“Lifetime management” nella stenosi aortica

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Life time management of SVAo stenosis: do we have the right equation?

Age of patients at first implant

Patient life expectancy

Valve durability

Procedure repeatibility

N of redo

Type of redo

Coronary reaccess

Risk of coronary obstruction

$$\frac{1}{\pi} = \frac{2\sqrt{2}}{9801} \sum_{k=0}^{\infty} \frac{(4k)!(1103 + 26390k)}{(k!)^4 396^{4k}}$$

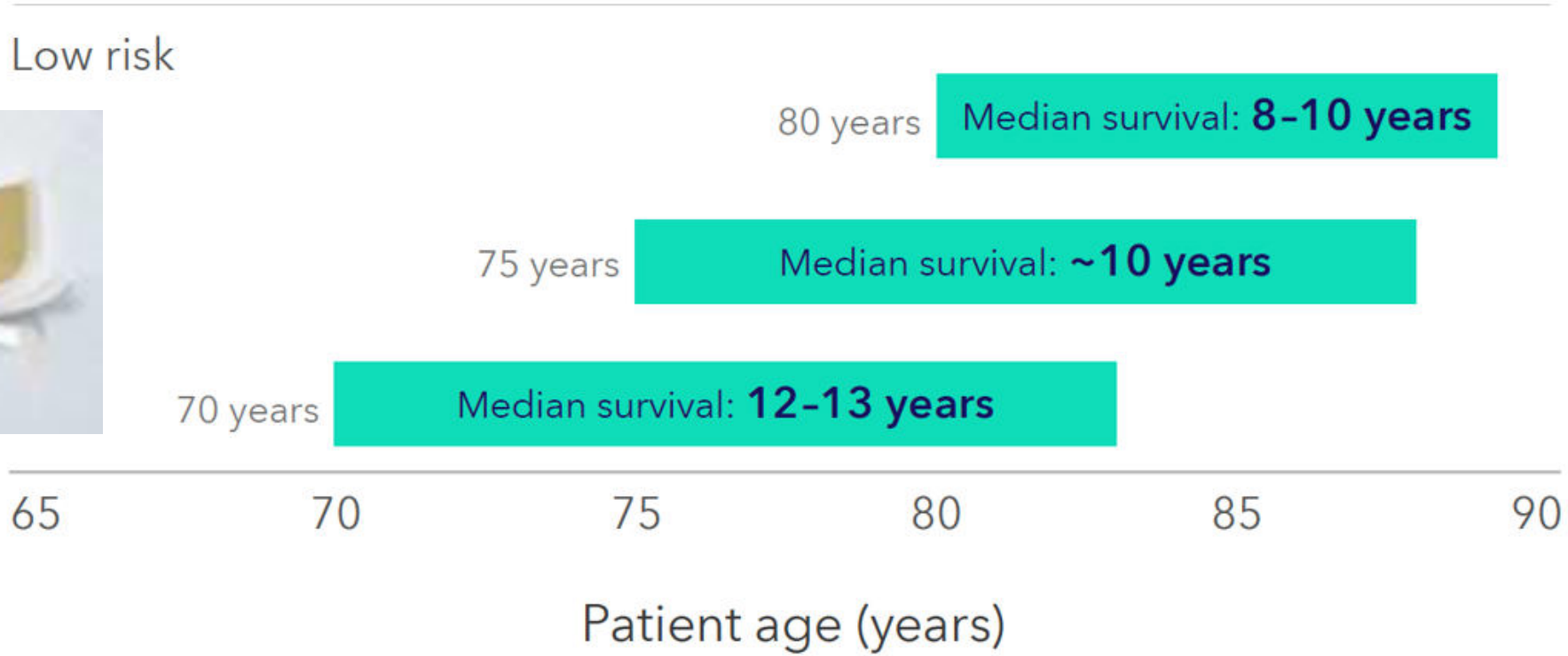
Life expectancy in the world in 2022

	Country	70 80 90	Male	Female	Both sexes
1	Hong Kong		82.38	88.17	85.29
2	Japan		81.91	88.09	85.03
3	Switzerland		82.42	86.02	84.25
4	Singapore		82.06	86.15	84.07
5	Italy		81.90	85.97	84.01
6	Spain		81.27	86.68	83.99
7	Australia		82.08	85.80	83.94
8	Iceland		82.15	84.90	83.52
9	South Korea		80.46	86.42	83.50
10	Israel		81.98	84.91	83.49
11	Sweden		81.69	84.97	83.33
12	France		80.32	85.82	83.13
13	Malta		81.37	84.68	83.06
14	Canada		81.15	84.74	82.96
15	Norway		81.11	84.78	82.94
16	Ireland		81.29	84.32	82.81
17	New Zealand		81.20	84.38	82.80

