CT Imaging Pearls for Transcatheter Mitral Procedures

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Disclosures

Consultant to

Edwards Lifesciences Inc.

Neovasc Inc.

Circle Imaging

Tendyne Holdings

SPH Cardiac CT Core Lab, providing services to
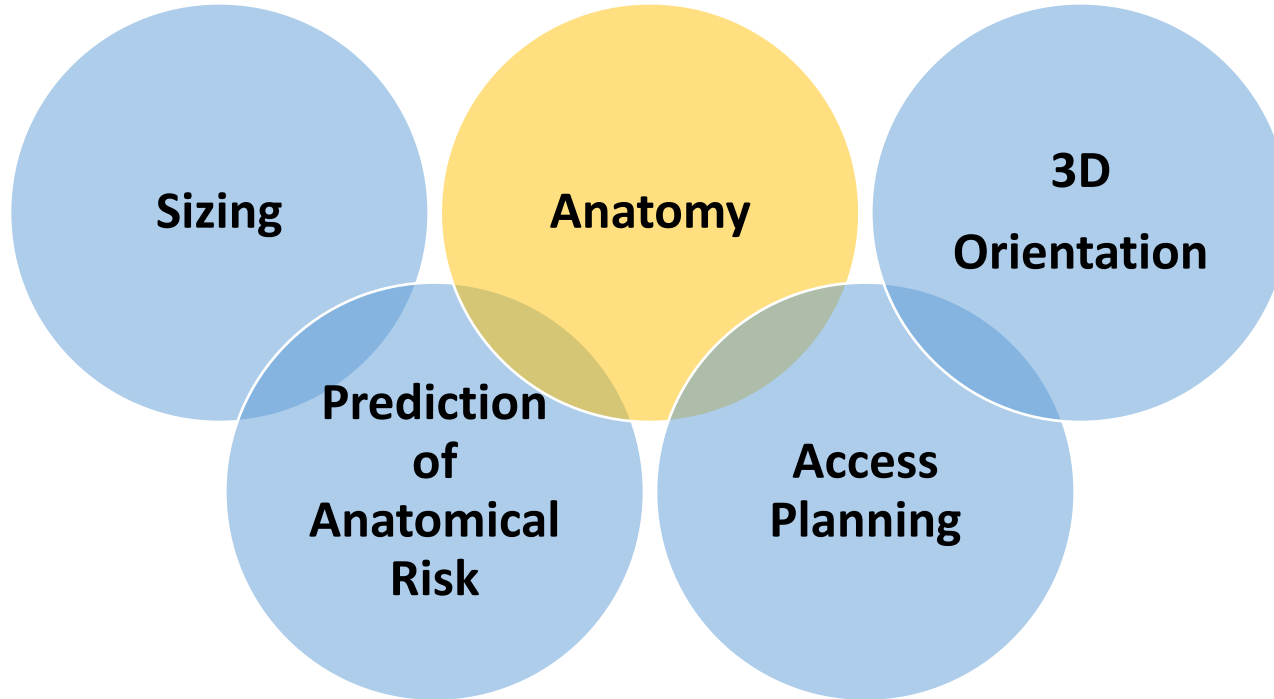
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Transcatheter Mitral Procedures

Anatomy

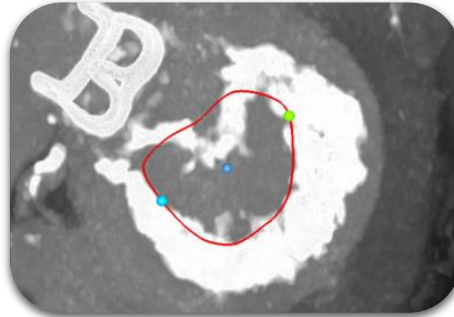**'CT is the anatomical truth machine'**
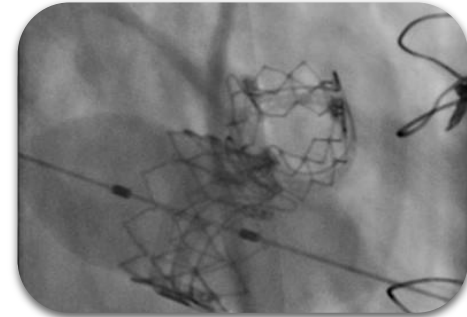
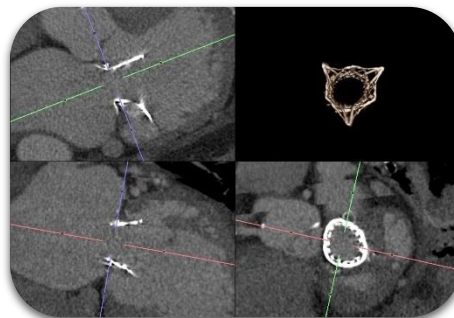# CT Assessment for Mitral Valve Procedures

