

Valve-in-valve TAVI in degenerated stentless bioprostheses

Wojciech Wojakowski

Division of Cardiology and Structural Heart Diseases
Medical University of Silesia
Katowice, Poland

Potential COI

- Lecture fees: Medtronic, Edwards Lifesciences
- Medtronic Advisory Board

Why stentless aortic valves are different?

Vs. stented valves

- More physiological flow pattern
- Better hemodynamics
(larger EAOI, lower gradients)
- Regression of LVH
- Low risk of IE
- Low thrombogenicity
- Indication: IE, small native annulus,
need for root replacement
- Complex surgical technique (esp. Redo)

Stentless bioprosthetic valves



Type of prosthesis	Material
Medtronic Freestyle (Medtronic Inc., Minneapolis, Minnesota, USA)	porcine
Edwards Prima/Plus (Edwards Lifesciences LLC, Irvine, California, USA)	porcine
Toronto SPV/Root (St. Jude Medical Inc., St. Paul, Minnesota, USA)	porcine
CryoLife-O'Brien (CryoLife International Inc., Kennesaw, Georgia, USA)	porcine,
Sorin Pericarbon Freedom/Solo (Sorin Biomedica Cardio, Saluggia, Vercelli, Italy)	bovine, pericardial
Shelhigh Superstentless/Bioconduit (Shelhigh Inc., Union, New Jersey, USA)	porcine
3F Aortic Bioprosthesis (3F Therapeutics, Lake Forest, California, USA)	equine
Biocor PSB Stentless (Biocor Industria e Pesquisa Ltda, Belo Horizonte, Brazil)	porcine

Why stentless aortic valves are different?



Full Root

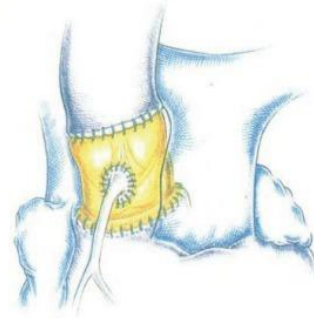


Complete Subcoronary

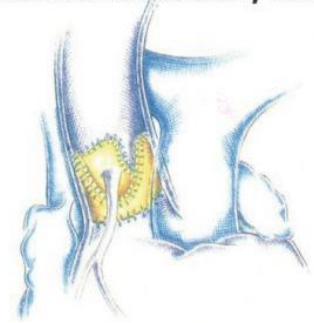


Modified Subcoronary

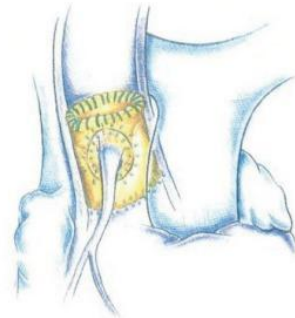
Full Root Technique



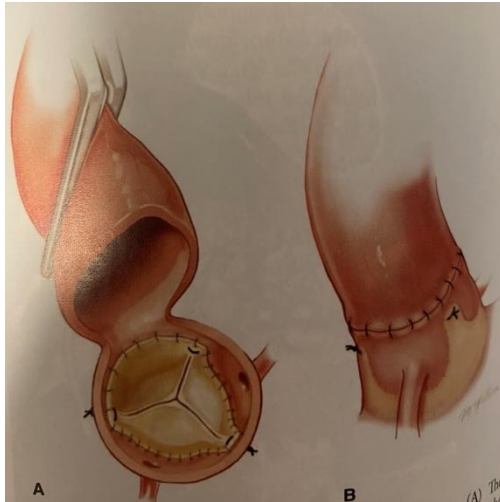
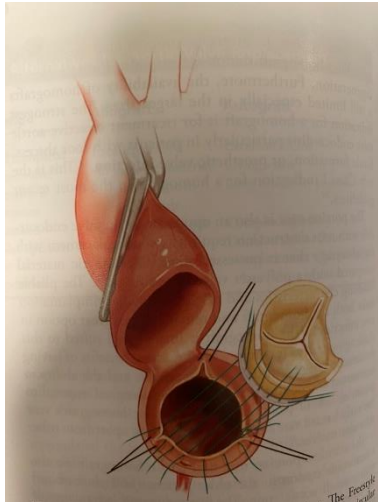
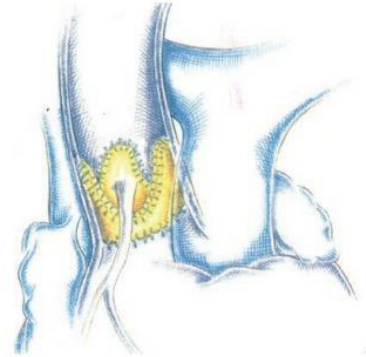
Modified Subcoronary Technique



Root Inclusion Technique

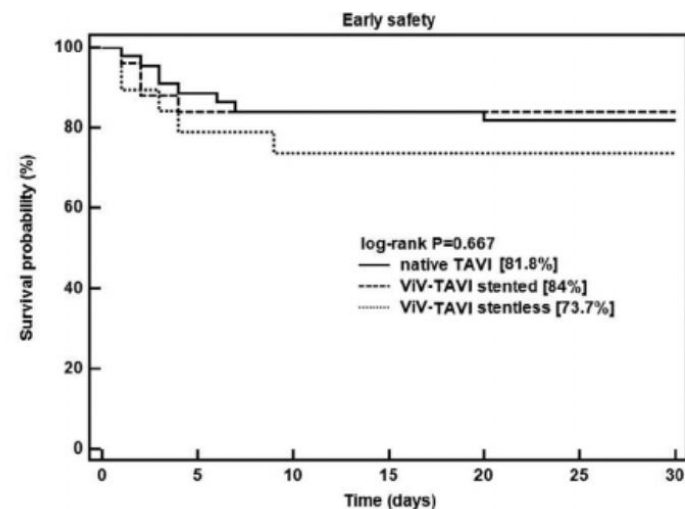


Complete Subcoronary Technique



Transcatheter aortic valve-in-valve implantation in failed stentless bioprostheses