OMS data

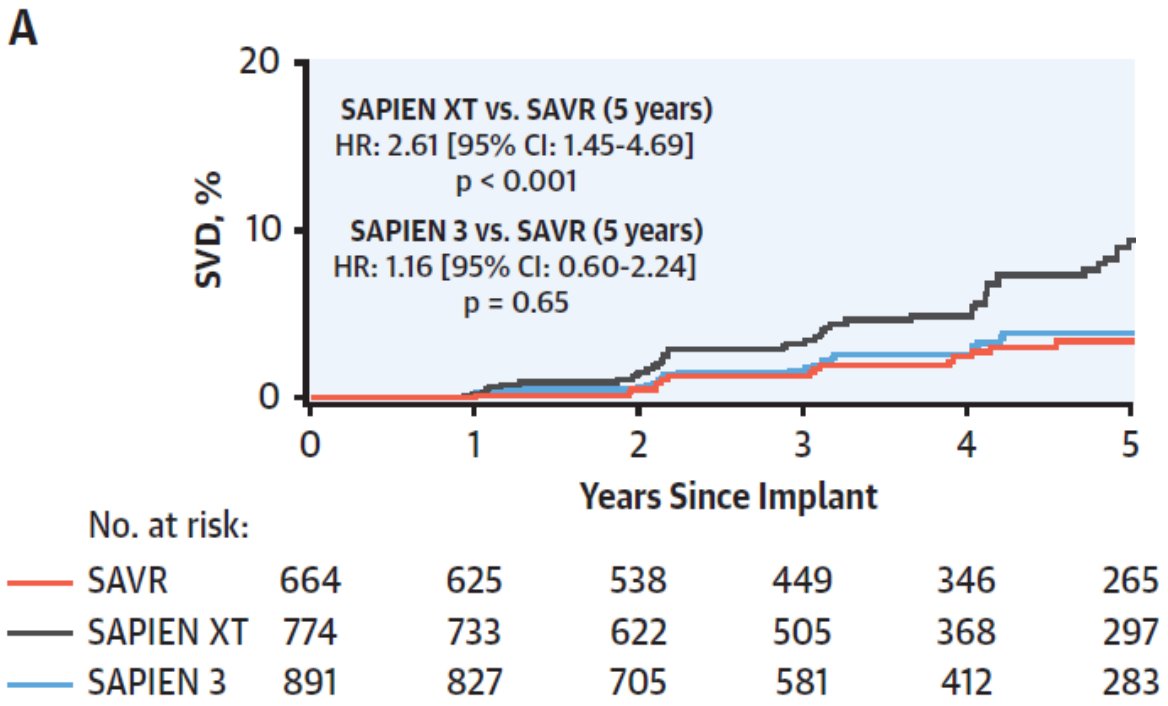
SWEDHEART REGISTRY

8,353 patients with SVAo stenosis undergoing SAVR
age≥ 60 yeras

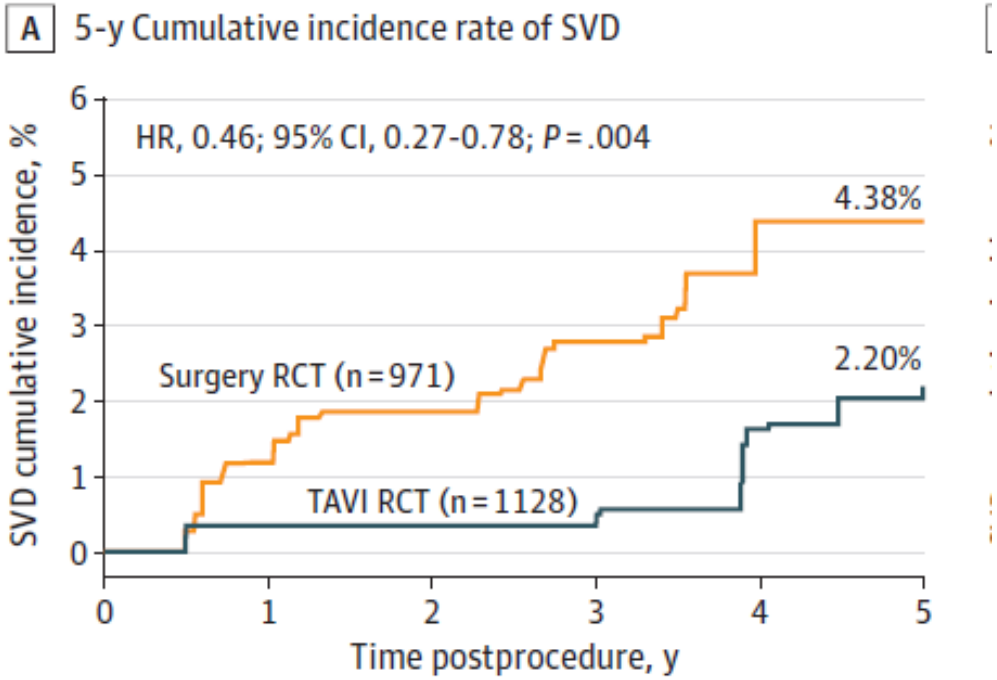


Martinsson A, et al. *J Am Coll Cardiol.* 2021;78:2147-2157.