Spectrum of Implantation/Replacement

TMVI

THV in calcific MVD

ViV

ViR

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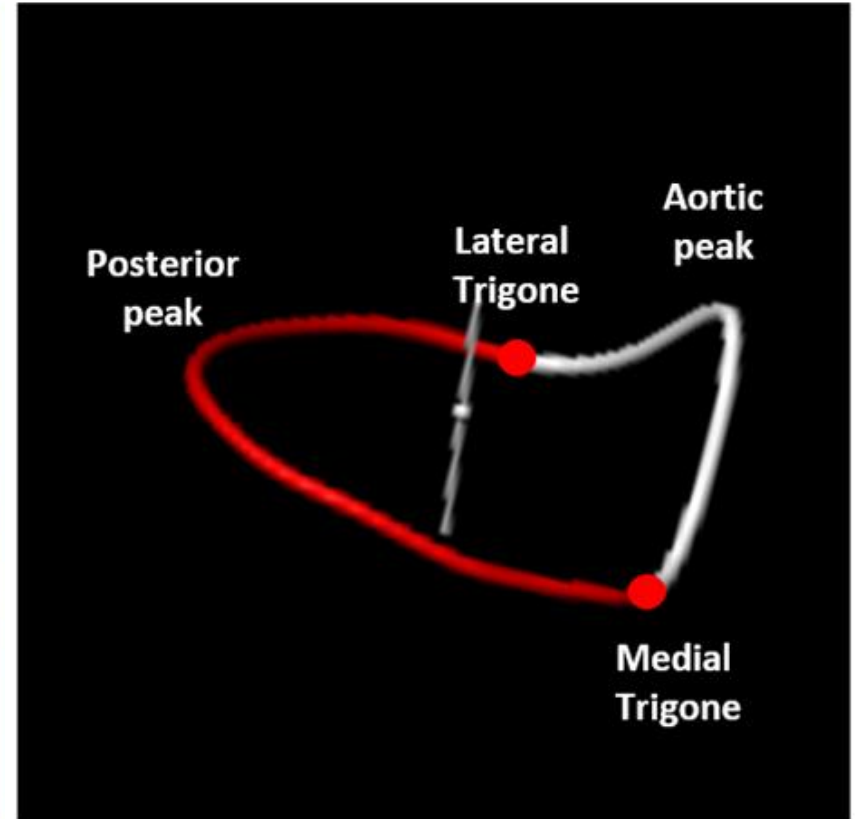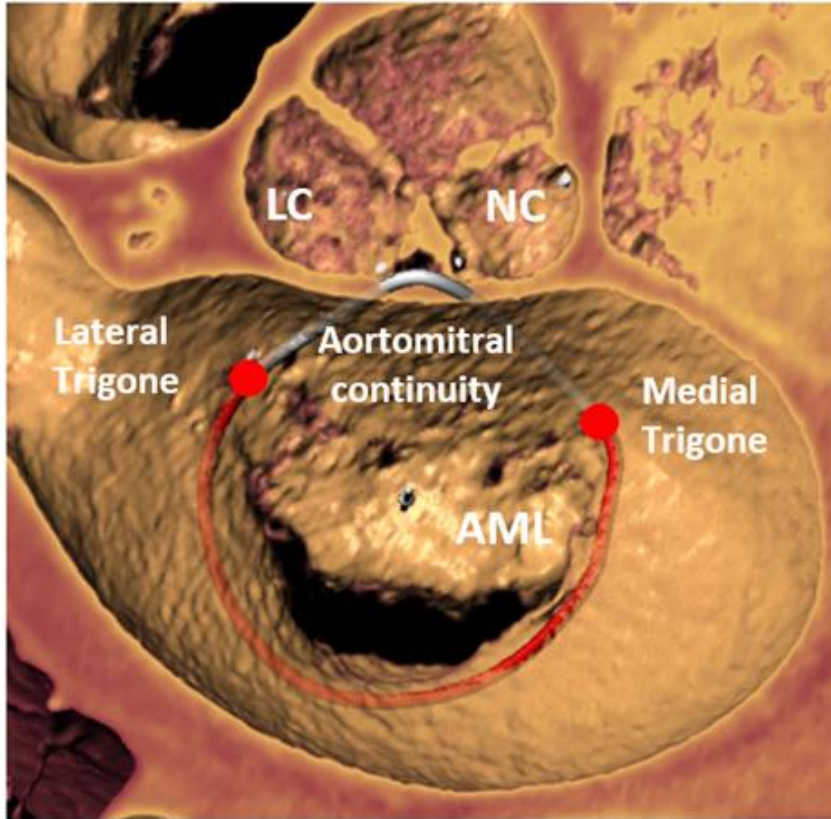Heart Valve Innovation
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Sizing

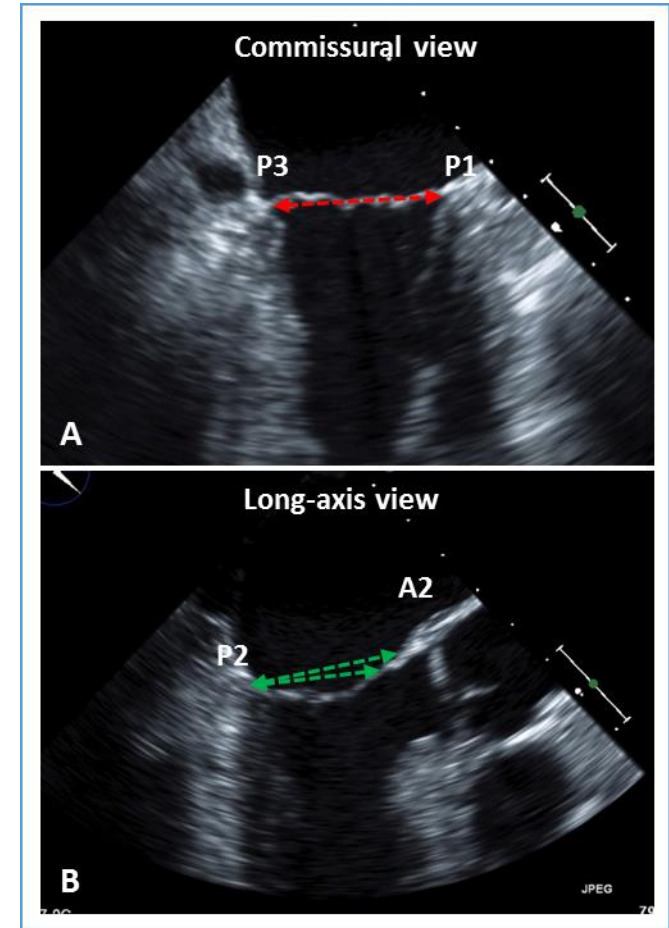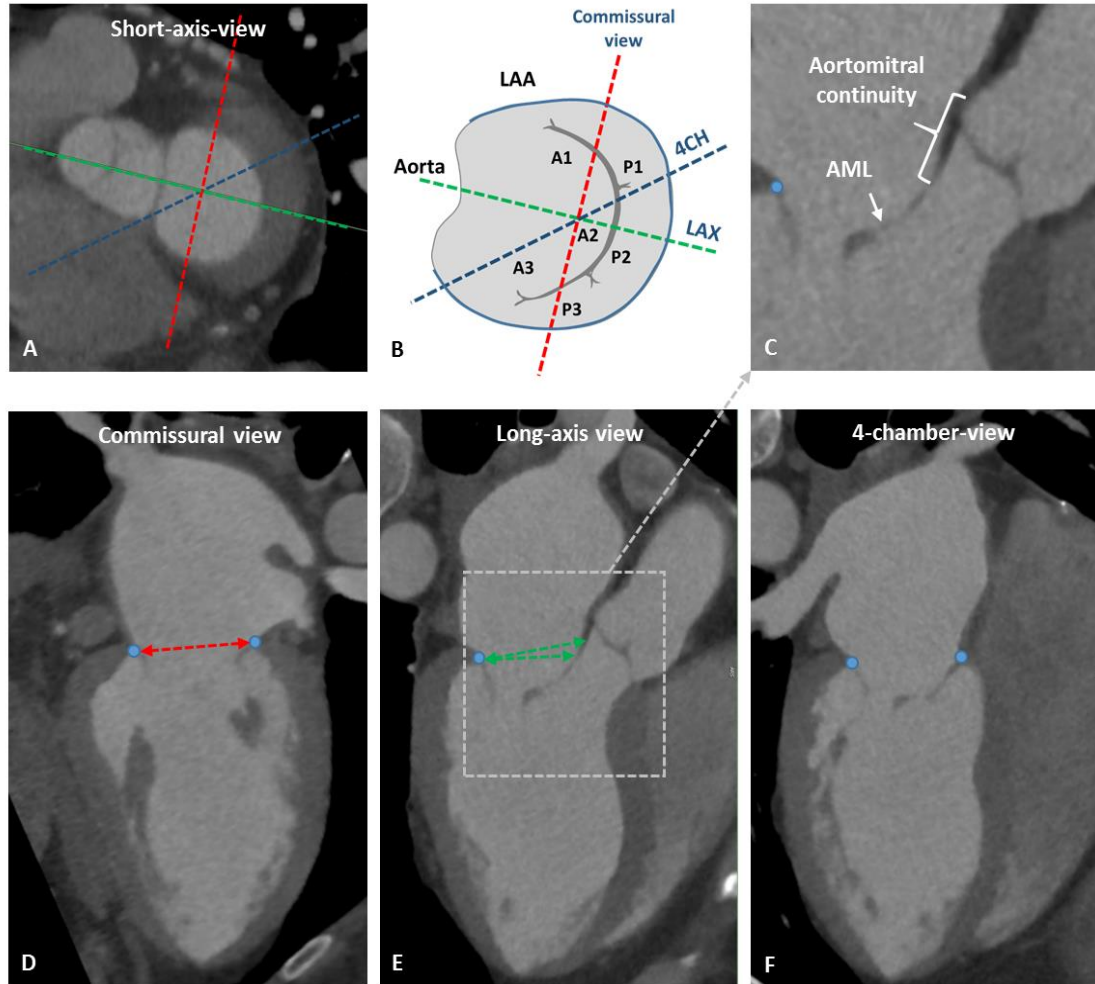## Goal: To find the right size for the right patient

