



Centre for
Heart Valve Innovation
St. Paul's Hospital, Vancouver



CT for TMVR Planning: Imaging Specialist's Tips and Tricks

Philipp Blanke, MD

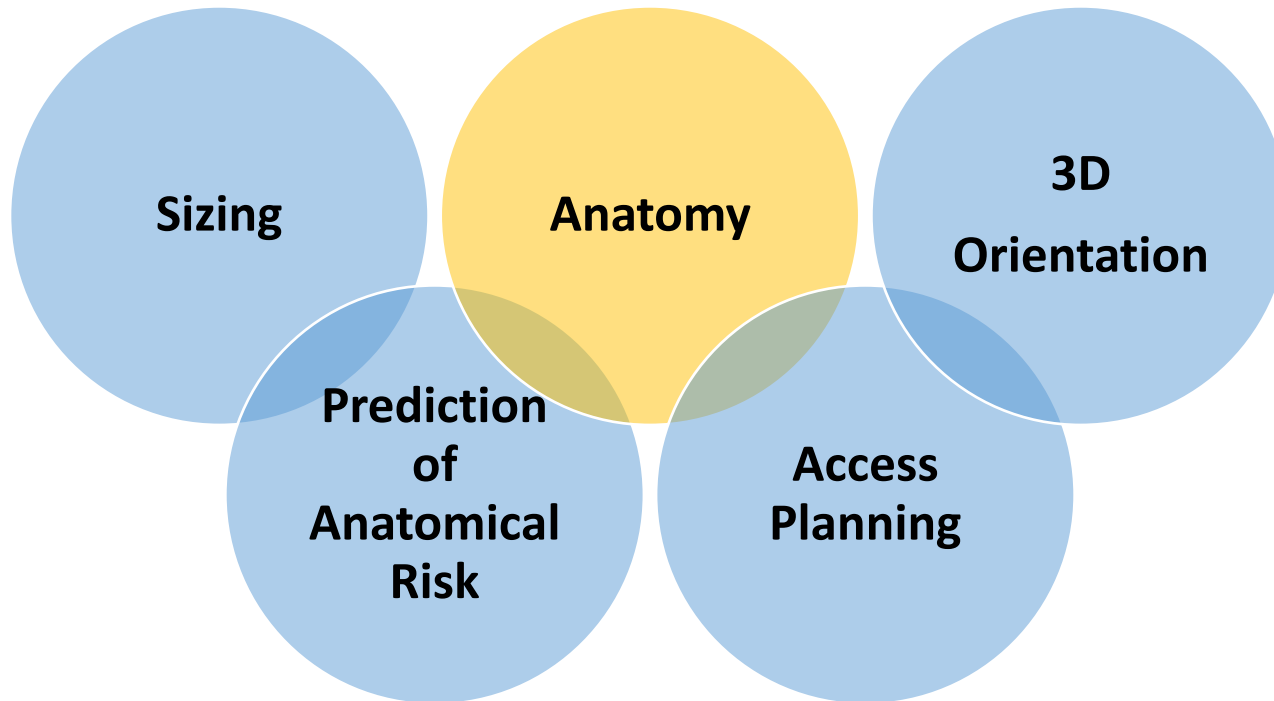
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Assistant Professor, University of British Columbia

CT for Transcatheter Mitral Procedures

Anatomy



‘CT is the anatomical truth machine’

