



# Treat More Patients with EVOLUT Pro+

## Post TAVR PCI and Commissural Alignment

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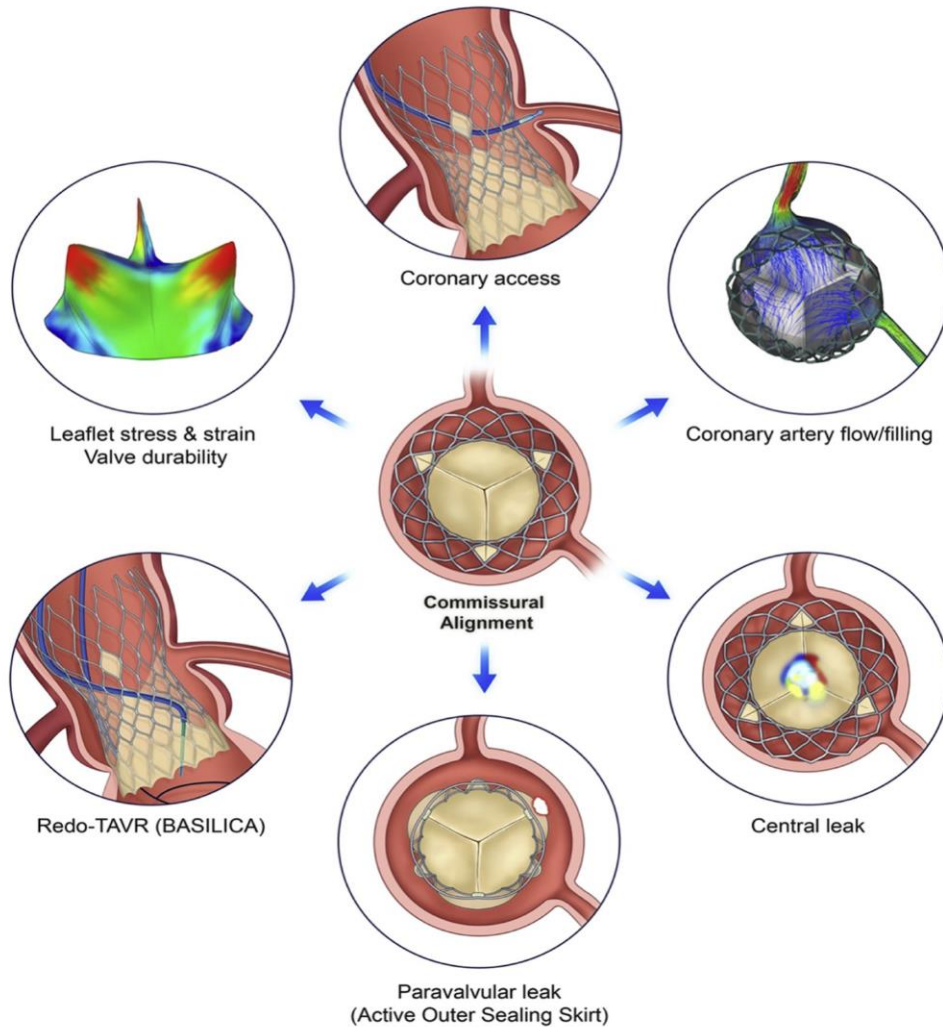


# Conflict of Interest

➤ **Research Grant Support: Abbott, Boston Scientific, Edwards Lifesciences, Medtronic, PulseCath, Daiichi Sankyo , Teleflex, Siemens, Pie Medical**

➤ **Consultancy: Abbott, Boston Scientific, Medtronic, PulseCath, Daiichi Sankyo , Amgen, Teleflex, Abiomed, Pie Medical, Anteris, JenaValve, Materialise**

# Commissural Alignment Benefits



- **Facilitate coronary re-access**
- **Improved coronary artery flow/filling**
- **Reduce risk of central leak (leaflet coaptation)**
- **Improve active outer sealing skirt effect, ↓ PVL**
- **Keep the possibility for BASILICA in case of redo-TAVR**
- **Reduce leaflet stress and strain → valve durability.**

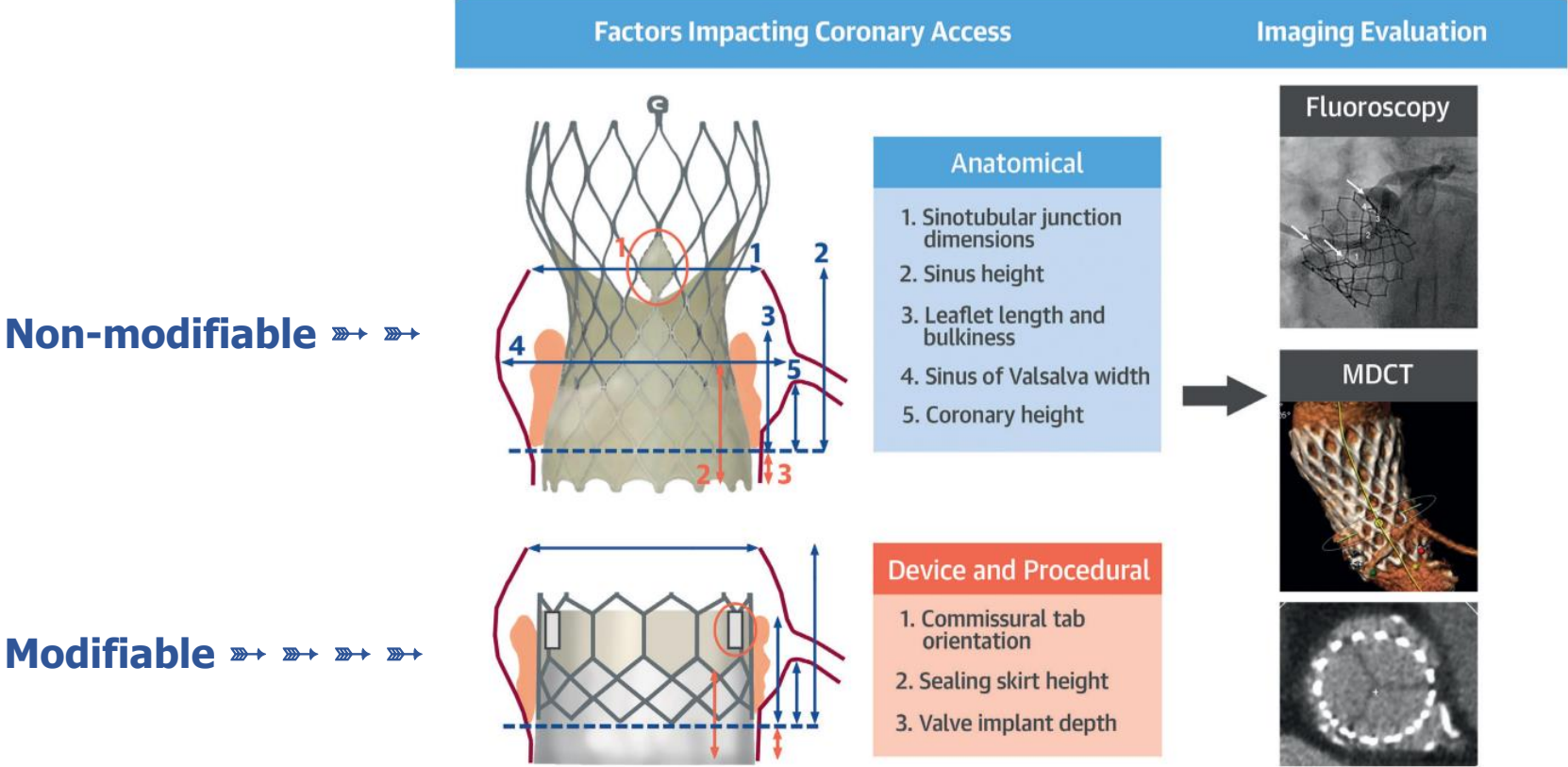
# Coronary Re-access – Why Commissural Alignment ...