TMVR CT screening: Essentials

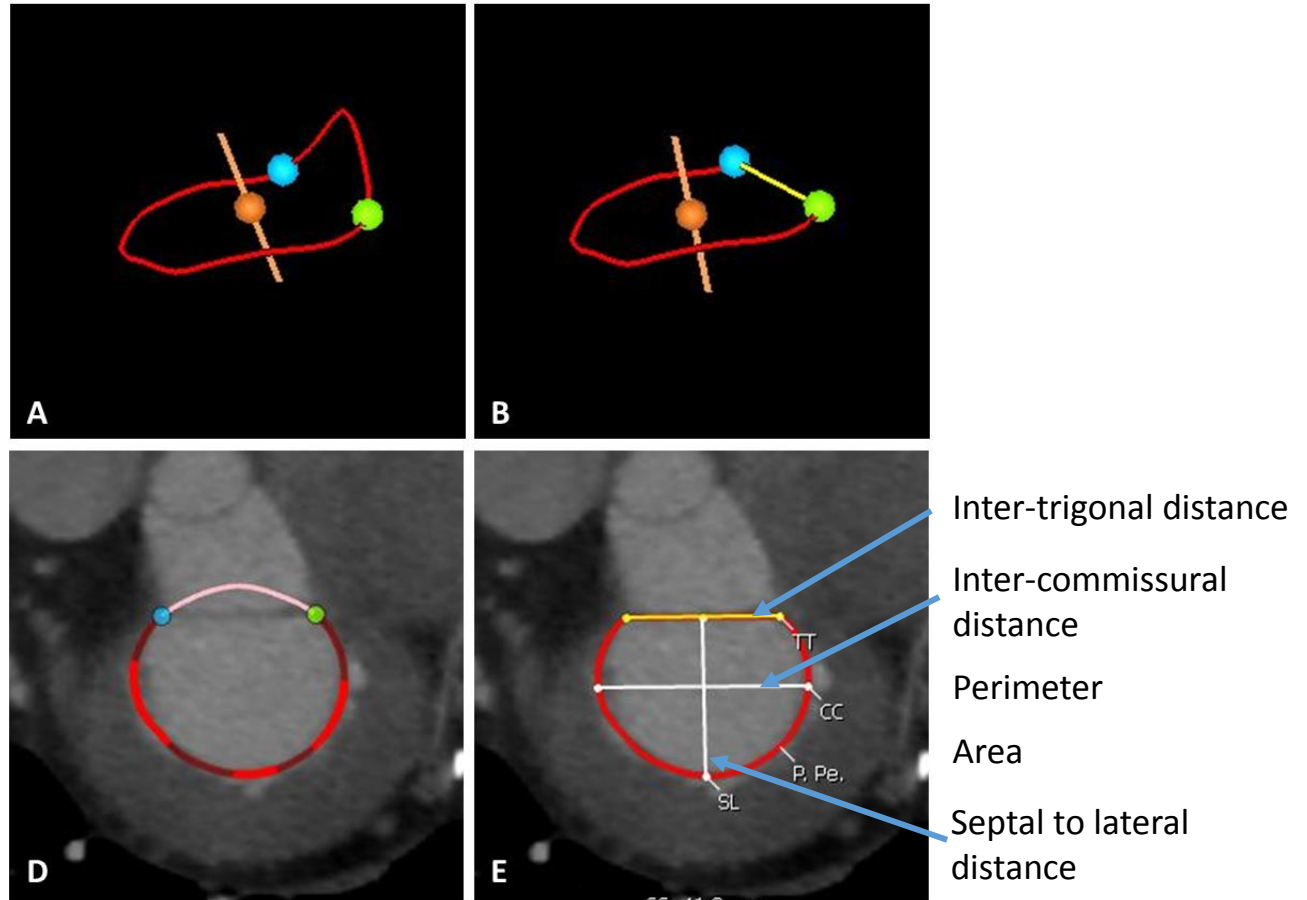Mitral annulus: saddle-shaped 3-dimensional configuration

