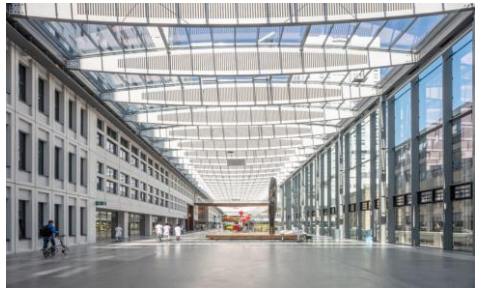

Treat More Patients with EVOLUT Pro+

Post TAVR PCI and Commissural Alignment

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Erasmus MC
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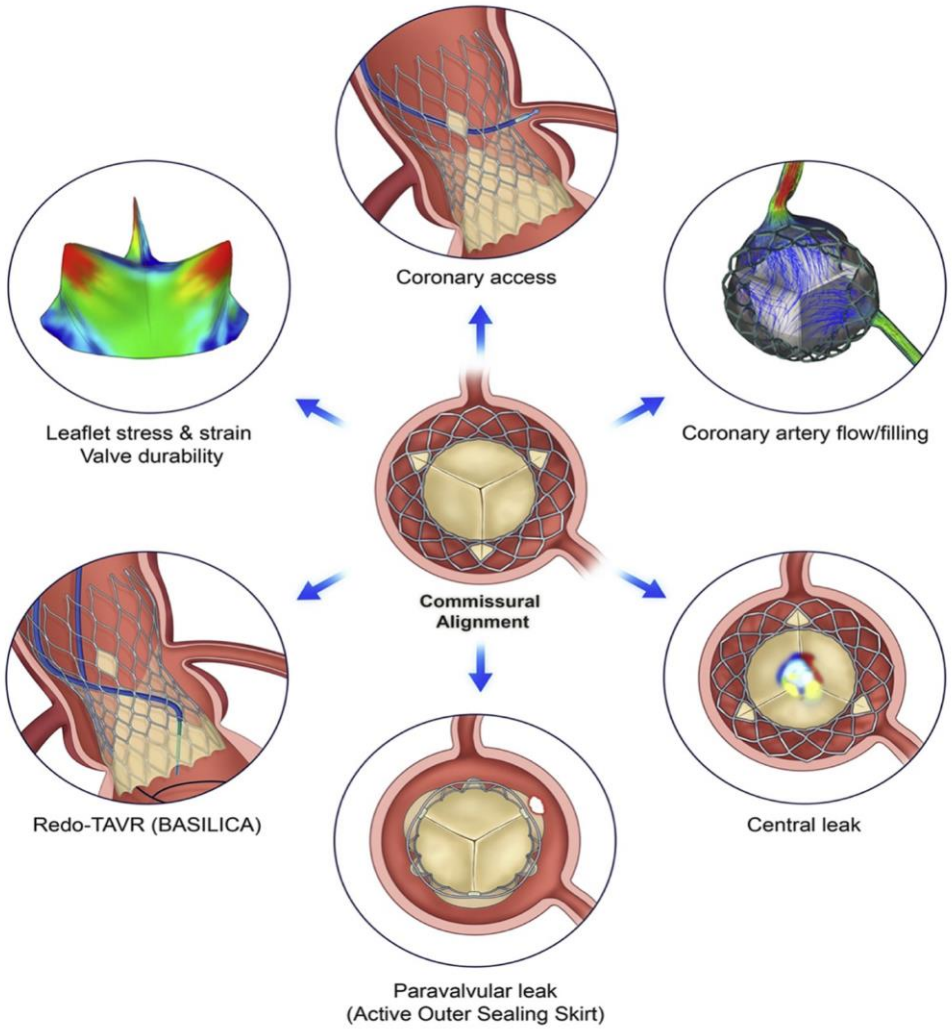
Conflict of Interest

- **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.

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Tang et al. JACC CVI 2022;15:1497-1518

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[55]	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[66]	CoreValve (n=16)	43.8%	58%	16%	75%	44%	n=7; 85.7%
Htun et al. 2017[67]	CoreValve (n=28)	90.0%	100%	90%	100%	97%	n=29; 100%
Zivelonghi et al. 2017[54]	Evolut R (n=25) SAPIEN 3 (n=41)	0%	100%	94%	98%	97%	n=17; 100%
Tanaka et al. 2019[61]	CoreValve/Evolut (n=41)	56.5%	50%	31.3%	87.5%	57.1%	n=30; 93.3%
Ferreira-Neto et al. 2019[53]	SAPIEN XT (n=28)	64.3%	100%	81.5%	100%	82.6%	n=13; 100%
Couture et al. 2020[97]	Evolut R/PRO (n=10)	10.0%	NA	60%	NA	40%	n=2; 50%
Nai Fovino et al. 2020[52]	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[51]	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[98]	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%

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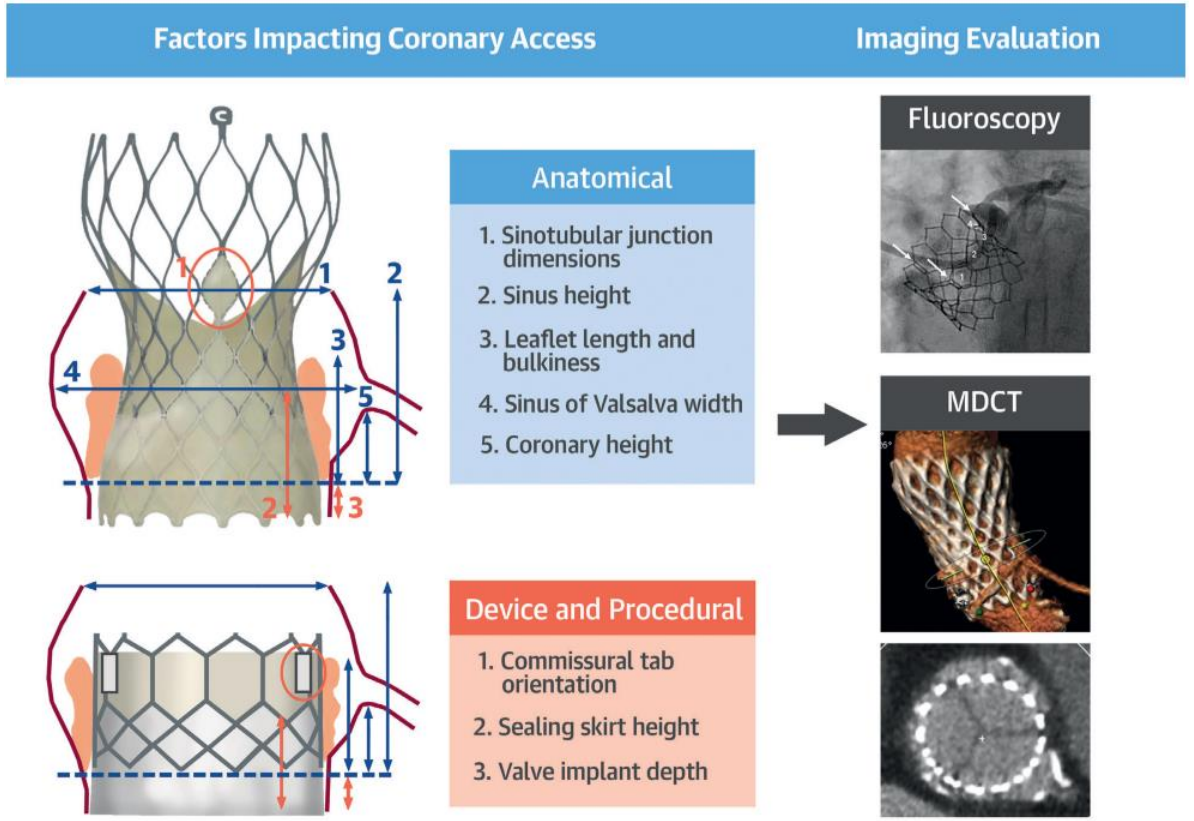
Determinants for Successful Coronary Re-access