# THV Platform & Coronary Re-access

Study author, year	Valve type (n)	ACS	RCA CA success	RCA CA selective	LCA CA success	LCA CA selective	PCI, n; success, %
Blumenstein et al. 2015 <sup>55</sup>	SAPIEN XT (n=19) CoreValve (n=10) ACURATE (n=4) Other (n=2)	13.3%	94.3%	77.1%	97.1%	79.4%	n=8; 100%
Boukantar et al. 2017 <sup>66</sup>	CoreValve (n=16)	43.8%	58%	16%	75%	44%	n=7; 85.7%
Htun et al. 2017 <sup>67</sup>	CoreValve (n=28)	90.0%	100%	90%	100%	97%	n=29; 100%
Zivelonghi et al. 2017 <sup>54</sup>	Evolut R (n=25) SAPIEN 3 (n=41)	0%	100%	94%	98%	97%	n=17; 100%
Tanaka et al. 2019 <sup>61</sup>	CoreValve/Evolut (n=41)	56.5%	50%	31.3%	87.5%	57.1%	n=30; 93.3%
Ferreira-Neto et al. 2019 <sup>53</sup>	SAPIEN XT (n=28)	64.3%	100%	81.5%	100%	82.6%	n=13; 100%
Couture et al. 2020 <sup>97</sup>	Evolut R/PRO (n=10)	10.0%	NA	60%	NA	40%	n=2; 50%
Nai Fovino et al. 2020 <sup>52</sup>	SAPIEN XT/3 (n=36) CoreValve/Evolut R/Pro (n=8) Jena (n=2) Lotus (n=2)	35.0%	100% IA vs 75% SA	94% IA vs 25% SA	100% IA vs 100% SA	97% IA vs 50% SA	n=26; 96.2%
Barbanti et al. 2020 <sup>51</sup>	SAPIEN (n=96) Evolut (n=123) ACURATE (n=72) Portico (n=9)	0%	96.0%	88.0%	95.3%	68.3%	n=0; 0%
Kim et al. 2021 <sup>98</sup>	SAPIEN (n=201) ACURATE (n=62) CoreValve/Evolut (n=140) Portico (n=16) Other (n=30)	100%	98.3%	71.6%	99.3%	79.3%	n=243; 91.4%

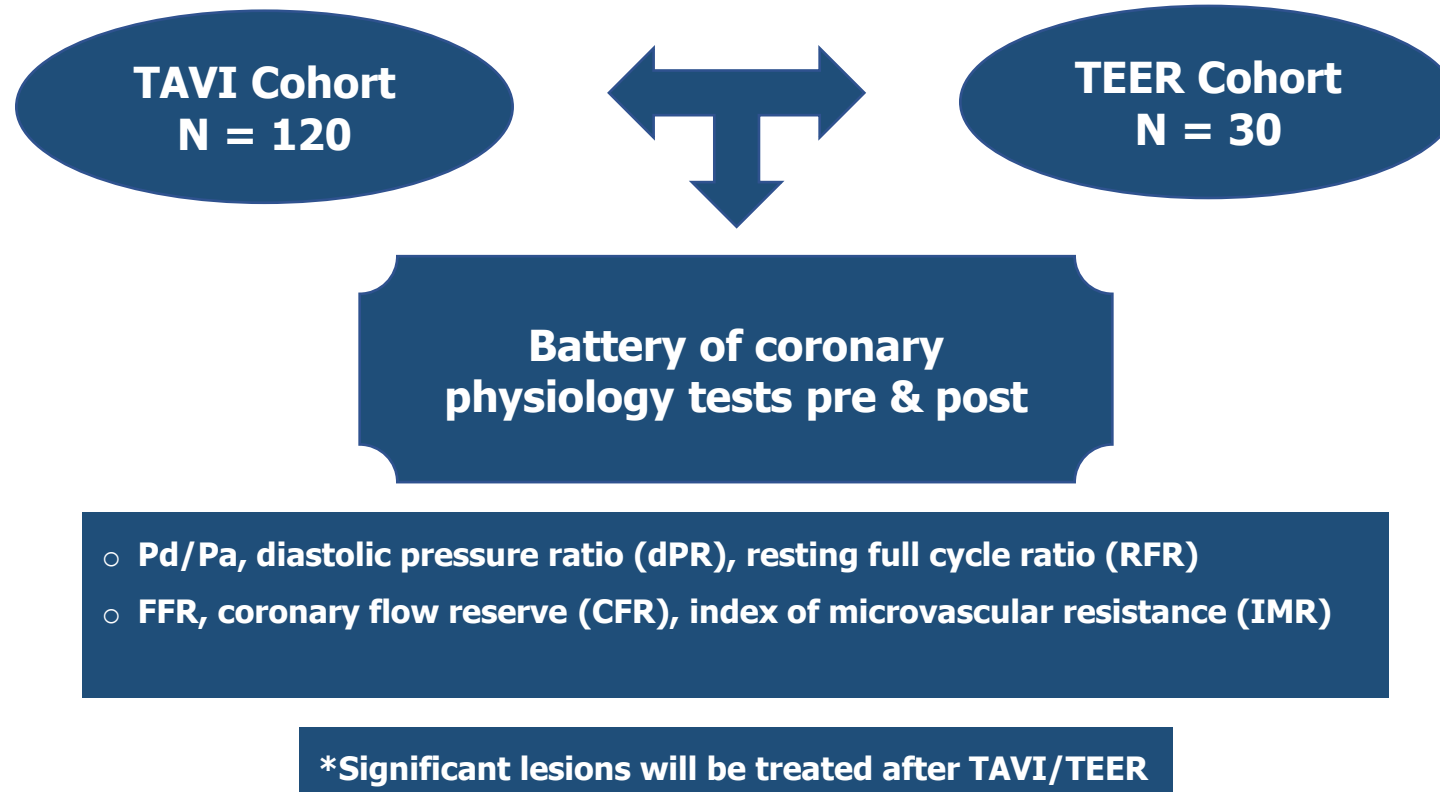
# Determinants for Successful Coronary Re-access