TMVR CT screening: Essentials

Mitral annulus: saddle-shaped 3-dimensional configuration

TMVR CT screening: Essentials

Annular segmentation

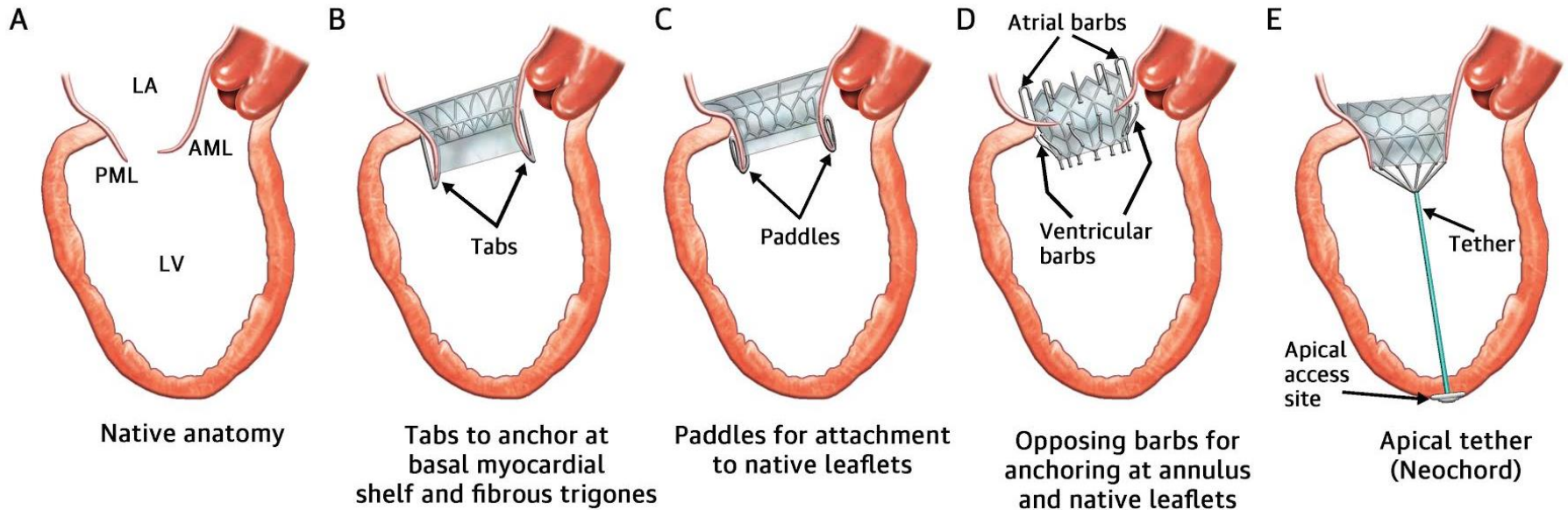Inter-trigonal distance

Inter-commissural distance

Perimeter

Area

Septal to lateral distance

CT is the gold standard for annular sizing

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TMVR CT screening: Essentials

Different devices – Different requirements!

A — Native anatomy

B — Tabs to anchor at basal myocardial shelf and fibrous trigones

C — Paddles for attachment to native leaflets

D — Opposing barbs for anchoring at annulus and native leaflets

E — Apical tether (Neochord)

Challenge: Different devices – Different requirements!