Valve durability: 5 year follow up

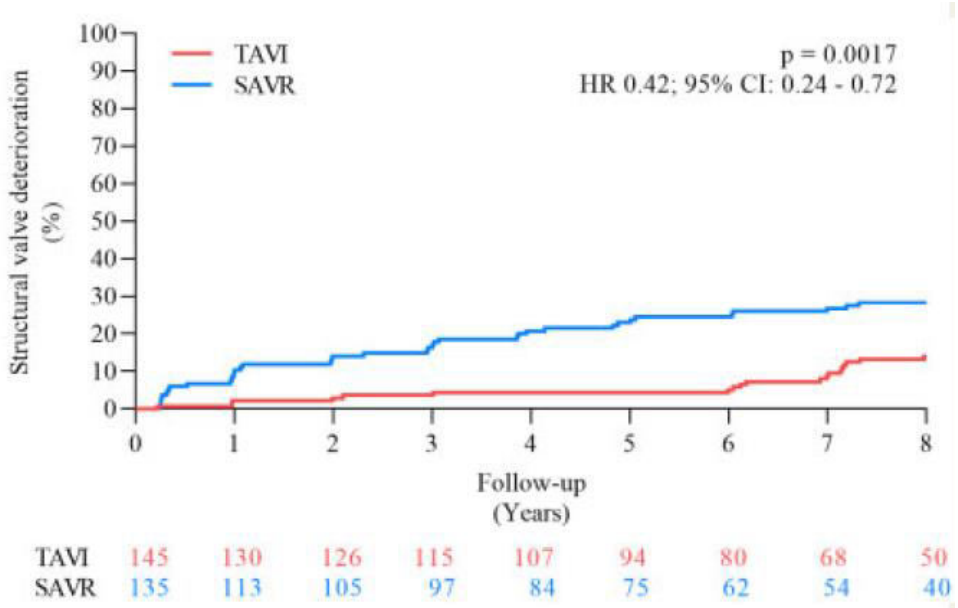


Pibarot et al; JACC 2020



O'Hair; JAMA Cardiol 2023

Valve durability beyond 5 years



Jorgensen et al; EHJ 2021

First Author (Ref. #)	THV	N	Number of Patients Alive at Median Follow-Up	Median Follow-Up	Findings
Barbanti et al. (49)	CoreValve (n = 238) SAPIEN XT (n = 48)	288	19	8 yrs	BVF: 4.5% Moderate SVD: 5.8% Severe SVD: 2.3% Freedom from BVF and severe SVD at 8 yrs: 95%
Panico et al. (50)	CoreValve (n = 278)	278	68	6.8 yrs	BVF: 2.5% Moderate/severe SVD: 3.6% Freedom from BVF at 6.8 yrs: 97.5%
Holy et al. (51)	CoreValve (n = 152)	152	6	8 yrs	BVF: 4.5% Severe SVD: 0% Freedom from BVF at 8 yrs adjusted for mortality: 92.1%