Zenon Huczek MD, PhD¹ | Kajetan Grodecki¹ | Piotr Scisło MD, PhD¹ |
Krzysztof Wilczek MD, PhD² | Dariusz Jagielak MD, PhD³ |
Wojciech Fil MD, PhD⁴ | Piotr Kubler MD, PhD⁵ | Piotr Olszówka MD, PhD⁶ |
Maciej Dąbrowski MD, PhD⁷ | Marek Frank MD, PhD⁸ |
Marek Grygier MD, PhD⁹ | Michał Kidawa MD, PhD¹⁰ | Radosław Wilimski MD¹¹ |
Katarzyna Żelazowska MD, PhD¹² | Adam Witkowski MD, PhD⁷ |
Janusz Kochman MD, PhD¹ | Marian Zembala MD, PhD¹³ |
Grzegorz Opolski MD, PhD¹⁴ | Danny Dvir MD, PhD¹⁴ |
Wojciech Wojakowski MD, PhD¹²



	VIV-TAVI		P-value
	Stentless (n = 20)	Stented (n = 25)	
Time since SAVR, years (CI)	11.5 (8-14.9)	6.2 (4.7-7.6)	0.006
Model of surgical bioprosthesis, n (%)			
Freestyle (Medtronic)	8 (40)		
Freedom Solo (Sorin)	1 (5)		
Pericarbon Freedom (Sorin)	4 (20)		
SuperStentless (Shelhigh)	1 (5)		
Homograft	6 (30)		
CE Standard (Edwards Lifesciences)		3 (12)	
Epic (St. Jude Medical)		2 (8)	
Hancock II (Medtronic)		12 (48)	
Labcor Porcine (Labcor)		1 (4)	
Mosaic (Medtronic)		4 (16)	
Soprano (Sorin)		2 (8)	
Trifecta (St. Jude Medical)		1 (4)	
Mean label size, mm (CI)	22.4 (21.1-23.7)	22.4 (21.7-23.2)	0.986

	VIV-TAVI			P-value
	Stentless (n = 20)	Stented (n = 25)	Native TAVI (n = 45)	
Type of surgical valve failure, n (%)				
Stenosis	5 (25)	11 (44)	40 (89)	<0.001
Regurgitation	7 (35)	2 (8)	0 (0)	<0.001
Mixed	8 (40)	12 (48)	5 (11)	0.002

- Wear and tear
- AR + AS and AR > AS
- Rapidly progressive HF
- Redo surgery high risk

#1: extensive root calcification (much less leaflets)

#2: poor visibility in fluoro

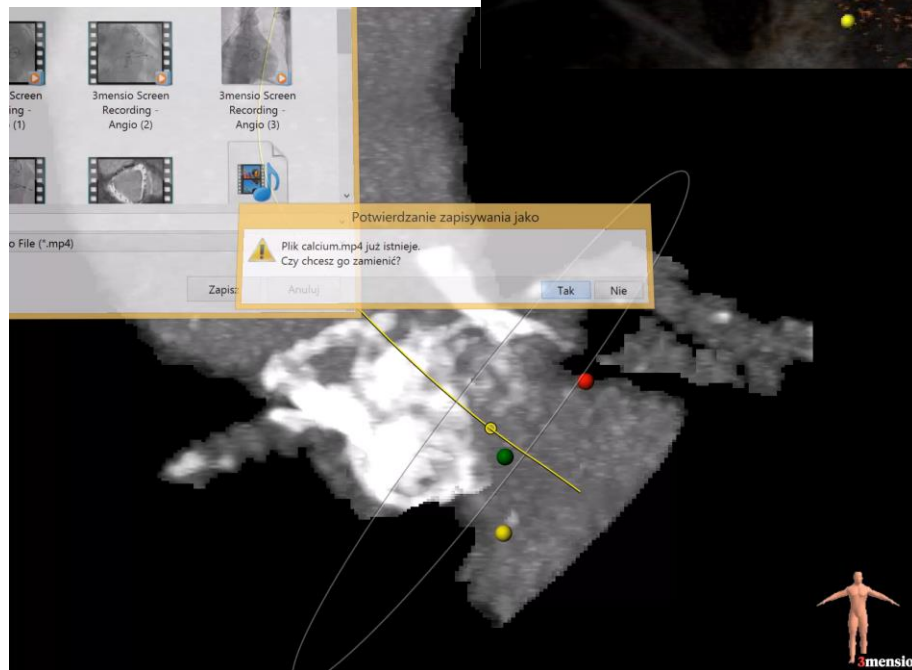
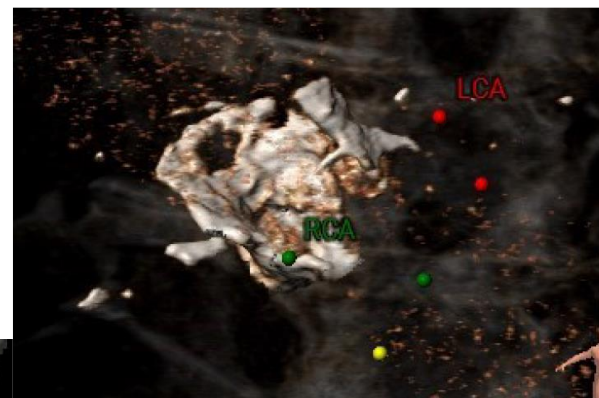
#3: difficult definition of the landing zone