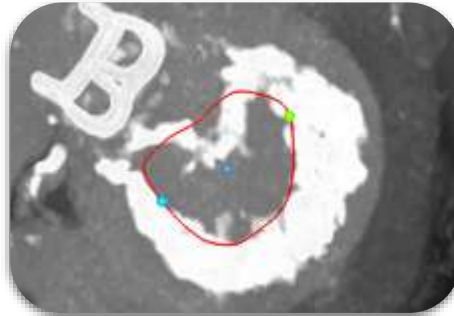


CT for Transcatheter Mitral Procedures

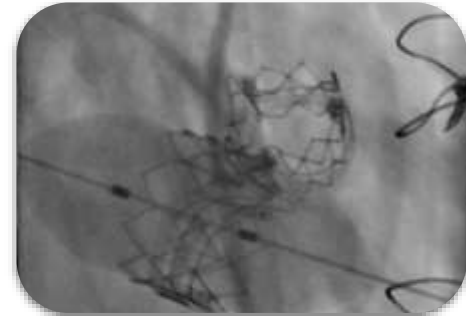
Spectrum of Implantation/Replacement



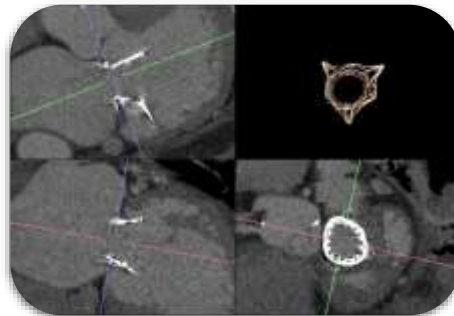
TMVI



THV in calcific
MVD



ViV

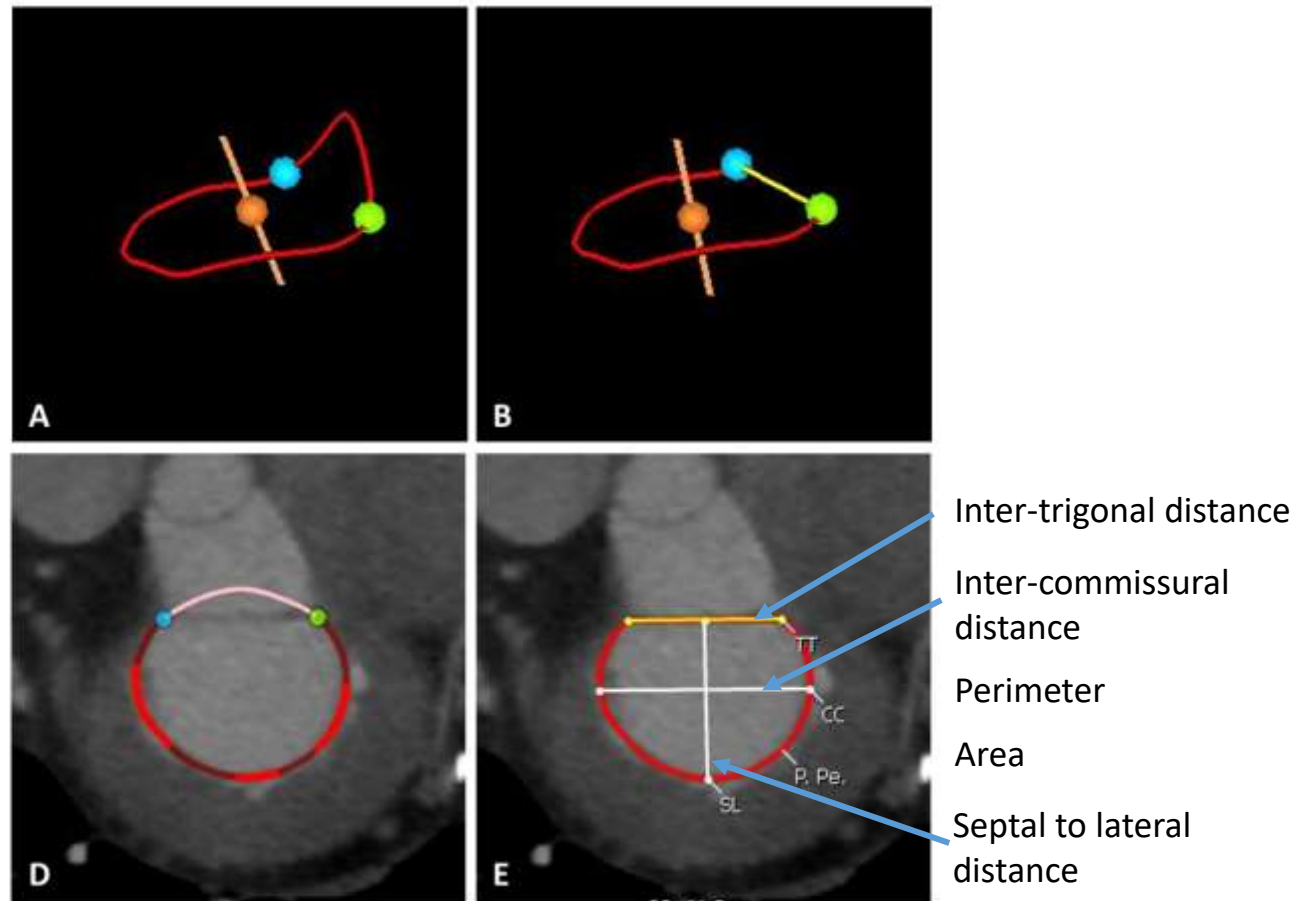


ViR



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Annular segmentation

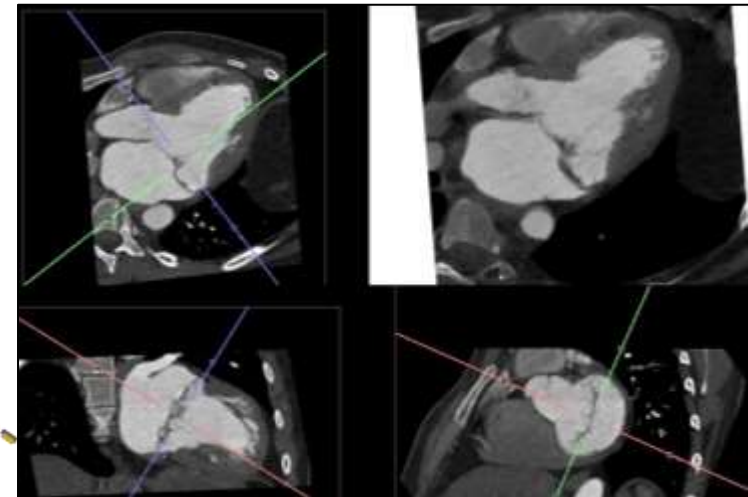
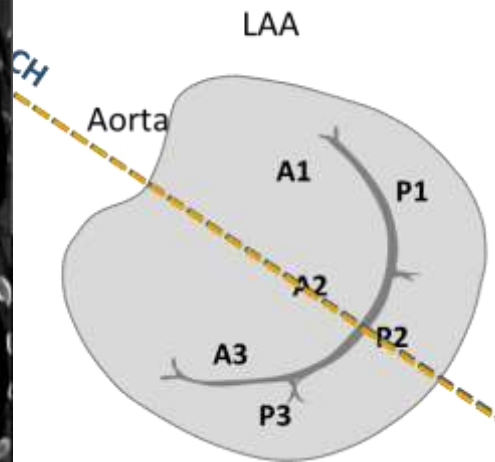
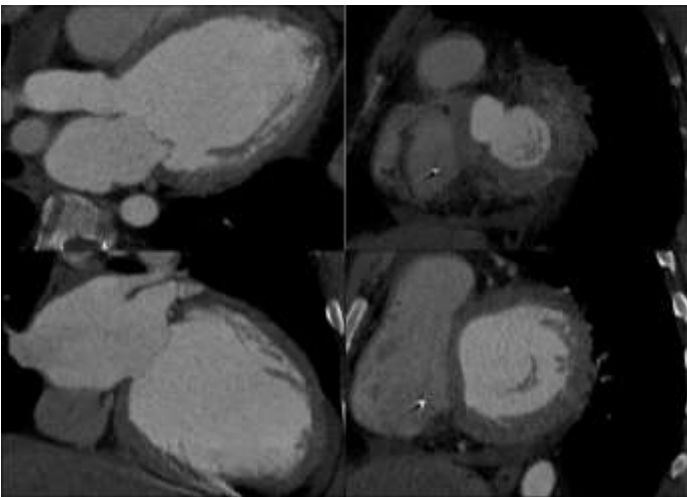