# Coronary Physiology Validation in severe AS/MR

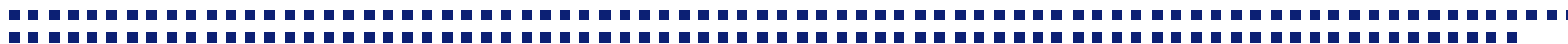
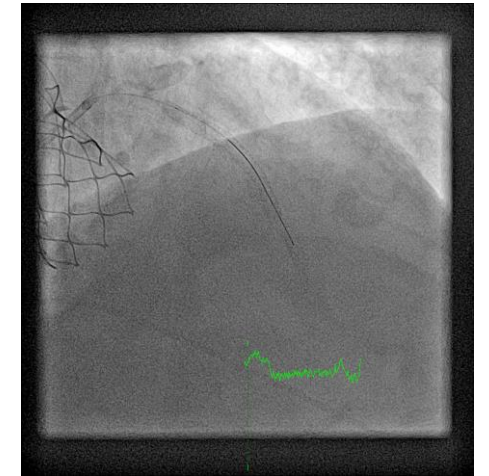
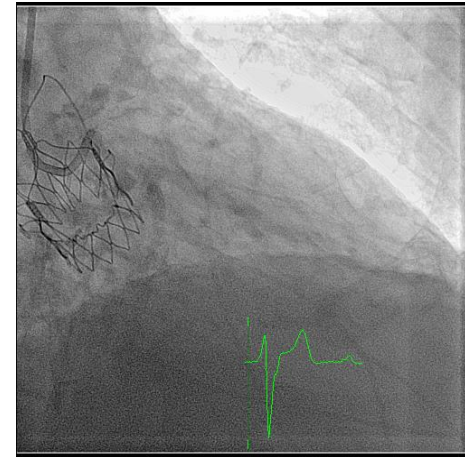
POTUS - ClinicalTrials.gov Identifier: NCT05374733

Prospective, investigator-initiated, single-arm observational study



# THV Platform - Insights from POTUS Trial

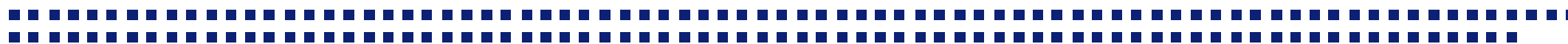
## Prospective Study on Coronary Physiology before & after TAVI



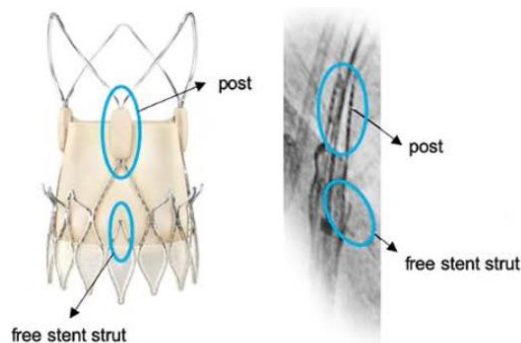
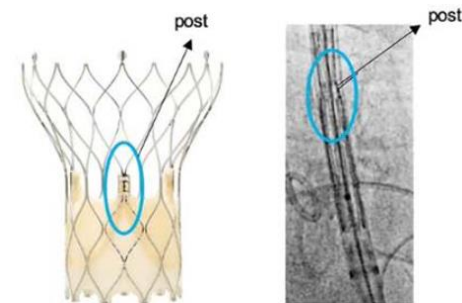
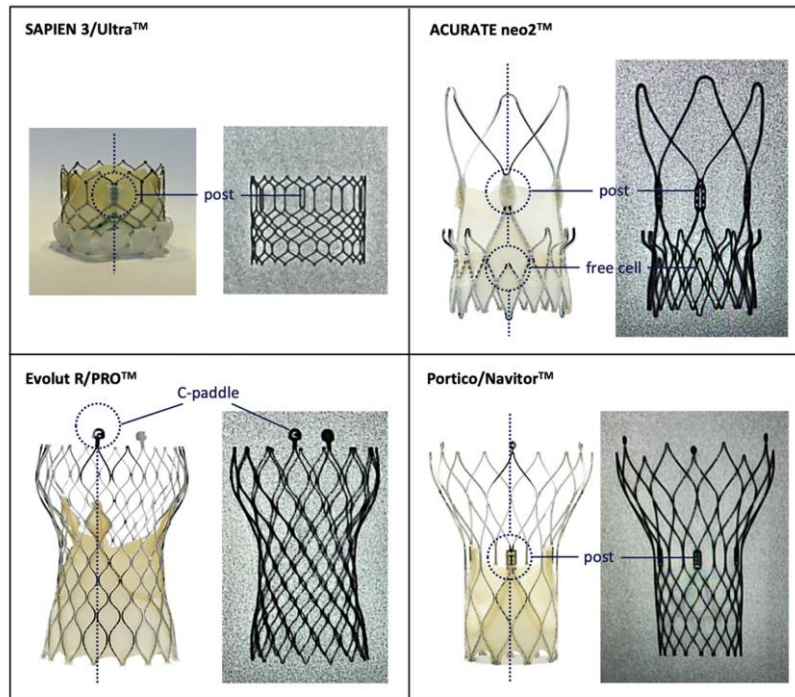




## How to achieve Commissural Alignment

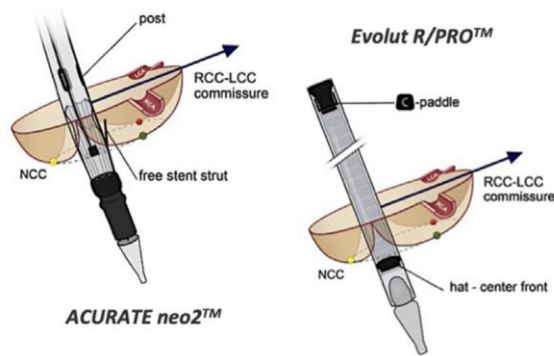
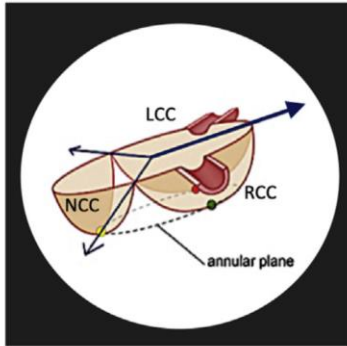
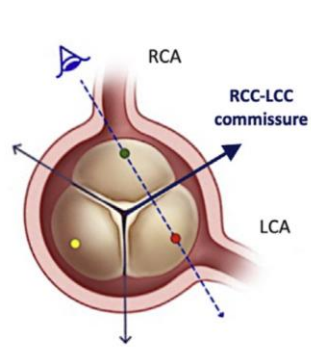