#4: low coronaries

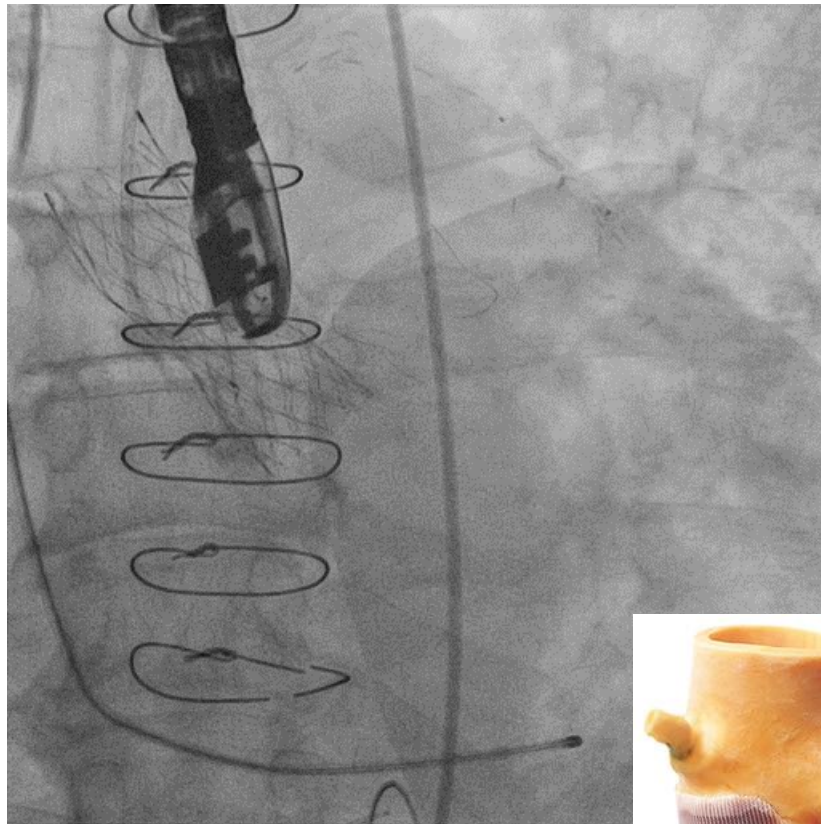
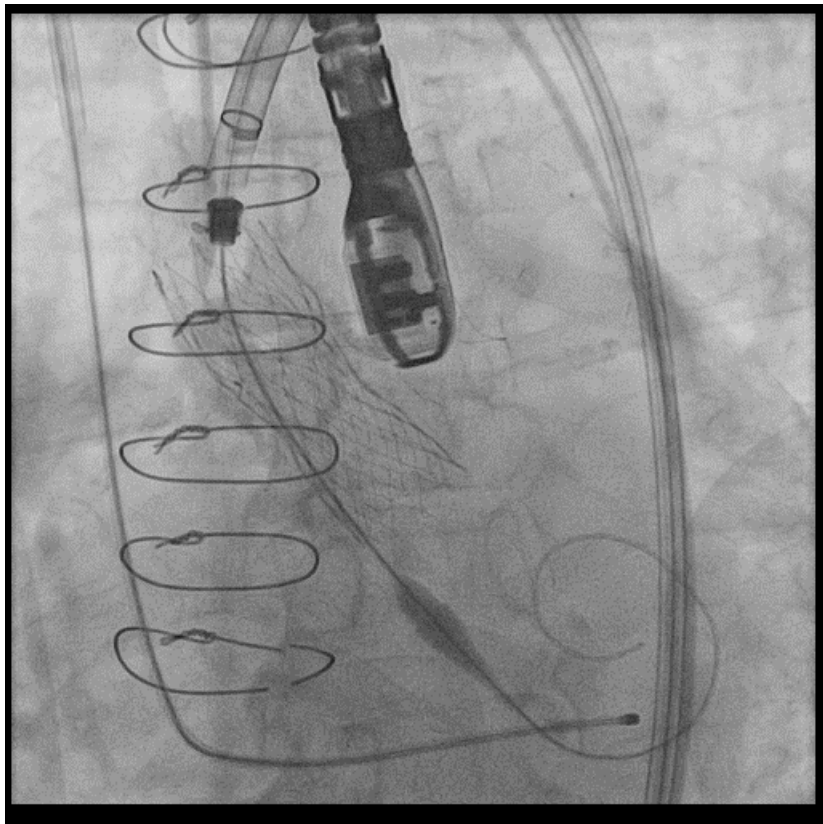
#5: no good anchoring

#6: bailout surgery much riskier

#1: extensive root calcification (much less leaflets)

