AP VALVES & STRUCTURAL HEART 2022

Real world experience with the ACURATE *neo2*

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GIESSEN UND MARBURG

11th AP VALVES & STRUCTURAL HEART 2022

KERCKHOFF KLINIK

CVRF

Disclosure

Proctor/speaker fees/advisory board

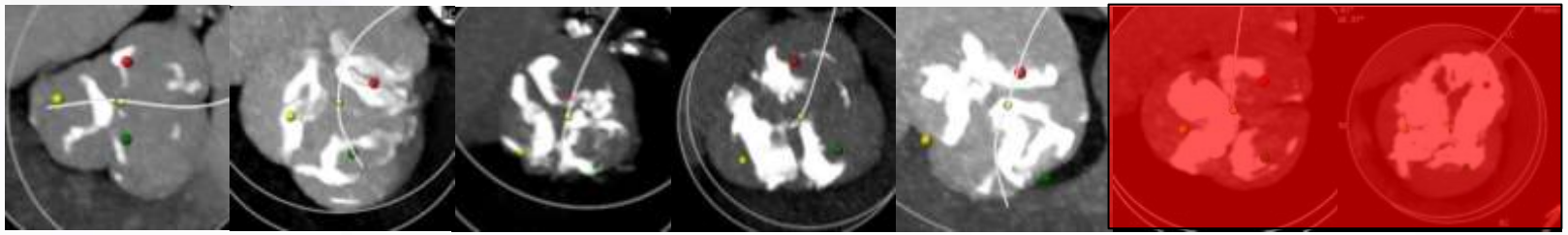
- Abbott
- Astra Zeneca
- Boston Scientific
- Daiichi
- Edwards Lifesciences
- Medtronic
- Meril Life Sciences
- Shockwave Medical

Agenda

- Sizing
- Positioning
- Commissural alignment
- Recrossing
- Management of valve dislodgement

Limitations & caveats of first gen ACURATE neo

Aortic valve calcification

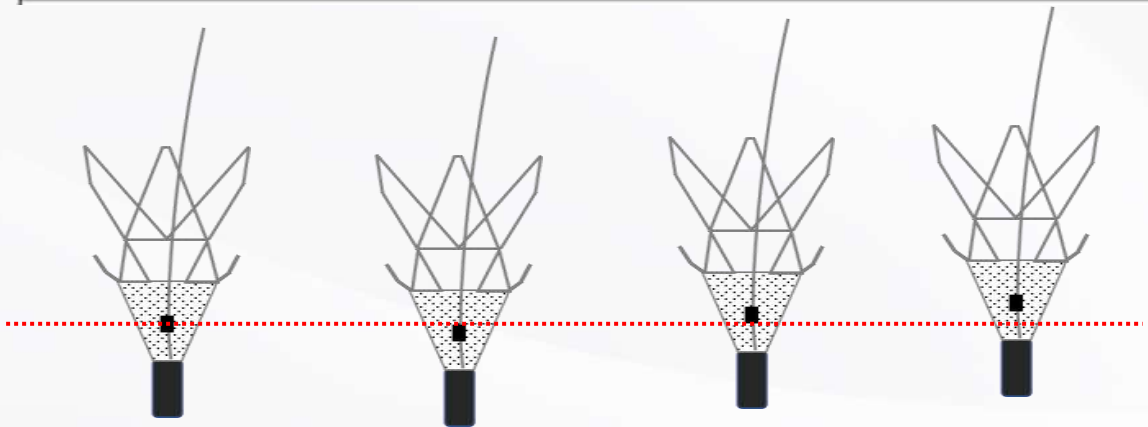


Annulus range

Appropriate Sizing

ACURATE neo Size	Annular Range According to Official Sizing Recommendation (mm)	Perimeter-Derived Annulus in Diastole (mm) (Oversizing)	Perimeter-Derived Annulus in Systole (mm) (Oversizing)
Small	21.0-23.0	20.0-22.0 (13.0%-4.4%)	20.0-22.4 (13.0%-2.6%)
Medium	23.0-25.0	22.1-23.9 (11.6%-4.4%)	22.5-24.3 (10.0%-2.8%)
Large	25.0-27.0	24.0-25.8 (11.1%-4.4%)	24.4-26.3 (9.6%-2.6%)

Correct positioning



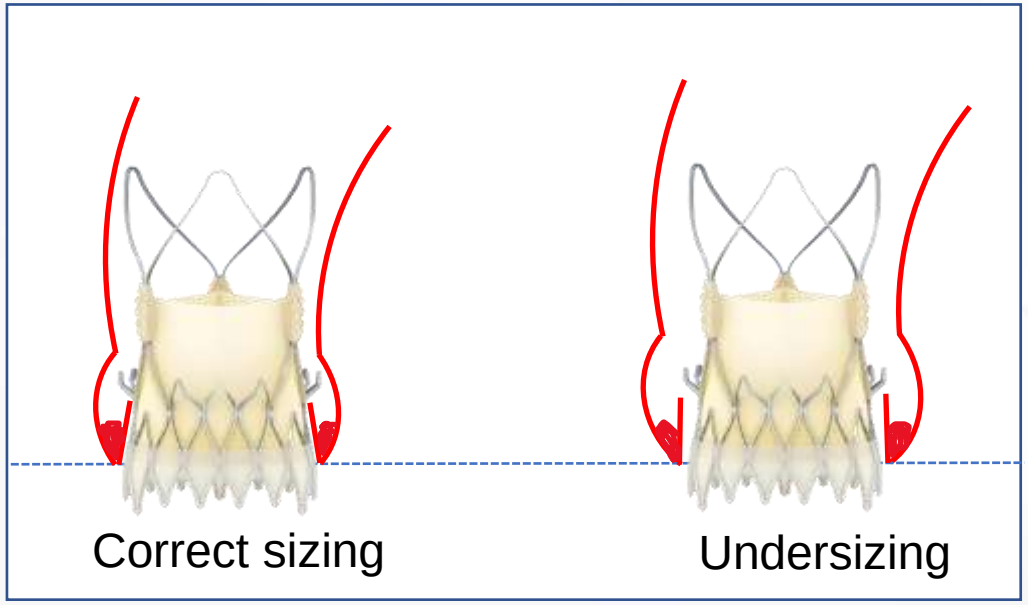
Kim et al, JACC Cardiovasc Interv 2019

Learning curve first gen ACURATE *neo*

Variable	Quartile 1 (Case 1–250)	Quartile 2 (Case 251–500)	Quartile 3 (Case 501–750)	Quartile 4 (Case 751-1000)	p
Cover index (%)	3.87 [1.86; 6.37]	5.13 [3.04; 7.30]	5.38 [3.39; 7.52]	6.17 [4.20; 7.90]	<0.001
Aortic valve calcium score (AU)	2395 [1646; 3111]	2049 [1494; 2872]	1955 [1385; 2893]	1989 [1280; 2726]	<0.001
Eccentric calcification	64 (25.6%)	41 (16.4%)	42 (16.8%)	29 (11.6%)	0.001
Implantation depth LCC (mm)	5.0 [3.0; 6.0]	6.0 [5.0; 7.0]	6.0 [4.0; 6.0]	5.0 [4.0; 6.0]	<0.001
Device success (VARC-2)	171 (85.5%)	177 (88.5%)	181 (90.5%)	186 (93.0%)	0.002
PVL ≥moderate	18/243 (7.4%)	7/241 (2.9%)	9/246 (3.7%)	2/246 (0.8%)	0.001
Permanent pacemaker	25 (10.0%)	26 (10.4%)	26 (10.4%)	17 (6.8%)	0.444

Kim et al, AJC 2020

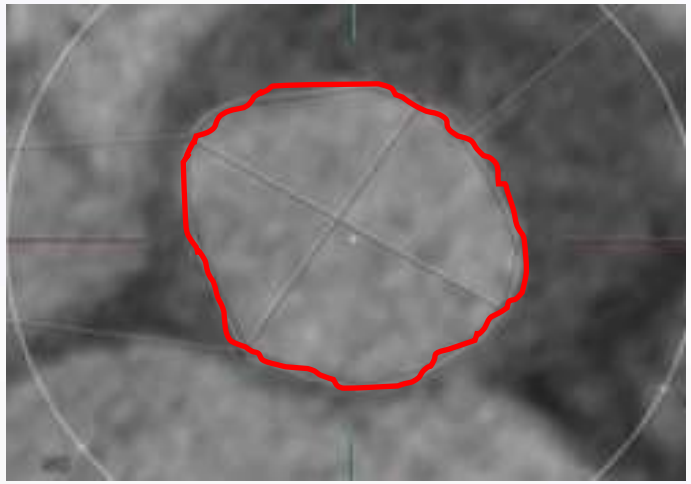
Proper sizing is key!



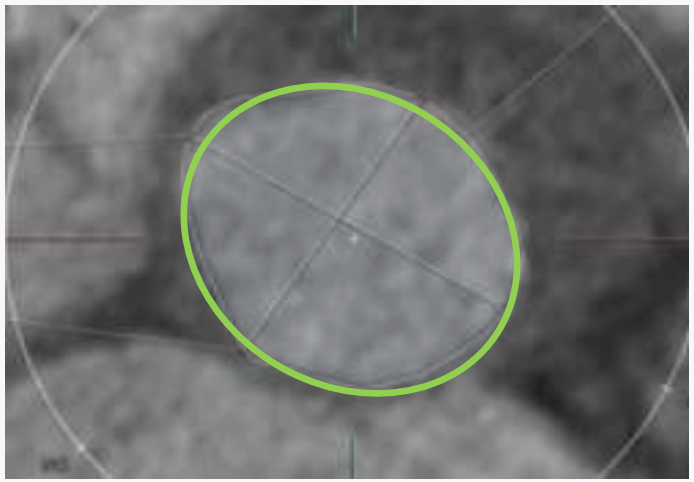
- Wrong measurement
- Measurement in wrong phase
- Suboptimal size selection

Common annulus measurement errors

Too many dodds

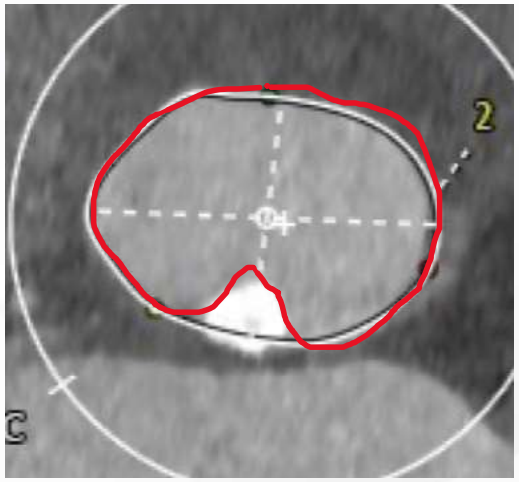


Perimeter
75 mm



Perimeter
71 mm

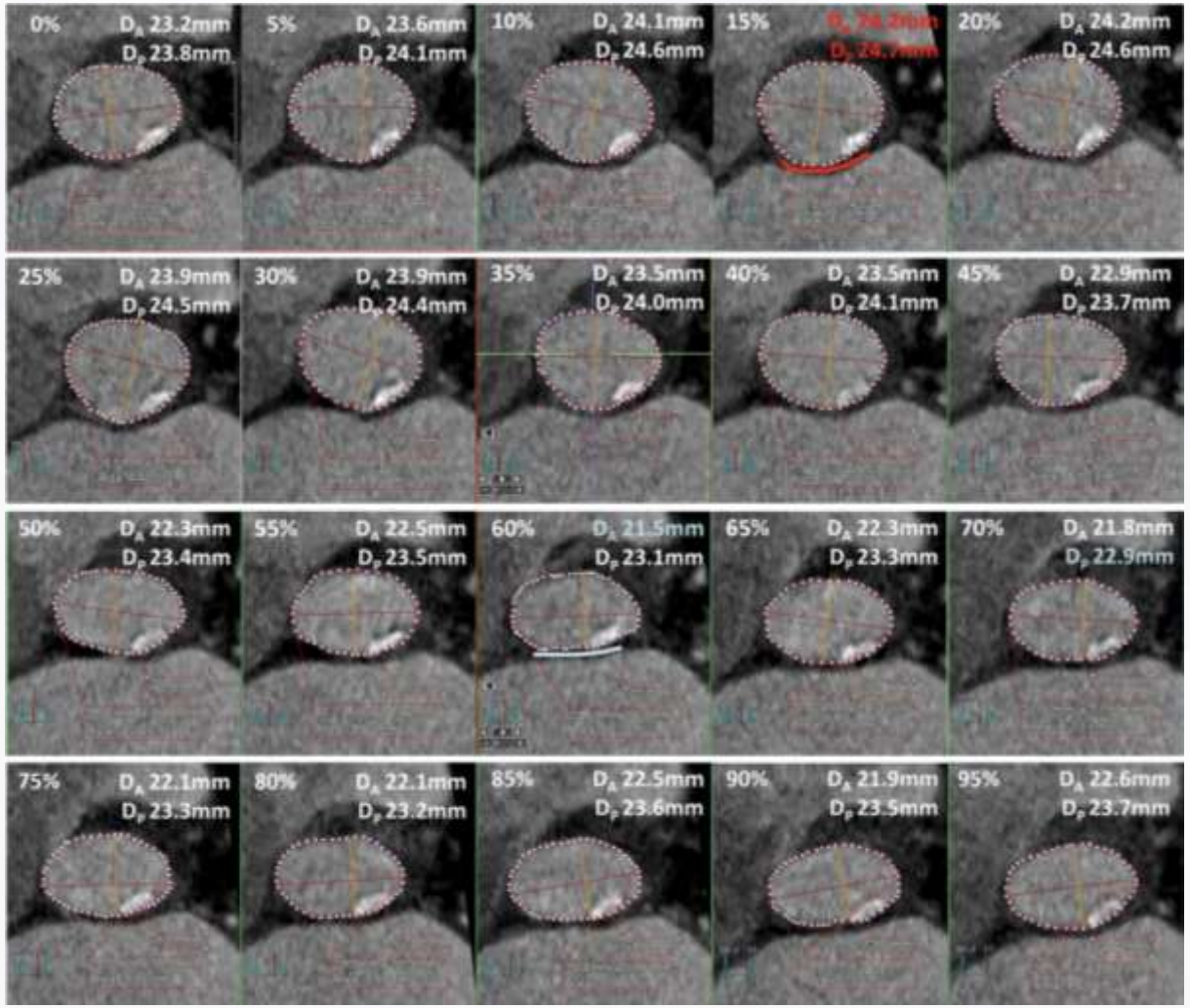
Exclusion of calcium

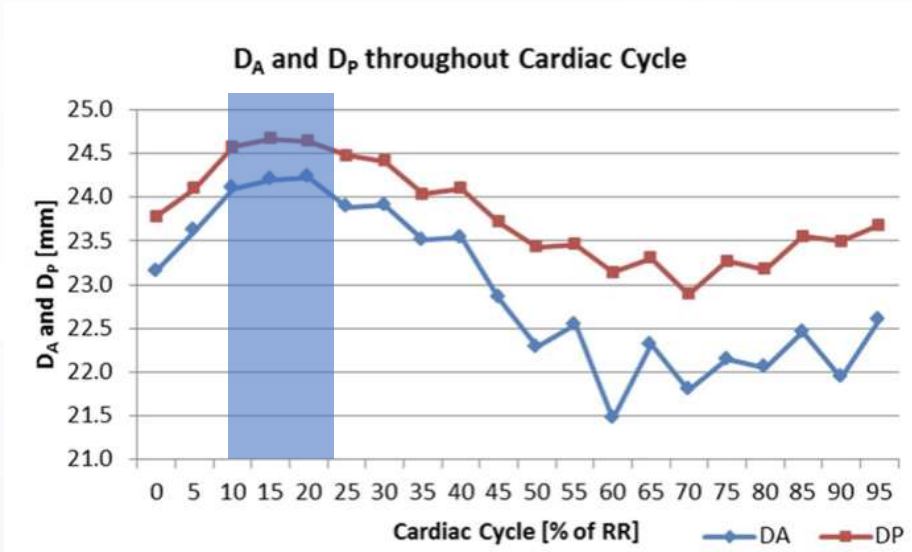


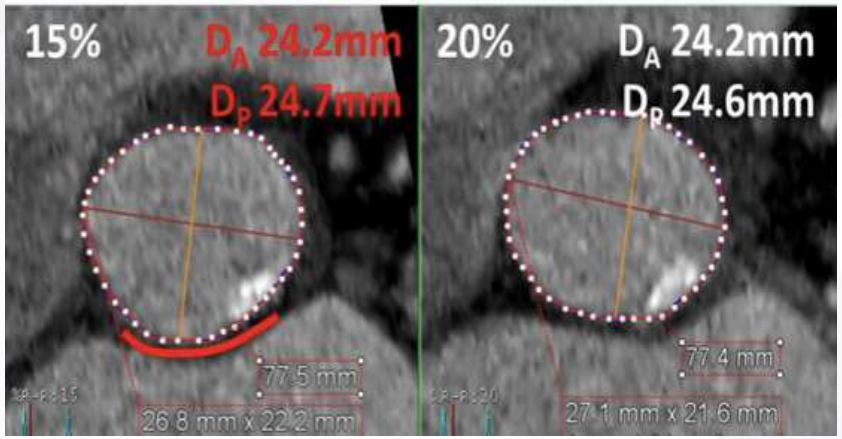
Perimeter
72 mm

Perimeter
68 mm

Cyclic changes of annulus

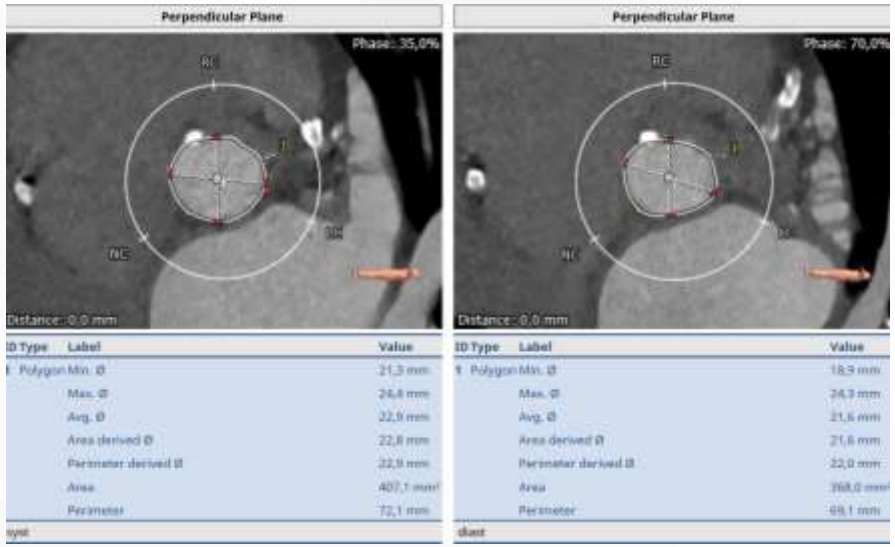






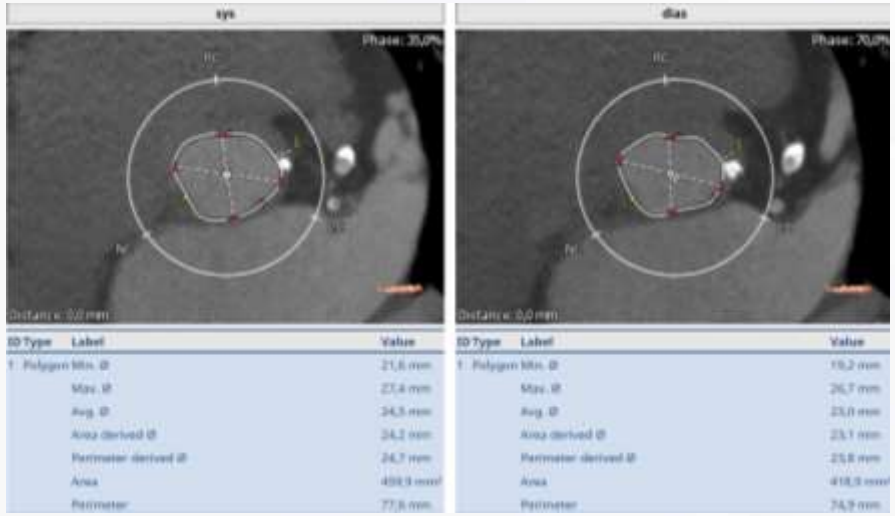
Blanke et al; JACC Cardiovasc Interv 2012