# THV Platform & Commissural Posts



# THV Platform & Commissural Posts

## R/L CUSP OVERLAP VIEW


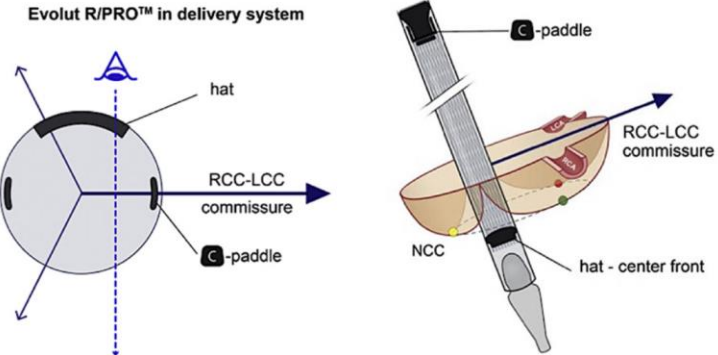
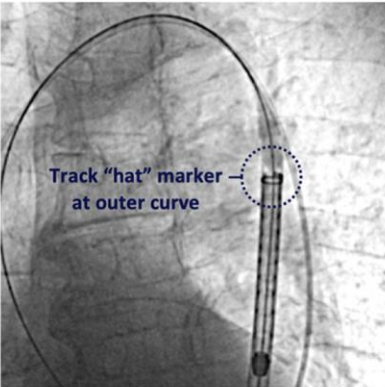
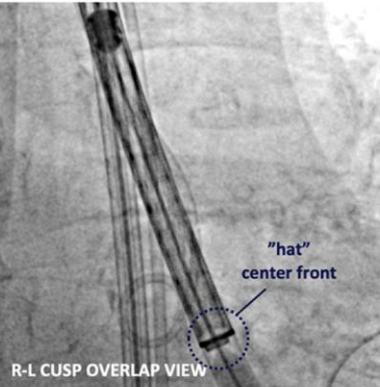
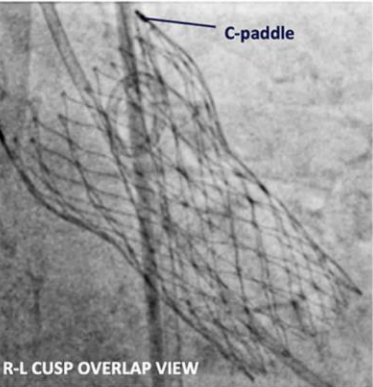


**RCC/LCC commissure directed towards the right of the fluoroscopic image**

– One THV commissural post should be lateralized at the right side of the fluoroscopic image –

	CoreValve platform	ACURATE neo platform	Portico platform
STEP 1 – DELIVERY INSERTION	<p><b>A</b></p> <p>Start with flush port at 3 o'clock away from the operator.</p>	<p><b>B</b></p> <p>Start with flush port at 6 o'clock.</p>	<p><b>C</b></p> <p>Start with flush port at 12 o'clock.</p>
STEP 2 – CRIMPED VIEW	<p><b>D</b></p> <p>CF in cusp overlap</p> <p>Starting with the hat marker in the DC position when crossing the aortic arch in the LAO view, the hat marker must be in the CF position when checking the LR cusp overlap view.</p>	<p><b>E</b></p> <p>In the RL cusp overlap view, one thin marker corresponding to one single post and one protruding free stent strut on the right of the screen. A thicker line corresponding to the 2 other overlapped posts is visible on the left.</p>	<p><b>F</b></p> <p>In the RL cusp overlap view, one thin marker corresponding to one single post on the right of the screen. A thicker line corresponding to the 2 overlapped posts is visible on the left.</p>
STEP 3 – EXPANDED VIEW	<p><b>G</b></p> <p>In the RL cusp overlap view, the C-paddle is on the right of the screen. The other solid paddle is in front of it, on the left.</p>	<p><b>H</b></p> <p>In the RL cusp overlap view, one isolated post is aligned in profile at the right of the screen, the other 2 posts are closed together on the left.</p>	<p><b>I</b></p> <p>In the RL cusp overlap view, one isolated post is aligned in profile at the right of the screen, the other 2 posts are closed together on the left.</p>

# EVOLUT Commissural Alignment

<p><b>STEP 1. INSERTION</b></p>  <p>3 o'clock</p> <p>Position handle with flush port at 3 o'clock</p>	<p><b>STEP 3. COMMISSURAL ALIGNMENT</b> R-L cusp overlap view</p>  <p>Evolut R/PRO™ in delivery system</p> <p>hat</p> <p>RCC-LCC commissure</p> <p>C-paddle</p> <p>C-paddle</p> <p>RCC-LCC commissure</p> <p>NCC</p> <p>hat - center front</p>	
<p><b>STEP 2. AORTIC ARCH</b></p>  <p>Track "hat" marker at outer curve</p>	<p><b>PRE-DEPLOYMENT</b></p>  <p>"hat" center front</p> <p>R-L CUSP OVERLAP VIEW</p>	<p><b>POST-DEPLOYMENT</b></p>  <p>C-paddle</p> <p>R-L CUSP OVERLAP VIEW</p>

# ACURATE Commissural Alignment

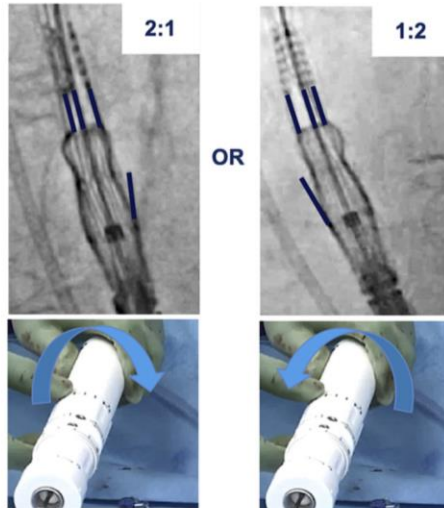
## STEP 1. INSERTION



Position handle with safety button facing down (6 o'clock)

## STEP 2. ASSESS ORIENTATION

3-cusp coplanar view



CW rotation needed

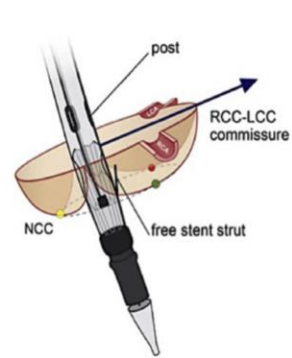
CCW rotation needed

Directionality assessment in 3-cusp coplanar view to minimize rotation to achieve alignment

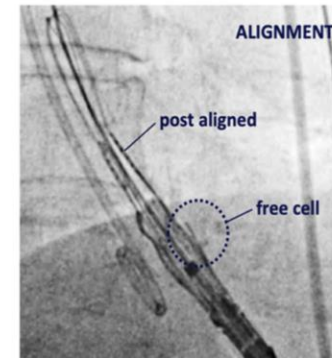
CW, clockwise  
CCW, counter-clockwise

## STEP 3. ALIGNMENT (ROTATION)

R-L cusp overlap view

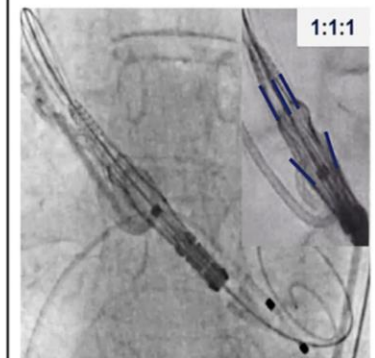


Using directionality, slowly rotate front part of the handle to achieve alignment --- typically 0.5 to 1.0 handle rotations (180° to 360°).