Blanke et al. JACC Imaging 2015

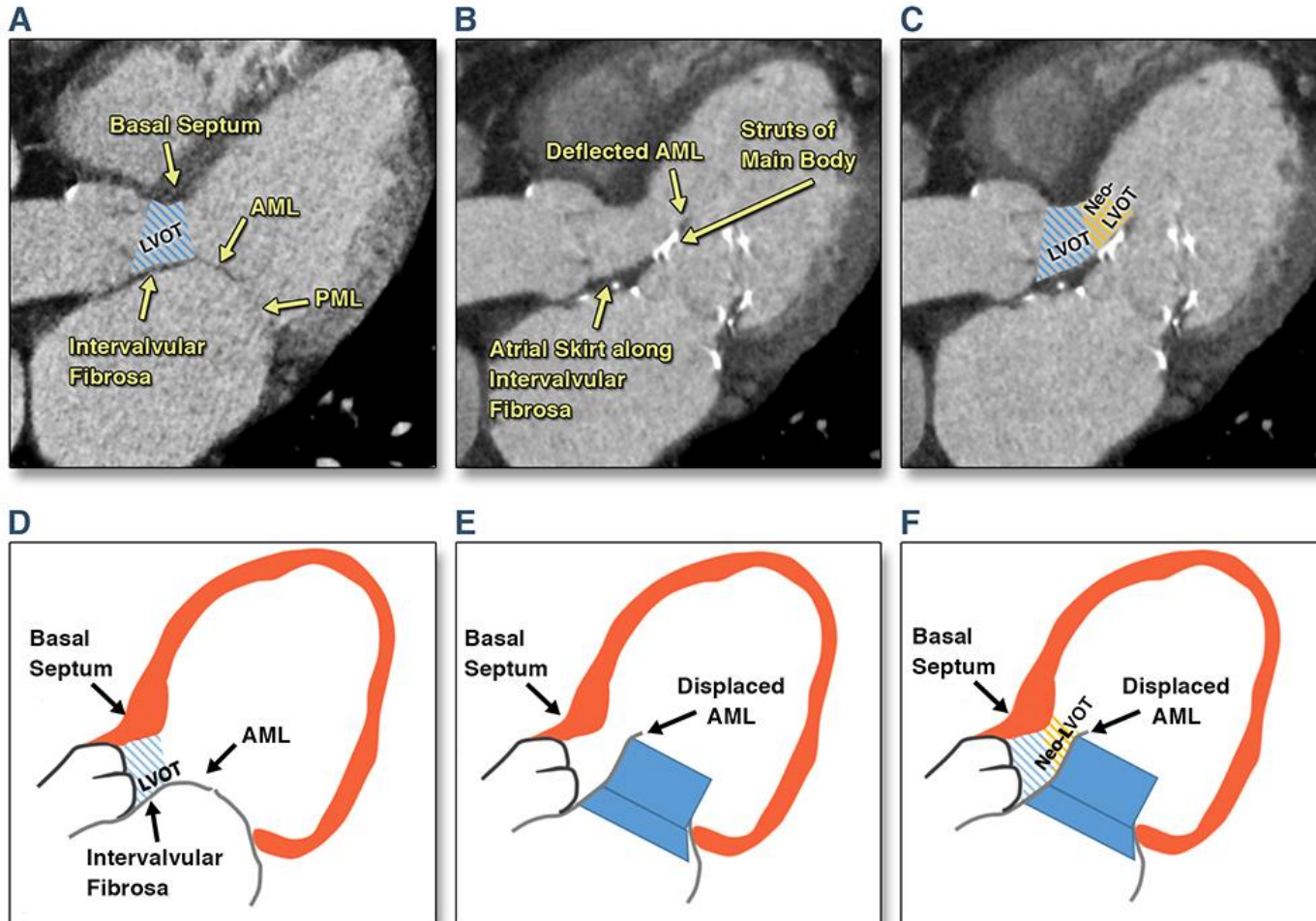# Prediction of Anatomical Risk

Goal: Prevent procedure-related adverse events
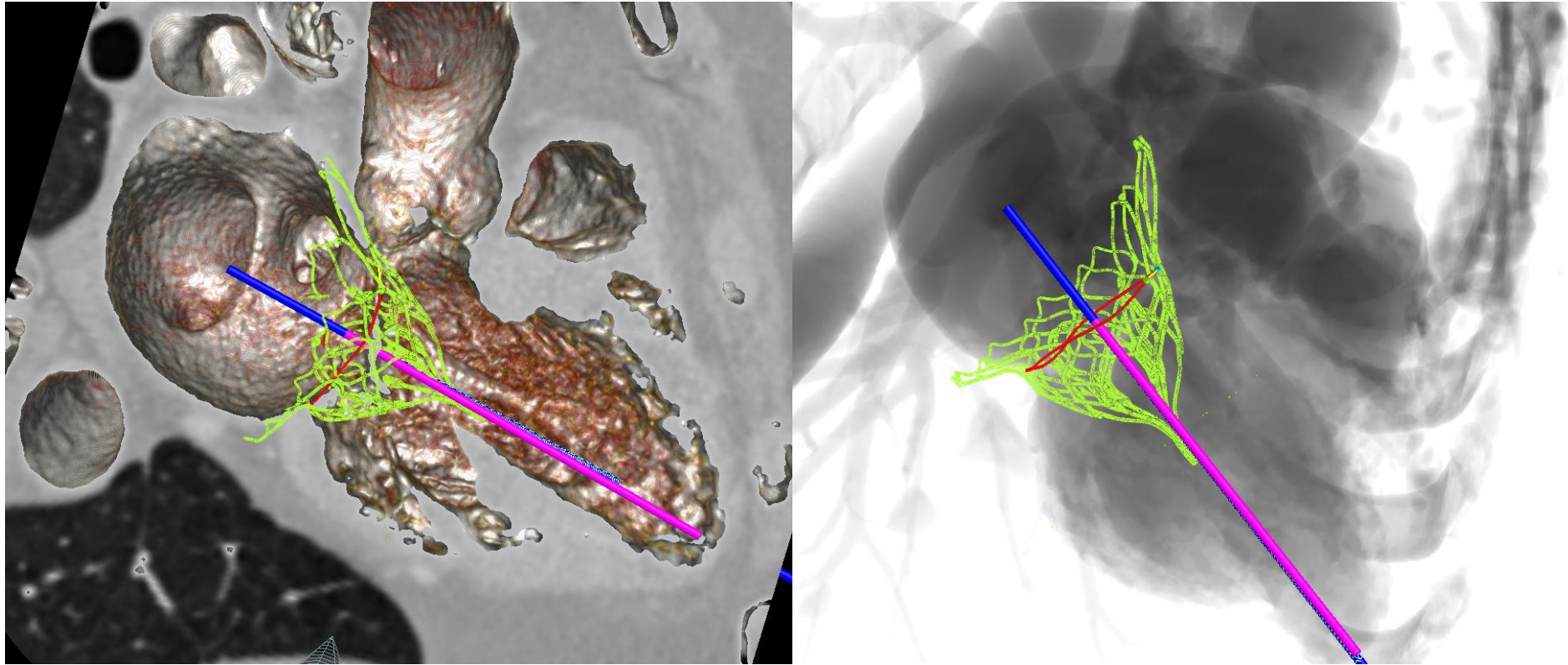
TMVR CT screening: Essentials

Neo-LVOT

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TMVR CT screening: Essentials

Anatomy & Device Related

Factors

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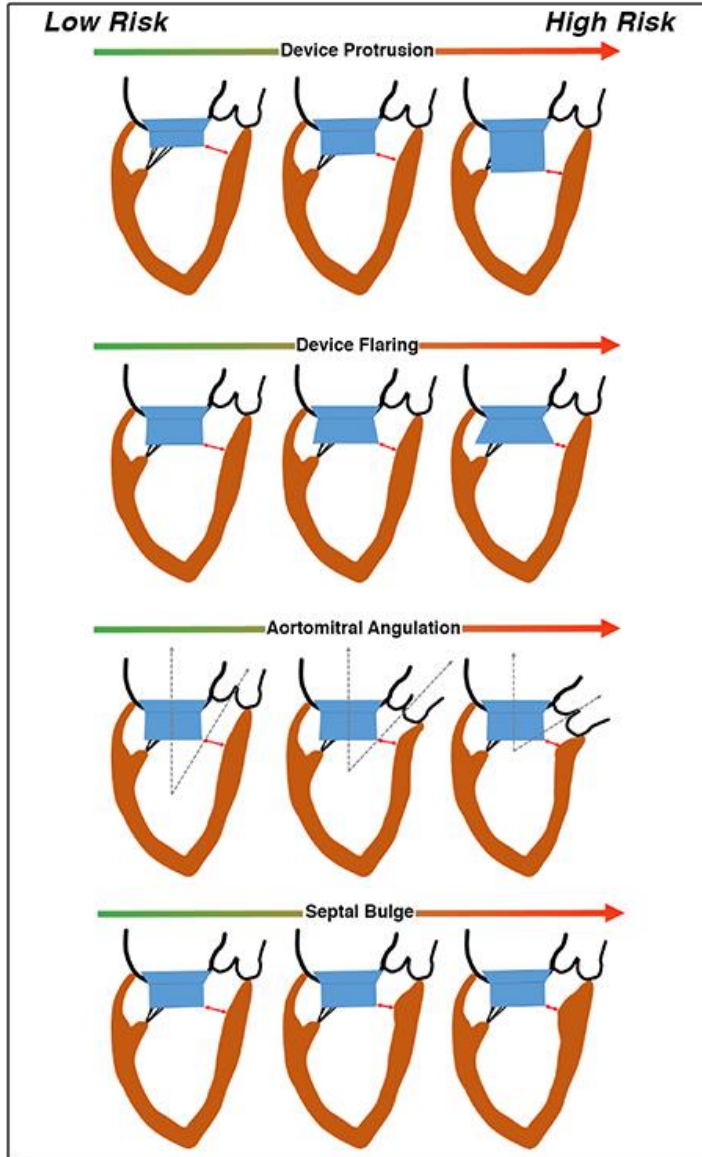
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TMVI – LVOT Obstruction