Sizing difference systole vs. diastole



- Systole: 22.9 mm => size M

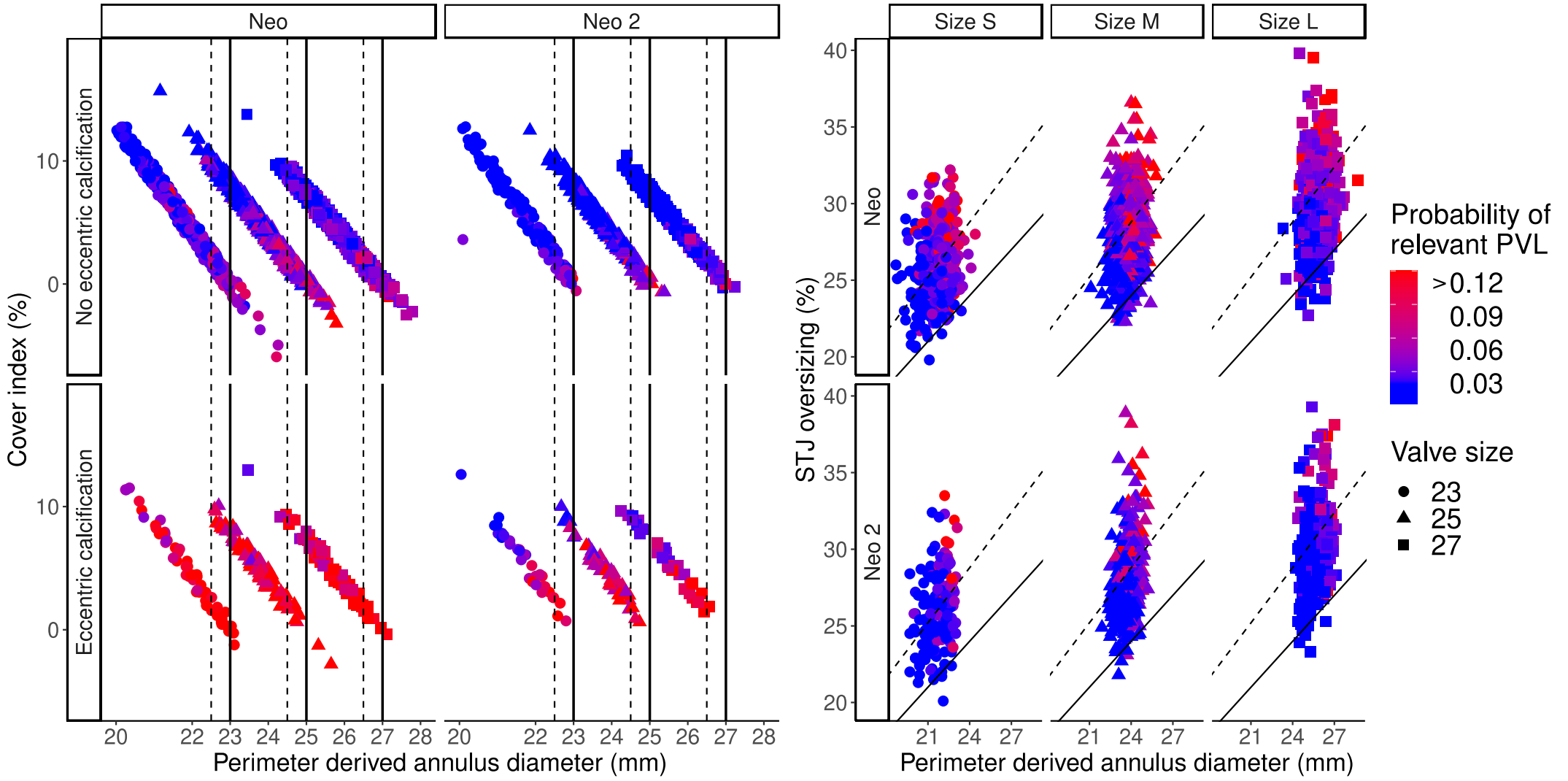
- Diastole: 22.0 mm => size S



- Systole: 24.7 mm => size L

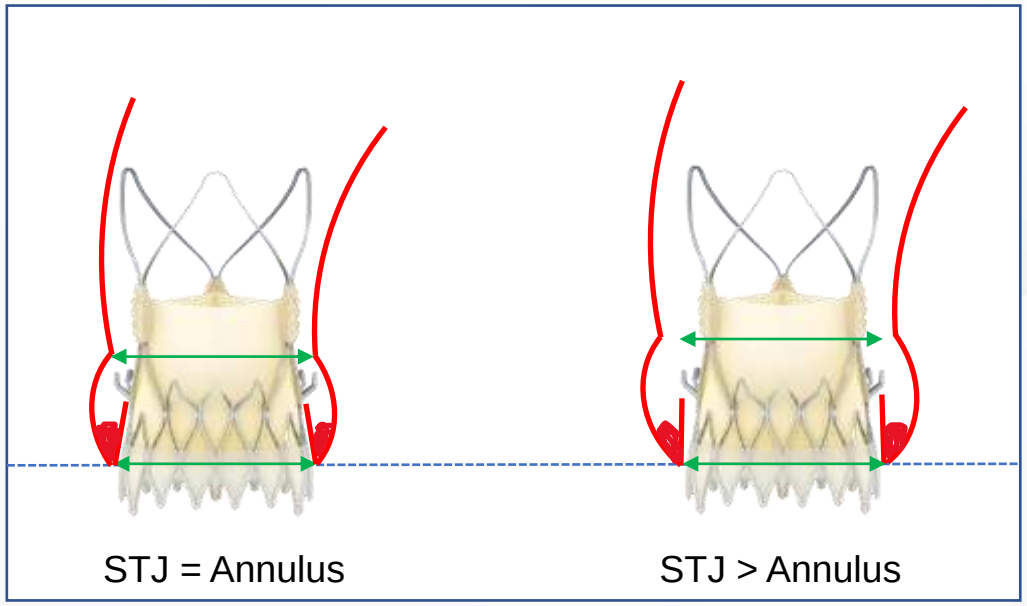
- Diastole: 23.8 mm => size M

Sizing considerations Neo vs Neo2



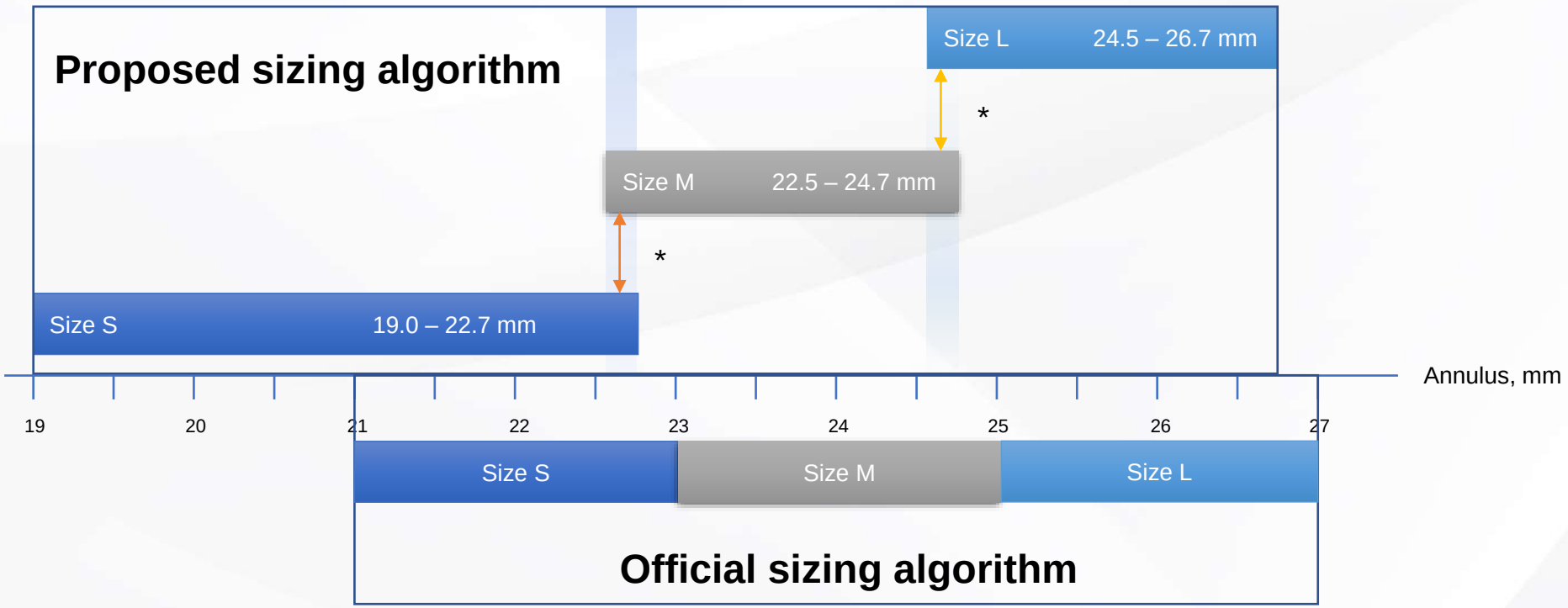
Data under review

The role of the STJ for anchoring



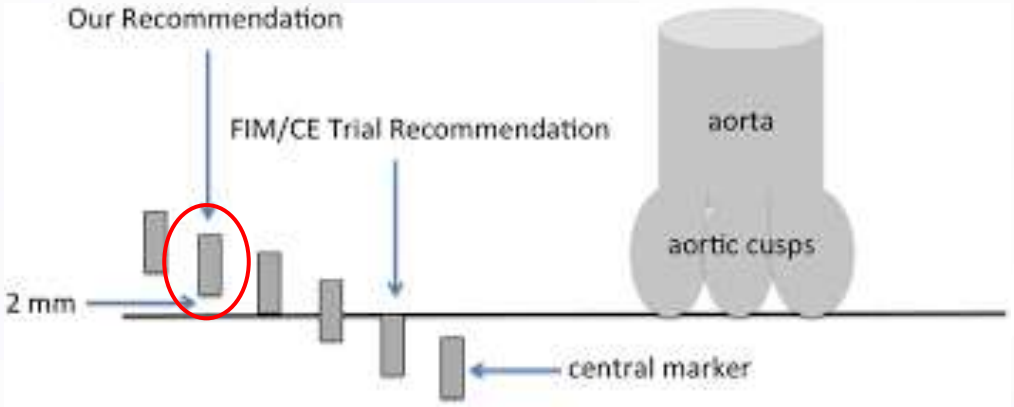
Suggestion for sizing algorithm: ACURATE *neo2*

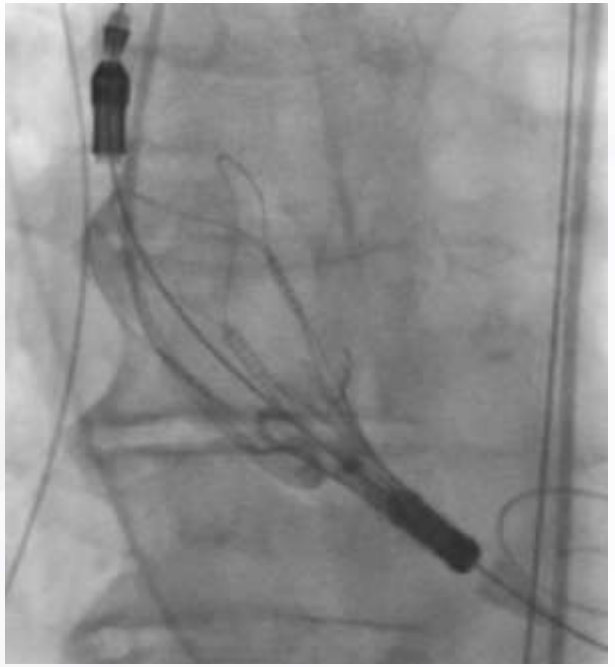
*Upsize if:
- STJ or STJ height is large
- Only diastolic reconstruction is available
- Perimeter could be underestimated (measured with few dodds)
- Eccentric annulus?
- Eccentric calcification
- High body size?

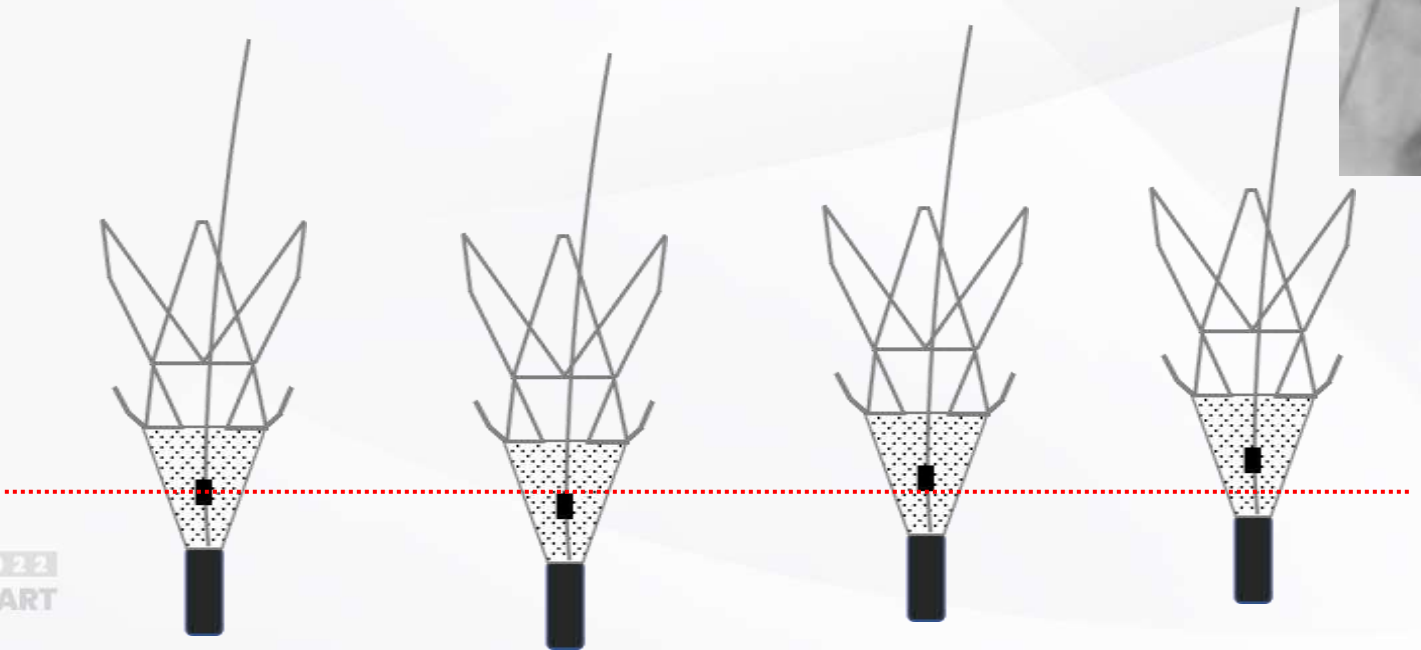


How to position the AS neo 2?