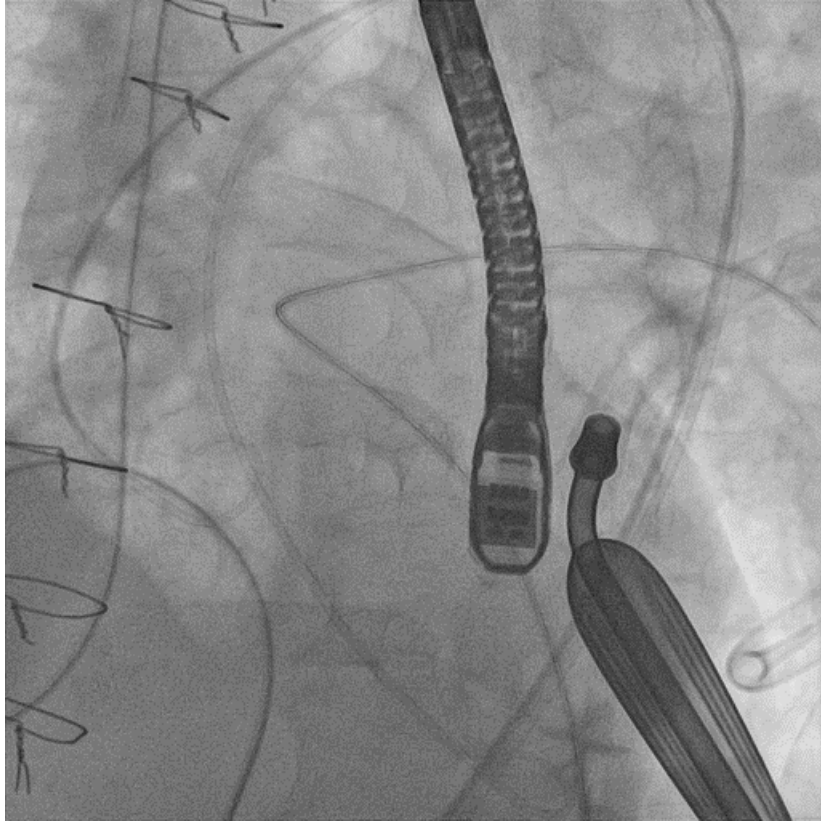


#1: extensive root calcification (much less leaflets)

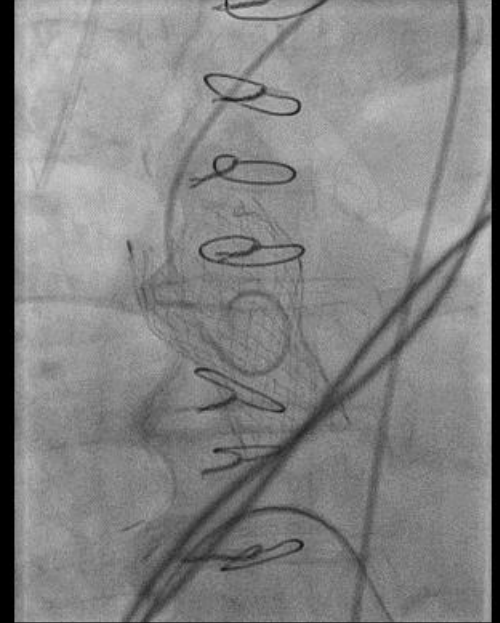
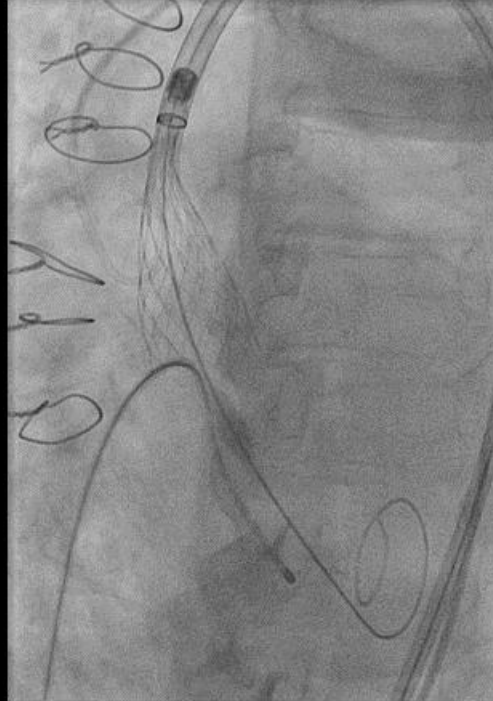
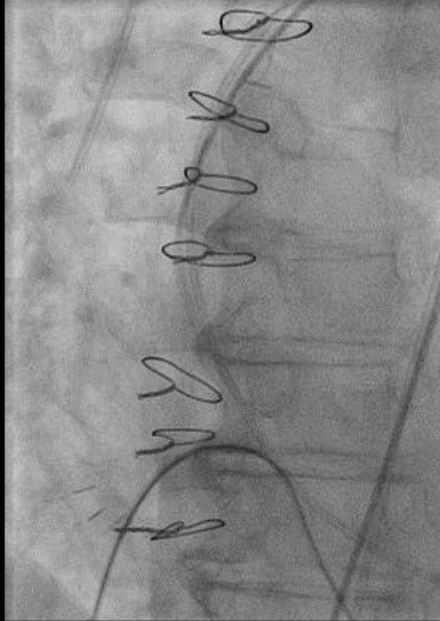


