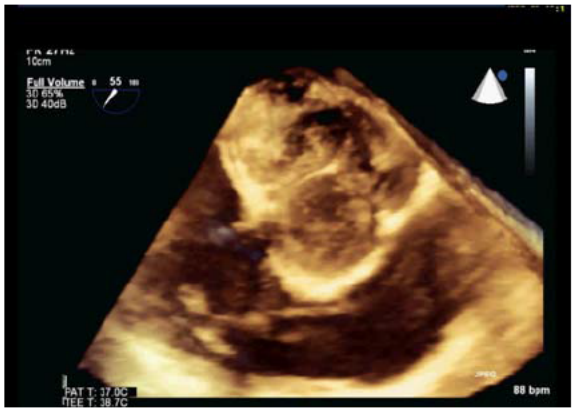
- It is crucial that good 3D CT images are obtained
- It is recommended:

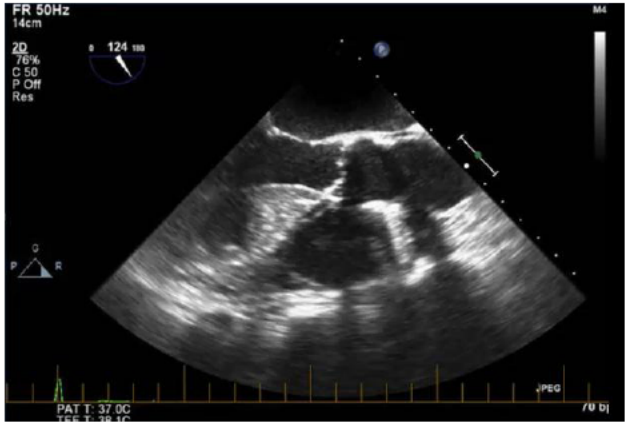
[redacted]



Valve Sizing: Multimodality Imaging

- Multimodality imaging is an additional important key to accurate sizing
- Size Variations:
  - It has been established that there is difference in annulus size depending on imaging modality and where the measurement was obtained
    - MDCT and 3D derived diameter measurements tend to be larger than 2D TTE/TEE diameter measurements
    - TEE measurements tend to be larger than TTE
- Multiple imaging studies are critical in borderline cases





Valve Sizing: Annulus Measurements

- Annulus is a dynamic structure it changes shape during the cardiac cycle
- The annular area also changes during the cardiac cycle:
  - Largest during systole when the valve leaflets are open
  - Smaller and more ovoid in shape during diastole
- It is critical that accurate measurements are obtained
- It is recommended that measurements are obtained during systole

[redacted]

Source

SAPIEN 3 Valve Sizing: Confirm THV Size

- Confirm native annulus diameter and/or area
- Assess anatomy and calcification
- Select THV size

NOTE:
THV size recommendations are based on native valve annulus size, as measured by TEE or CT. Multiple imaging modalities should be considered during THV size selection.