Non-modifiable ➳ ➳

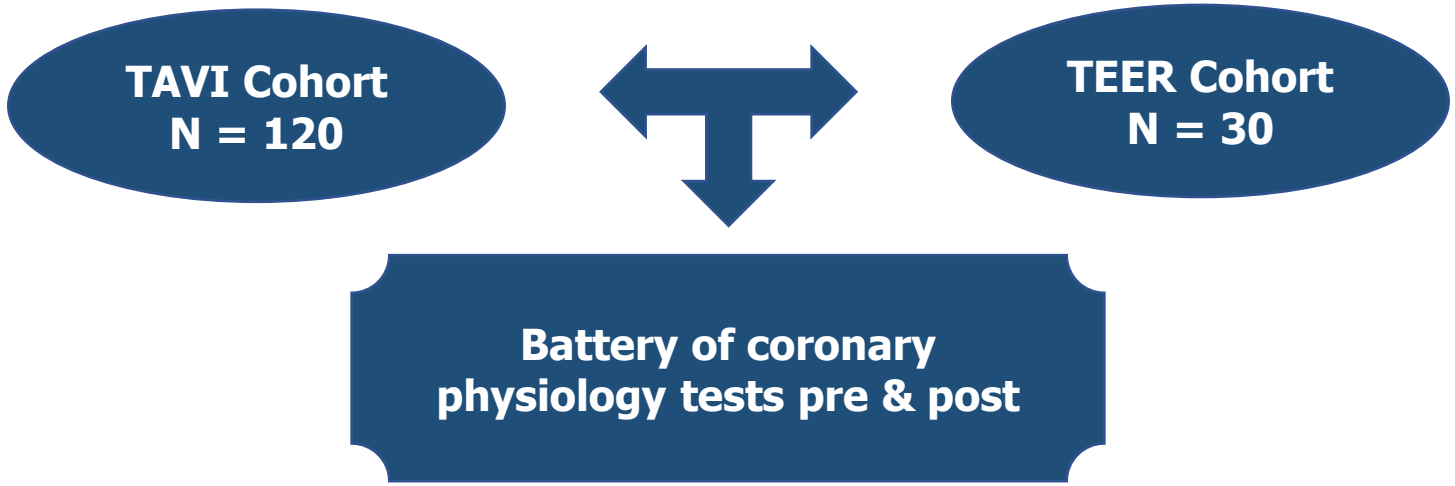
Modifiable ➳ ➳ ➳ ➳



Coronary Physiology Validation in severe AS/MR

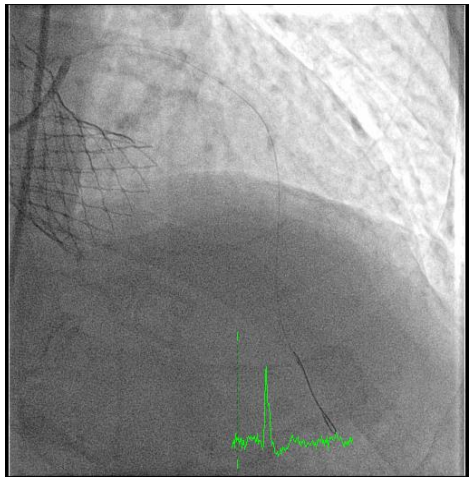
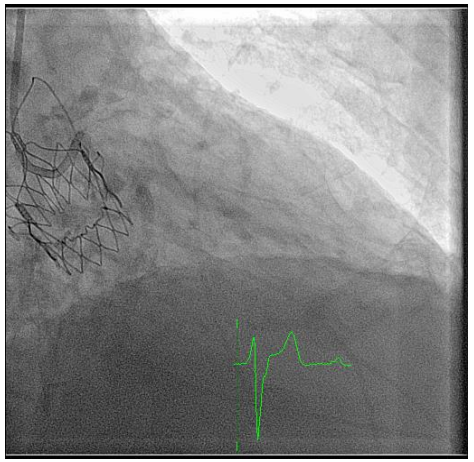
POTUS - ClinicalTrials.gov Identifier: NCT05374733

Prospective, investigator-initiated, single-arm observational study



THV Platform - Insights from POTUS Trial

Prospective Study on Coronary Physiology before & after TAVI

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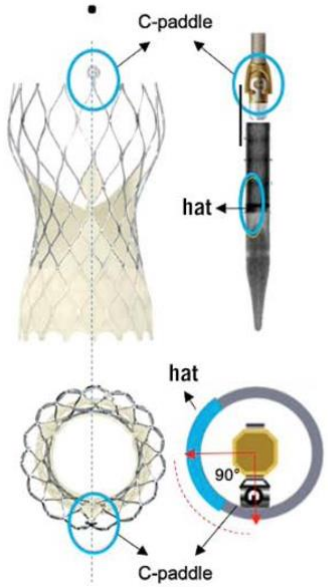
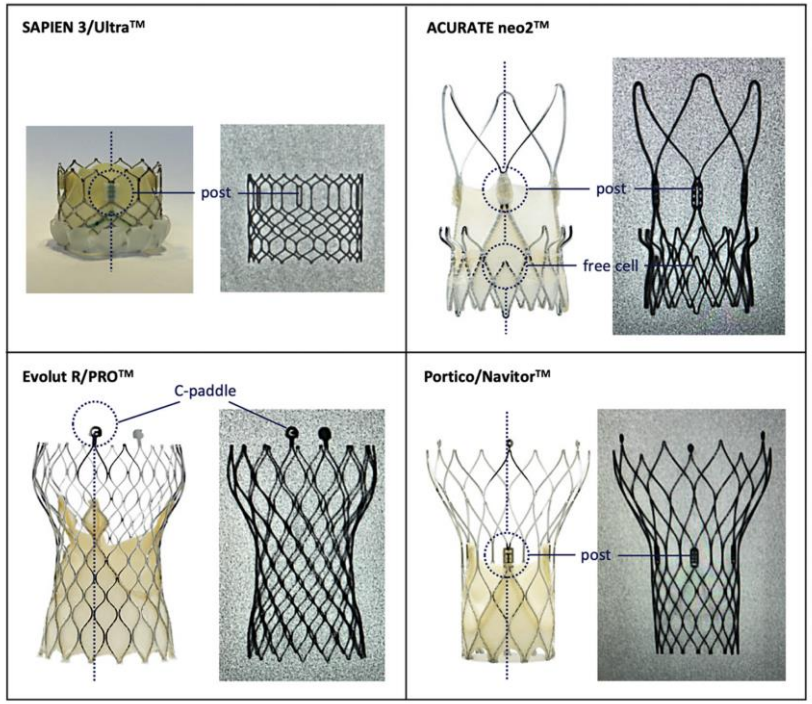
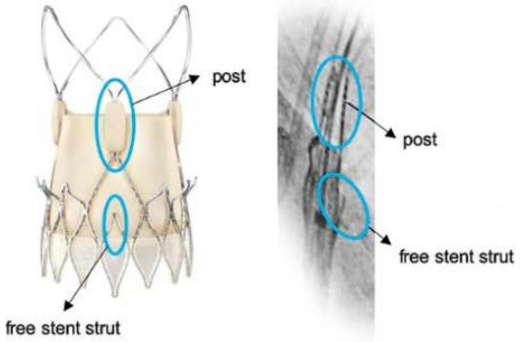
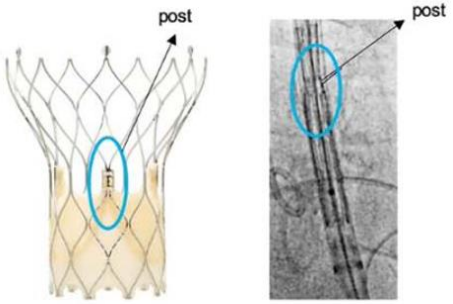
How to achieve Commissural Alignment