Blackman et al. (52)	CoreValve (n = 149) SAPIEN XT (n = 35) SAPIEN (n = 45)	241	44 alive at 8 yrs	5.8 yrs with maximum of 8 yrs follow-up	BVF: 0.4% Moderate SVD: 8.7% Severe SVD: 0.4% Freedom from SVD at 5.8 yrs: 91%
Murray et al. (53)	CoreValve (n = 41) SAPIEN (n = 60)	103	79	7 yrs	BVF: 3.8% Moderate SVD: 8.9% Severe SVD: 1.3% Freedom from SVD at 7 yrs: 91%
Deutsch et al. (54)	CoreValve (n = 214) SAPIEN (n = 86)	300	69	7 yrs	BVF: 3.6% Moderate/severe SVD: 14.9% Freedom from SVD at 7 yrs: 77% (SVD with CoreValve was 11.8% vs 22.6% with SAPIEN; p = 0.01)

Yerasi et al; JACC Int 2021

	Country	70	80	90	Male	Female	Both sexes
1	Hong Kong				82.38	88.17	85.29
2	Japan				81.91	88.09	85.03
3	Switzerland				82.42	86.02	84.25
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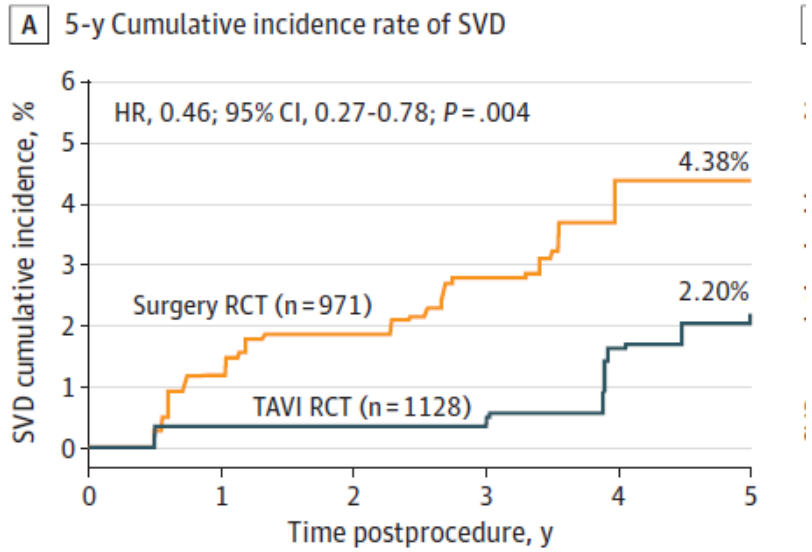