Full Root

#2: poor visibility in fluoro



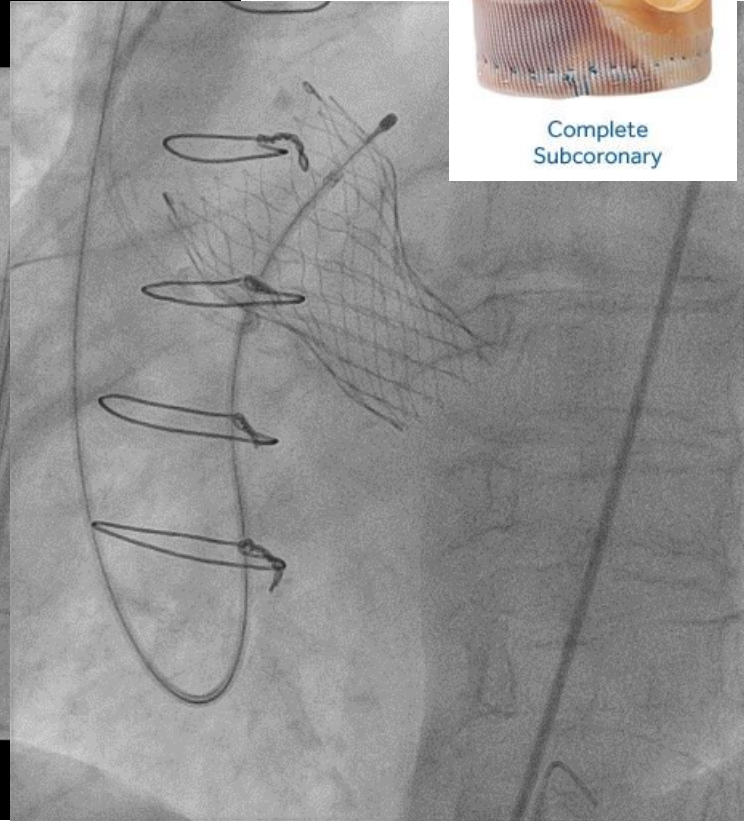
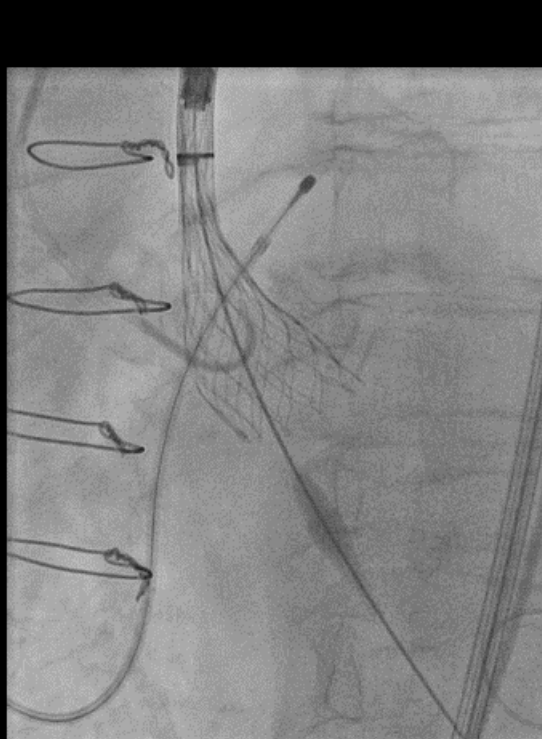
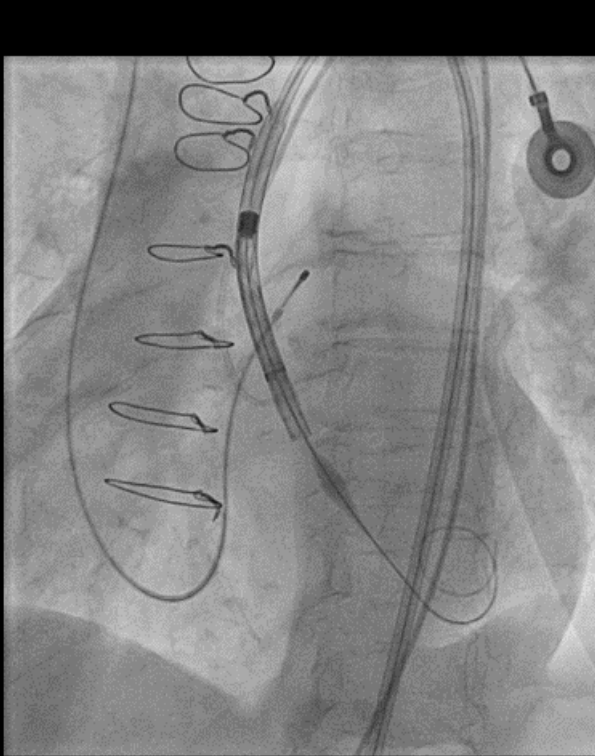
#4: low coronaries