SAPIEN 3
Positioning

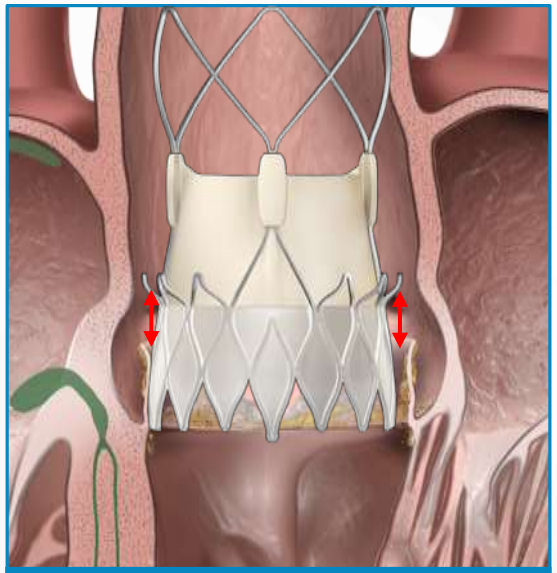






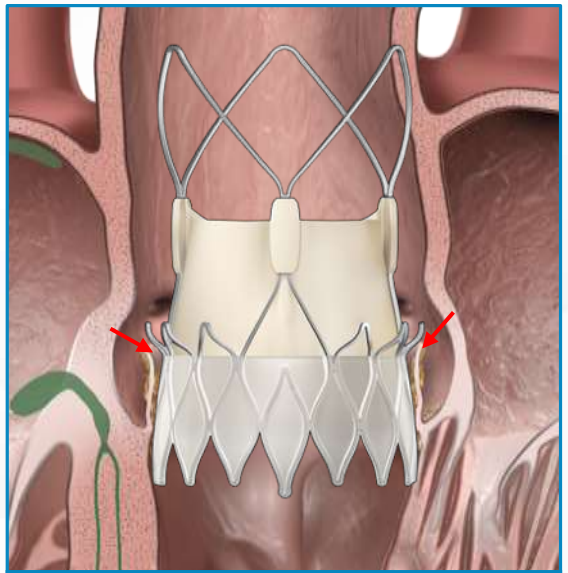
AS neo 2
Positioning

Positioning
Upper Crown on top of native leaflets

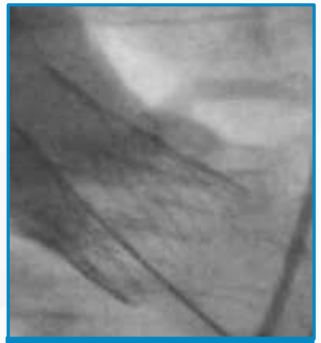


Too high

Too high

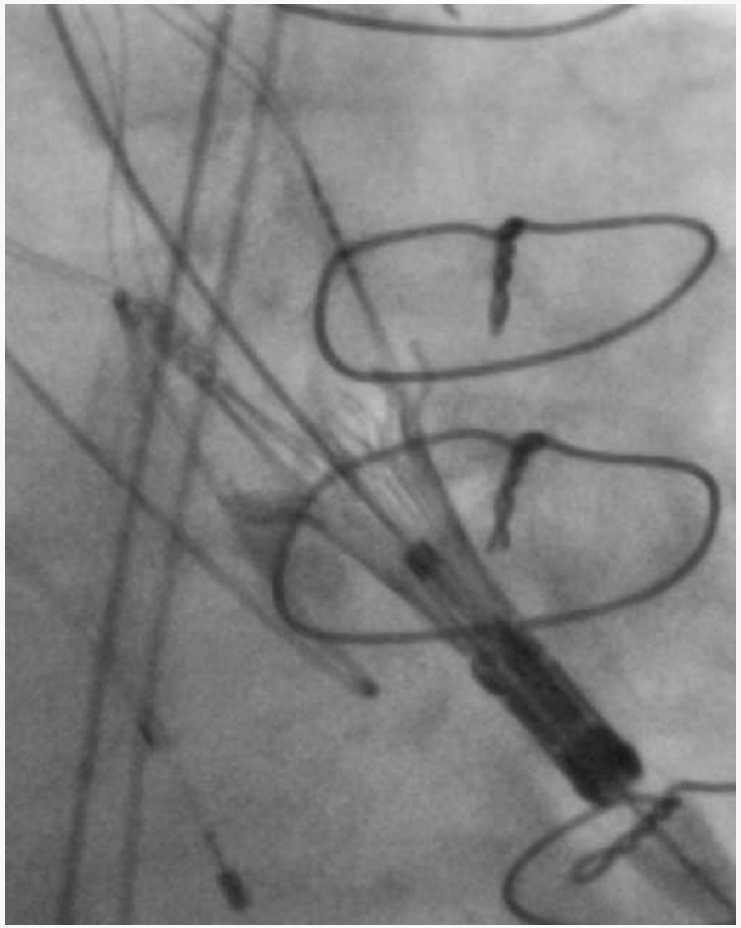


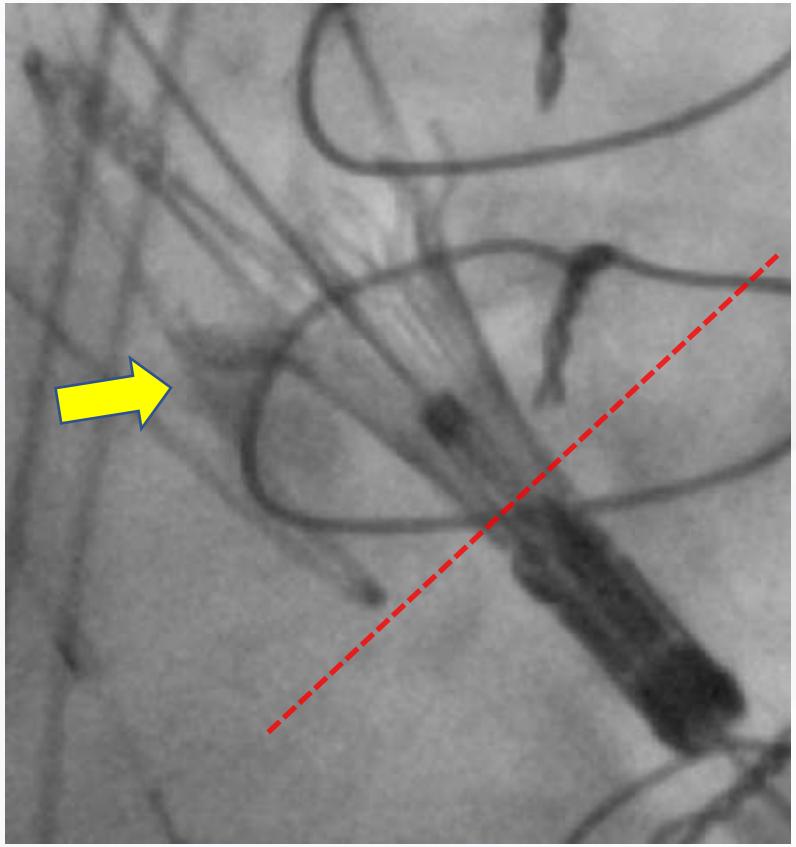
Upper crown adjacent to leaflets

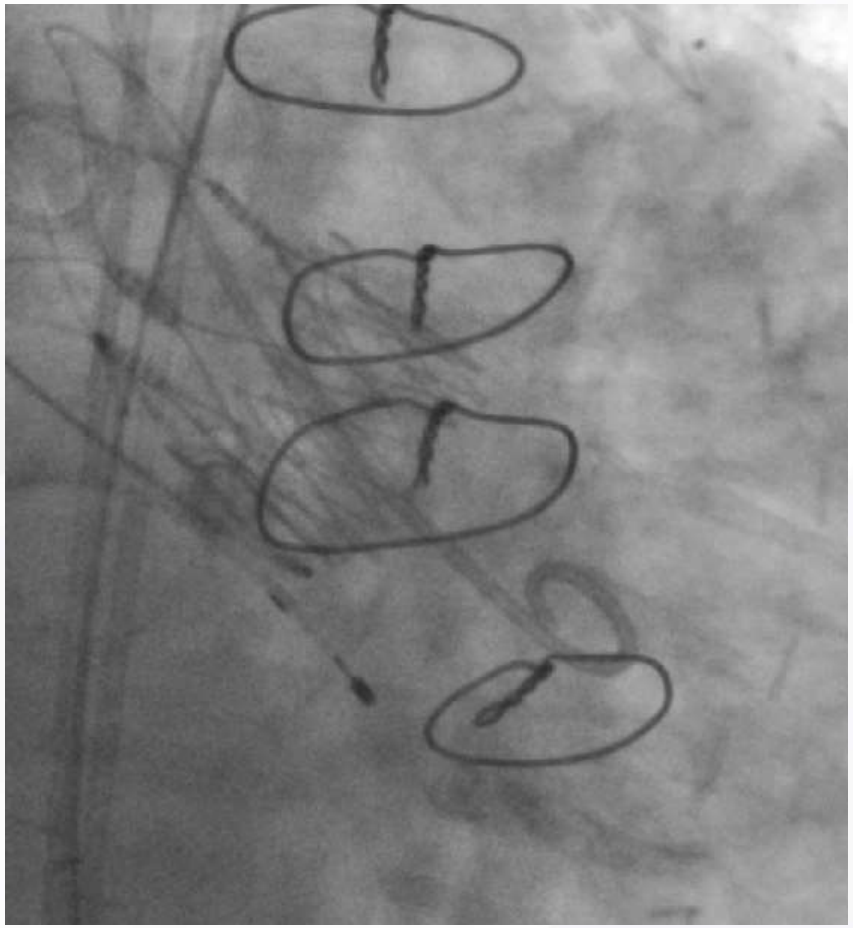


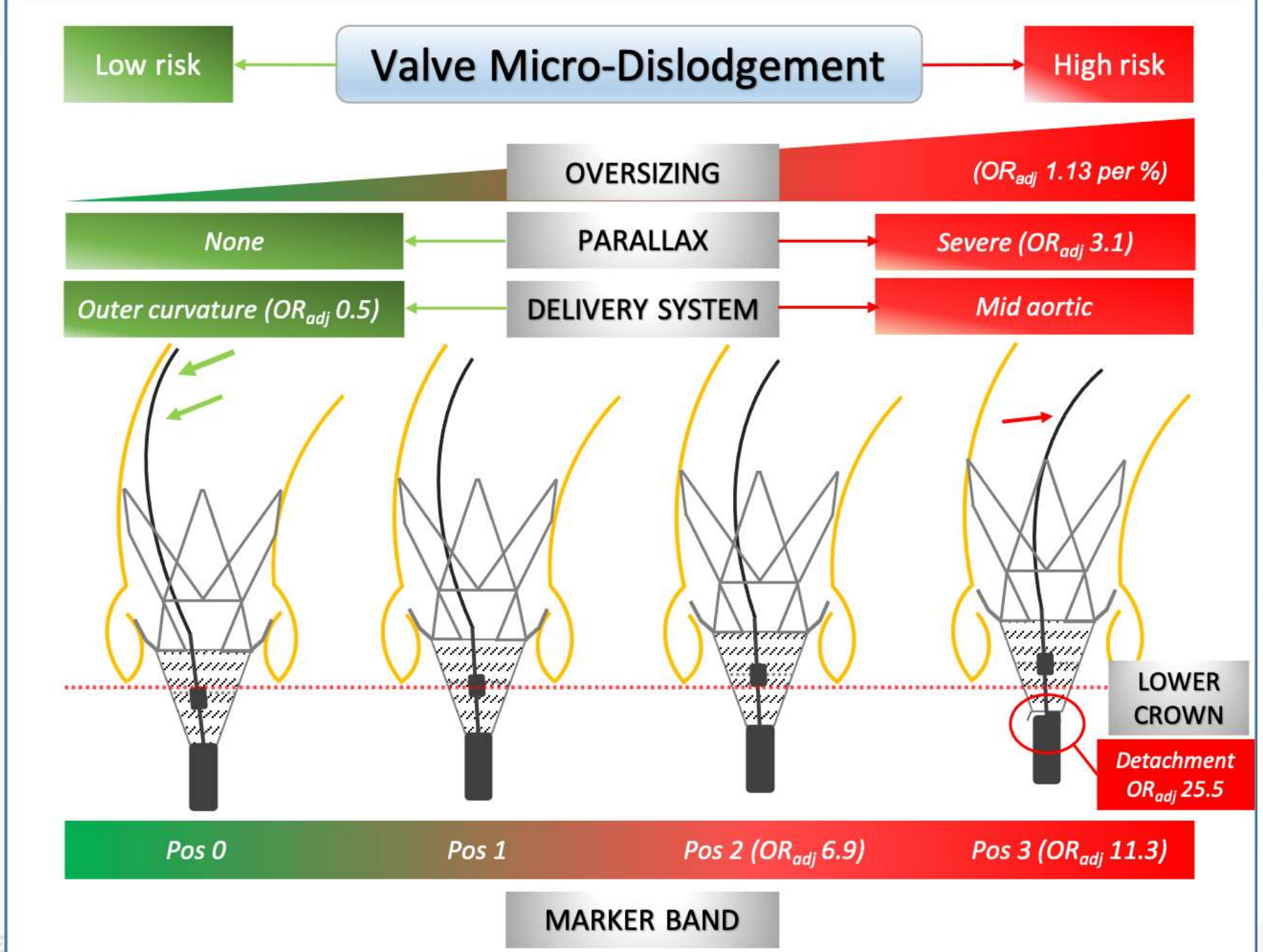
Upper crown adjacent to leaflets

Anatomic limitations of positioning



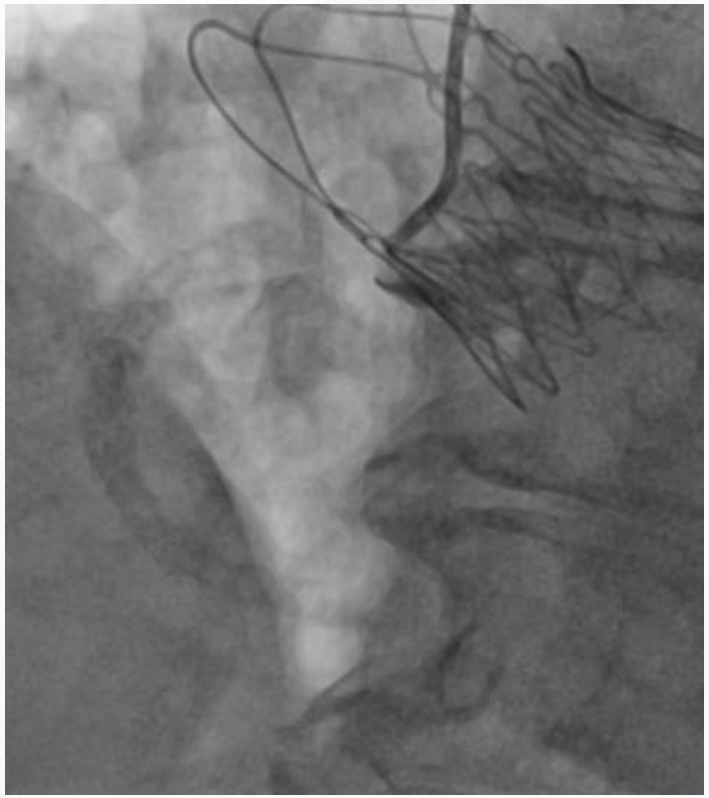


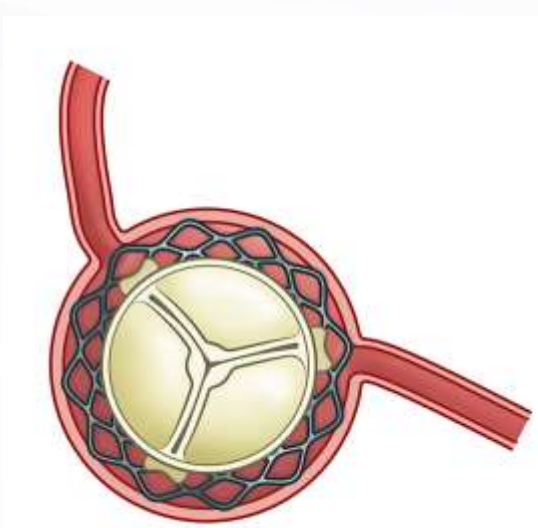




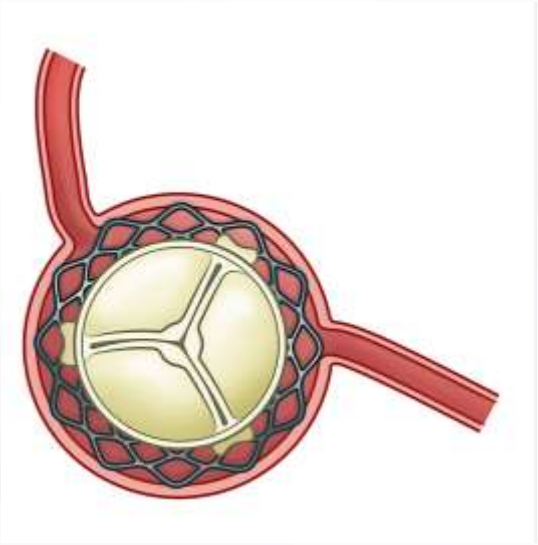
Kim et al, ICJ 2022

Commissural Alignment





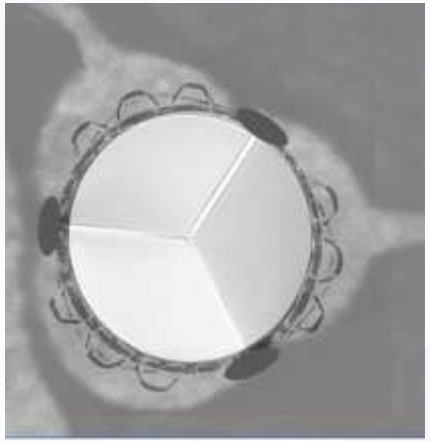
X Commissural misalignment



✓Commissural alignment

Sondergaard et al. EuroIntervention. 2018; 14:147-9

The main goal is not perfect commissural alignment, but to avoid commissural misalignment!



Rationale, Definitions, Techniques, and Outcomes of Commissural Alignment in TAVR

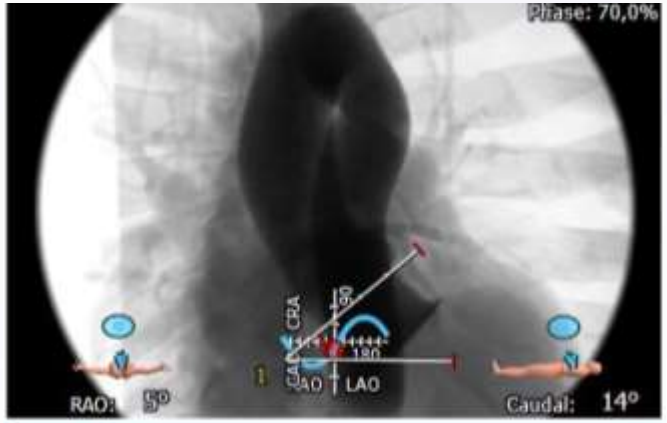
From the ALIGN-TAVR Consortium

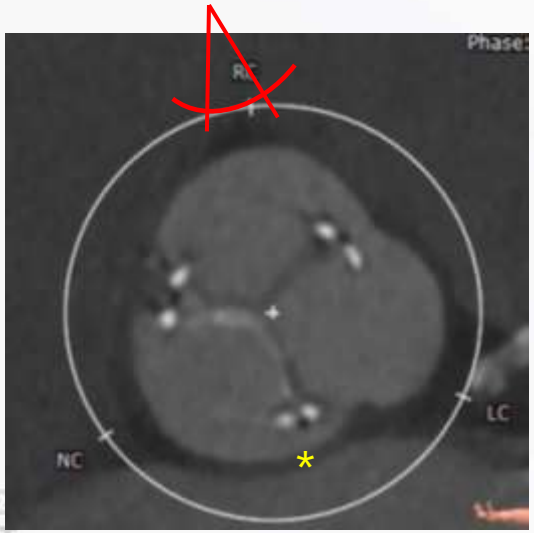
Gilbert H.L. Tang, MD, MSc, MBA,[a] Ignacio J. Amat-Santos, MD, PhD,[b] Ole De Backer, MD, PhD, MBA,[c] Marisa Avvedimento, MD,[d] Alfredo Redondo, MD,[b,e] Marco Barbanti, MD,[f] Giuliano Costa, MD,[f] Didier Tchétché, MD,[g] Hélène Eltchaninoff, MD,[h] Won-Keun Kim, MD,[i] Syed Zaid, MD,[j] Giuseppe Tarantini, MD, PhD,[k] Lars Søndergaard, MD[c]

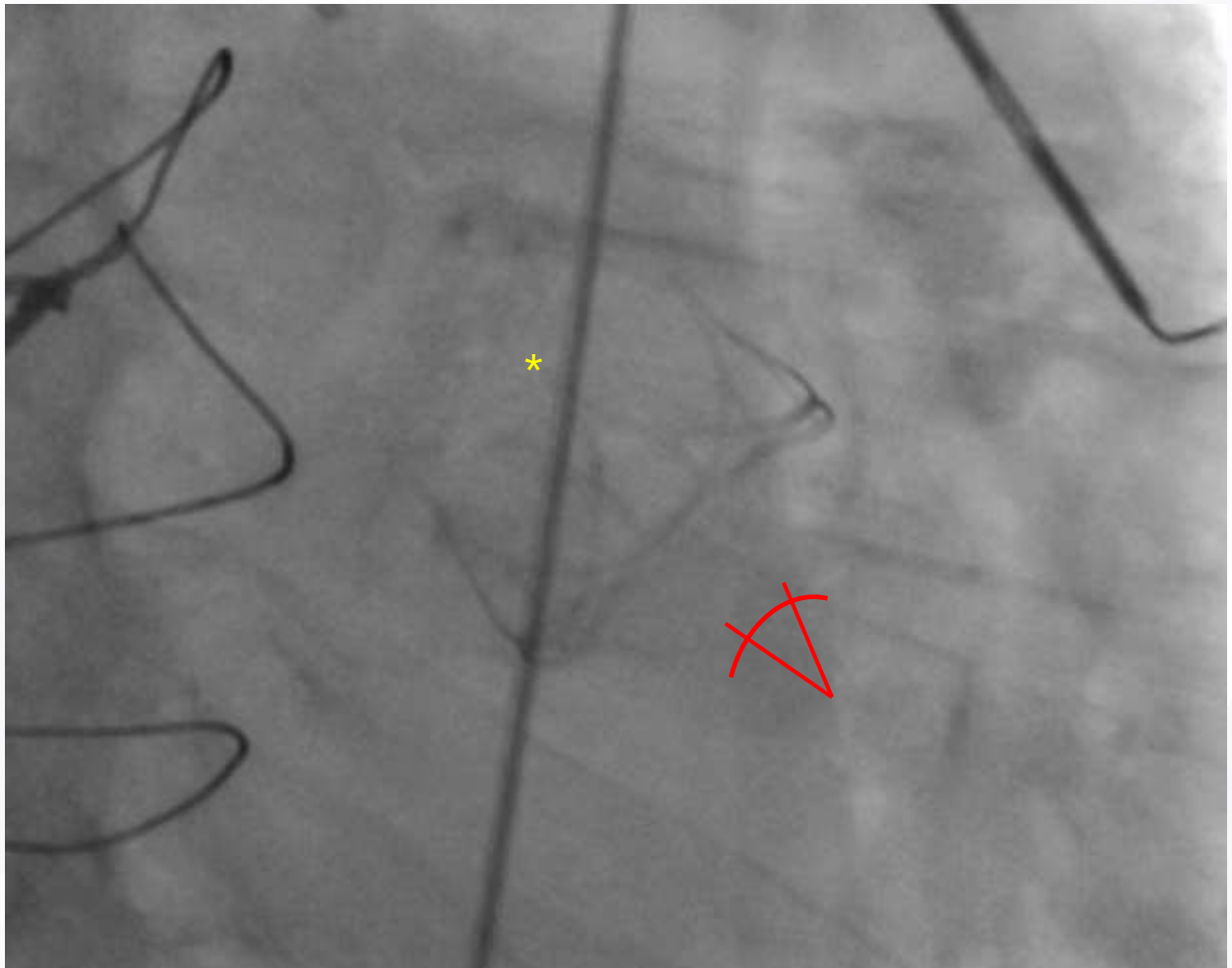
ABSTRACT

Given the expanding indications of transcatheter aortic valve replacement (TAVR) in younger patients with longer life expectancies, the ability to perform postprocedural coronary access represents a priority in their lifetime management. A growing body of evidence suggests that commissural (and perhaps coronary) alignment in TAVR impacts coronary access and valve hemodynamics as well as coronary flow and access after redo-TAVR. Recent studies have provided modified delivery system insertion and rotation techniques to obtain commissural alignment with available transcatheter heart valve devices. Moreover, patient-specific preprocedural planning and postprocedural imaging tools have been developed to facilitate and evaluate commissural alignment. Future efforts should aim to refine transcatheter heart valve and delivery system designs to make neocommissural alignment easier and more reproducible. The aim of this review is to present an in-depth insight of commissural alignment in TAVR, including its rationale, standardized definitions, technical steps, outcomes, and future directions. (J Am Coll Cardiol Intv 2022;15:1497–1518)