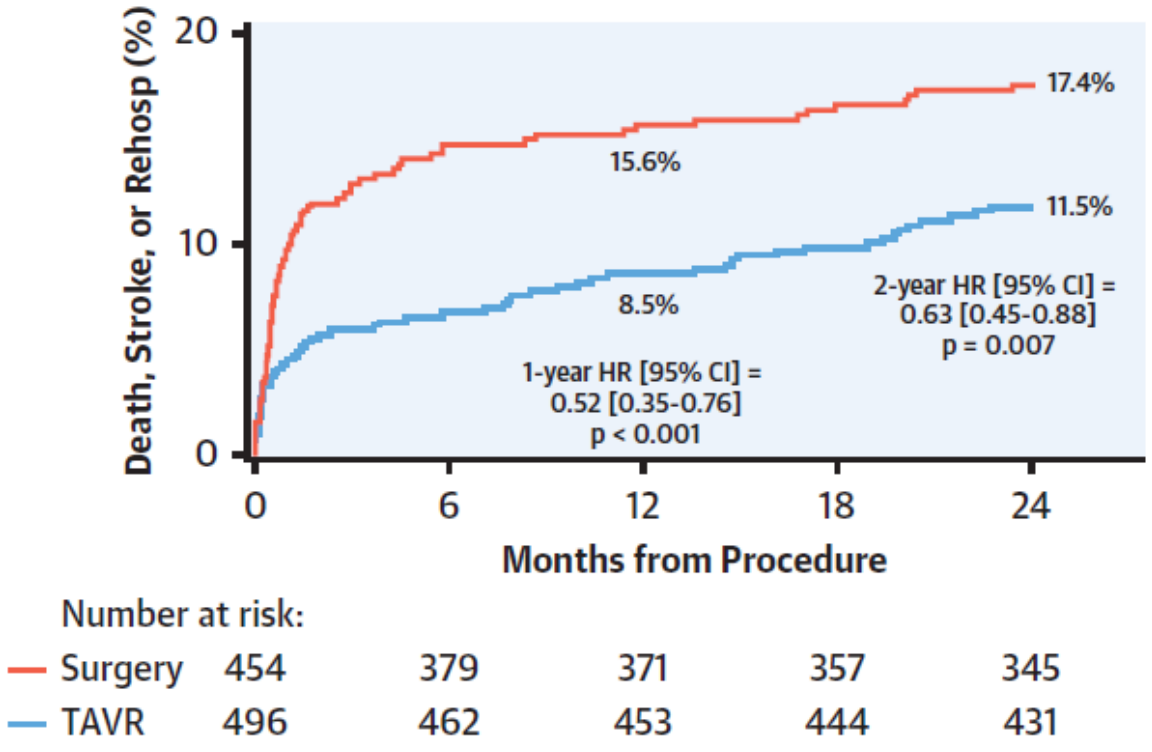
Age at first AVR

Implant 1

TAVR

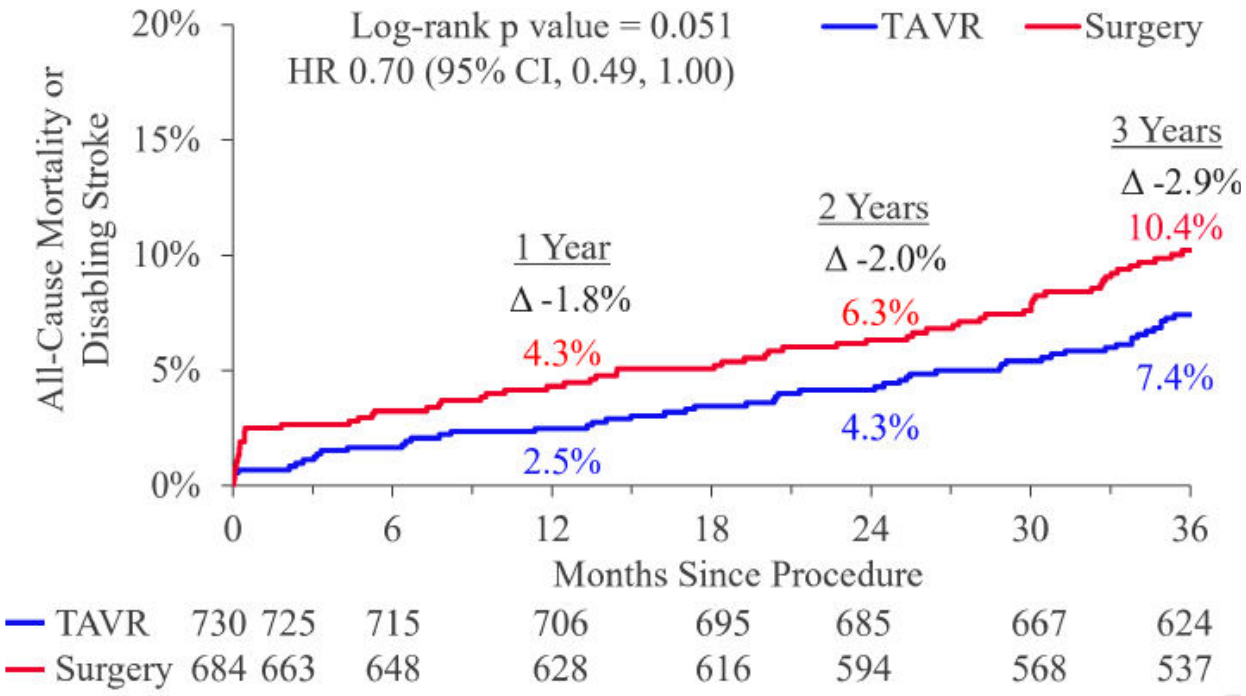
TAVI in younger patients

PARTNER 3



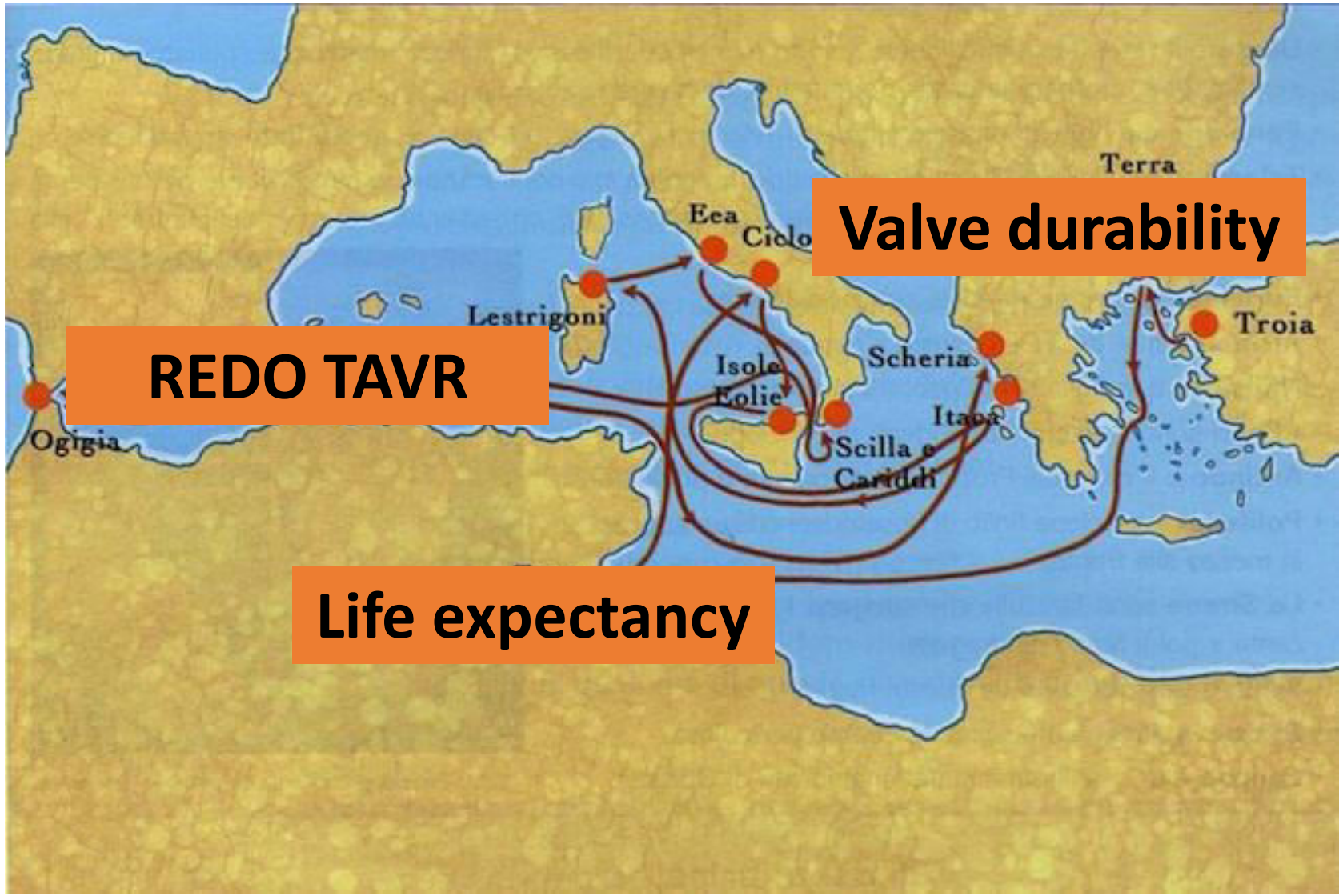
Leon et al; JACC 2021

EVOLUTE LOW RISK



Forrest et al; JACC 2023

An undetermined journey



Valve durability

REDO TAVR

Life expectancy

A one-stage journey

70 years

Life expectancy

15 years

70 — 85

Valve durability

15 years

0 — 15

Implant 1

TAVR

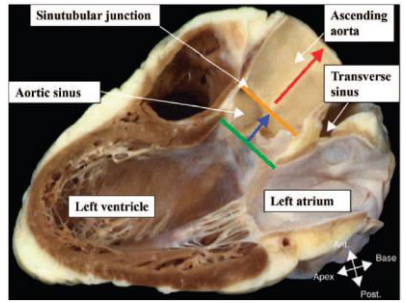
A two-stage journey

70 years

Life expectancy

15 years

70 — 85



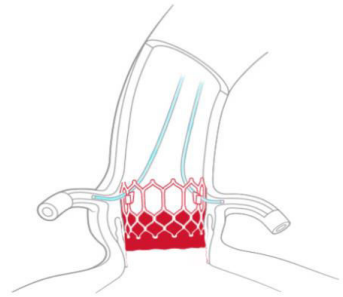
Valve durability

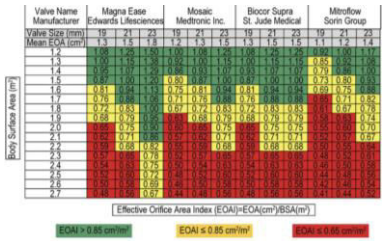
7-10 years

0 — 10 — 15

Implant 1 → **TAVR** / **SAVR**

Implant 2 → **TAVR** / **SAVR**





First implant

SAVR

Second implant

SAVR

Contemporary operative mortality in re-AVR is 4% to 9% in reports from large-volume institutions

ADULT CARDIAC