Patient specific modeling is required (?industry standard)
Challenge: Cut-off values for neo-LVOT dimensions

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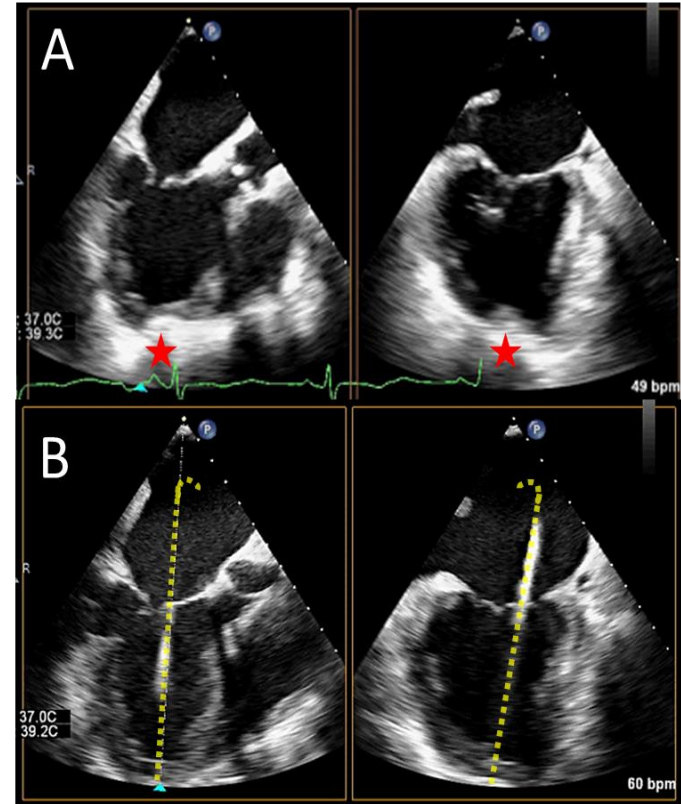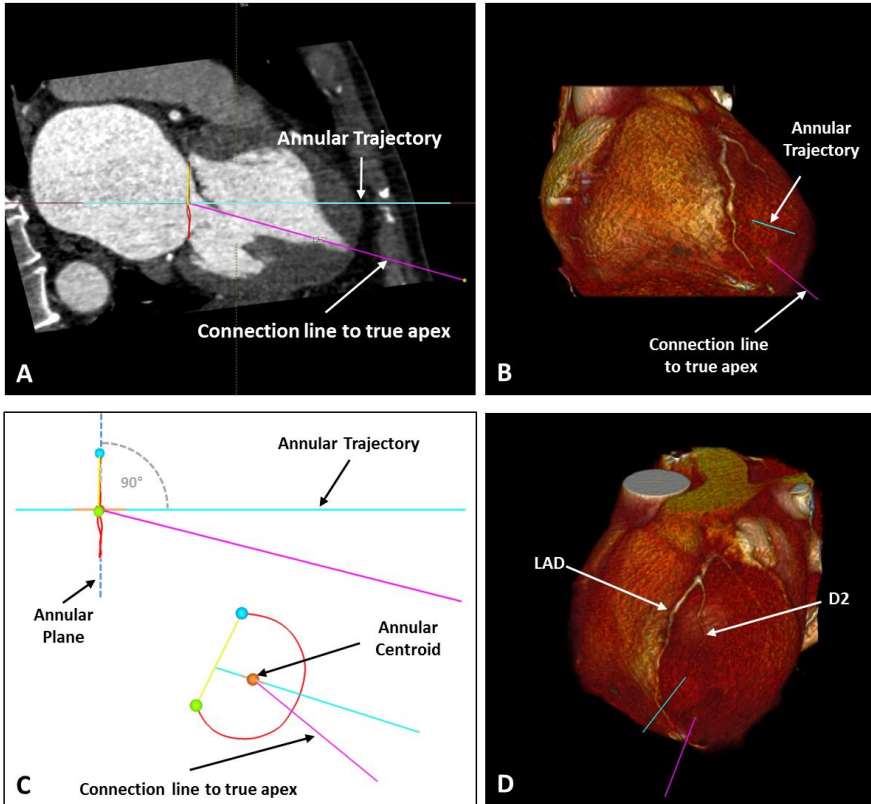St. Paul's Hospital, Vancouver

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Access Planning

Goals:

Optimal delivery approach (TA & TS)

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TMVI – Transapical access

CT can predict the orthogonal access point

Challenge: Speak the same language

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Transsseptal puncture
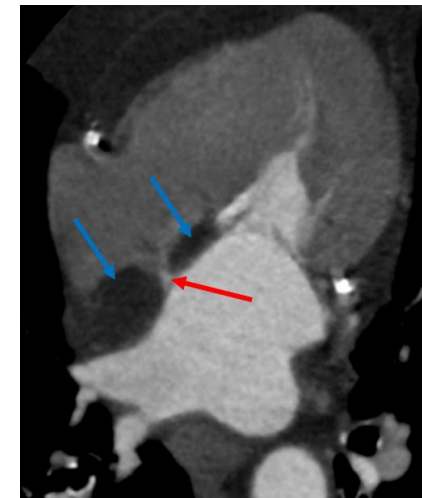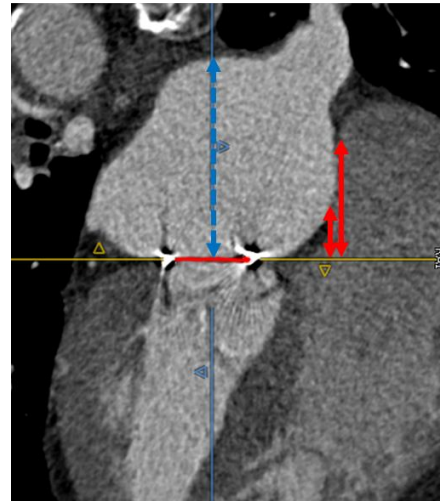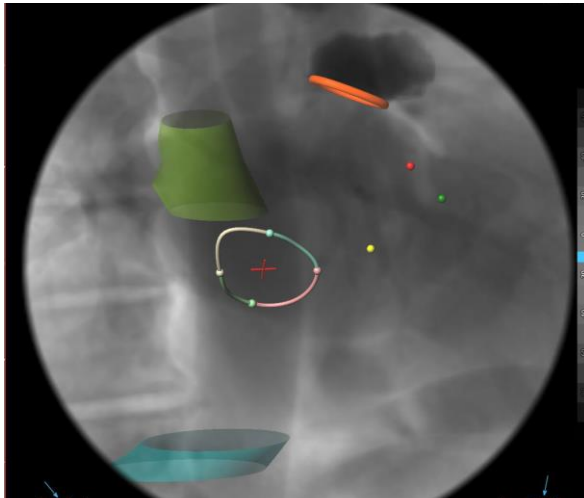
Prediction and Simulation of Trans-septal Crossing