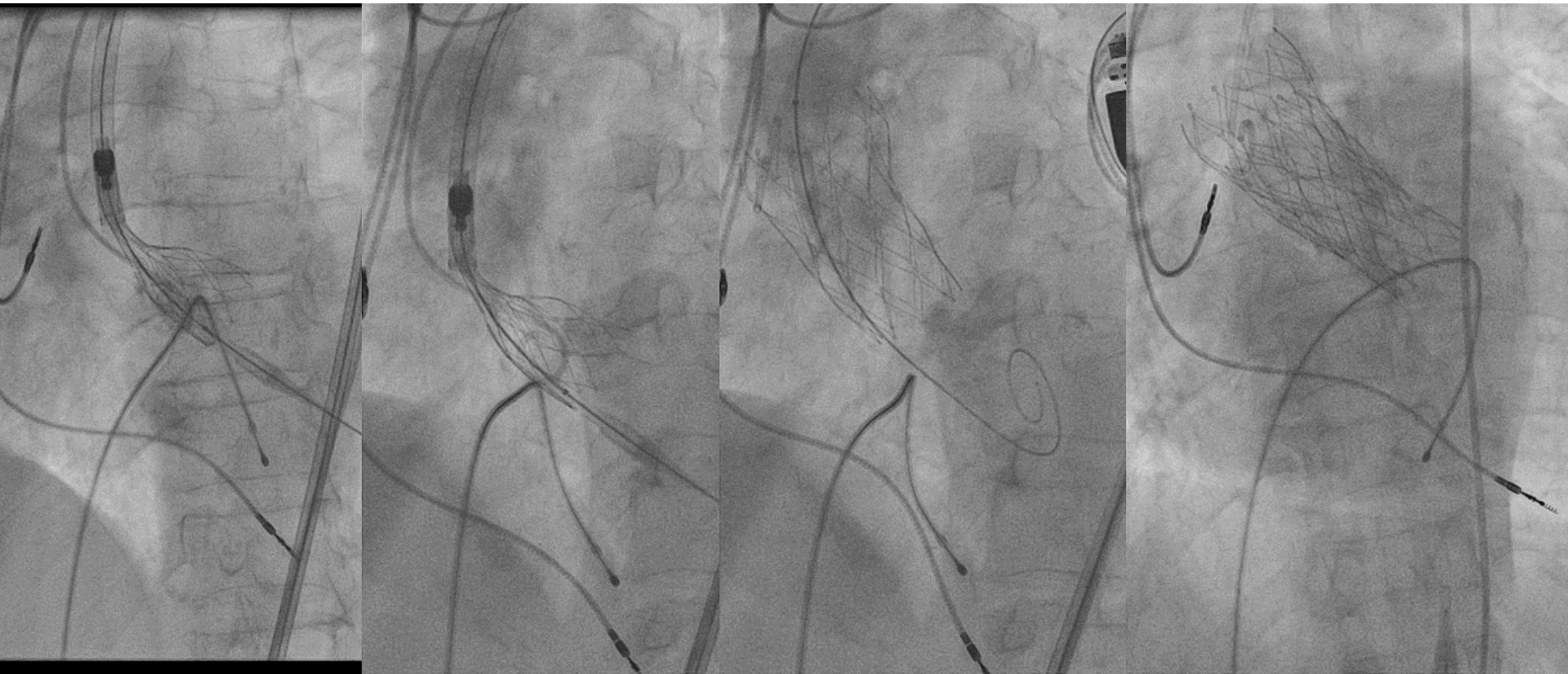
#3: difficult definition of the landing zone



Complete
Subcoronary

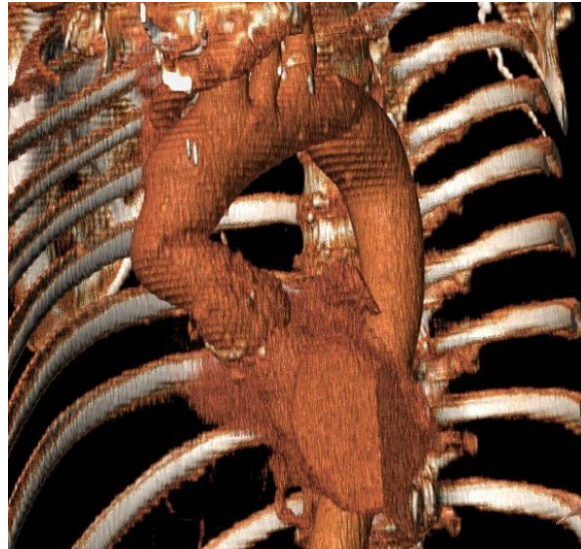
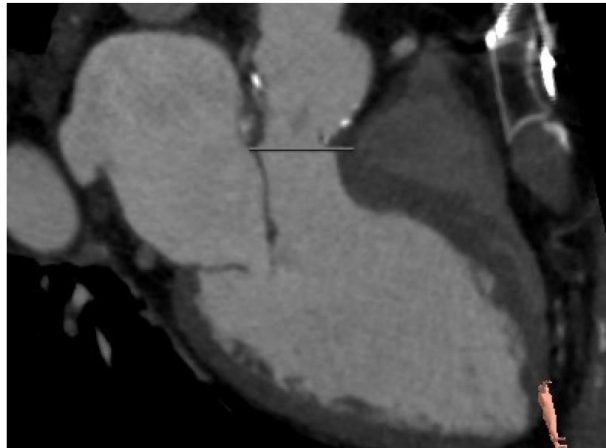
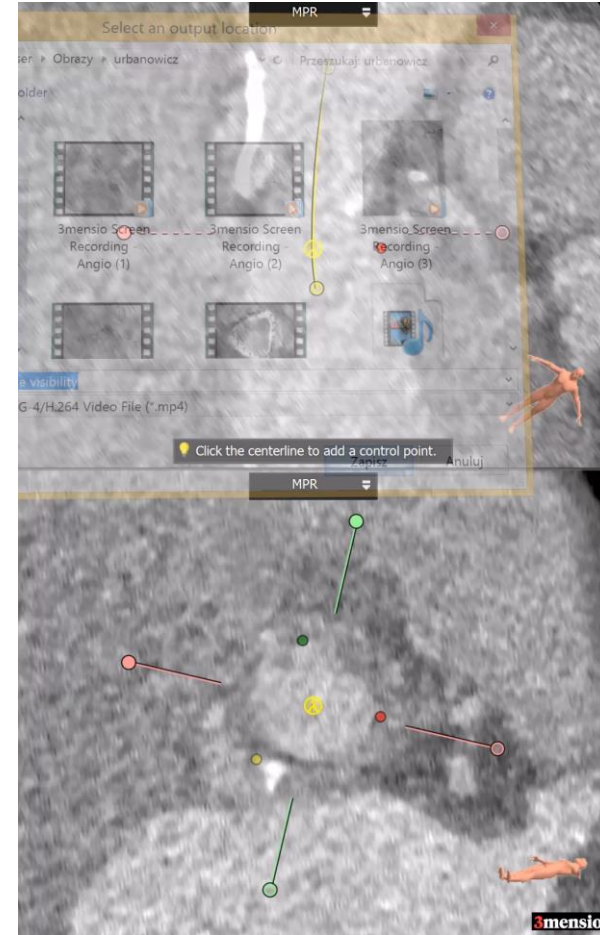
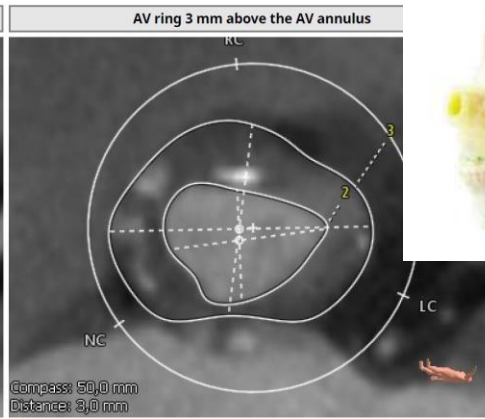
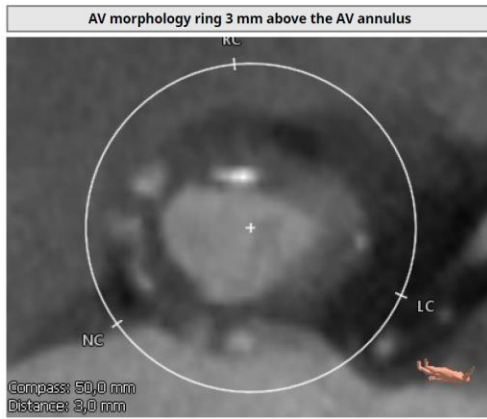