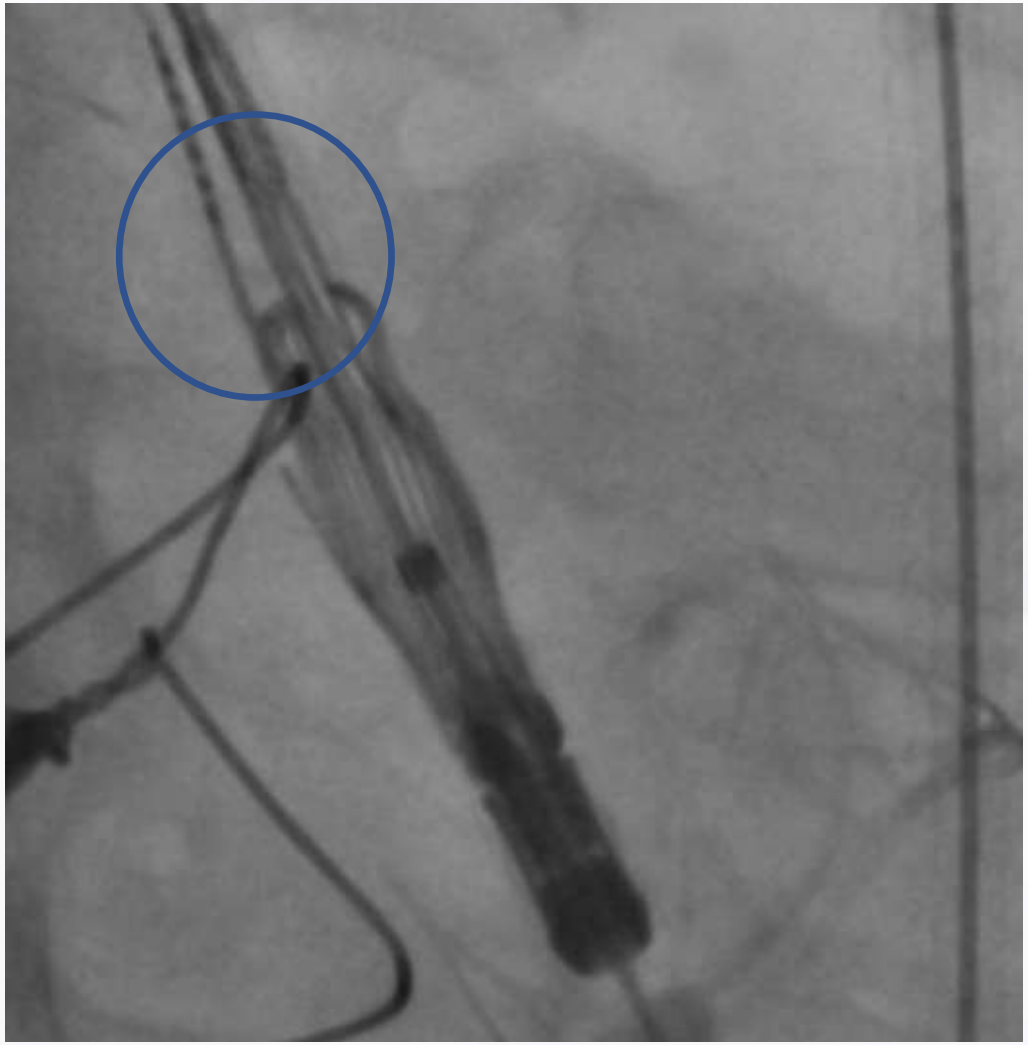
VinV (off-label) with commissural alignment





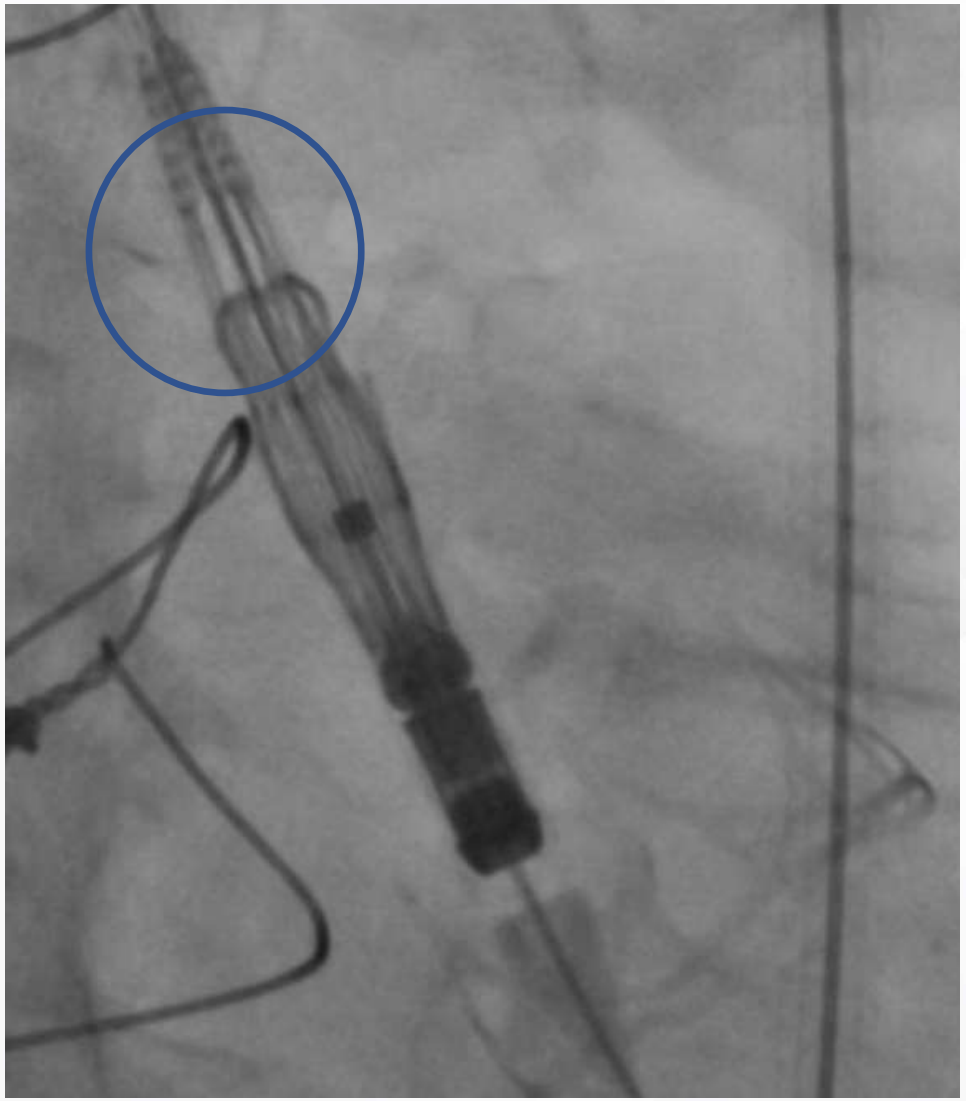


No commissural alignment



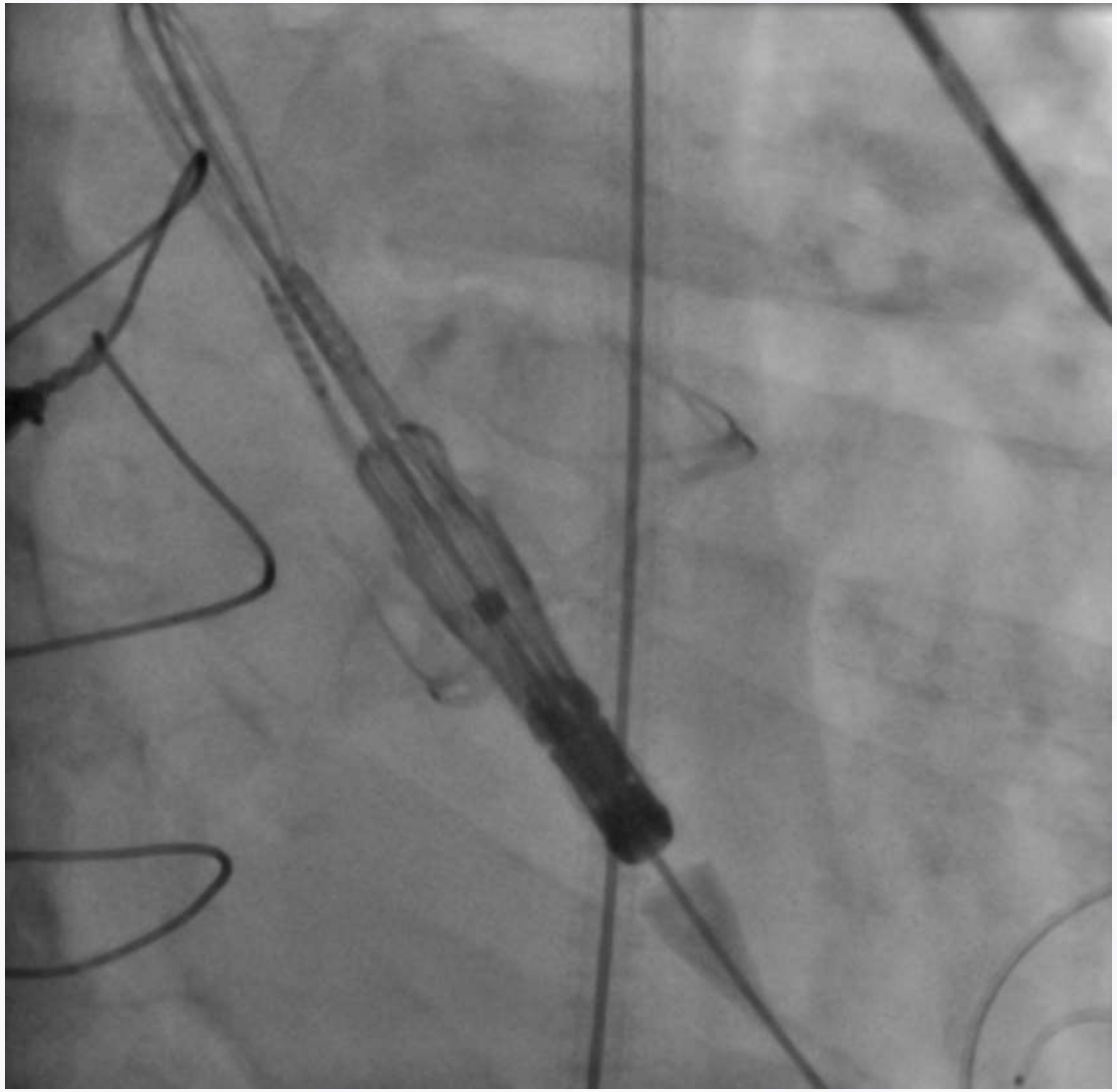
Two posts on inner curve, one post on outer curve
=> Rotate counterclockwise

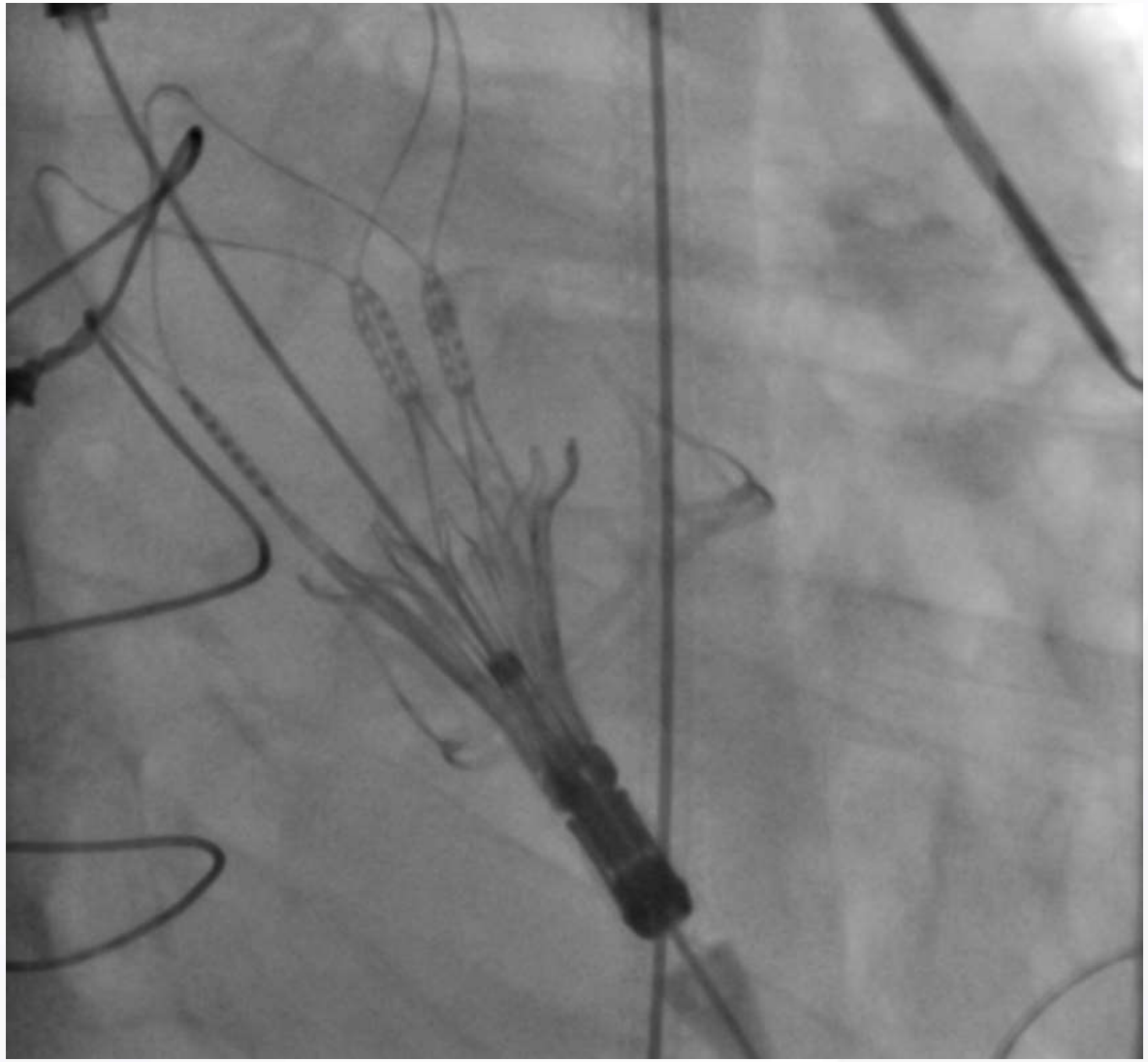
Commissural alignment



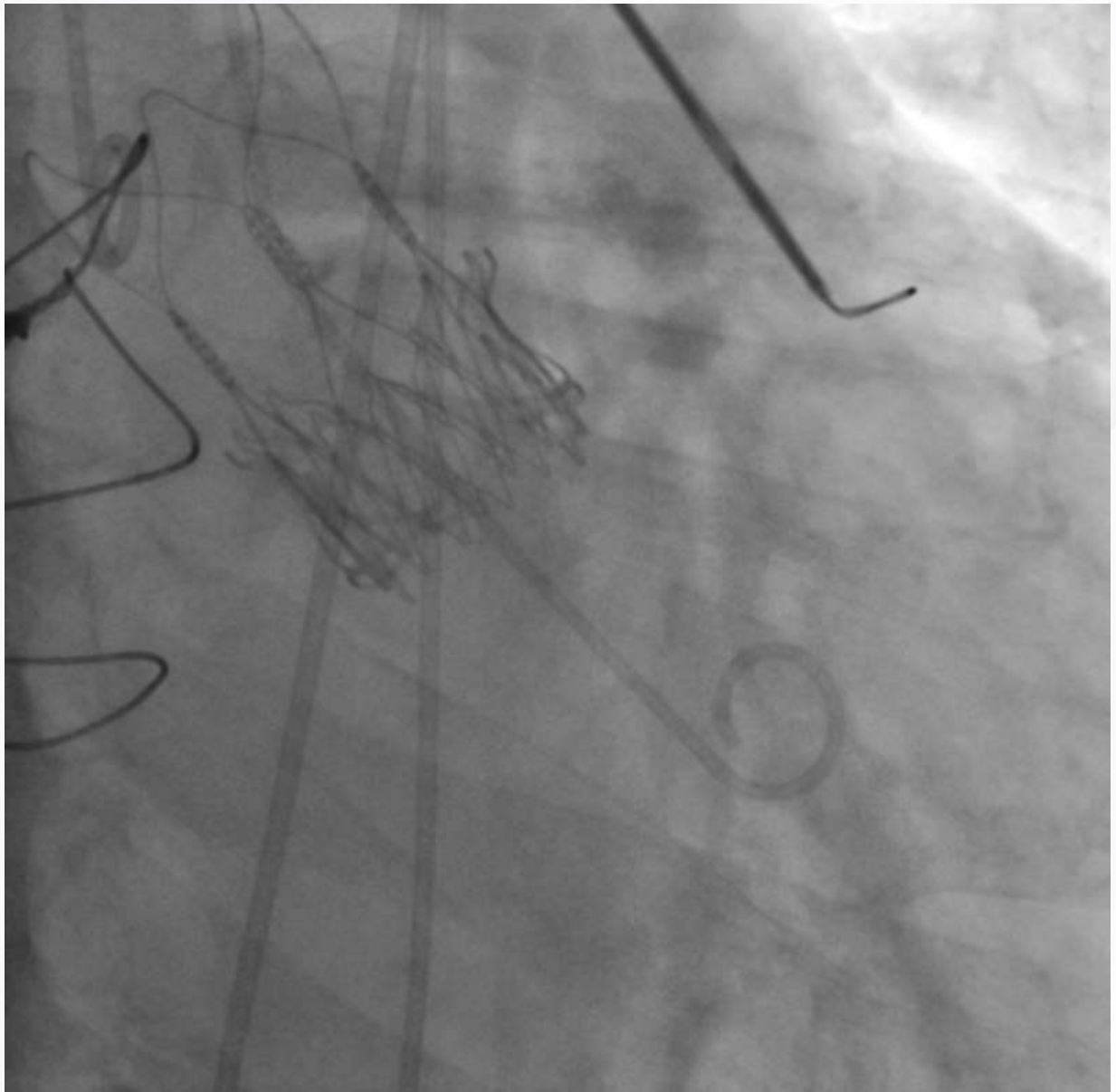
After turning 30° counterclockwise, all three posts are aligned.