## STEP 4. THV IMPLANT

3-cusp coplanar view



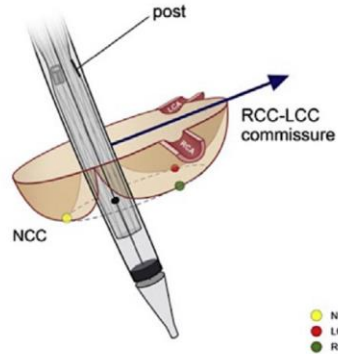
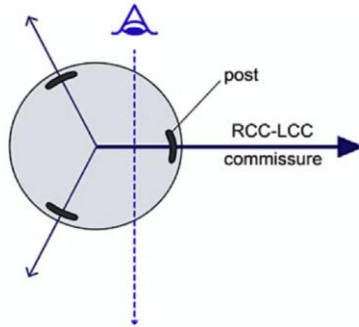
Proceed with classical ACURATE neo2 implantation steps

# NAVITOR Commissural Alignment

## OBTAINING COMMISSURAL ALIGNMENT

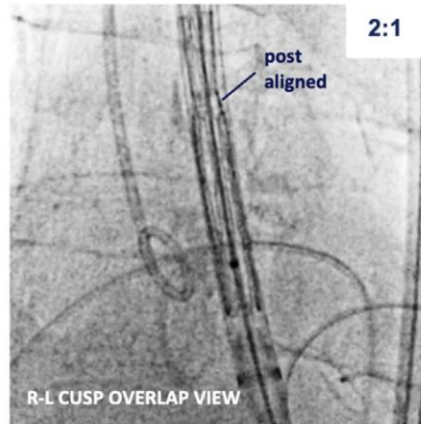
### R-L cusp overlap view

Portico/Navitor™ in delivery system

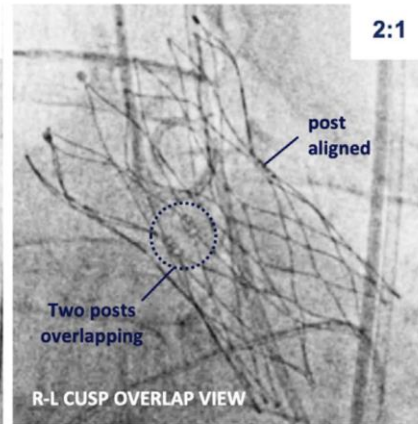


There is no strict recommendation on how to introduce the FlexNav delivery system – in general, recommendation to introduce the FlexNav delivery system with flush port at 12 o'clock.