THV Platform & Commissural Posts





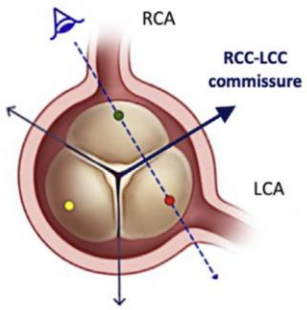


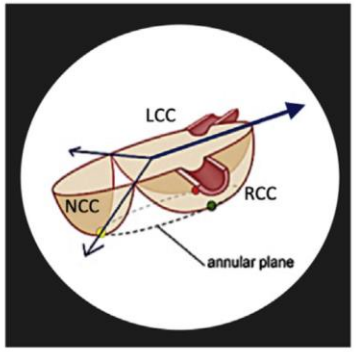


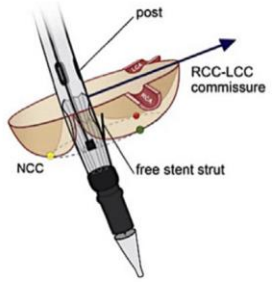
Tarantini et al. EuroIntervention 2023;19:37-52
Tang et al. JACC CVI 2022;15:1497-1518

THV Platform & Commissural Posts

R/L CUSP OVERLAP VIEW

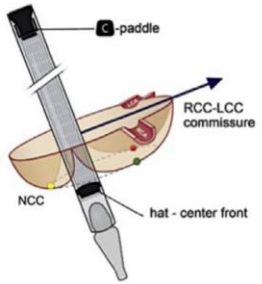






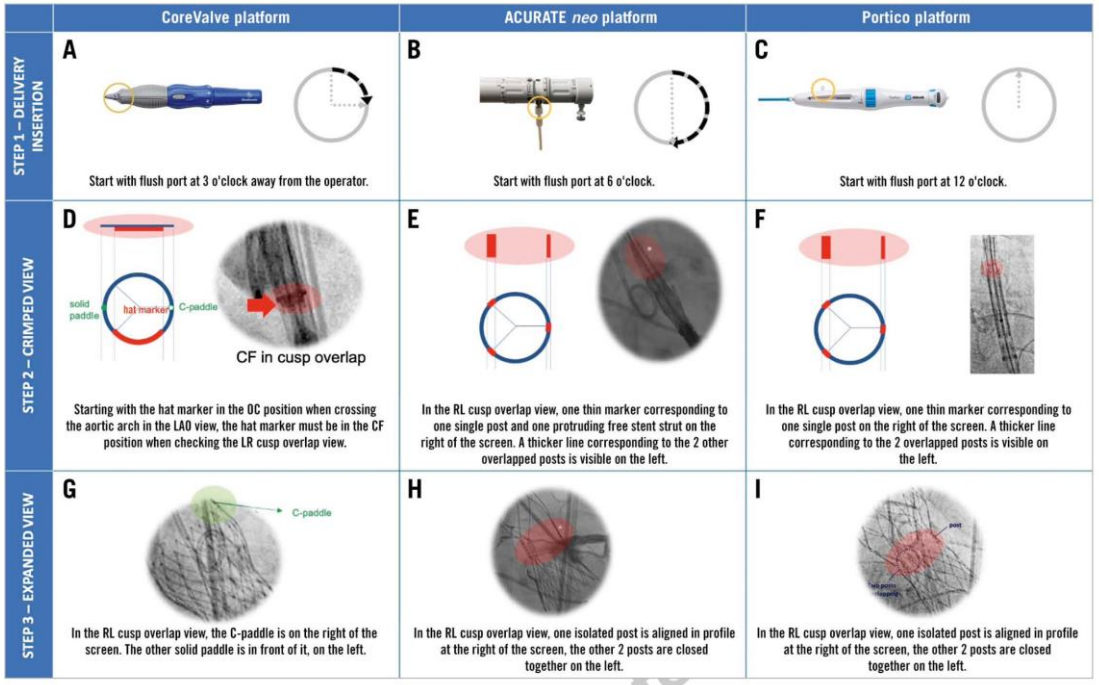
ACURATE neo2™

Evolut R/PRO™



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 –



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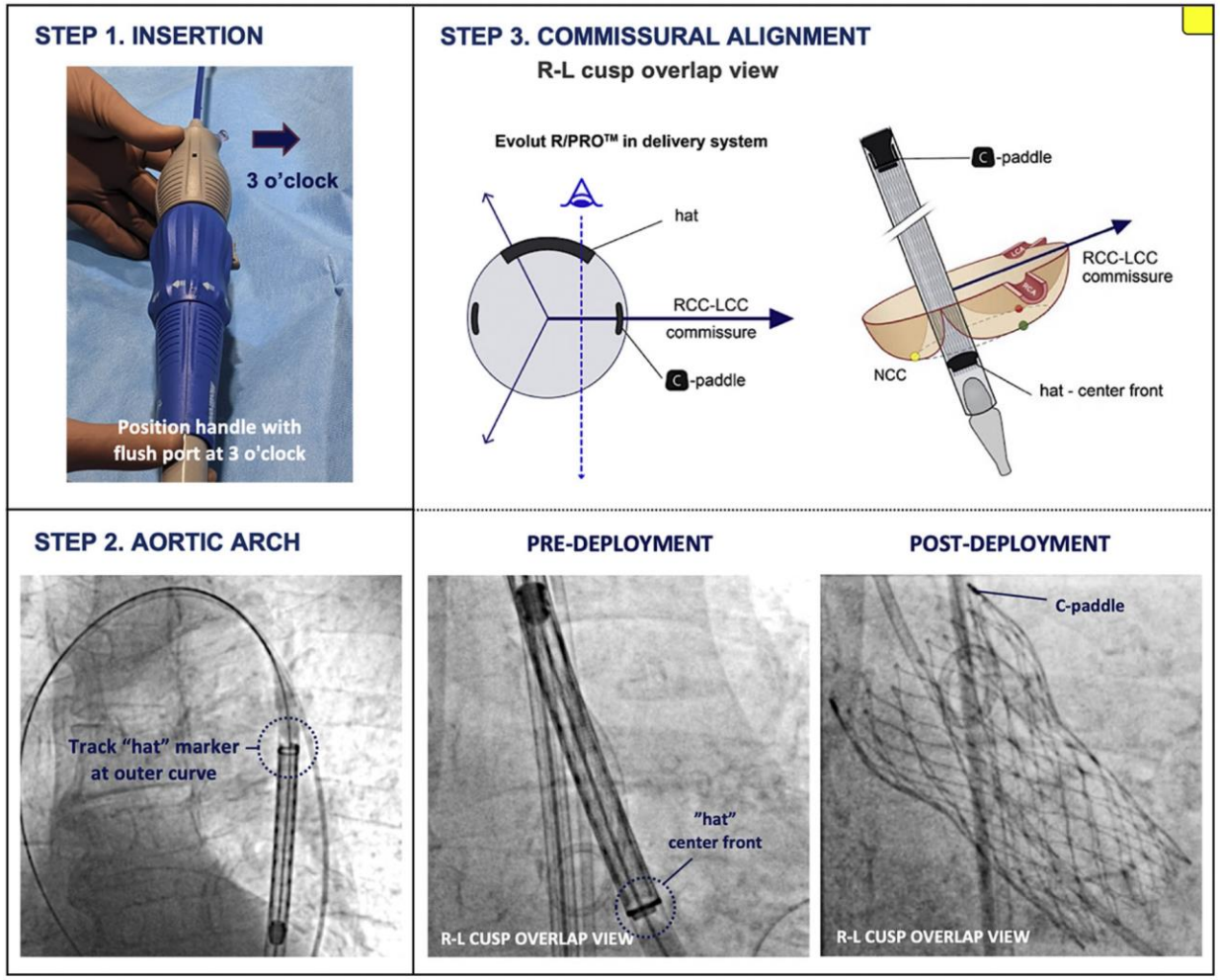
Tarantini et al. EuroIntervention 2023;19:37-52
Tang et al. JACC CVI 2022;15:1497-1518

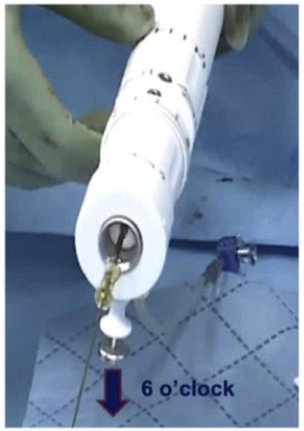
EVOLUT Commissural Alignment