Implantation



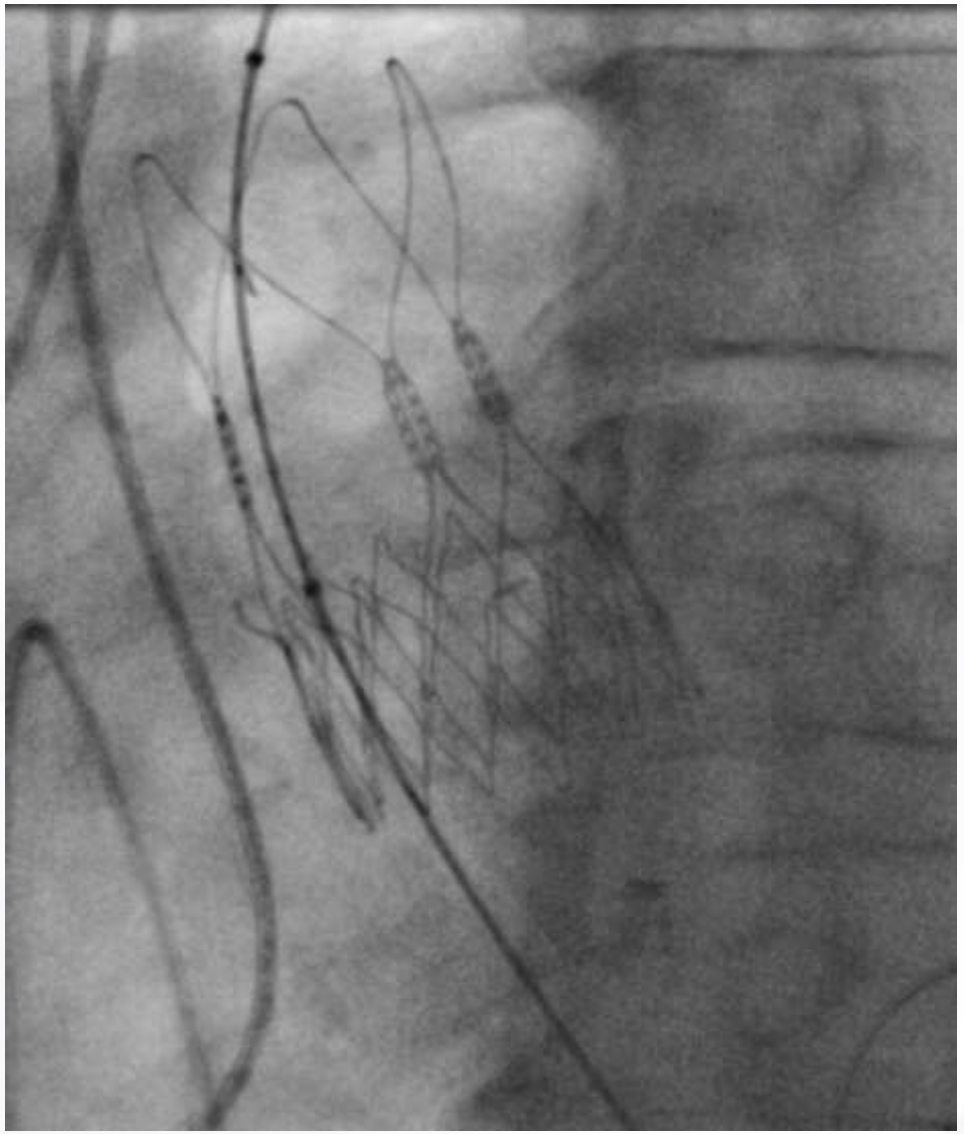


Final aortogram



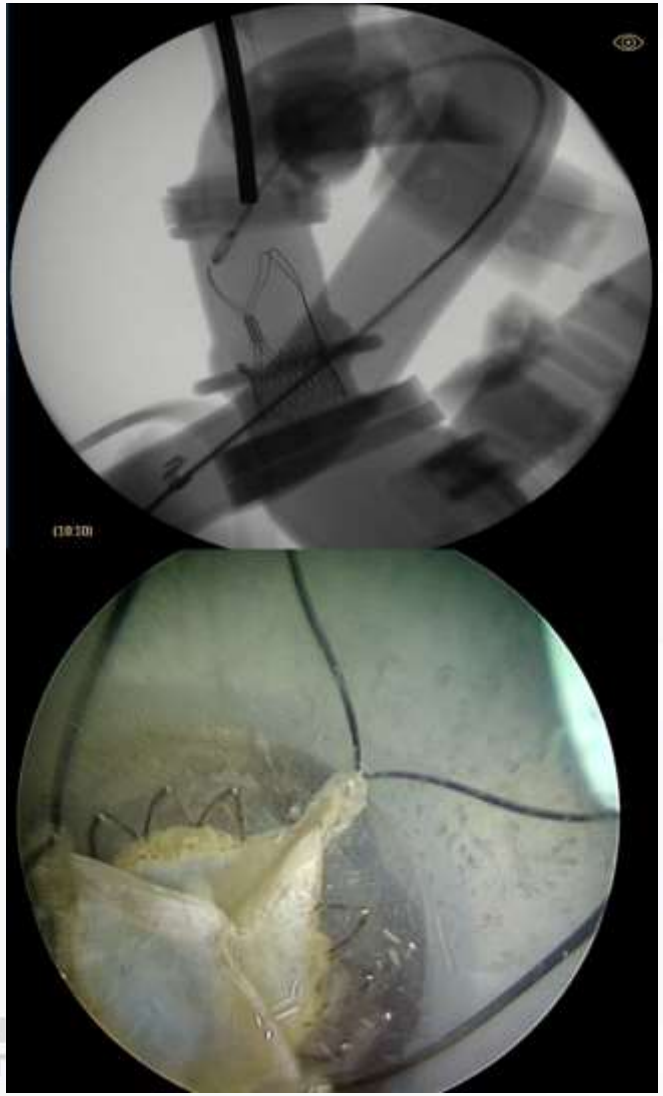
Recrossing: what we want to avoid

Wire thru valve body
but outside upper arch

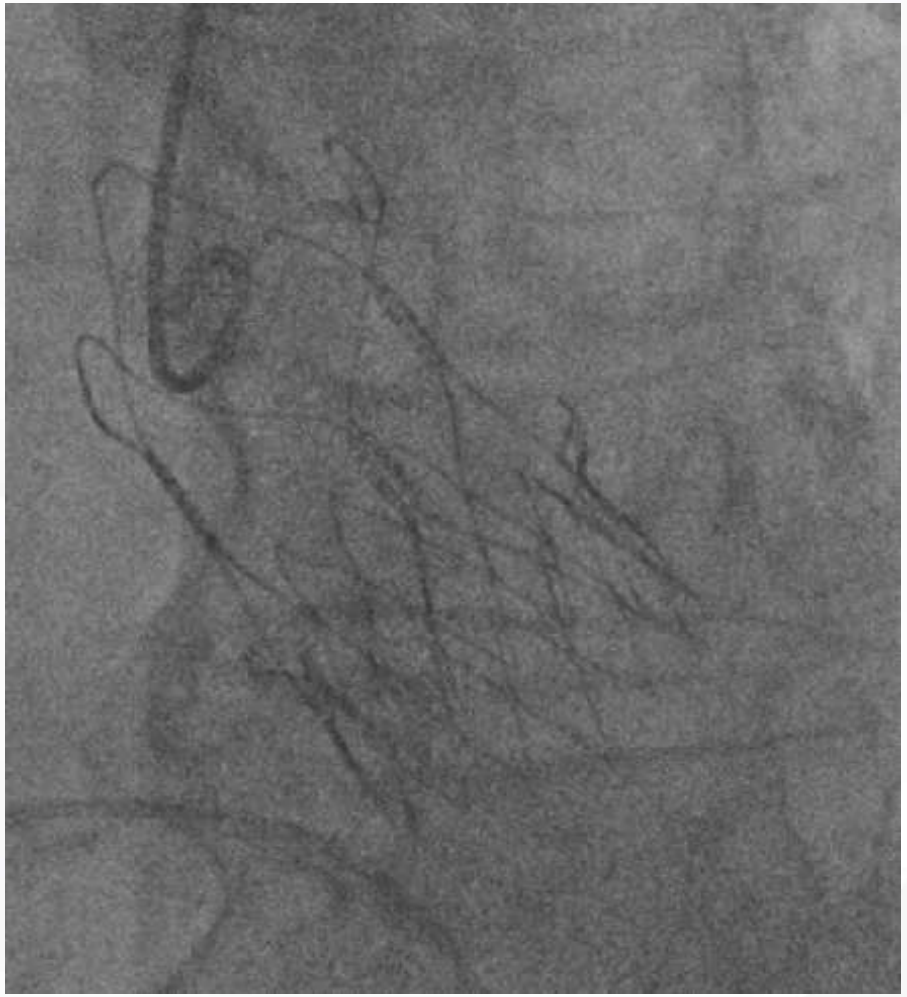


Recrossing techniqu

If possible, use pigtail only

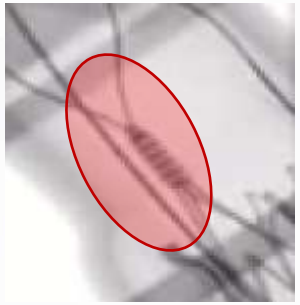


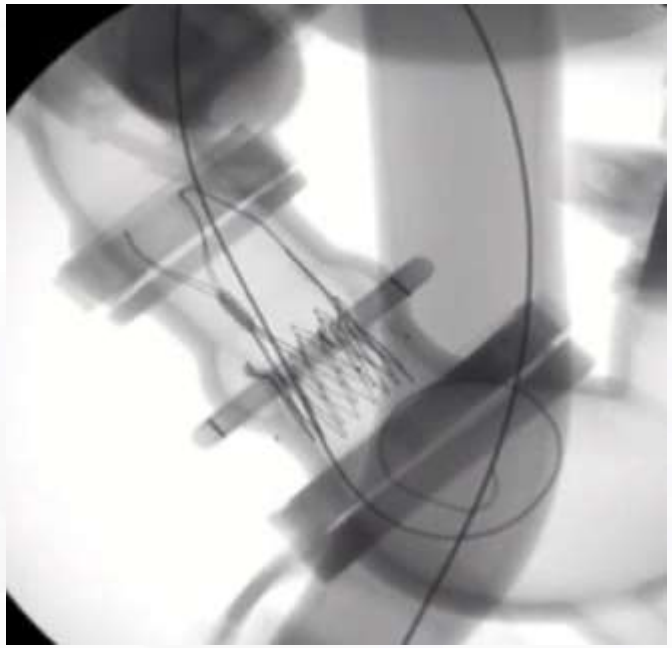
Some anatomies will require additional use of pigtail and wire

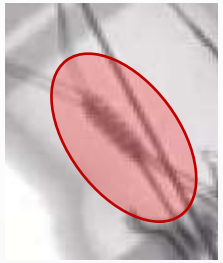


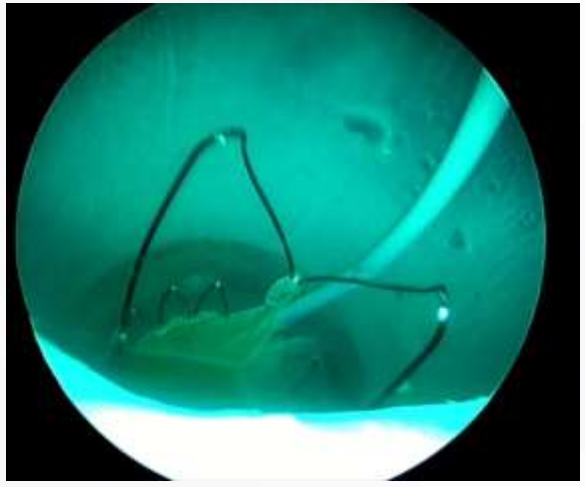
Incorrect Rerossing

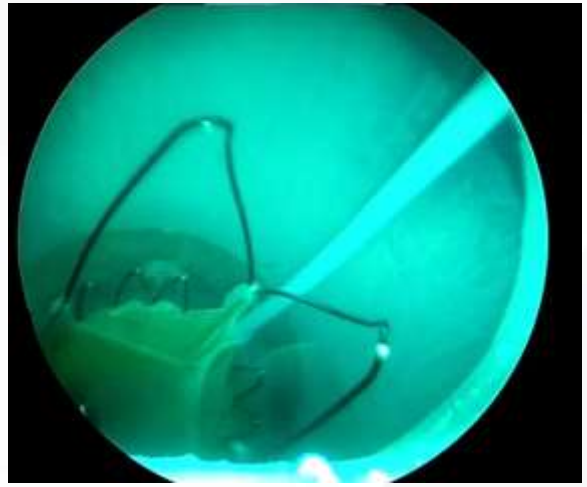
Wire does not move freely from inner/outer curvature at commissure post level







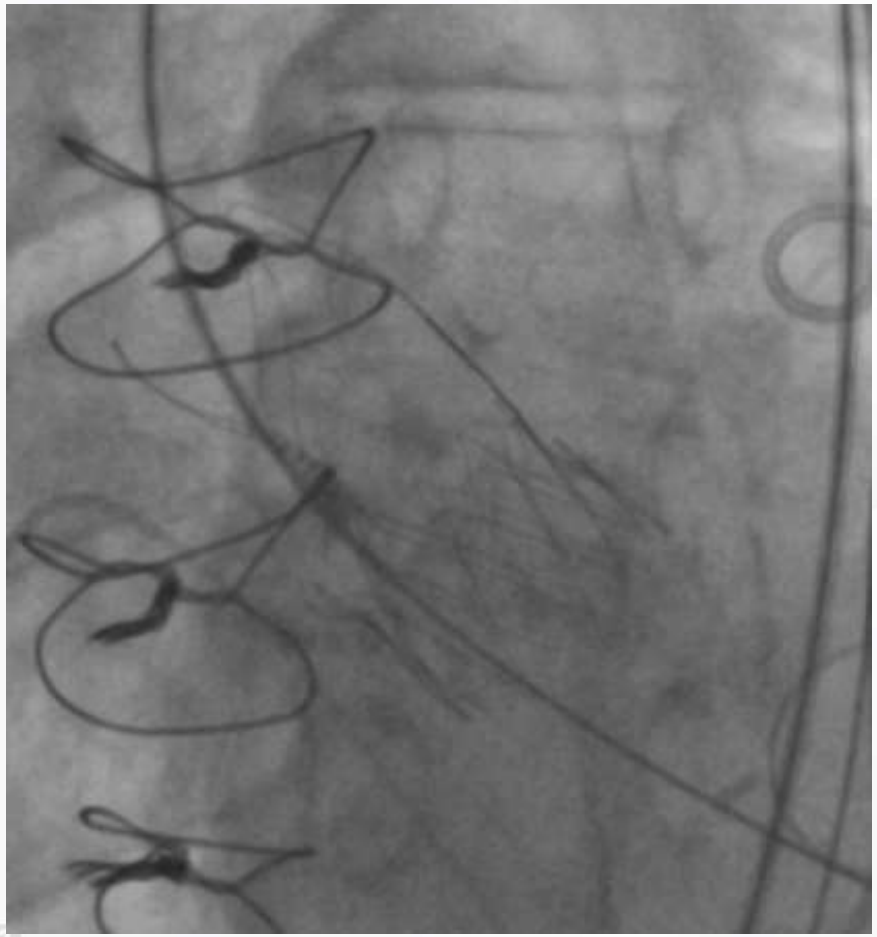


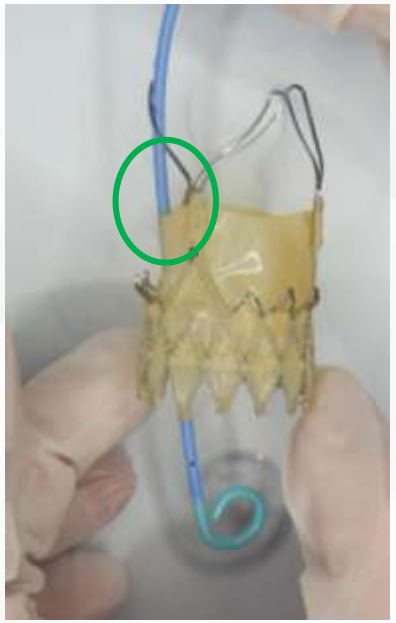


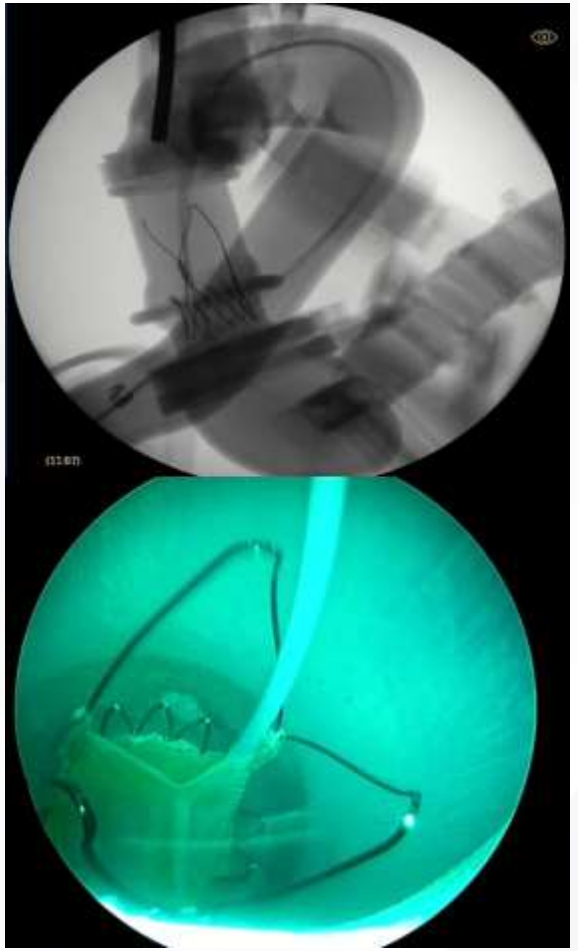
Correct Recrossing

Wire moves freely from inner/outer curvature at commissure post level

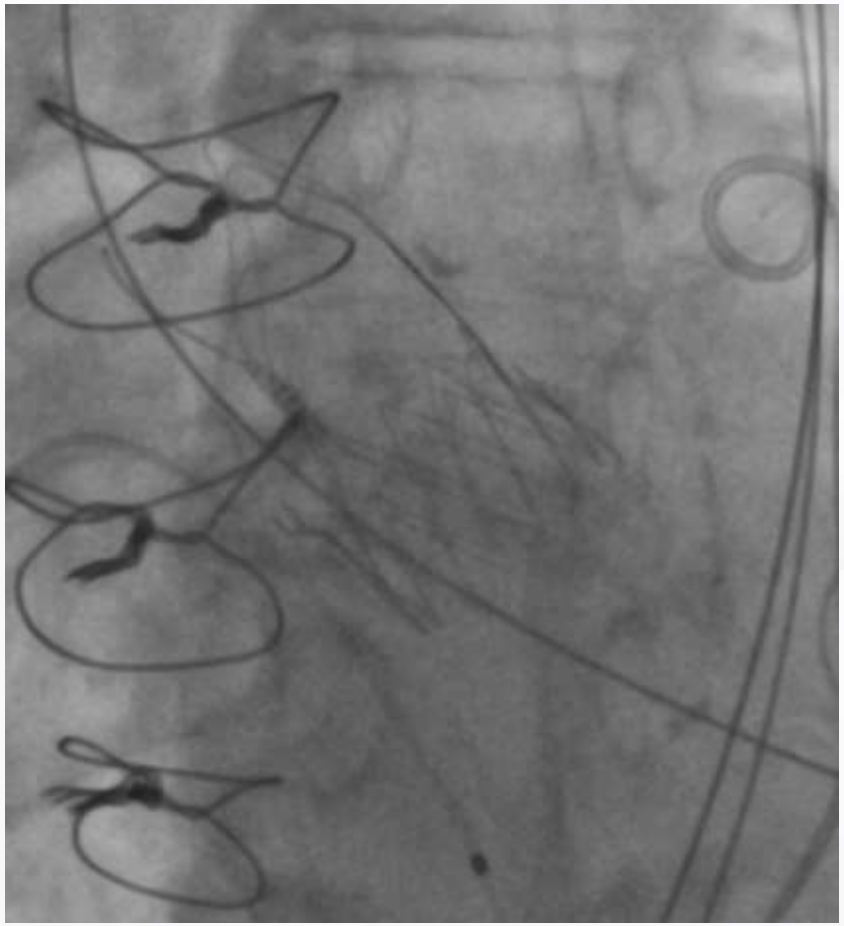
Pull and push on the wire trying to visualize if it travels beyond the overlapped post to the inner and outer side