CT is the gold standard for annular sizing



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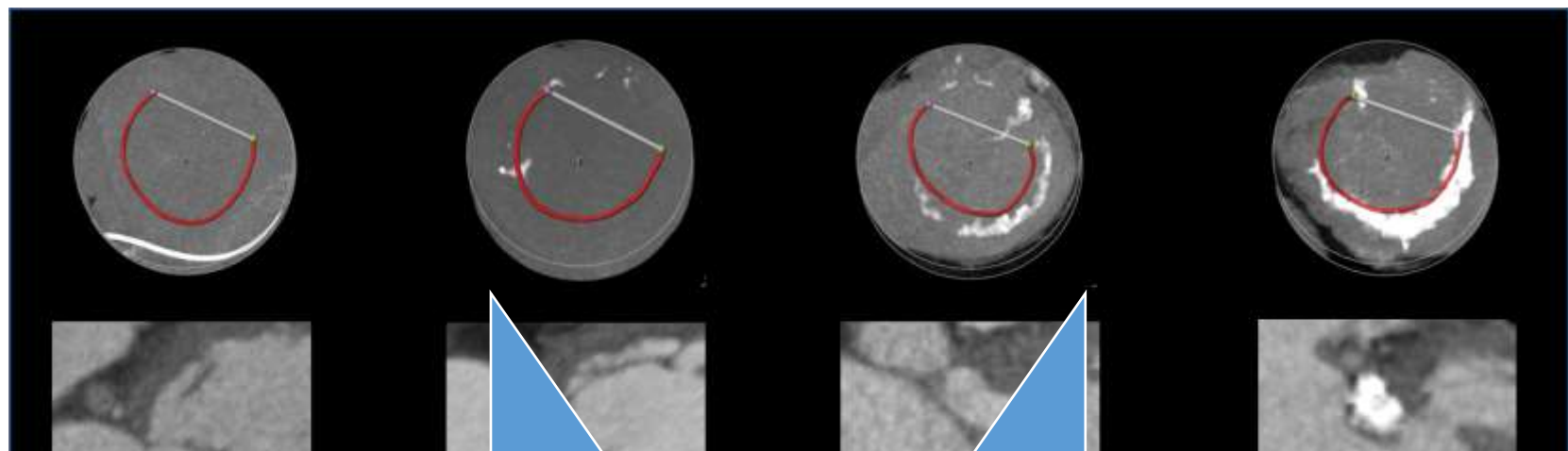
Landing zone anatomy



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Semi-qualitative Quantification stratified by mitral segment

None	Mild	Moderate	Severe
No annular calcium	Fleck like, spotty, focal, non-protruding	Coalescing	Bulky, protruding



If calcification is an obstacle

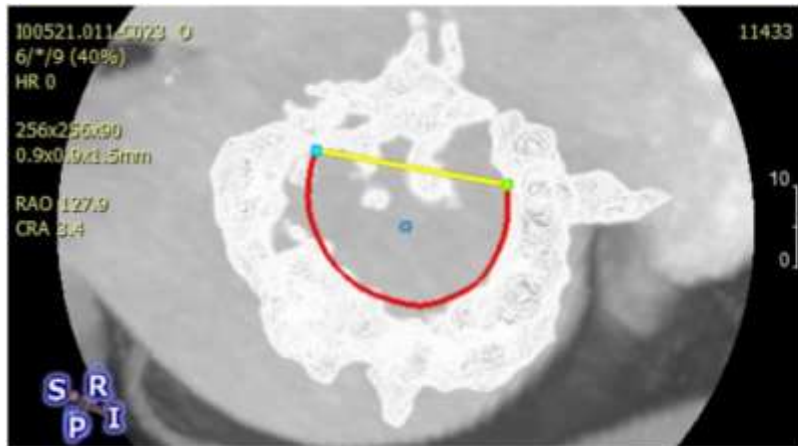
If calcification is needed for anchoring



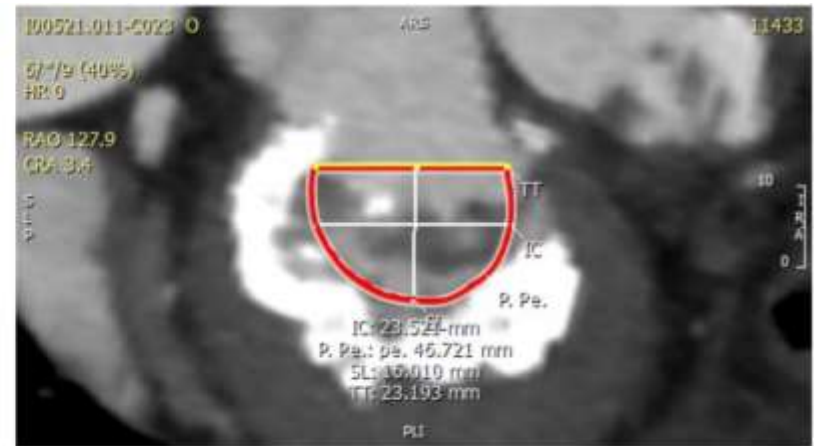
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Presentation of Views