Tang et al. JACC CVI 2022;15:1497-1518

ACURATE Commissural Alignment

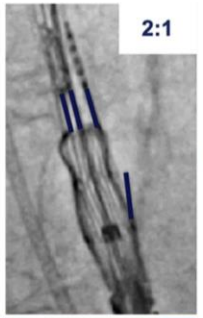
STEP 1. INSERTION



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

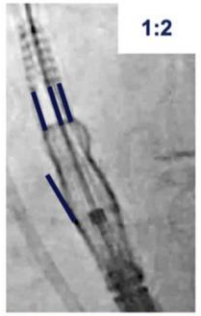
STEP 2. ASSESS ORIENTATION

3-cusp coplanar view



CW rotation needed

OR



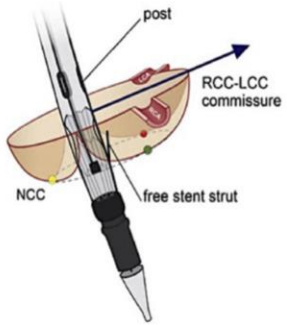
CCW rotation needed

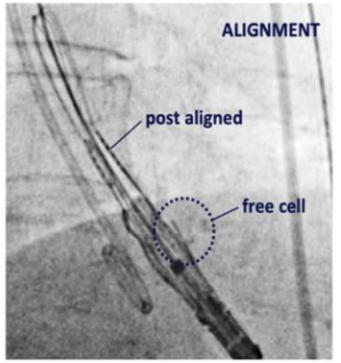
Directionality assessment in 3-cusp coplanar view to minimize rotation to achieve alignment

CW, clockwise
CCW, counter-clockwise

STEP 3. ALIGNMENT (ROTATION)

R-L cusp overlap view

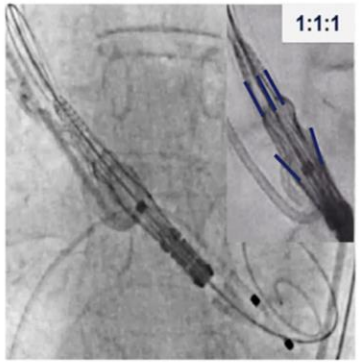




Using directionality, slowly rotate front part of the handle to achieve alignment --- typically 0.5 to 1.0 handle rotations (180° to 360°).