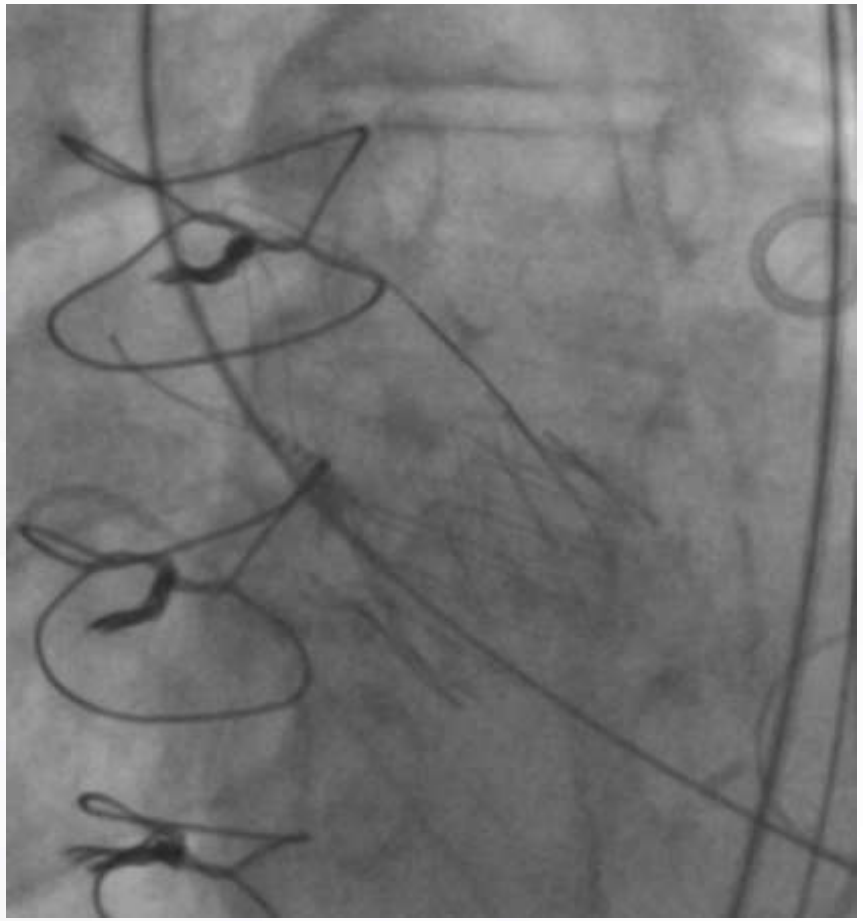






Wrong and correct recrossing

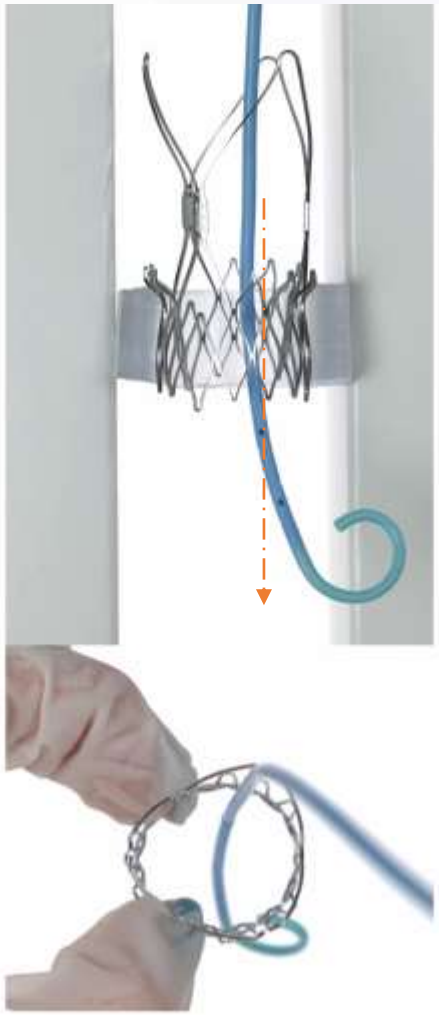




Kim et al, JIC 2021

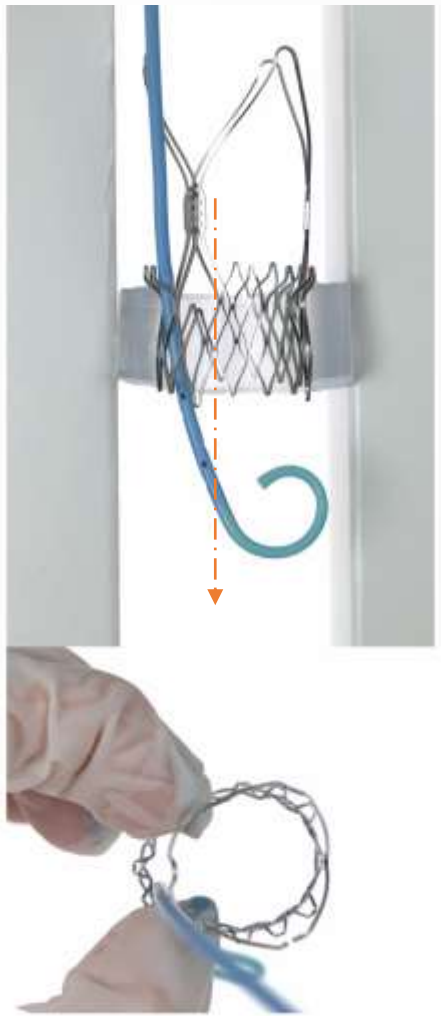
Recrossing wrap up

Normal - inside all arches



Freely crosses posts overlap

Outside outer curve arch



Cannot cross inside posts

Outside inner curve arch

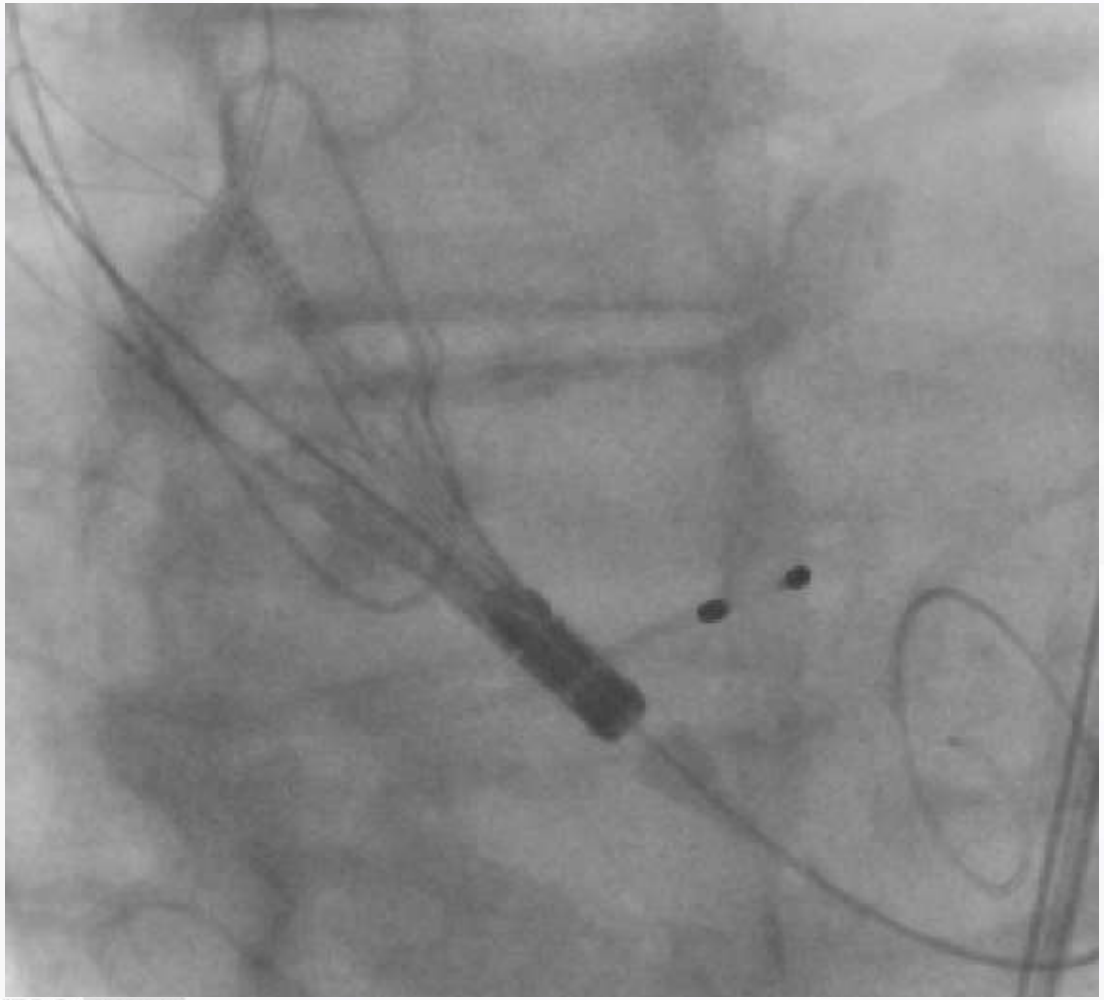
Cannot cross outside posts

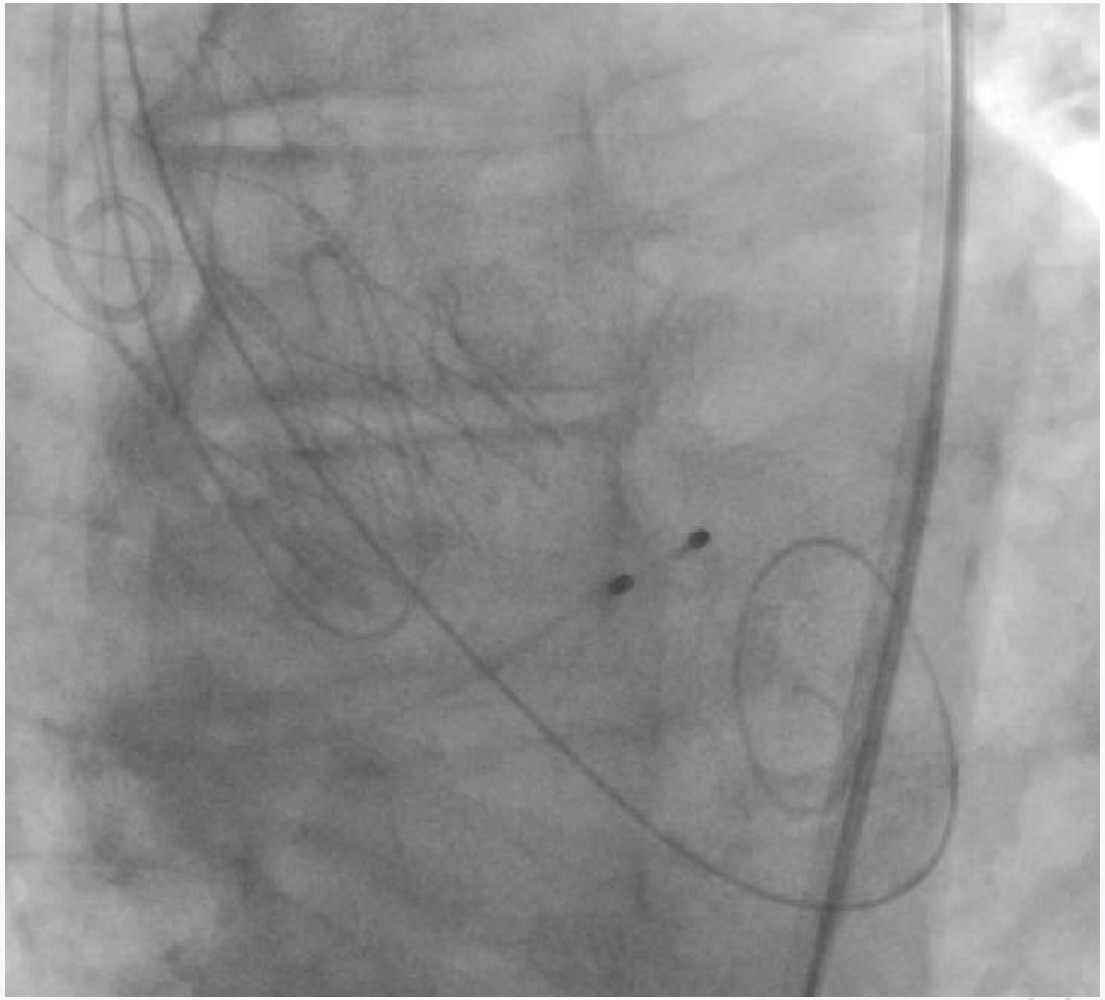
Valve embolization

Bailout options:

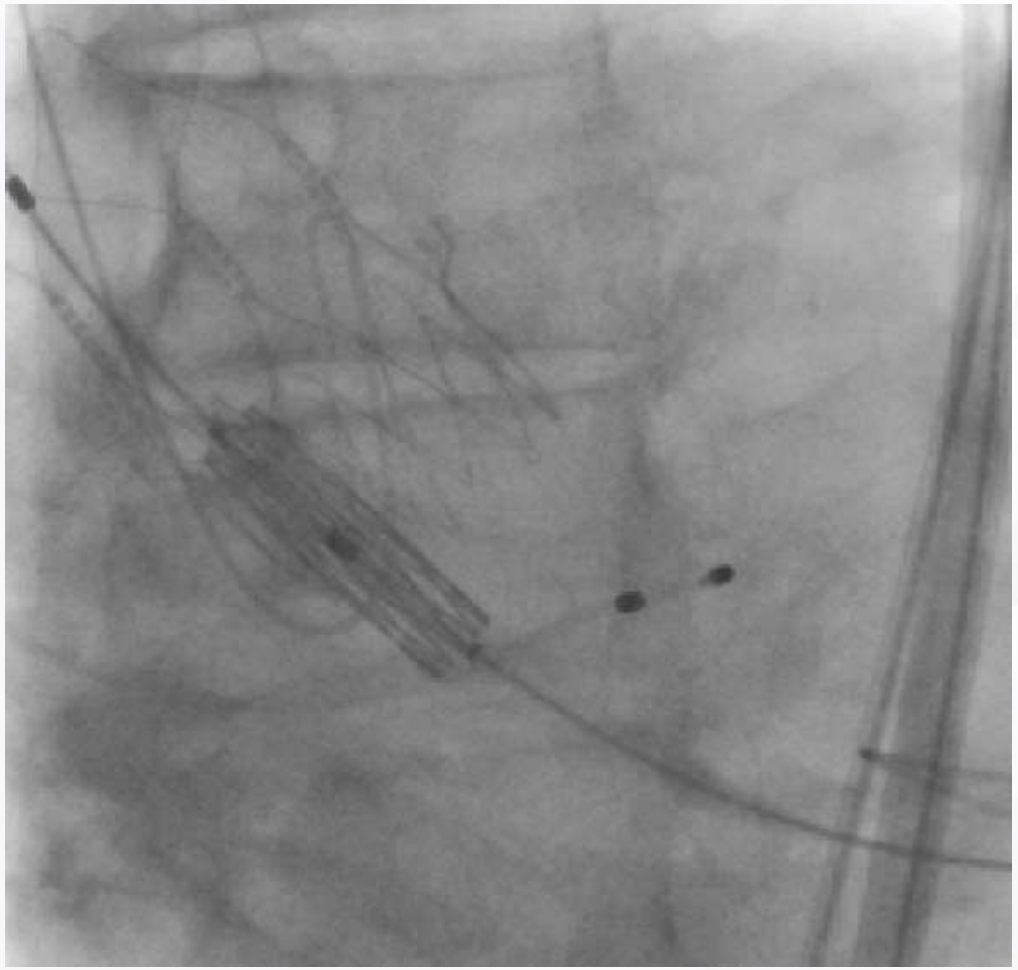
1) Conversion to open heart surgery
2) Valve-in-valve
- Sapien 3 ultra
- ACURATE neo2
- Evolut R/Navitor
3) Stent-in-valve