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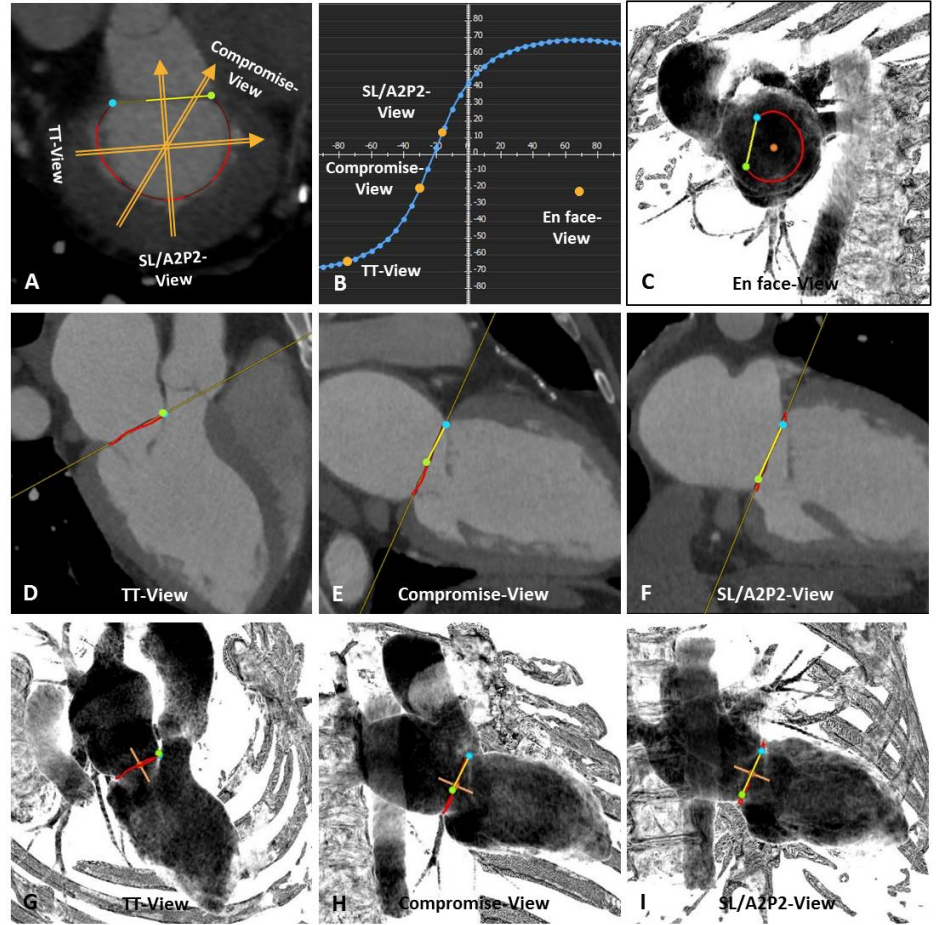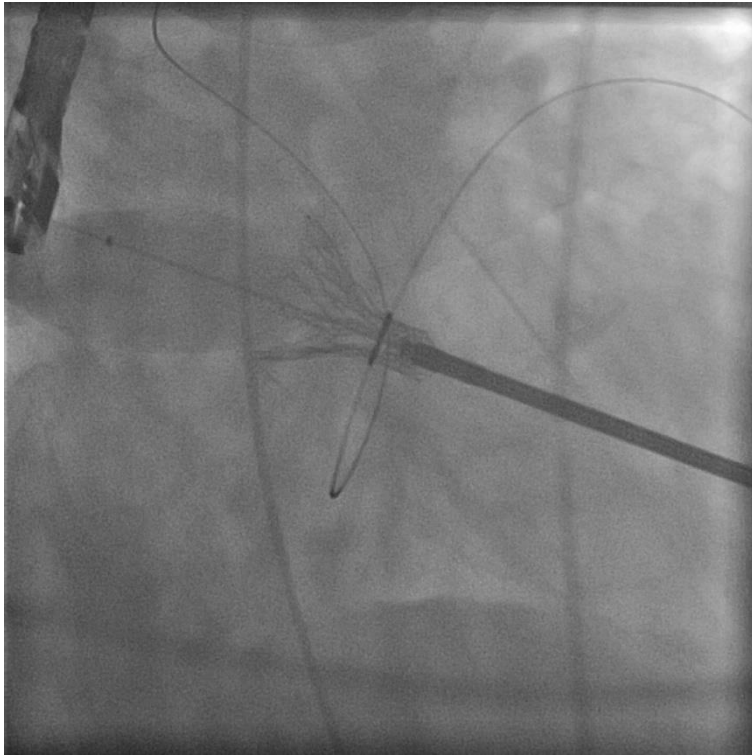
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Orientation within the 3D space

Goal: C-arm angulation for optimal delivery approach & device positioning

'peri-procedural guidance'