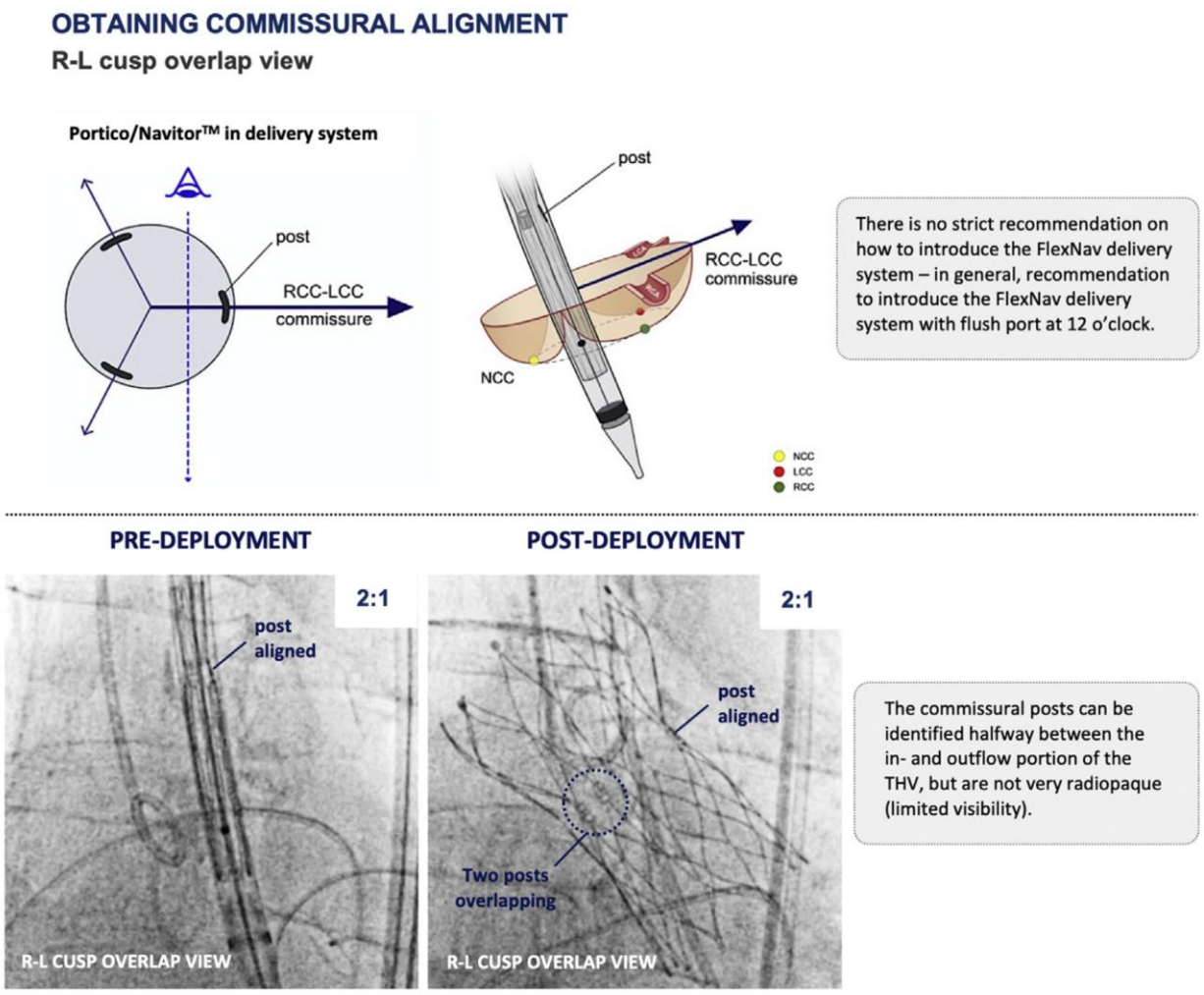
STEP 4. THV IMPLANT

3-cusp coplanar view



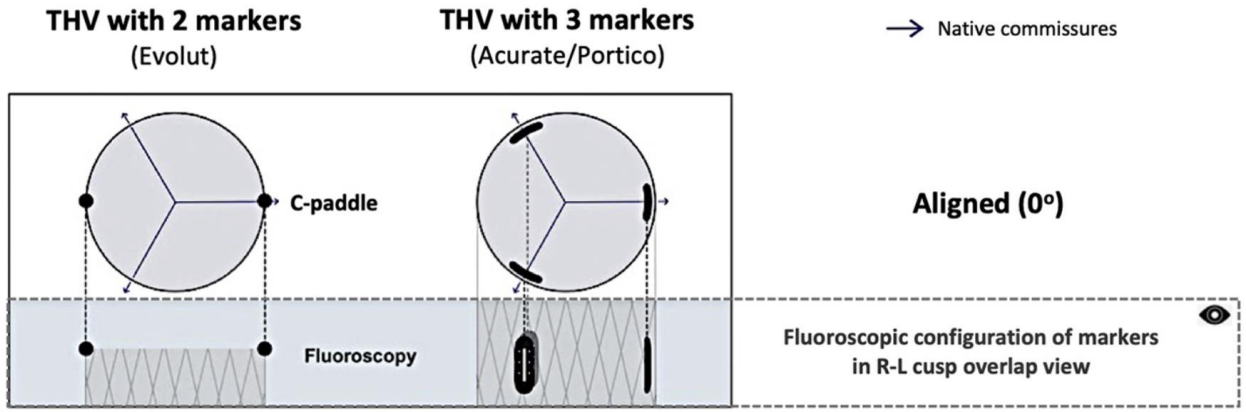
Proceed with classical ACURATE *neo2* implantation steps