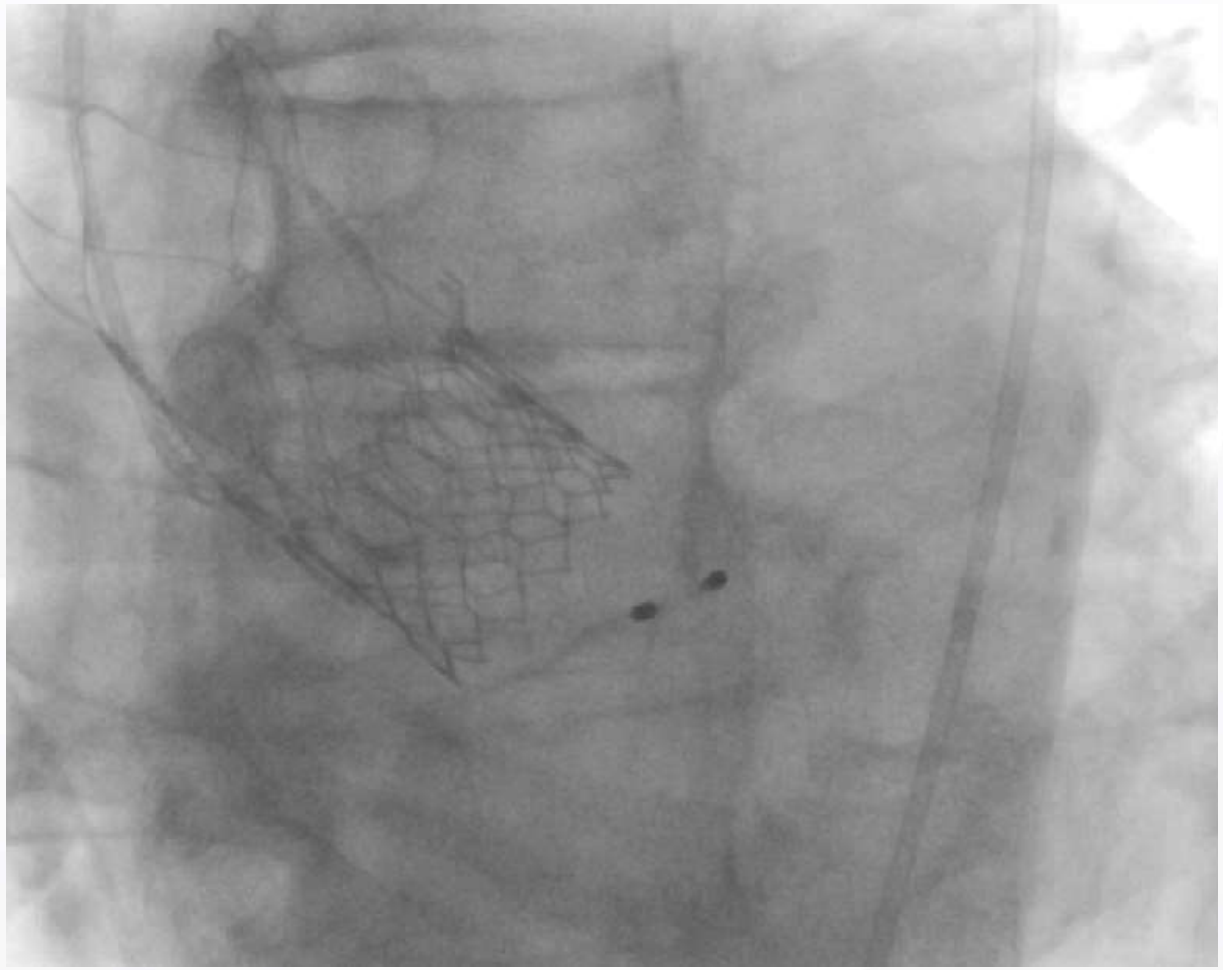
Embolized valve: case 1



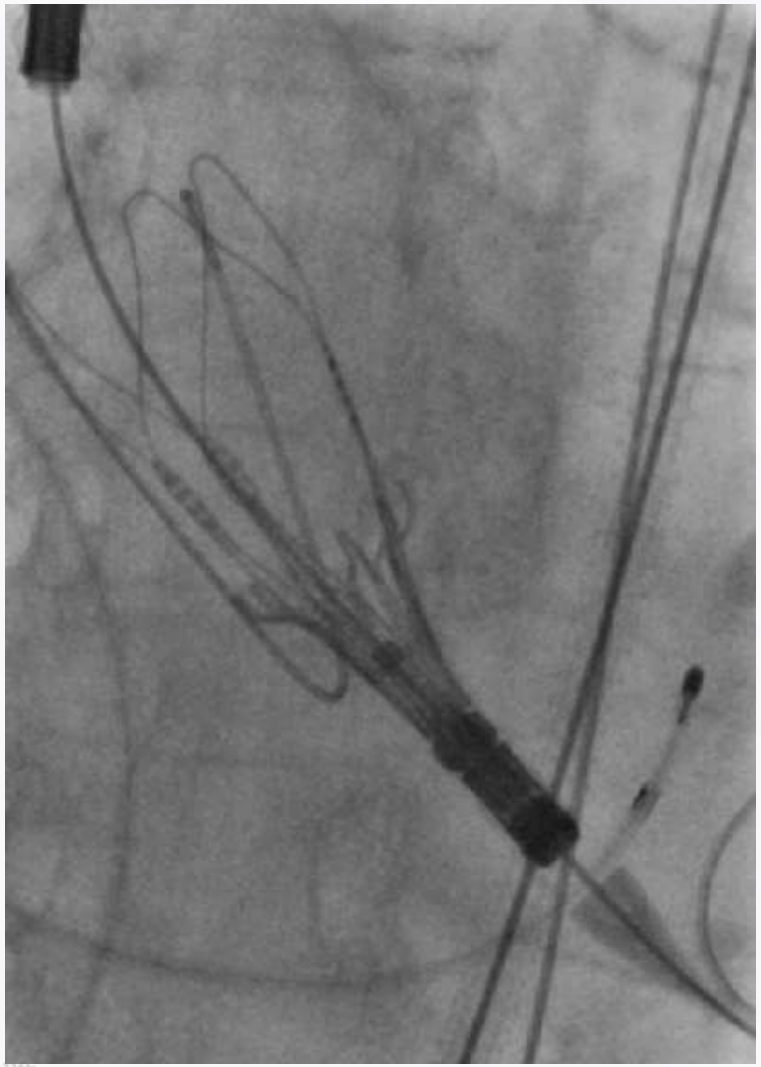


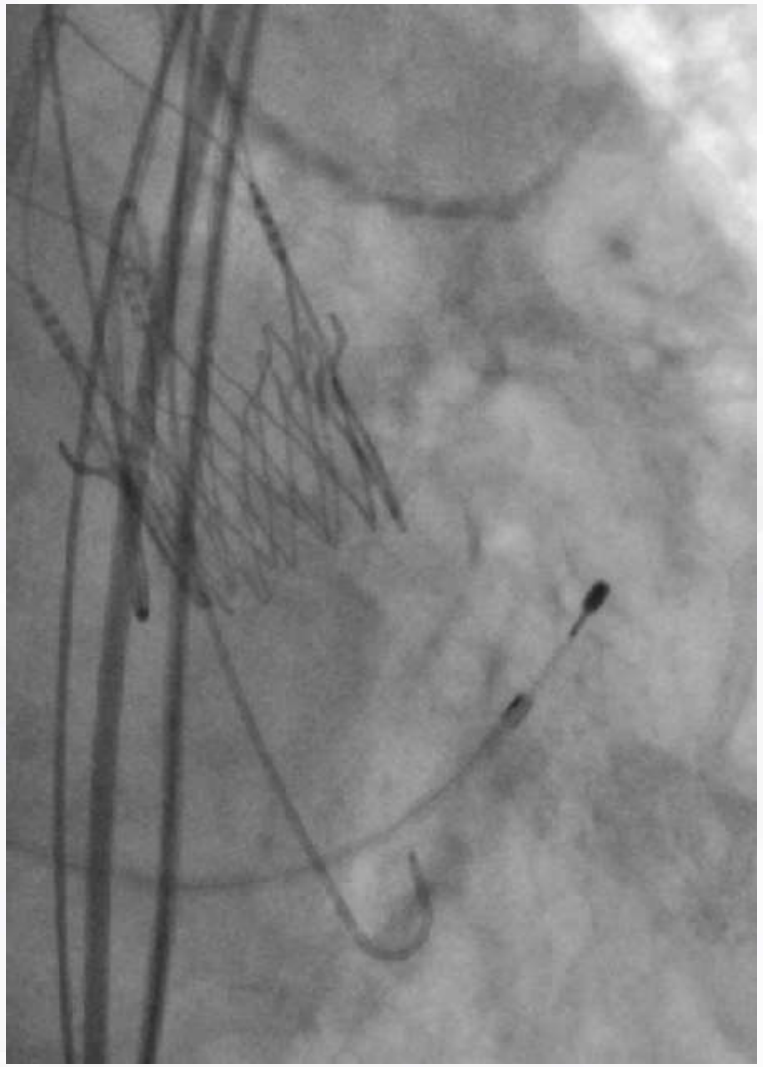
Embolized valve: case 1

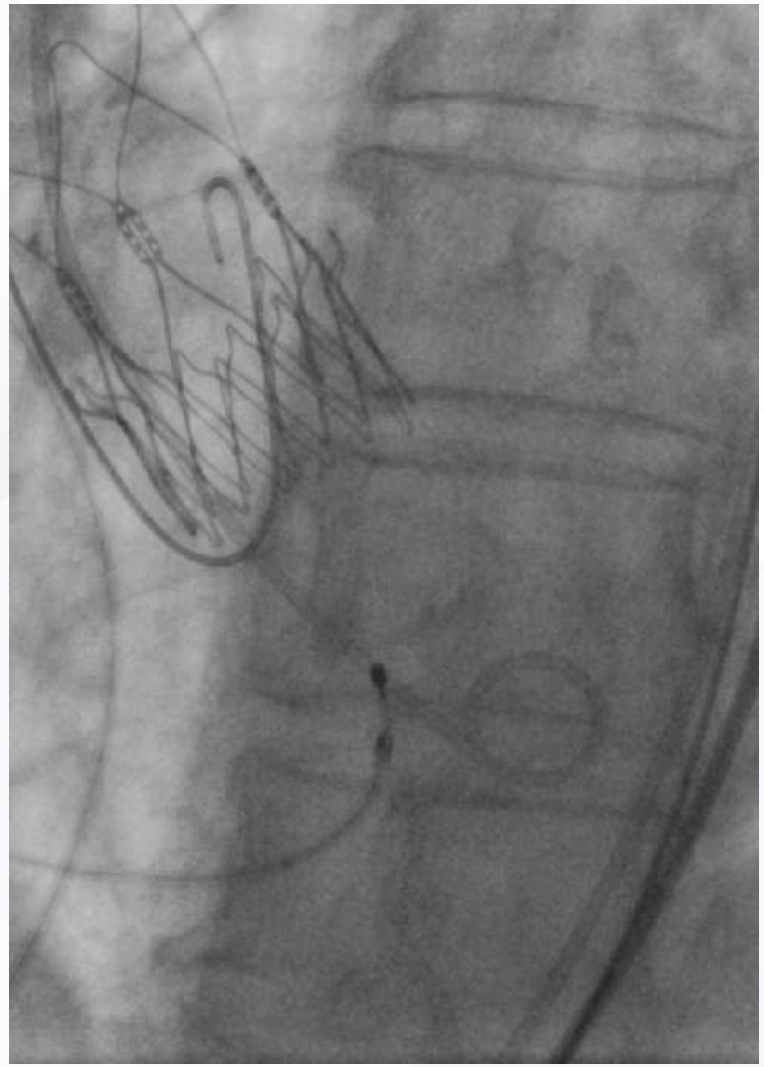




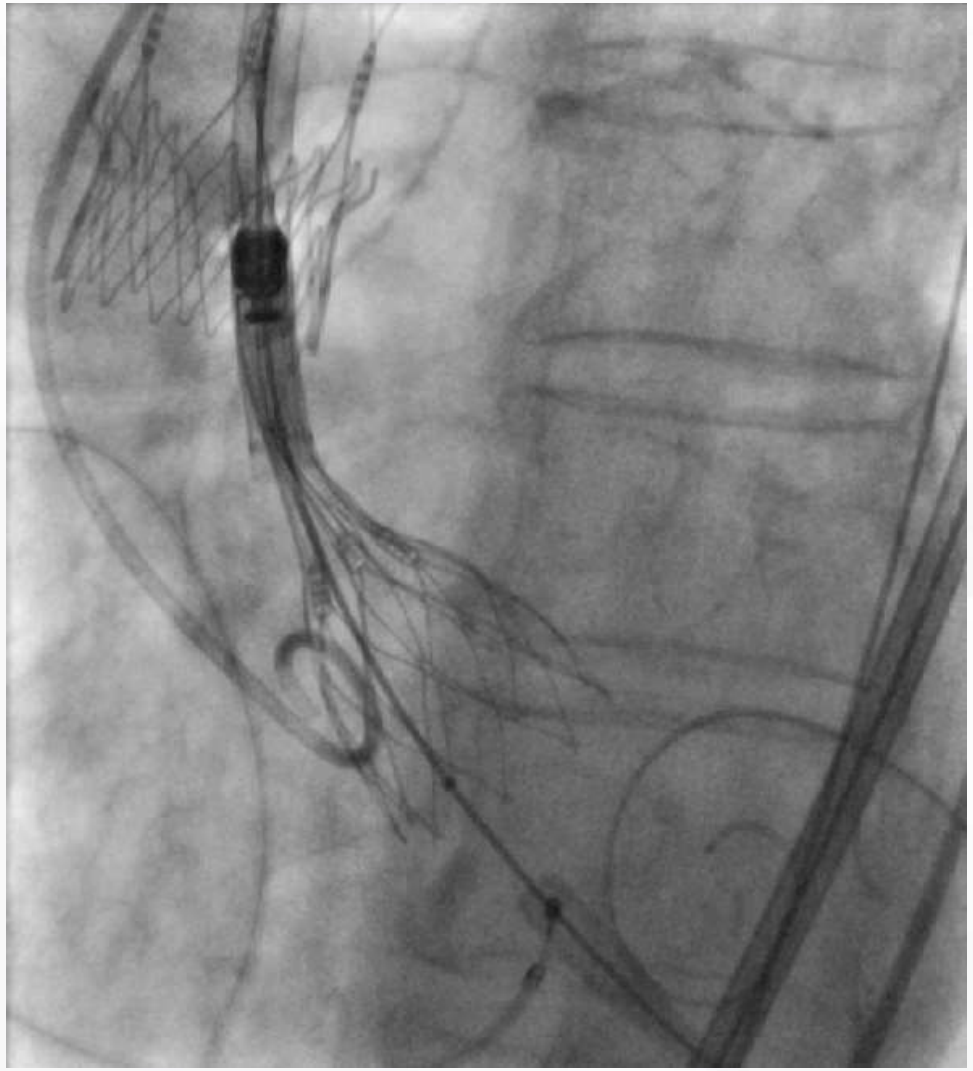
Embolized valve: case 2

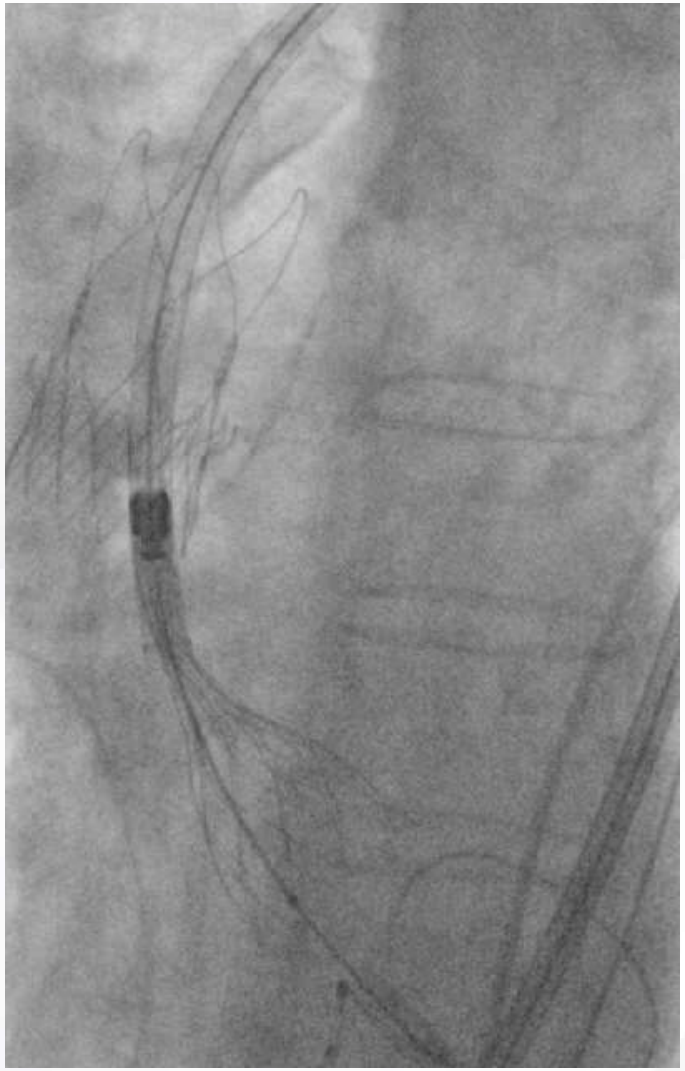




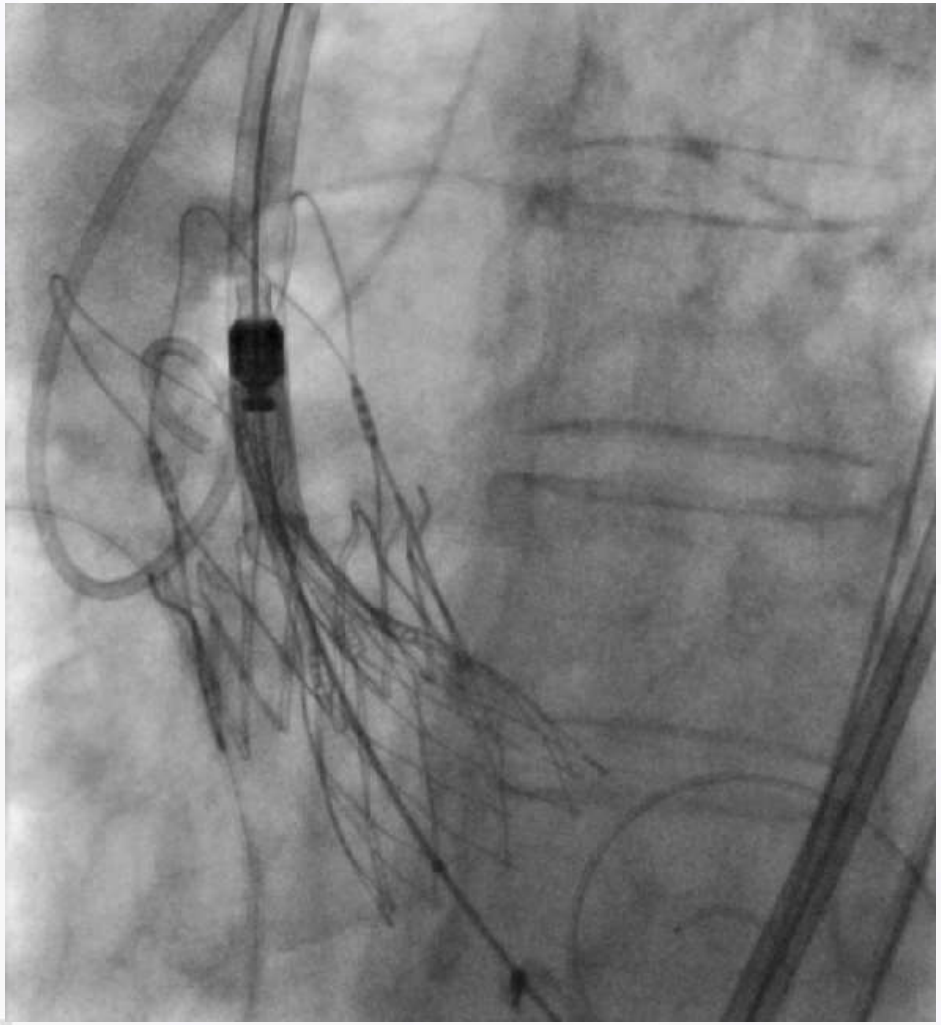


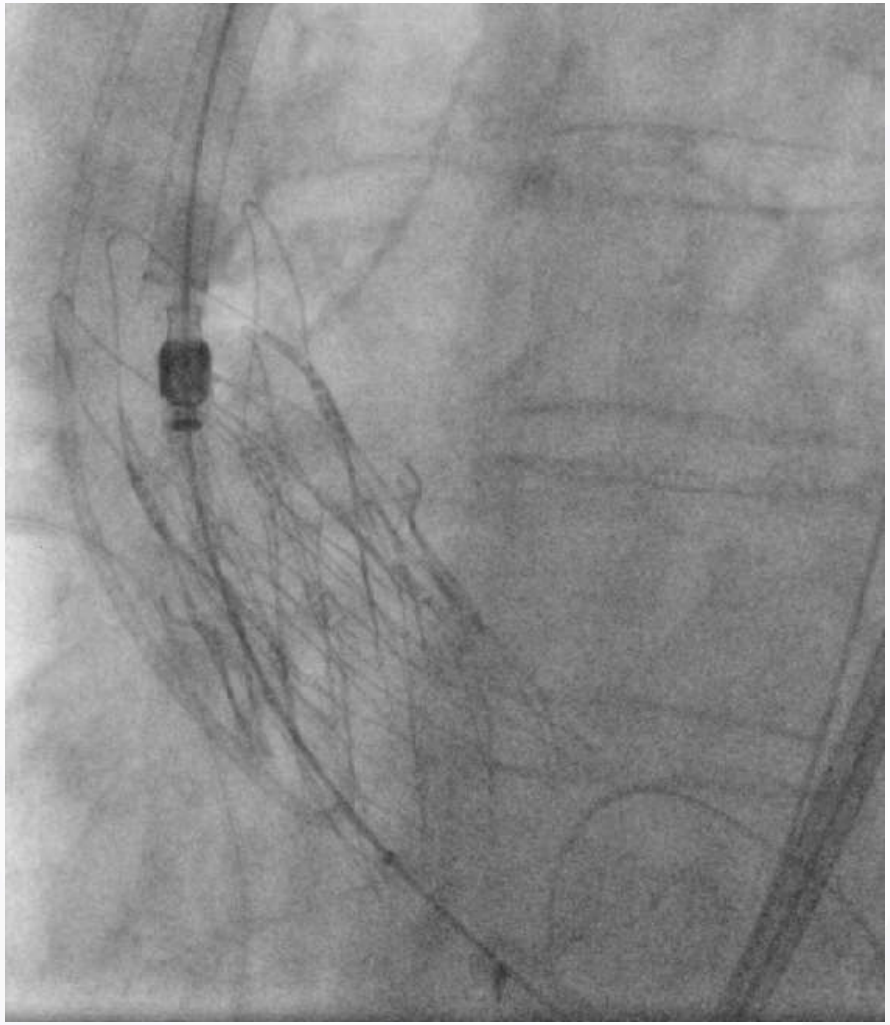
VinV and pigtail repositioning technique