### PRE-DEPLOYMENT

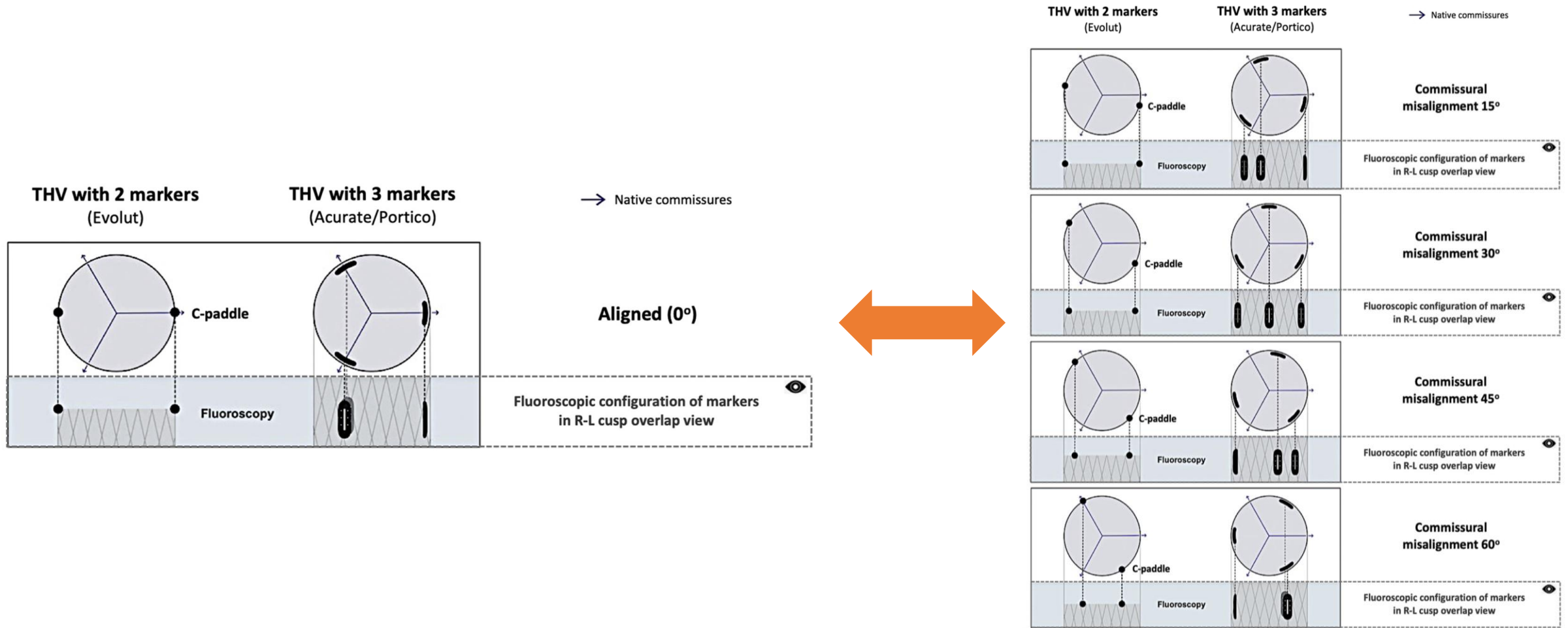


### POST-DEPLOYMENT

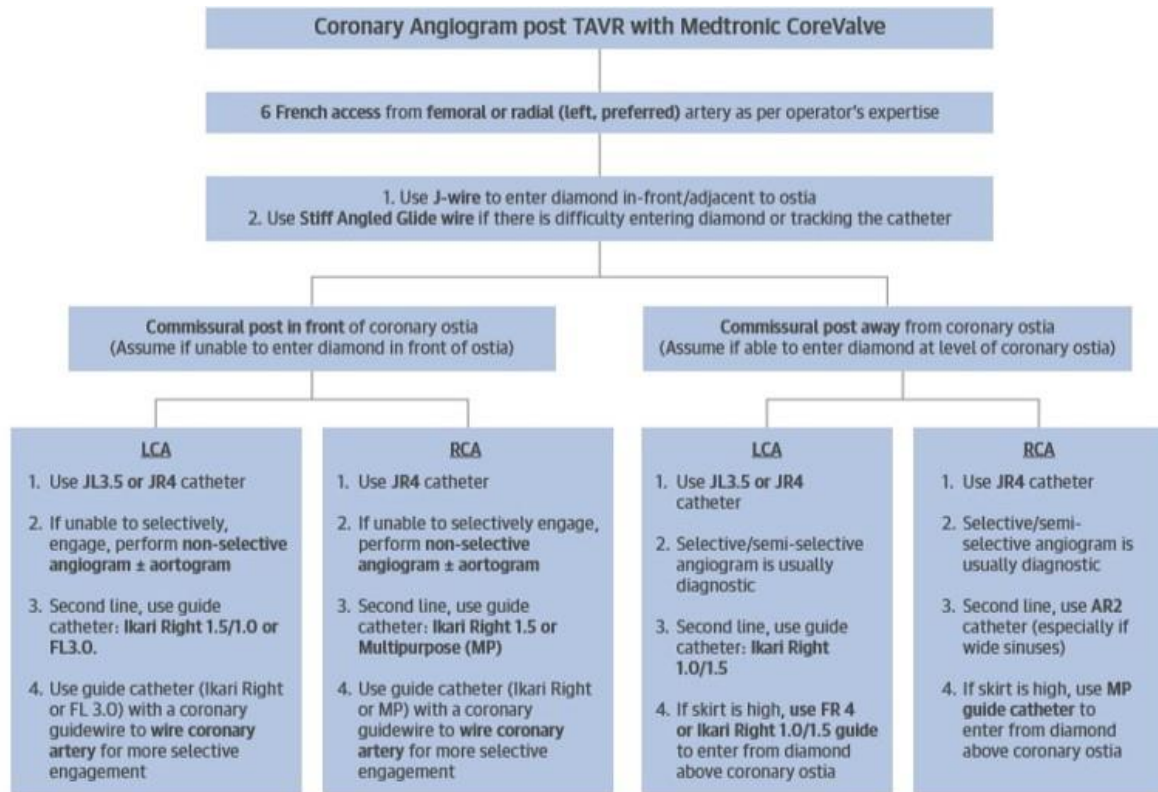


The commissural posts can be identified halfway between the in- and outflow portion of the THV, but are not very radiopaque (limited visibility).

# Commissural Alignment on Fluoroscopy



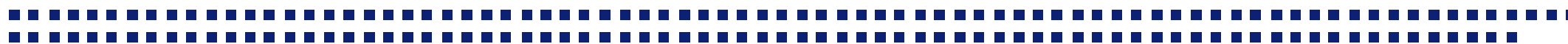
# Catheterization Strategy post Evolut Tavi



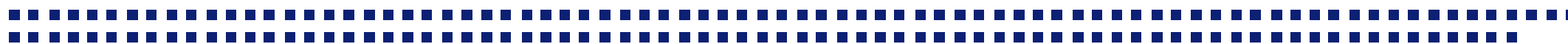
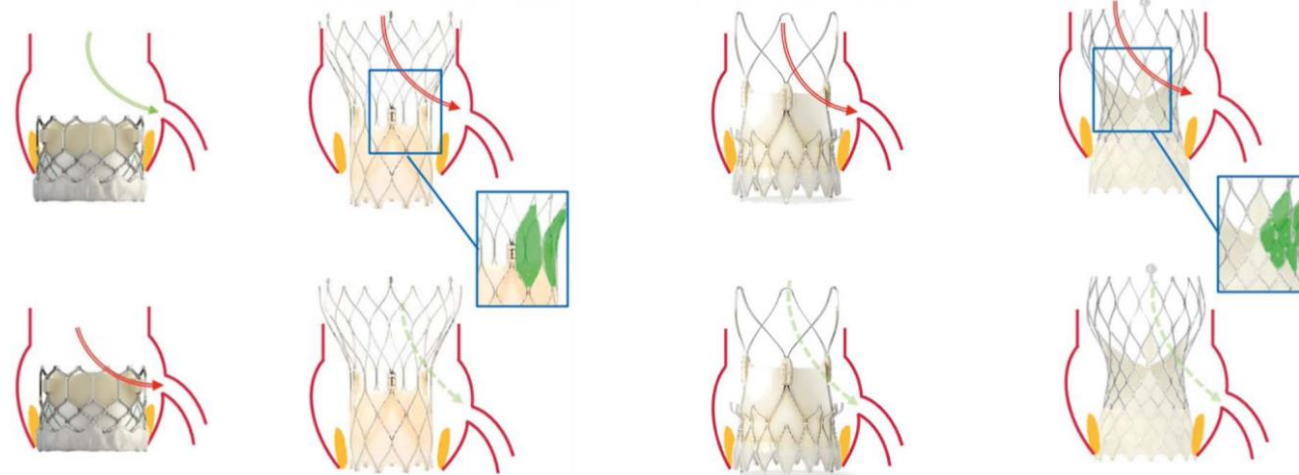
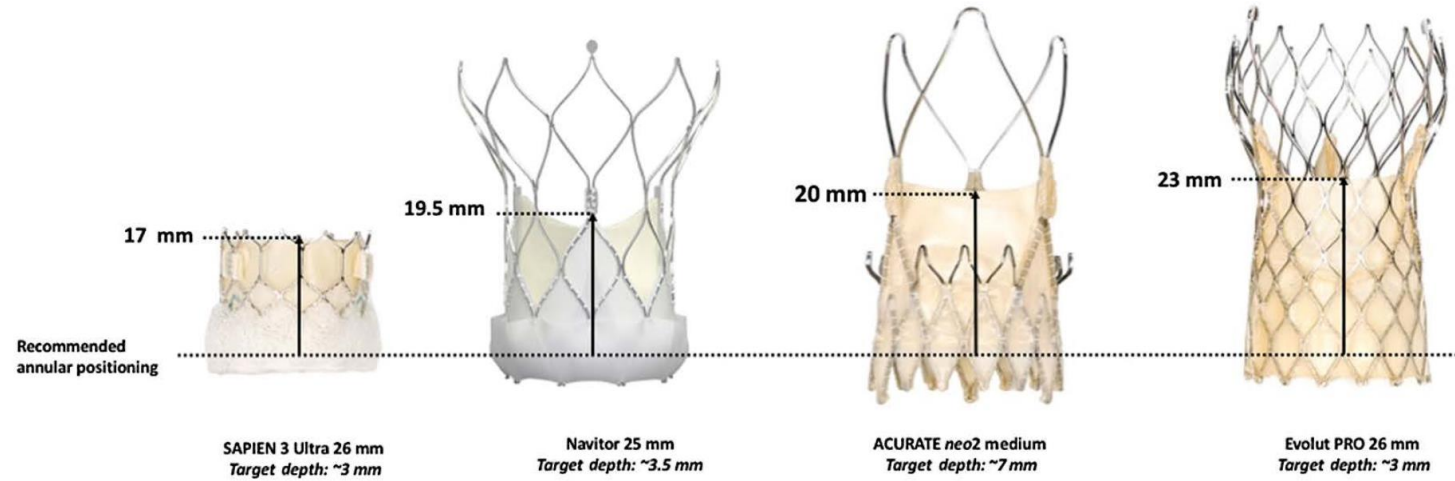
- **Attempt to engage coaxially**
- **No need to struggle for 100% selective engagement**
  - ✓ **consider**
    - **Nonselective angiography**
    - **0.014" guidewire navigation & bridge the gap with guide extension**
  - ✓ **If unable to approach ostium, consider switching catheter as indicated by sinus shape, size, or presence of commissure interference**