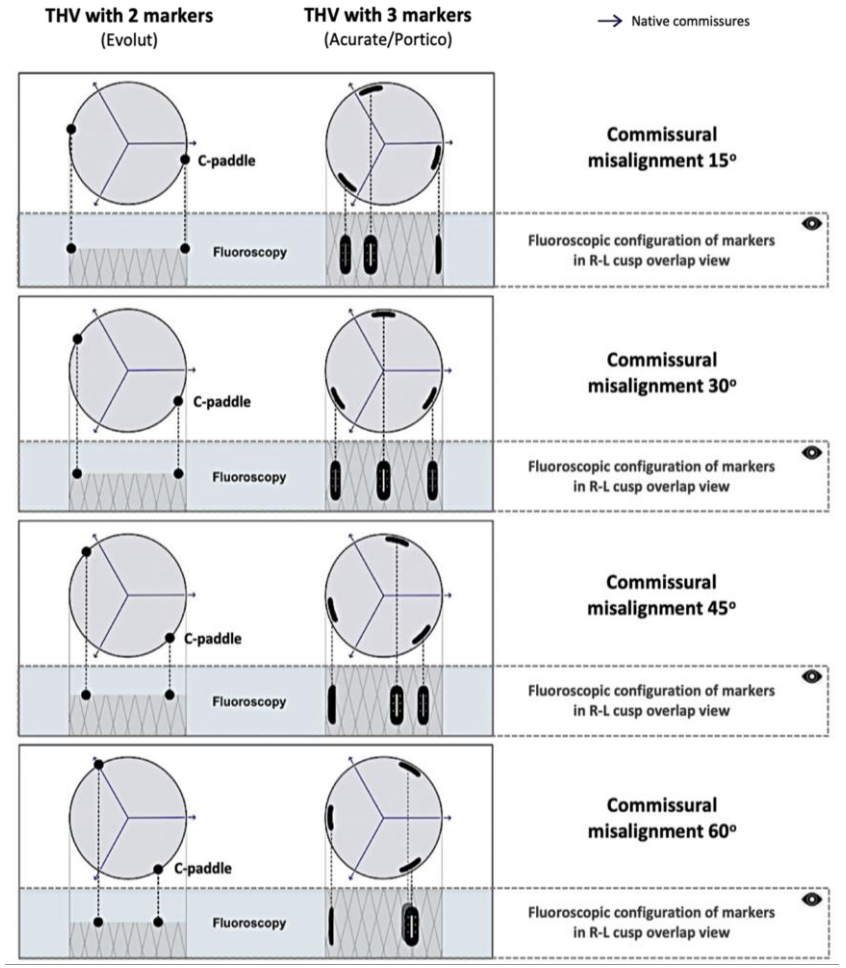
NAVITOR Commissural Alignment



Tang et al. JACC CVI 2022;15:1497-1518

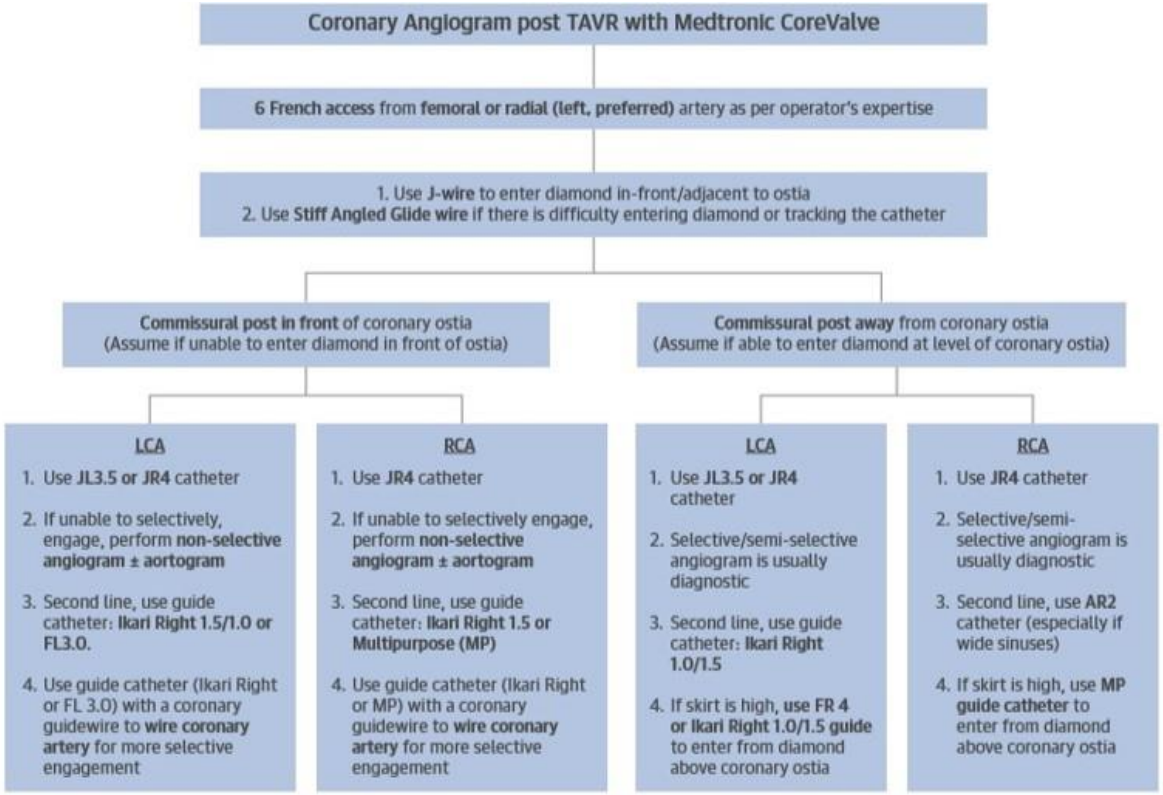
Commissural Alignment on Fluoroscopy





Tang et al. JACC CVI 2022;15:1497-1518