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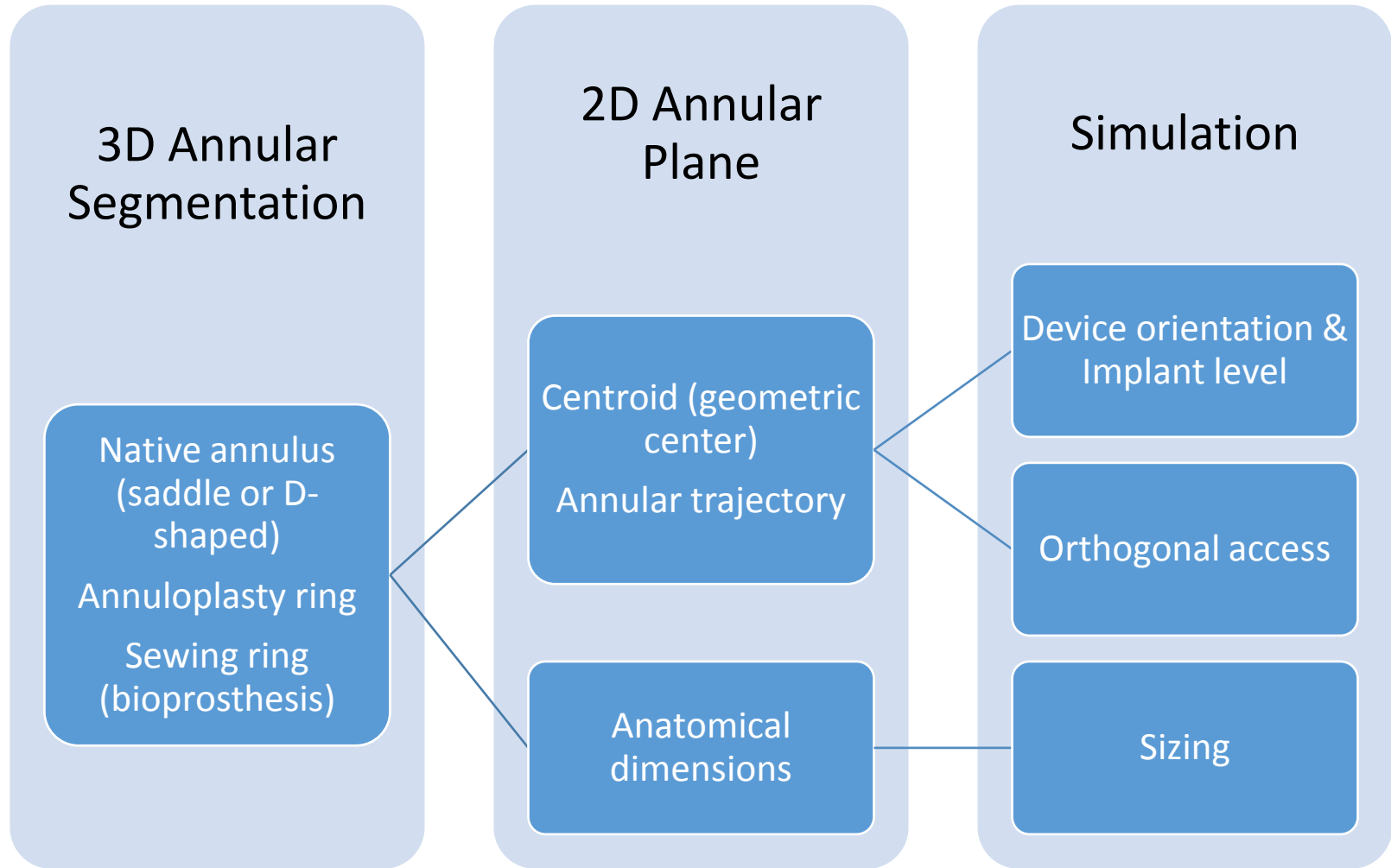
Coplanar View to facilitate Coaxial Deployment

CT can predict the coplanar views

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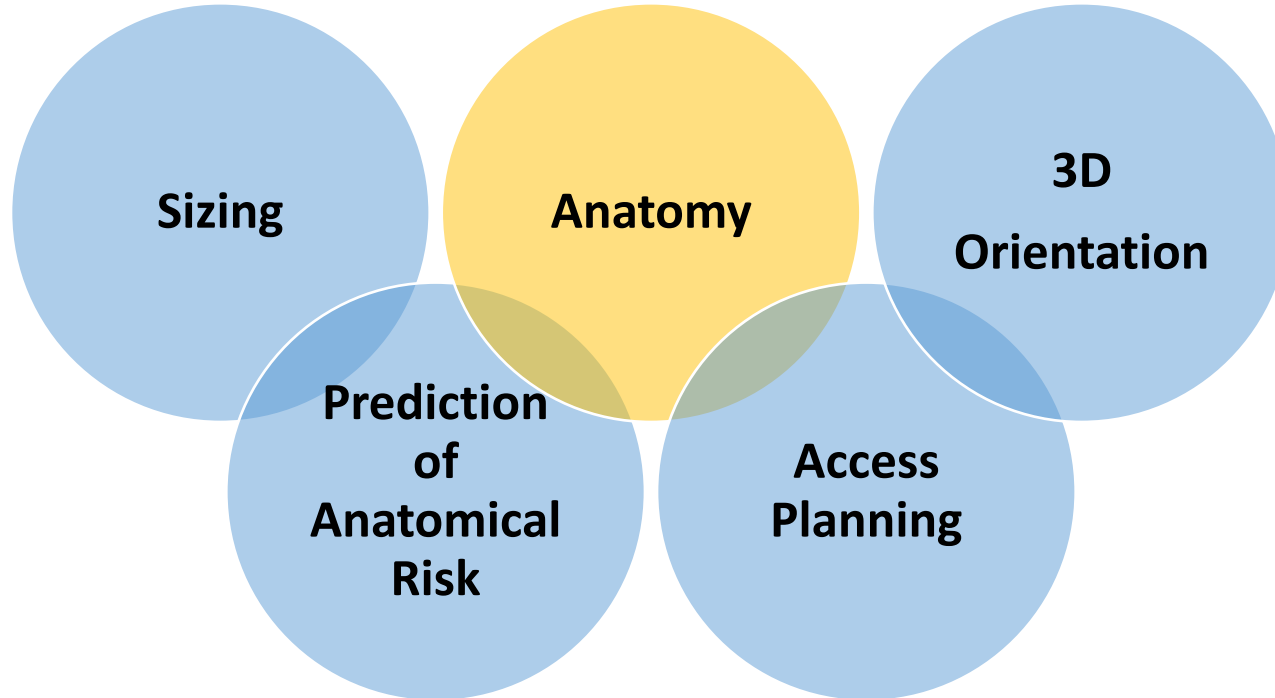St. Paul's Hospital, Vancouver

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TMVR CT screening: Essentials

Input & Output

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Anatomy

'CT is the anatomical truth machine'
Now: Fine tuning!

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