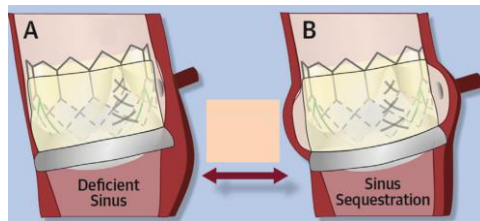
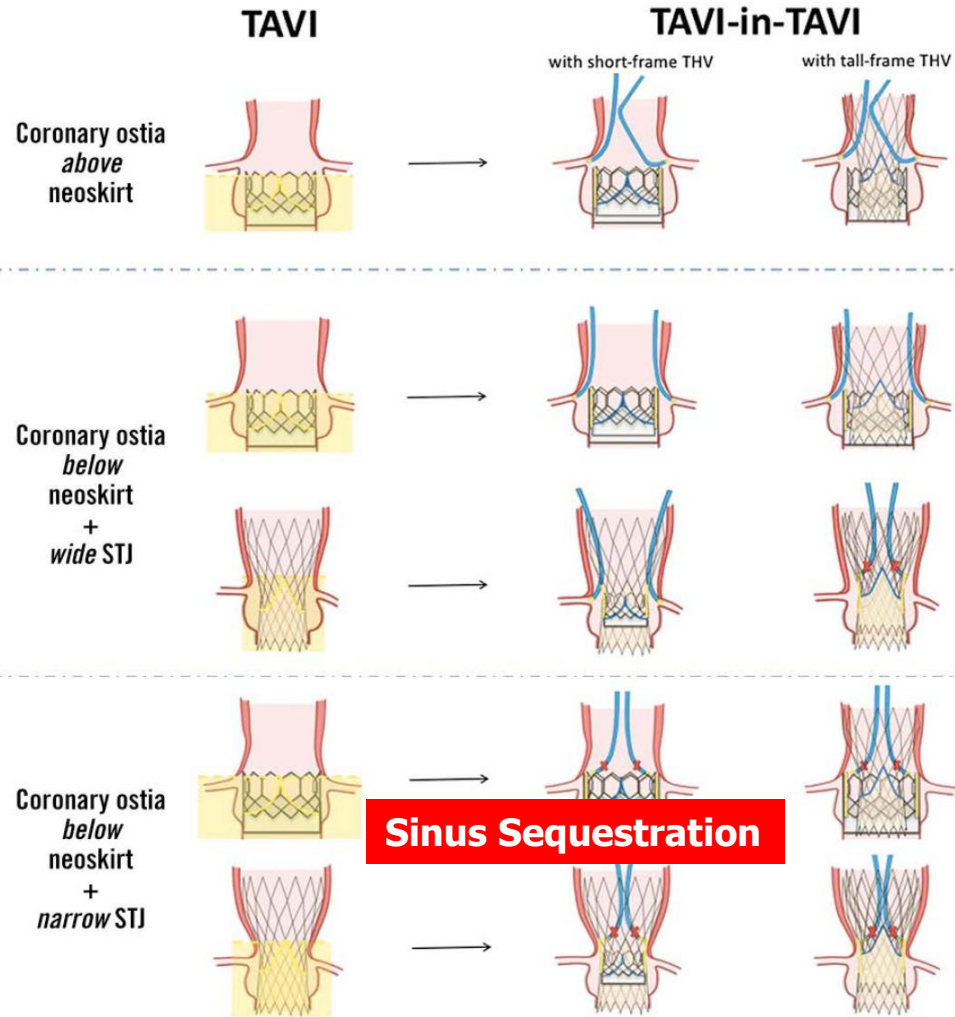
# Coronary Obstruction – When Commissural Alignment won't work...