Maximum Intensity Projection (MIP)
En face

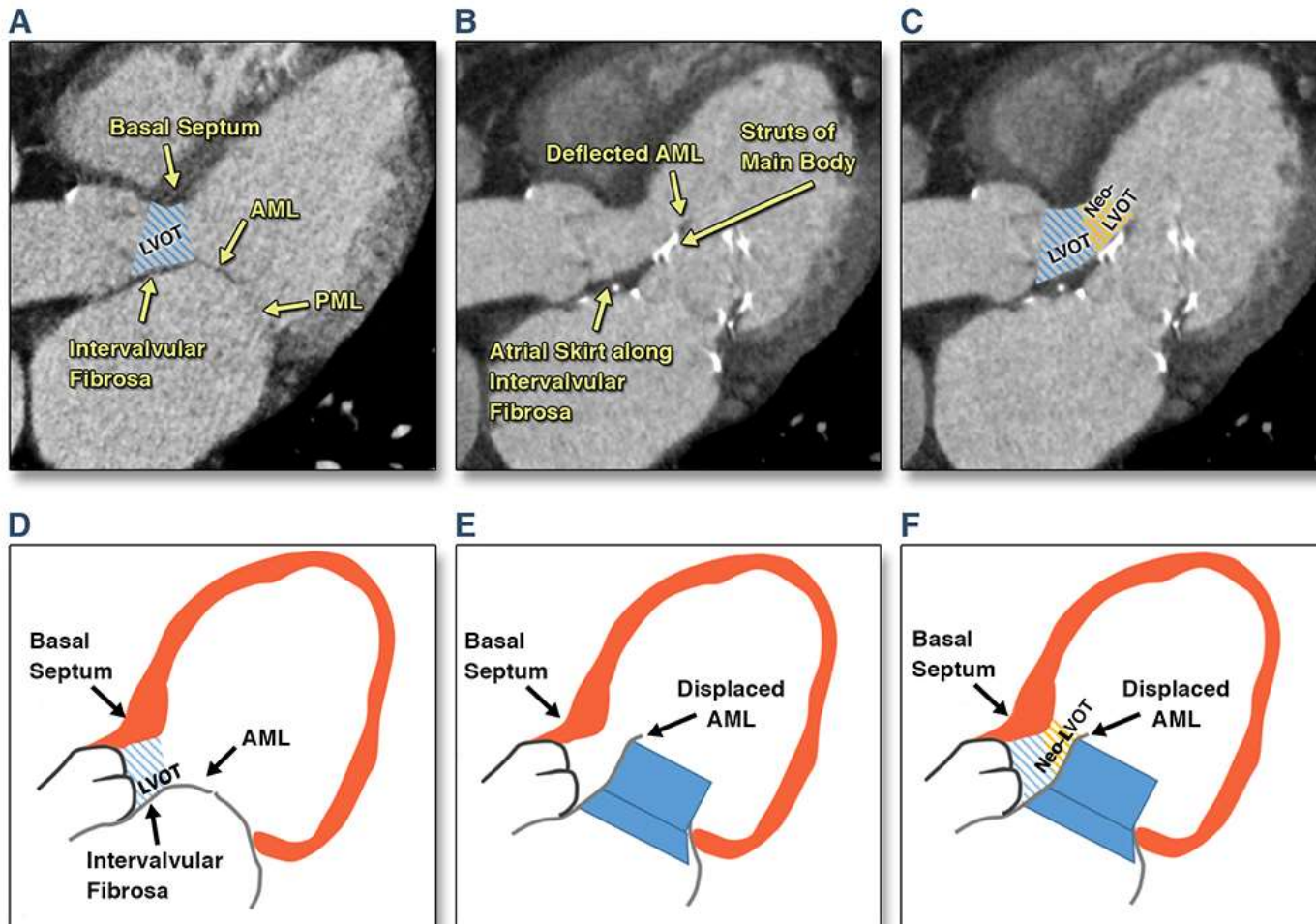


Multiplanar Reformat (MPR)
En face



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Neo-LVOT



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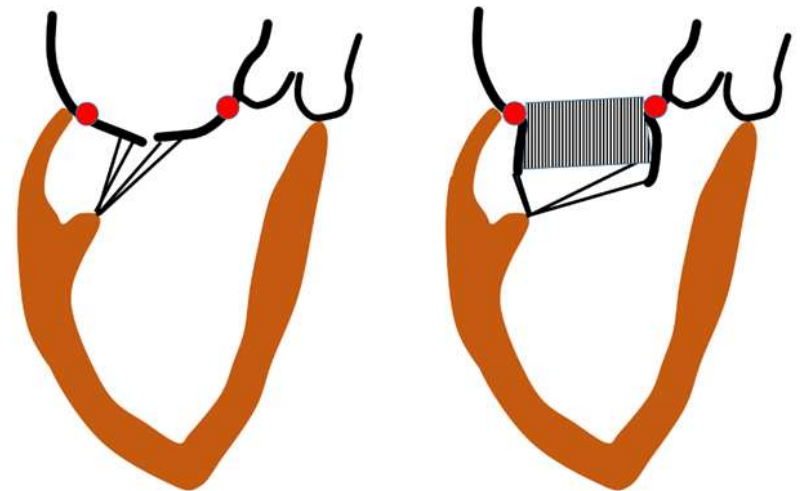
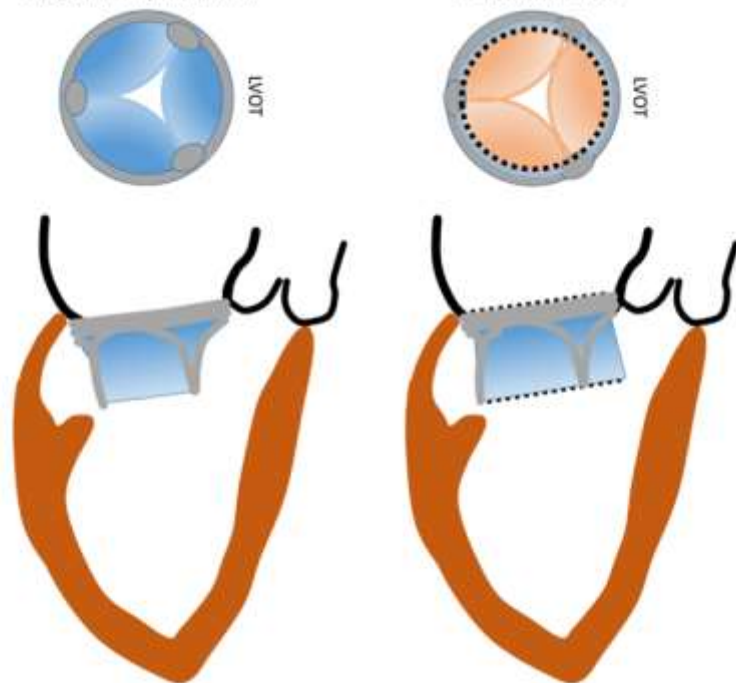
Understanding the procedural impact on to the LVOT