#5: no good anchoring



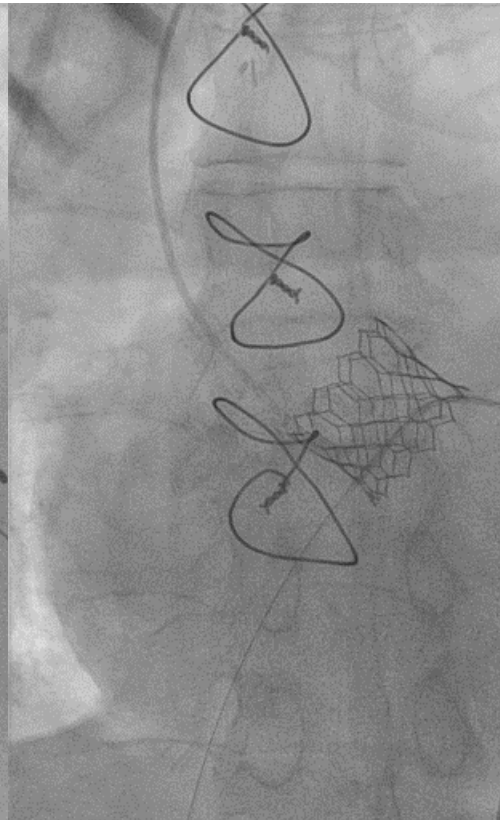
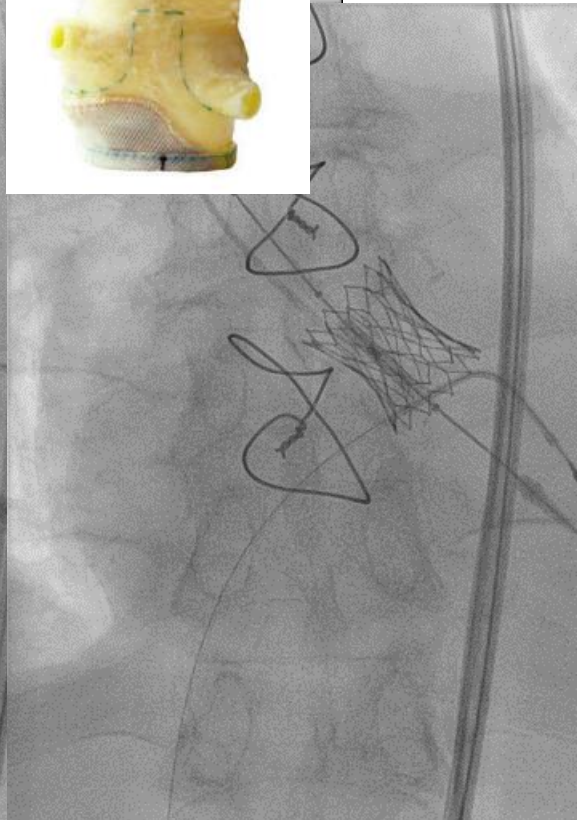
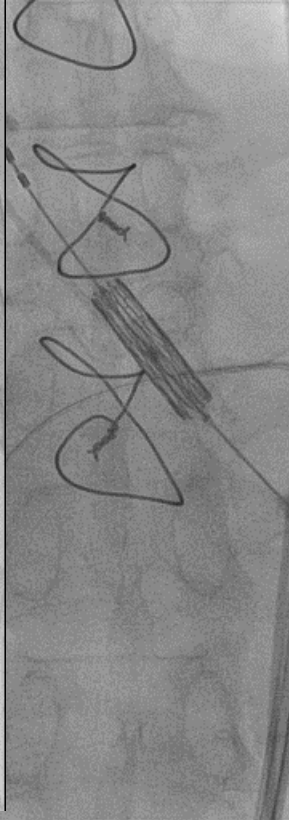
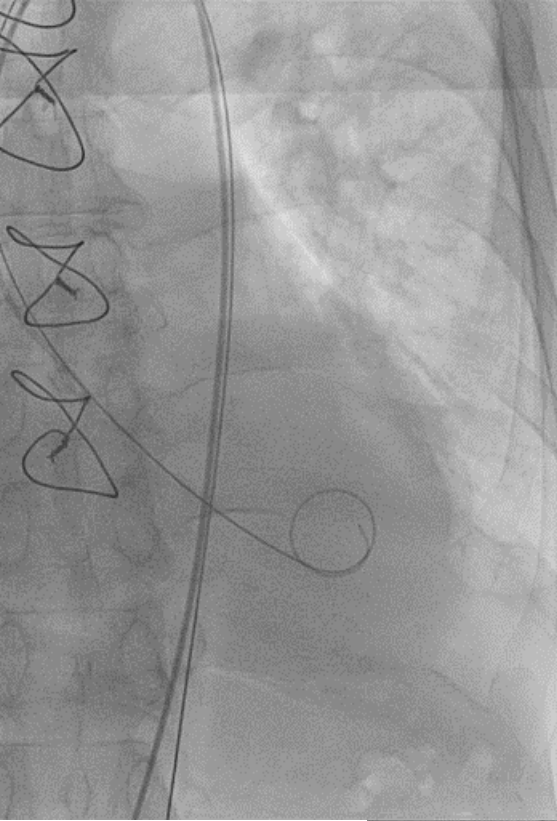
Sapien 3 Ultra