# THV Platform - THV Leaflet & Frame Height



# TAVI-in-TAVI & Neoskirt



**Sinus Sequestration**



# Coronary Obstruction & SOV

## Sinus of Valsalva

**Small sinuses** relative to aortic annulus

**Large THV** relative to SOV (VTC-distance)

Distance coronary ostia to annulus

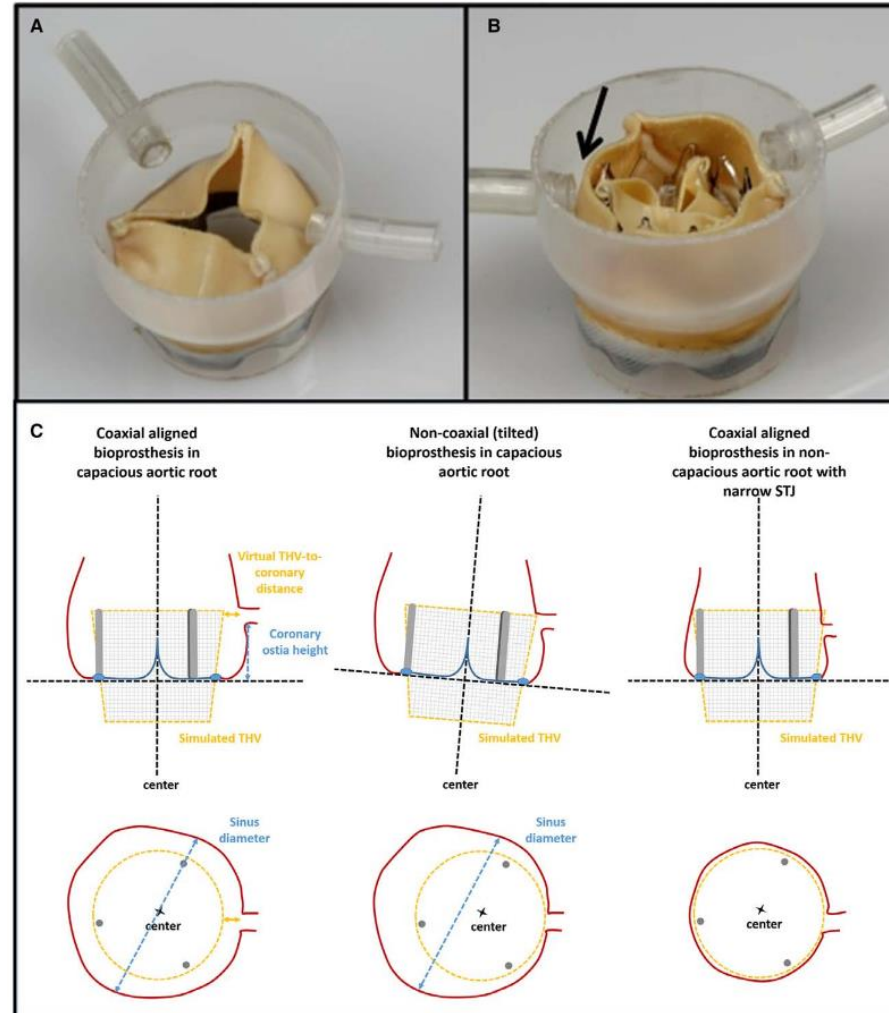
**<12mm**

**Non-coaxial/tilted THV implant**

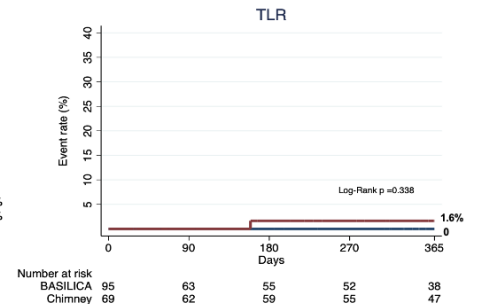
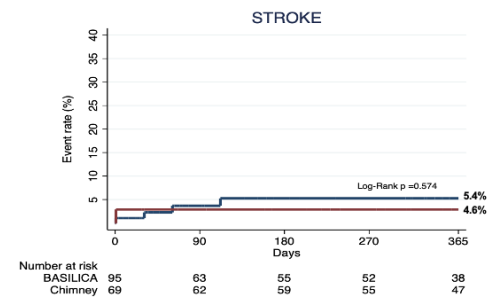
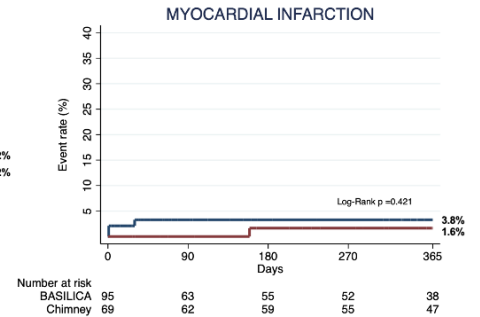
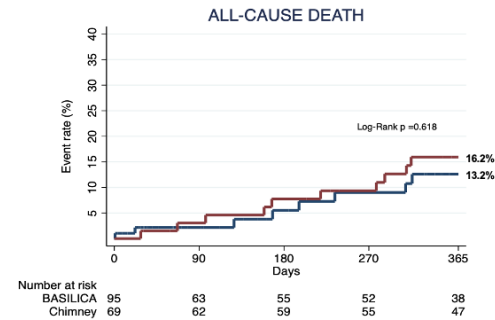
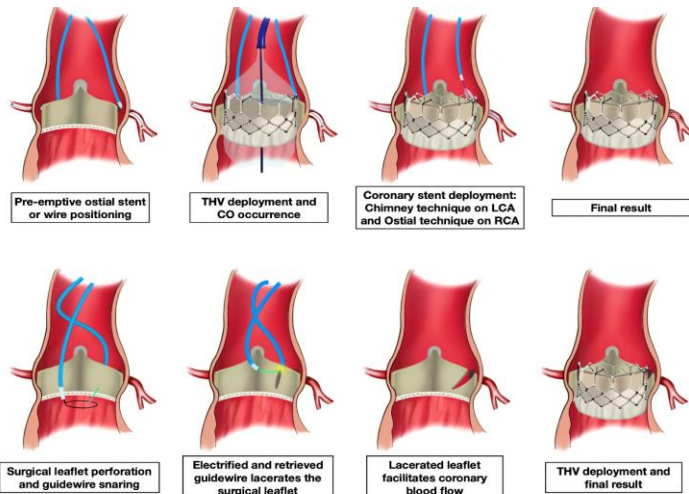
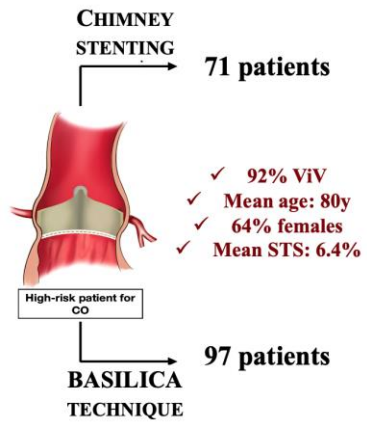
## Virtual distance THV-Coronary ostium

**VTC** & risk for coronary obstruction

- ◇ **< 3mm** – high risk
- ◇ **3 – 6mm** – intermediate risk
- ◇ **>6mm** – low risk



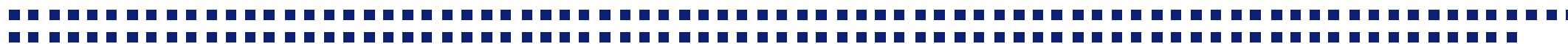
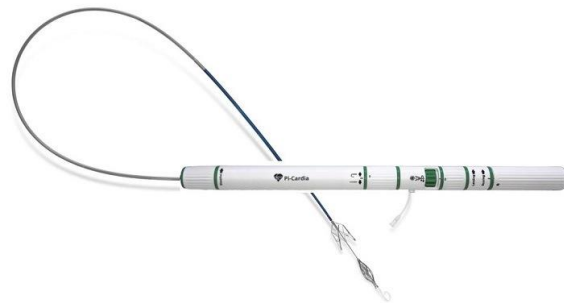
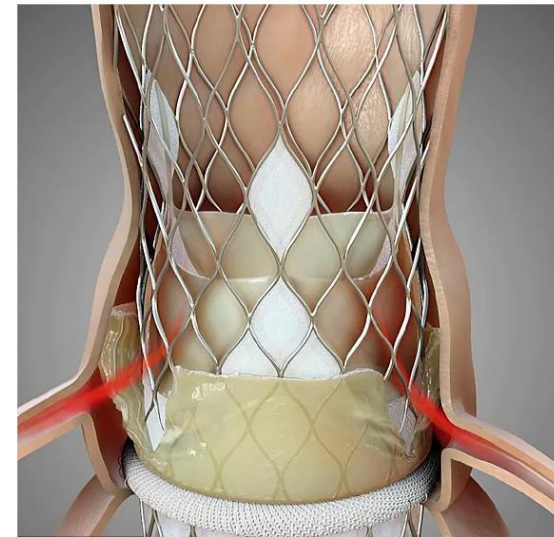
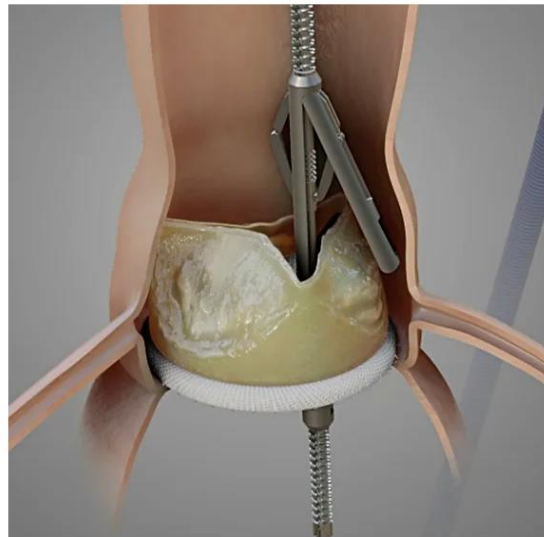
# BASILICA ⇔ Chimney Technique – Propensity matched analysis



— BASILICA — Chimney

# Dedicated Leaflet Scoring & Splitting

## ShortCut (Pi-Cardia)



# Takeaways

- **Coronary Re-access = important notion post TAVI**
- **THV design matters**
- **Commissural alignment techniques seem mandatory for TAVI with self-expanding designs in 2023**
- **Hostile anatomies may require advanced “coronary protection techniques”**
  - **Basilica**
  - **Chimney**
  - **Dedicated devices are forthcoming (Shortcut (Picardia), Excision Medical Leaflet Excision System...)**