Valve-in-Valve

Valve-in-Ring

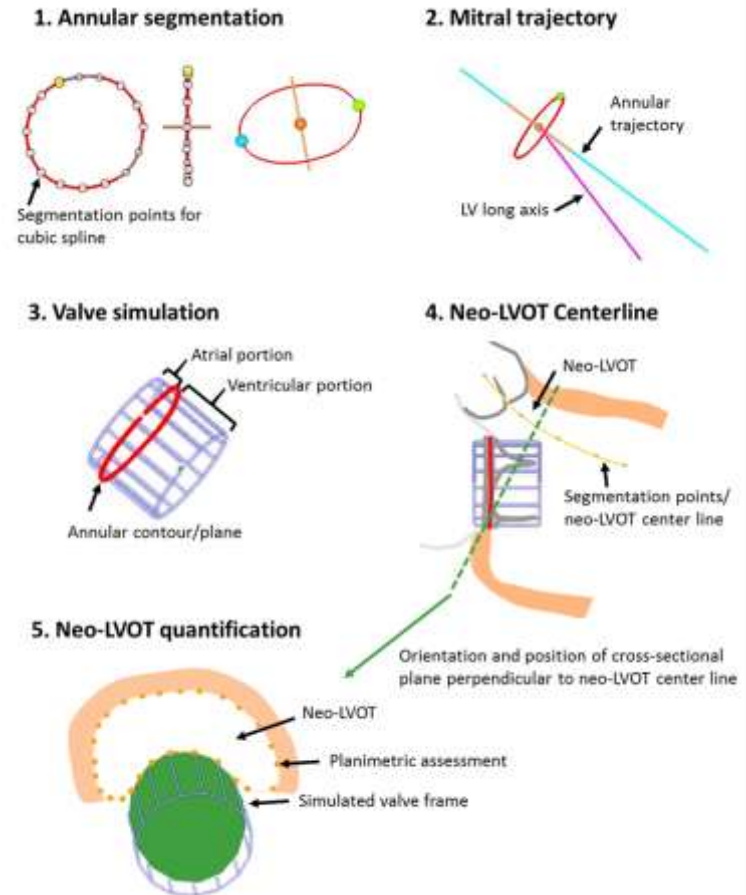
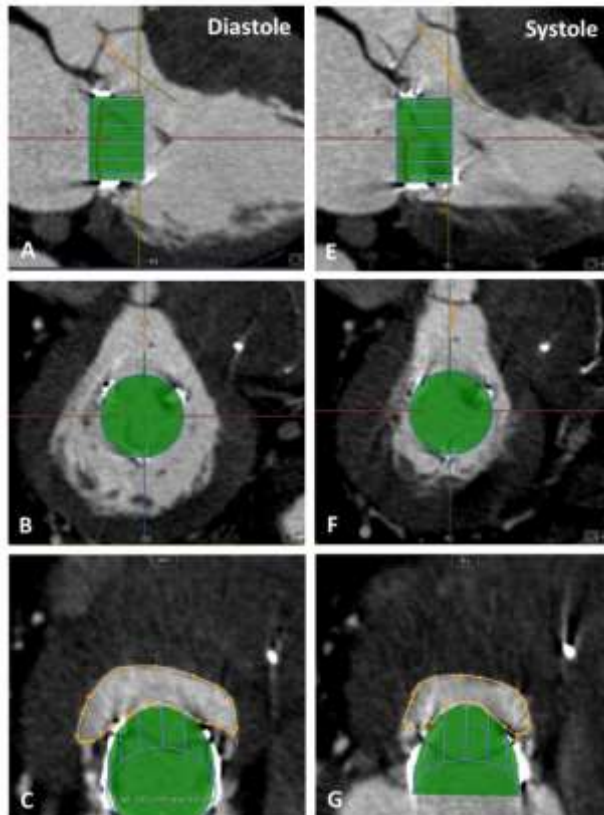
Surgical bioprosthesis