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**

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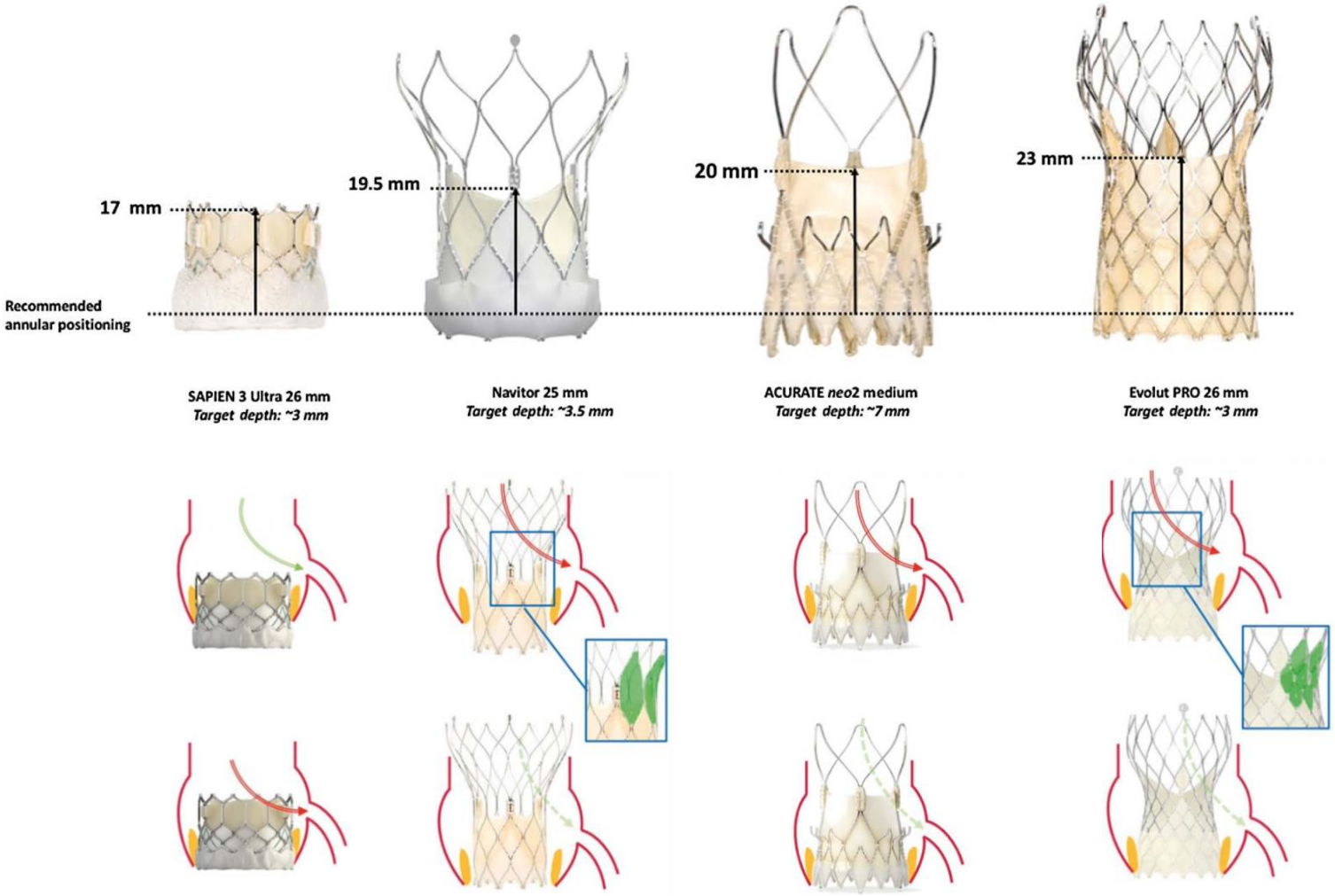
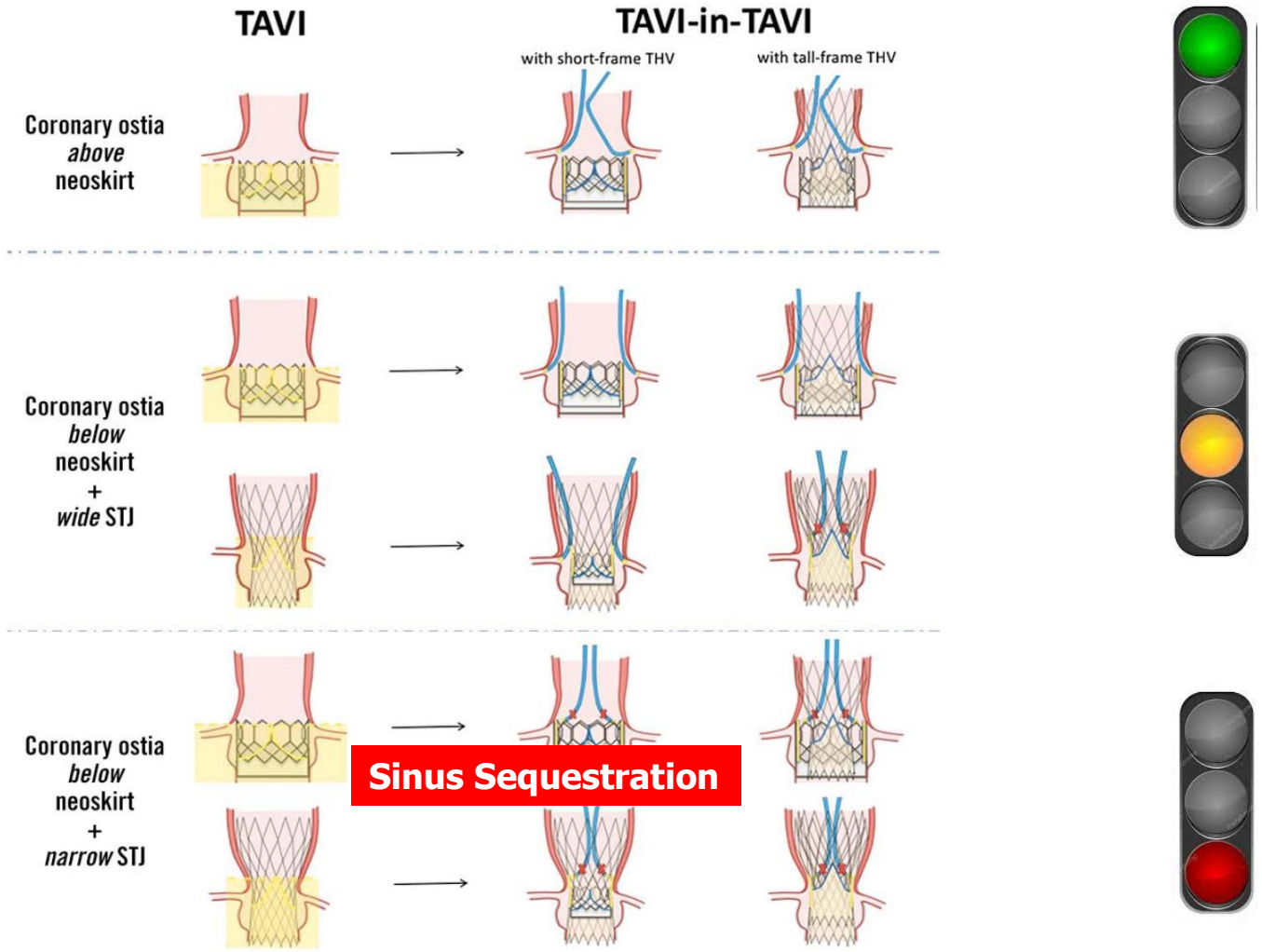
Yudi et al. JACC 2018;71:1360-78