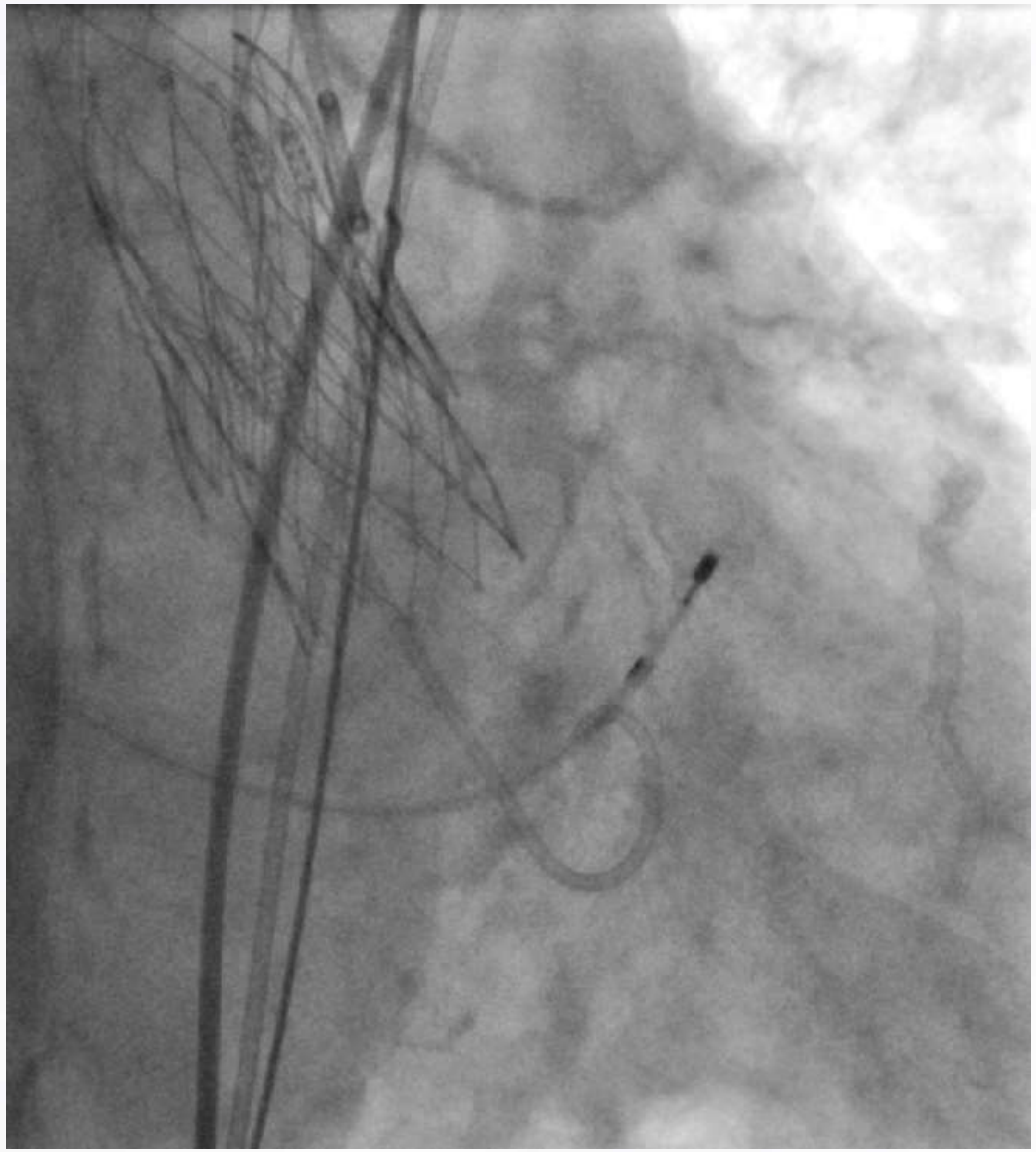


Full deployment and DS retrieval

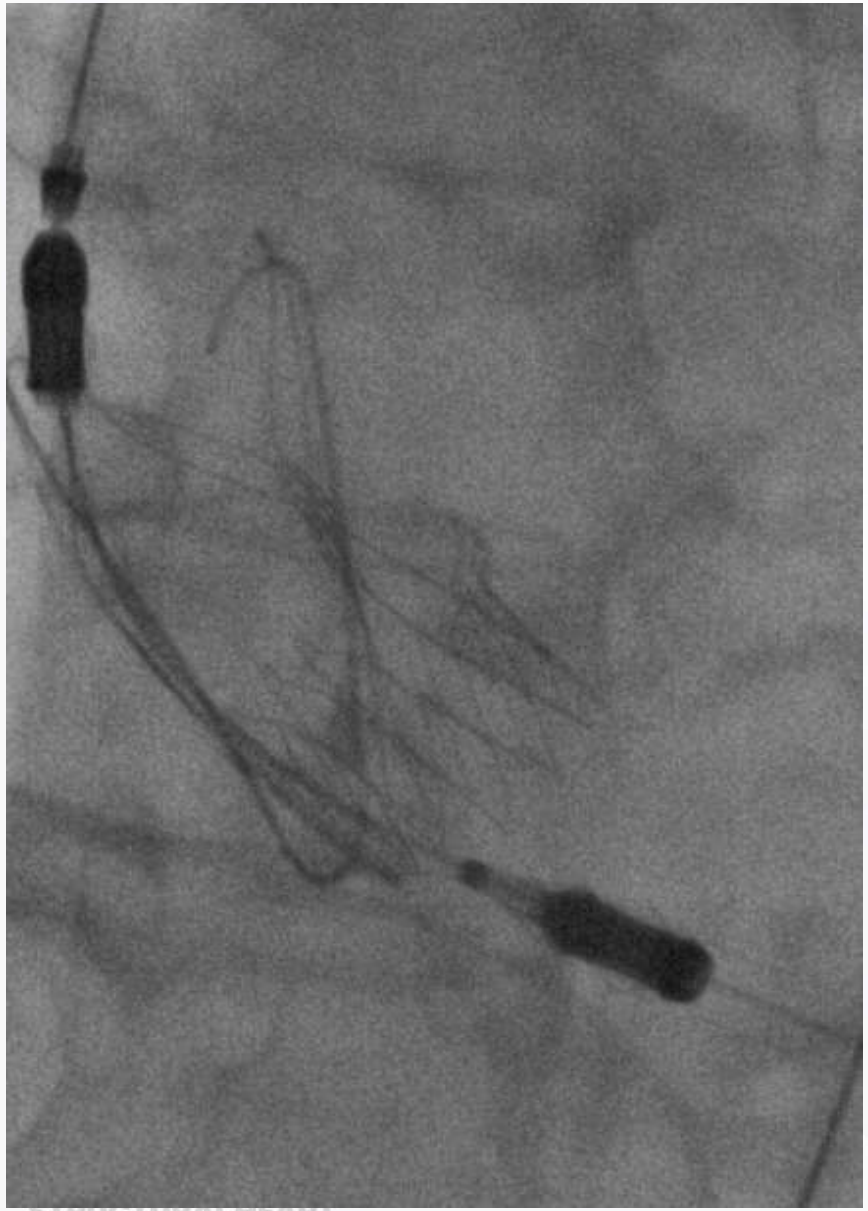


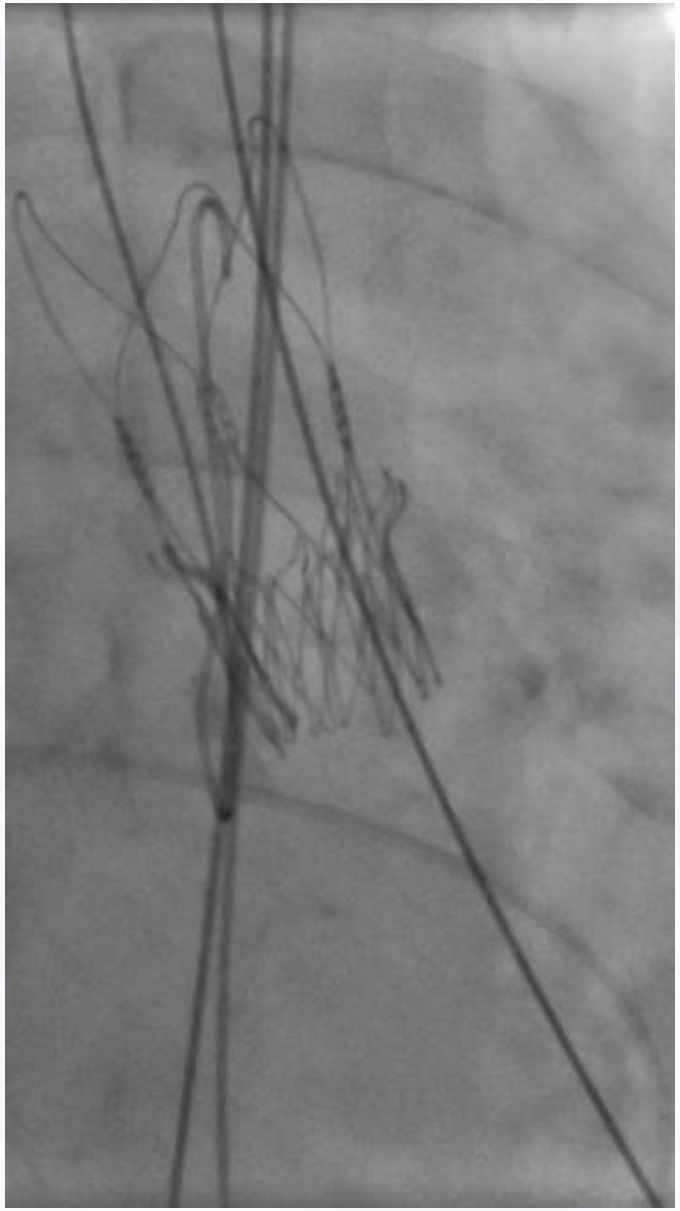


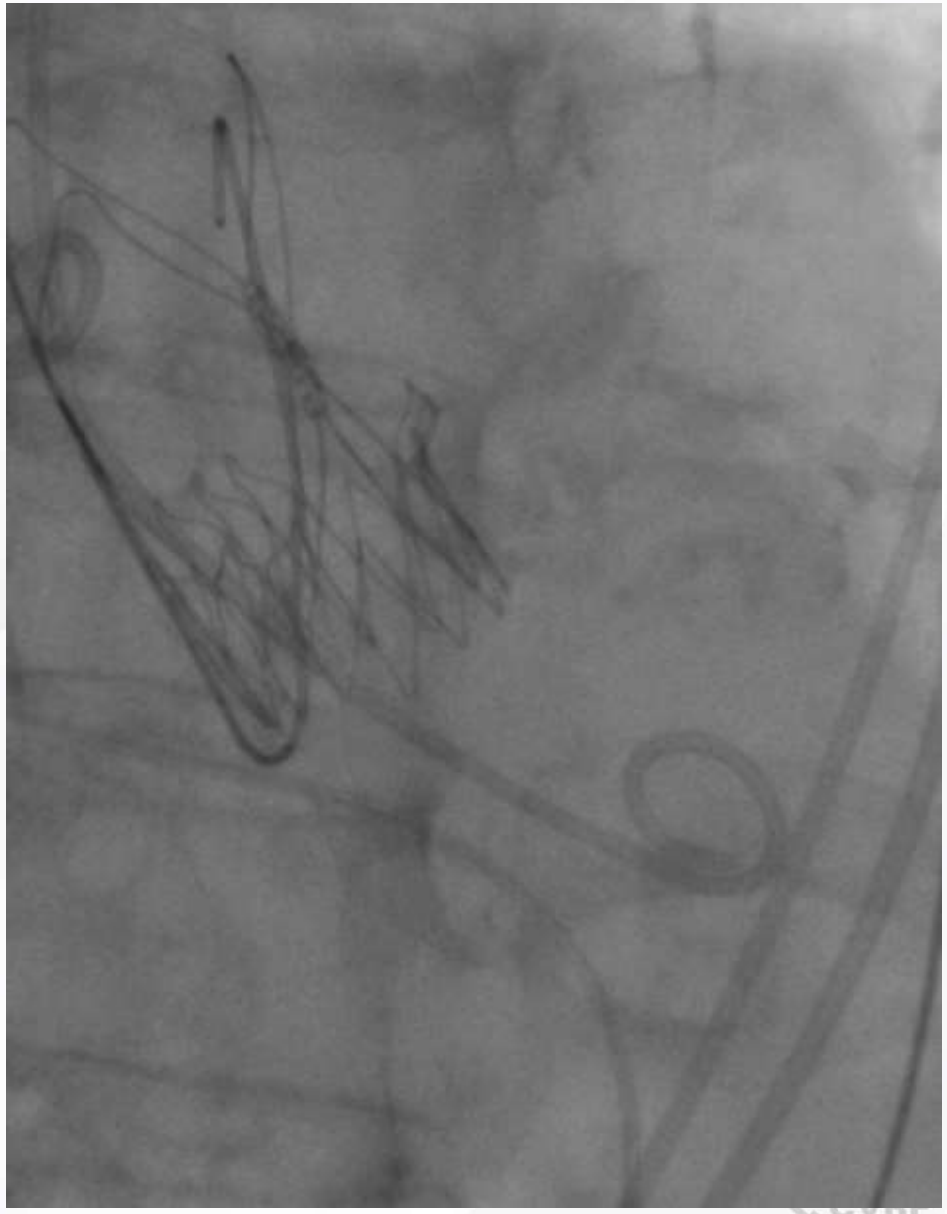
Final angio



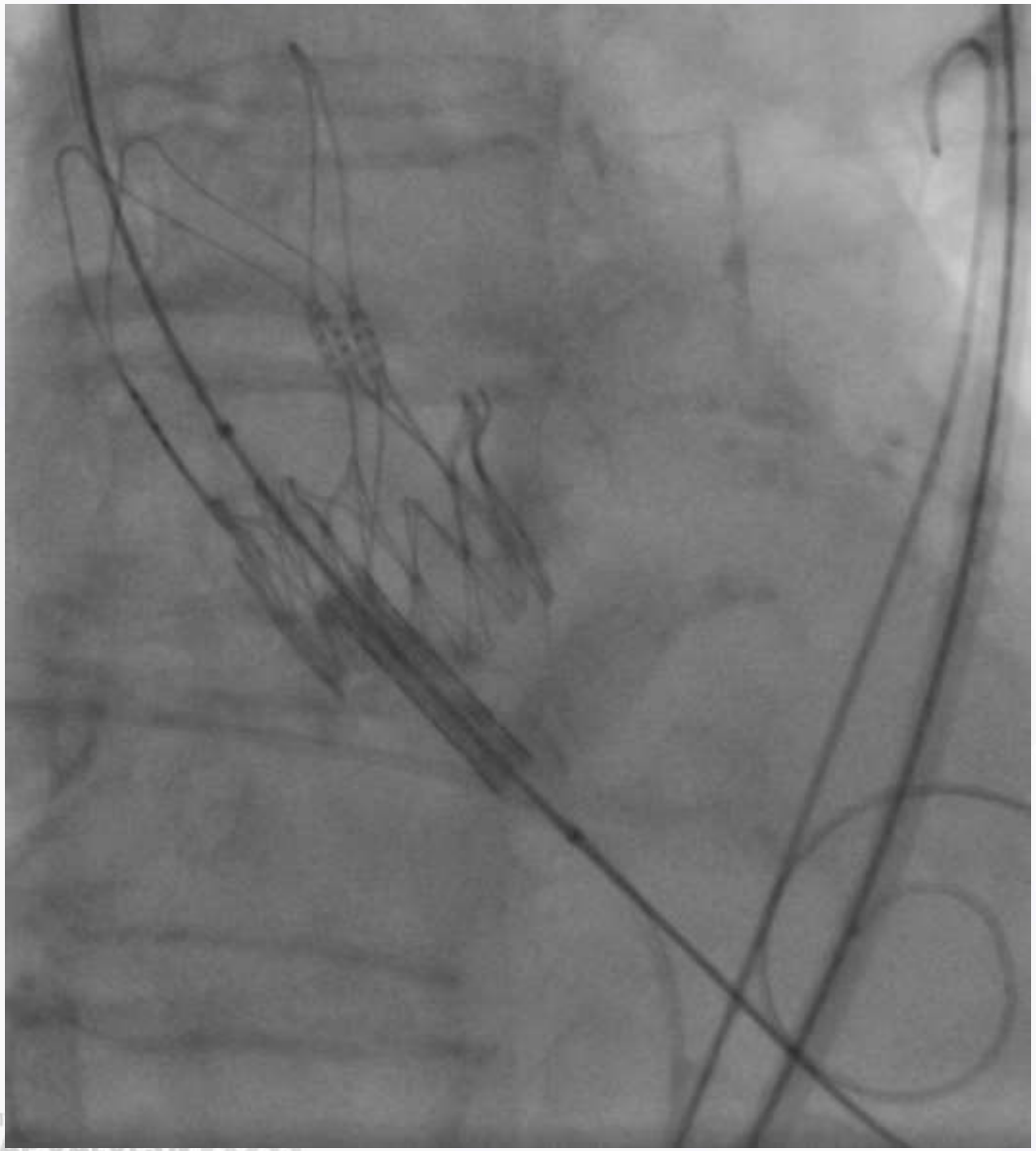
Embolized valve: case 3







Embolized valve: case 3



Conclusion

- Careful sizing and correct positioning are key for procedural success
- Commissural alignment can be easily achieved
- In the event of recrossing the ACURATE valve, the correct position should be verified
- Valve dislodgement requires a distinguished approach