Valve-in-Valve



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Neo-LVOT assessment



ViV: Assumption – rigid SHV scaffold guides orientation of THV

Blanke et al JACC Img 2015

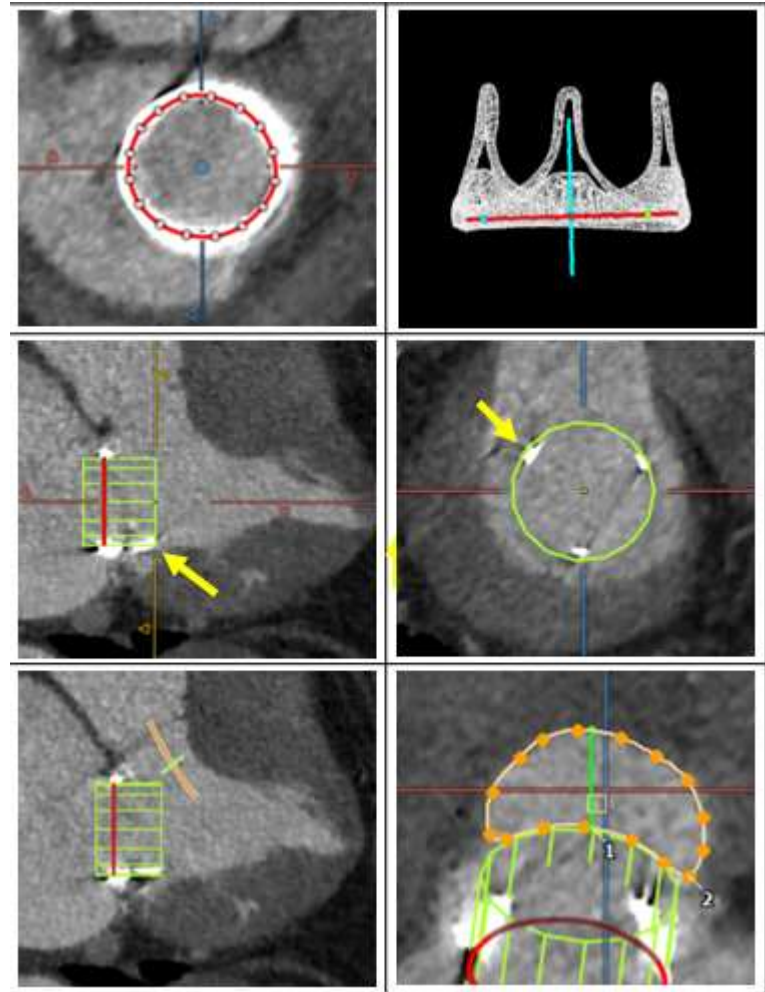


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Neo-LVOT assessment

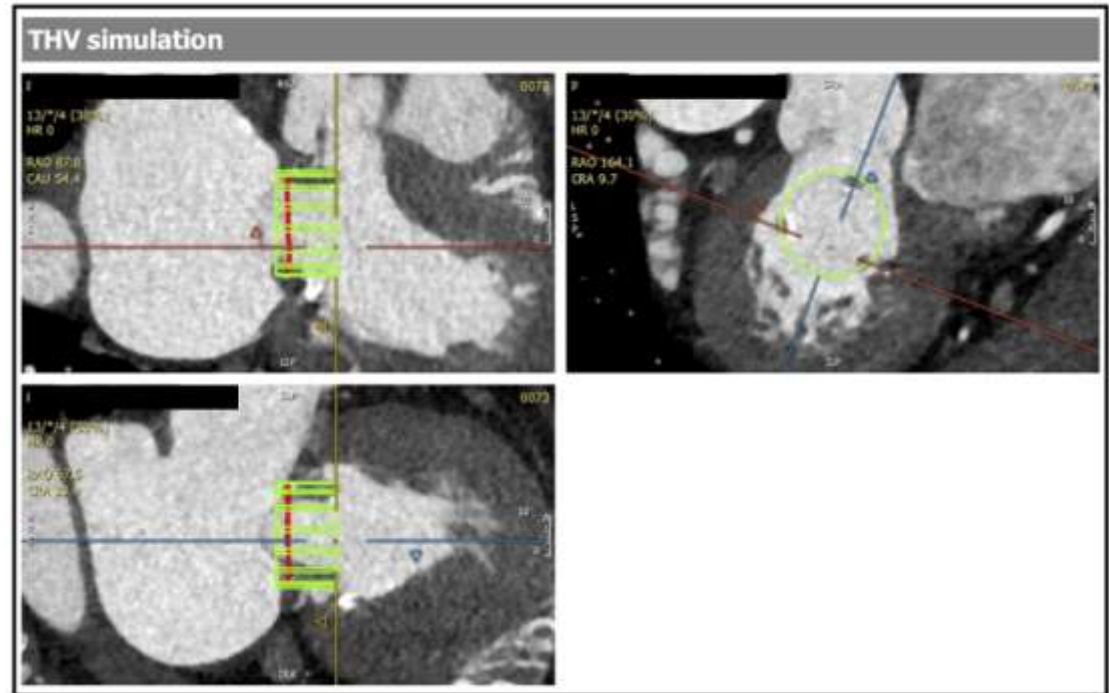


Magna (pericardial)
Leaflet height:
Macroscopic vs CT appearance



CT for Transcatheter Mitral Procedures

Neo-LVOT assessment



Epic (porcine)

Leaflet height:

Macroscopic vs CT appearance



CT for Transcatheter Mitral Procedures

Neo-LVOT assessment

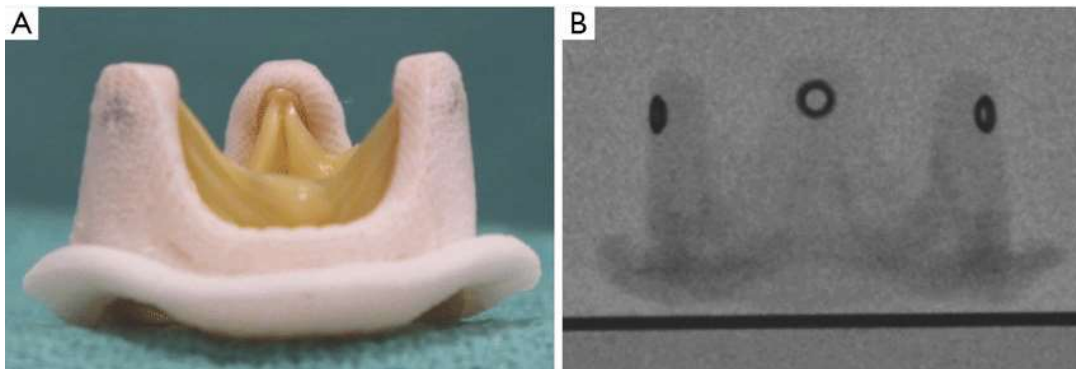
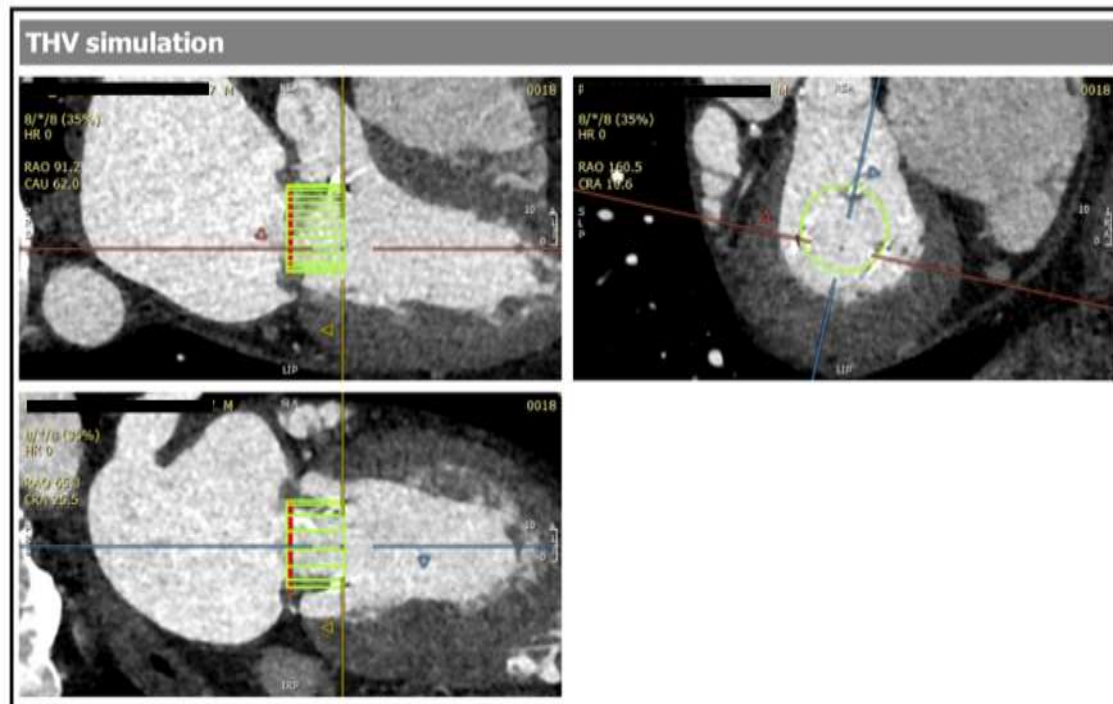