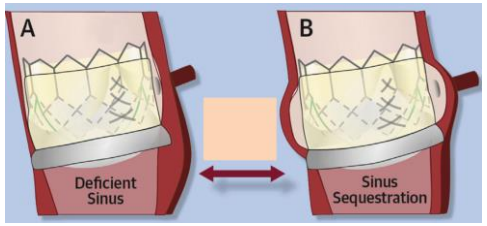
Coronary Obstruction – When Commissural Alignment won't work…

THV Platform - THV Leaflet & Frame Height



TAVI-in-TAVI & Neoskirt





Tarantini et al. EuroINtervention 2023;19:37-52

Coronary Obstruction & SOV

Sinus of Valsalva

Small sinuses relative to aortic annulus

Large THV relative to SOV (VTC-distance)

Distance coronary ostia to annulus

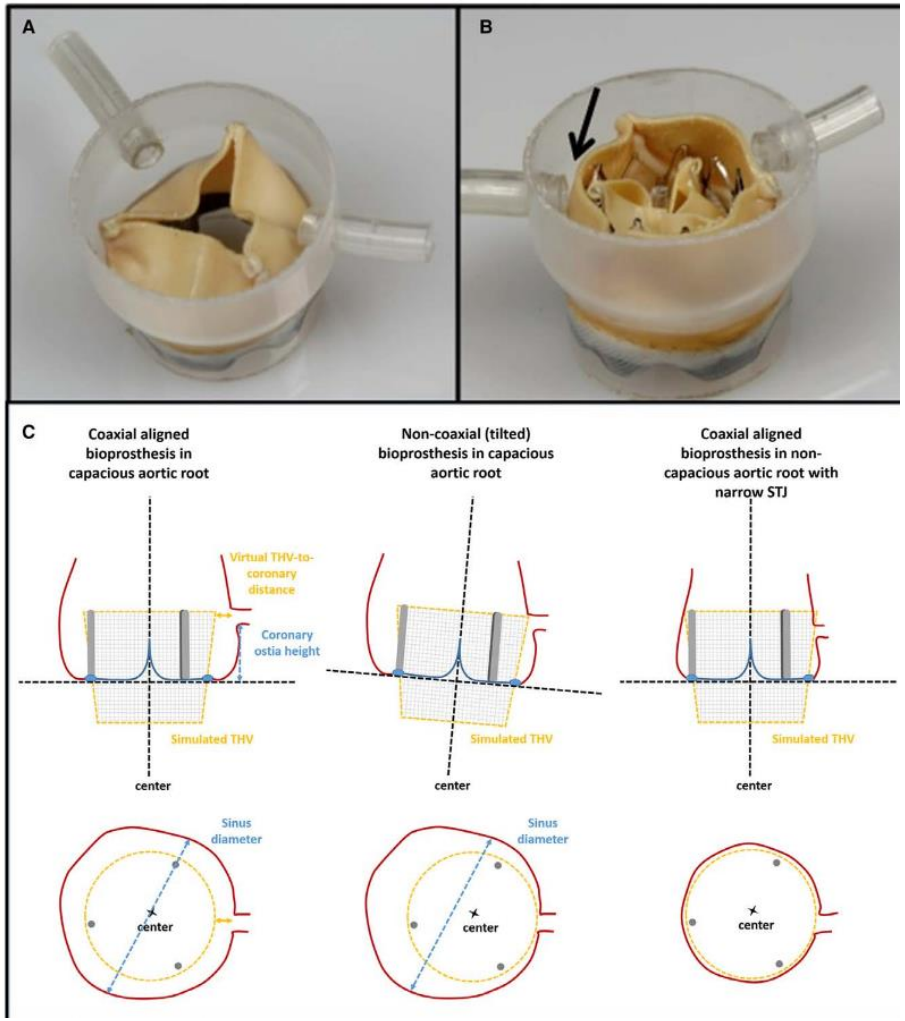
<12mm

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**



Dvir et al. Circulation CVI 2015;8:1-10

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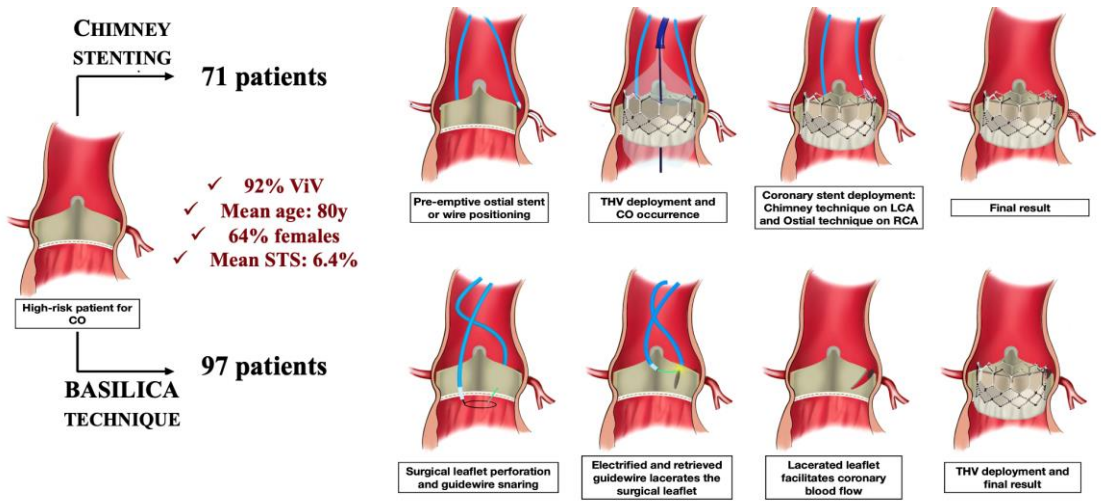
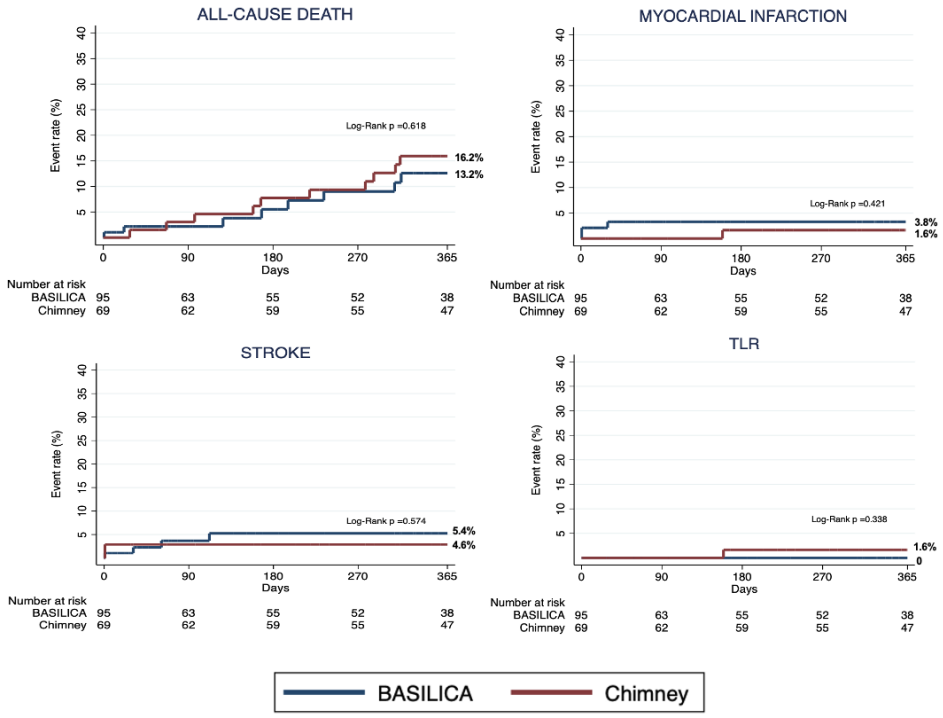
BASILICA ⇔ Chimney Technique – Propensity matched analysis

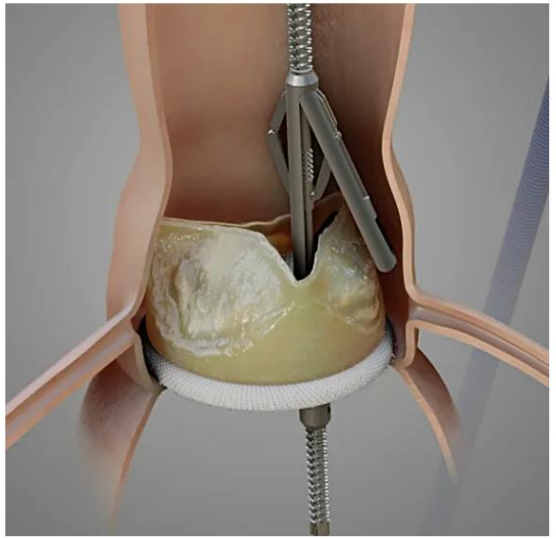


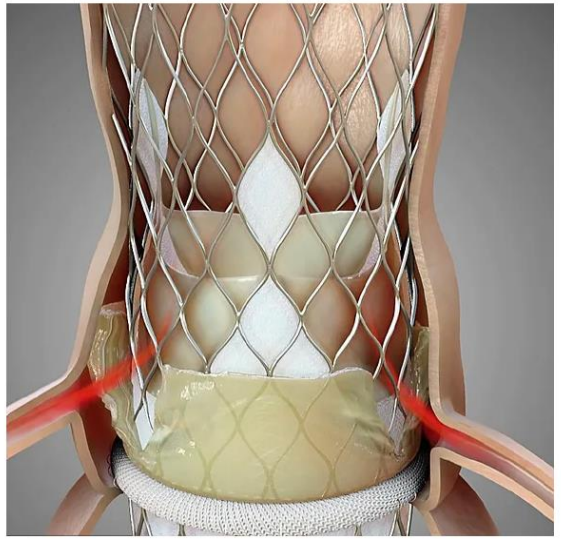


Mangieri et al. In press

Dedicated Leaflet Scoring & Splitting

ShortCut (Pi-Cardia)





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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…)**