Edwards Prima Plus

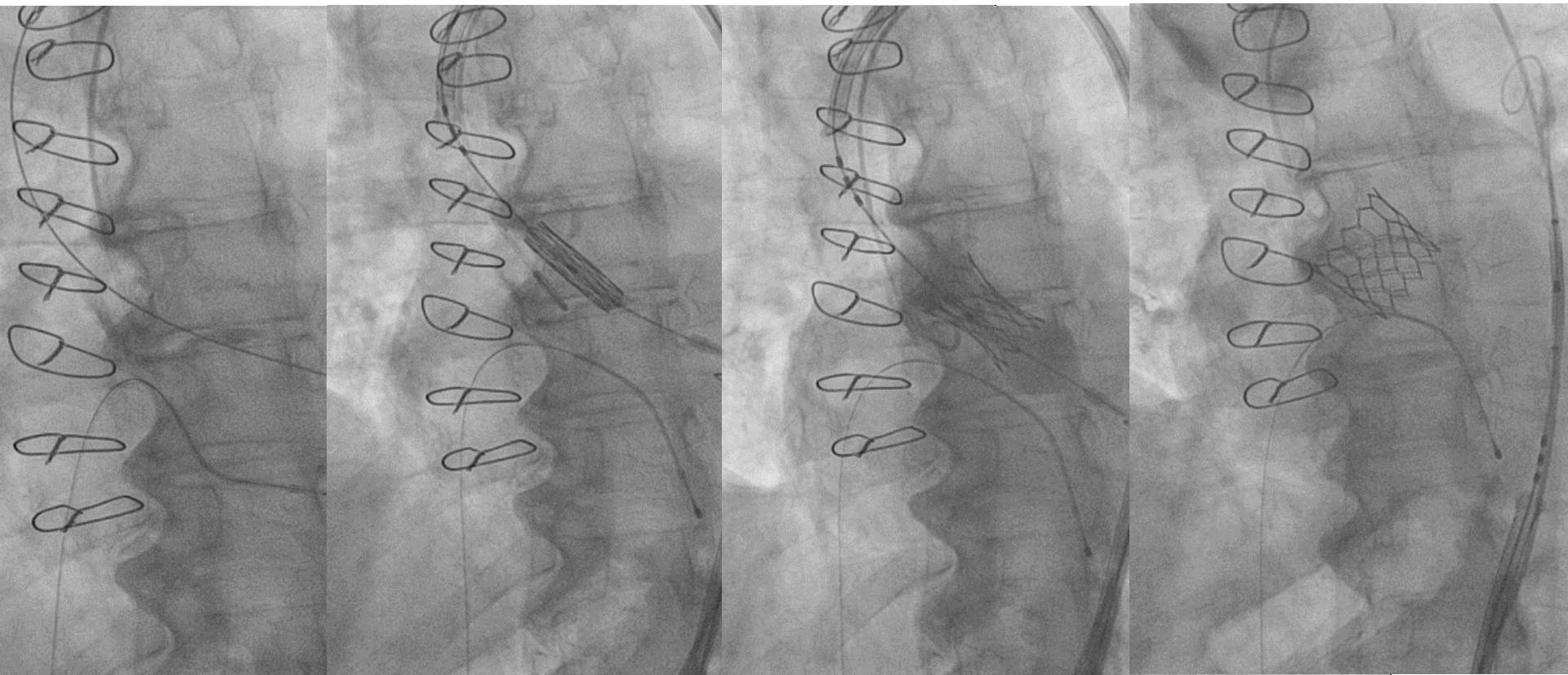


Sapien 3 Ultra

Edwards Prima Plus



Sapien 3 Ultra



ViV TAVI in stentless bioprosthesis is more challenging than in stented valves or „regular TAVI”

- 1: AR and rapidly progressive HF**
- 2: procedural planning with MSCT**
- 3: TOE may be helpful**
- 4: balloon-expandable valves (subjective)**
- 5: be prepared for bailout**