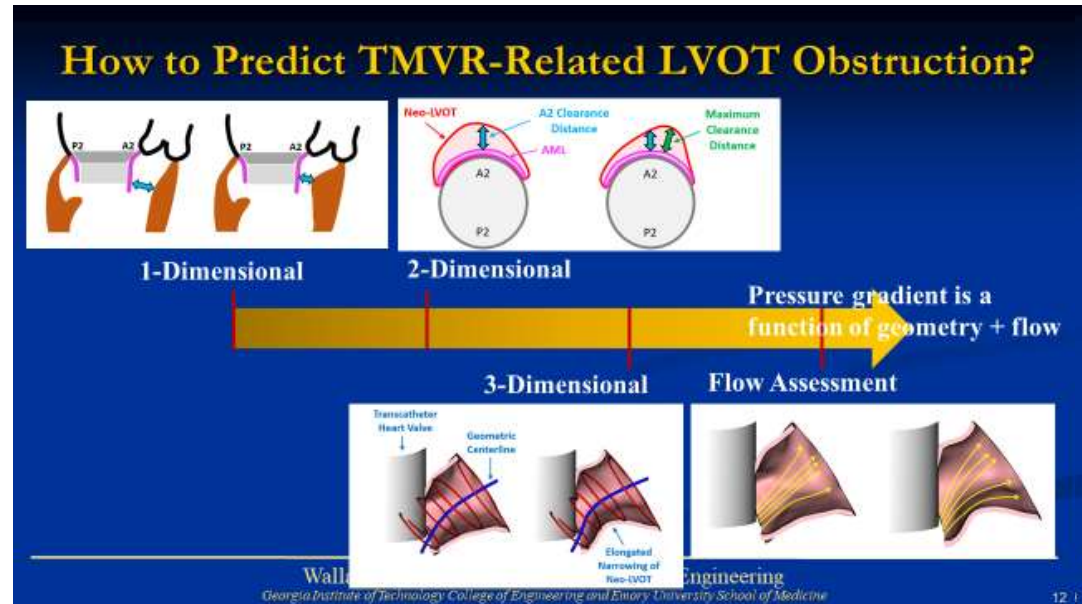
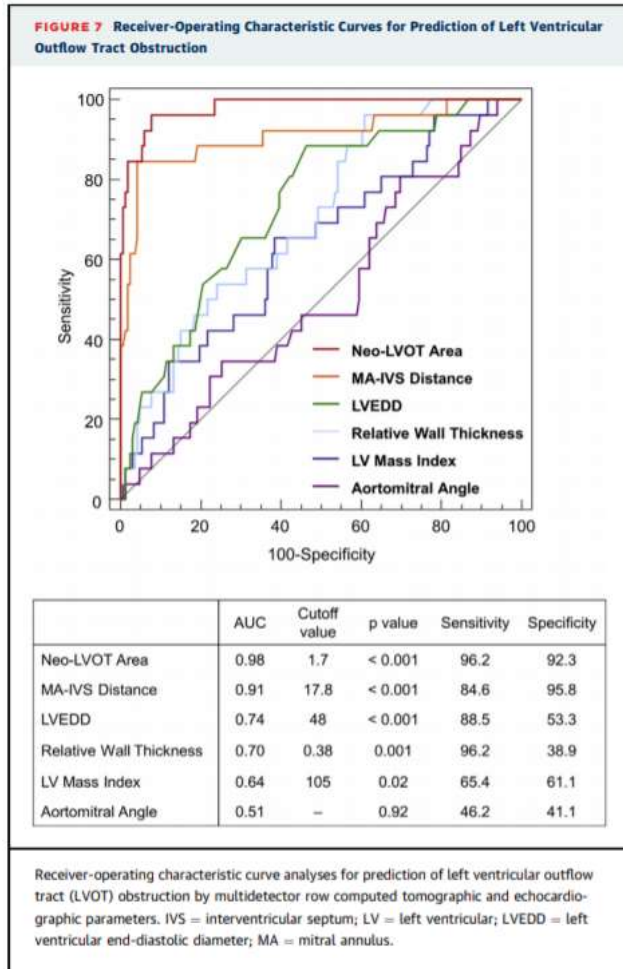
Image courtesy Dr. Bapat

Mosaic (porcine)
Leaflet height:
Macroscopic vs CT appearance



CT for Transcatheter Mitral Procedures

Threshold values



Courtesy of K. Kohli

Yoon et al JACC Interv. 2019



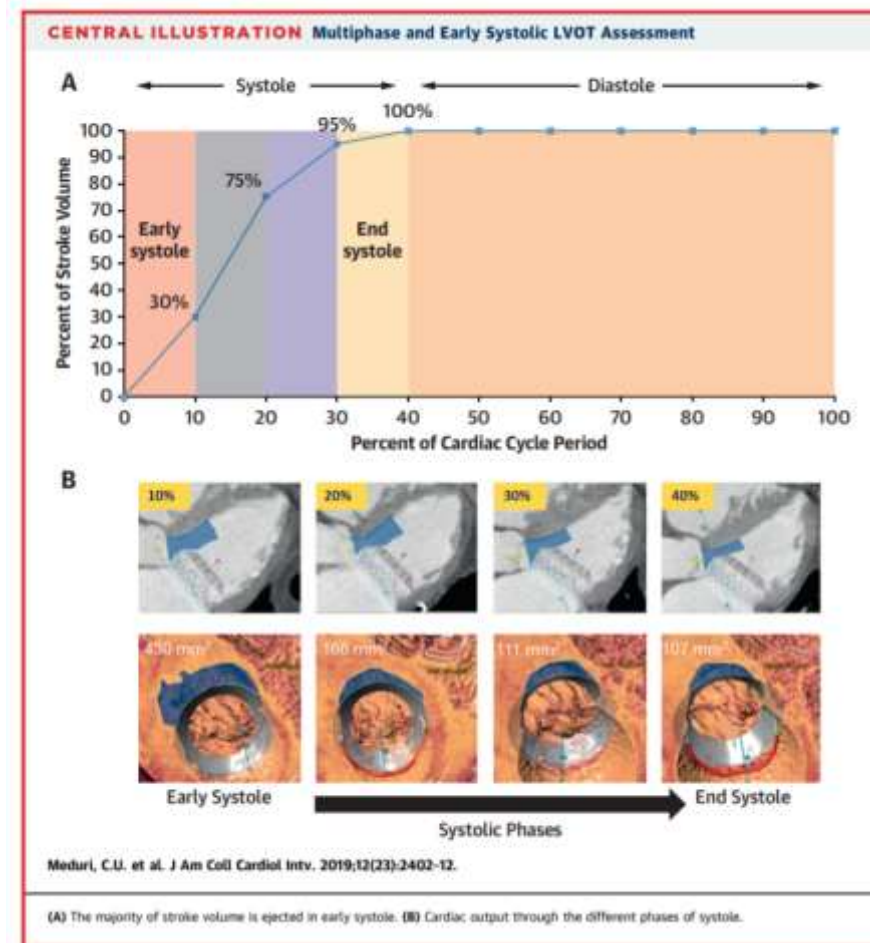
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CT for Transcatheter Mitral Procedures

Important considerations

- Dynamic changes throughout cardiac cycle – when to measure?



CT for Transcatheter Mitral Procedures

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- Dynamic changes throughout cardiac cycle – when to measure?

End-diastole

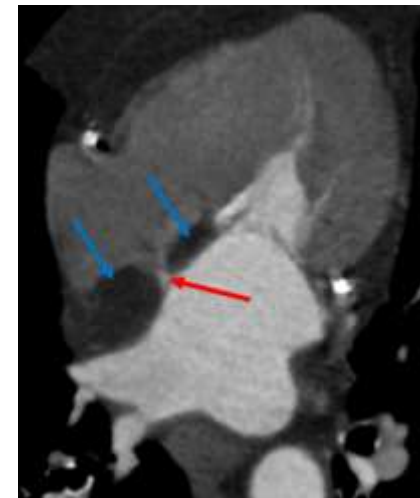
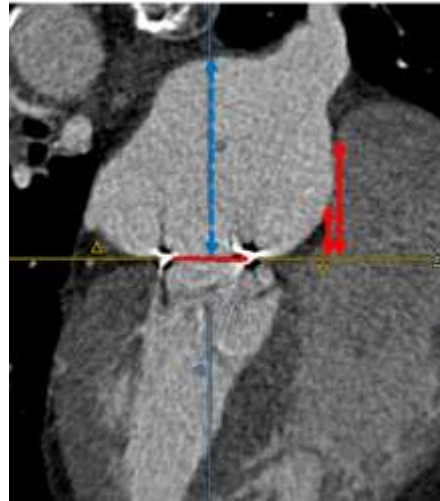
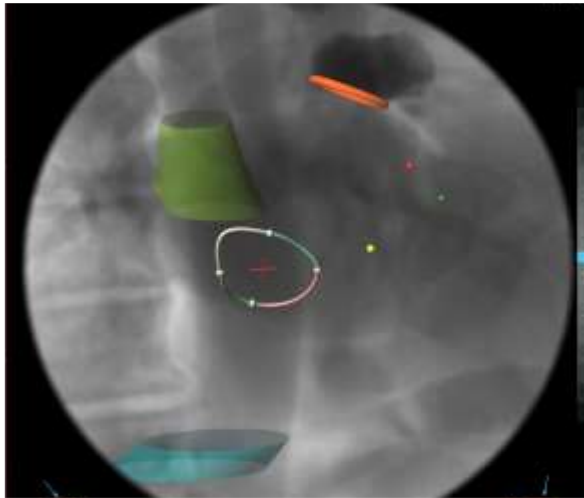


End-systole



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Assessment of inter-atrial septum



Fossa ovalis height

Abnormalities of the inter-atrial septum: LHIS, calcification, ASD/PFO