Contemporary Outcomes of Repeat Aortic Valve Replacement: A Benchmark for Transcatheter Valve-in-Valve Procedures

Tsuyoshi Kaneko, MD, Christina M. Vassileva, MD, Brian Englum, MD, Sunghee Kim, PhD, Maroun Yammine, MD, Matthew Brennan, MD, MPH, Rakesh M. Suri, MD, DPhil, Vinod H. Thourani, MD, Jeffrey P. Jacobs, MD, and Sary Aranki, MD

Division of Cardiac Surgery, Brigham and Women's Hospital, Boston, Massachusetts; Division of Cardiothoracic Surgery, Southern Illinois University School of Medicine, Springfield, Illinois; Division of Cardiothoracic Surgery, Duke Clinical Research Institute, and Division of Cardiology, Duke University Medical Center, Durham, North Carolina; Department of Cardiac Surgery, Mayo Clinic, Rochester, Minnesota; Division of Cardiothoracic Surgery, Emory University School of Medicine, Atlanta, Georgia; and Division of Cardiothoracic Surgery, Johns Hopkins All Children's Heart Institute, St. Petersburg, Florida

Table 3. Postoperative Outcome for Reoperative Aortic Valve Replacement Versus Primary Aortic Valve Replacement

Variable[a]	Previous AVR + Current AVR (n = 3,380)	Primary AVR (n = 54,183)	*p* Value
Outcomes			
Operative mortality	157 (4.6)	1,200 (2.2)	<.0001
Expected mortality, %	5.4	2.7	
Observed-to-expected ratio	0.86	0.81	
Composite, operative		6,369 (11.8)	<.0001
Stroke		761 (1.4)	0.020
Renal failure		1,339 (2.5)	<.0001
Pacemaker placement	370 (11.0)	2,337 (4.3)	<.0001
Re-op for bleeding/tamponade	133 (3.9)	1,755 (3.2)	0.028
Vascular complication	2 (0.06)	7 (0.01)	0.037
Post-op aortic insufficiency mild or greater	96 (2.8)	902 (1.7)	<.0001
Post-op atrial fibrillation	626 (18.5)	15,739 (29.1)	<.0001
Post-op blood transfusion	1,814 (53.7) (n = 3,236)	20,692 (38.2) (n = 53,204)	<.0001
Post-op length of stay, d	7 (5–10)	6 (5–8)	<.0001

Età media 66 anni

Open access Cardiac surgery

openheart

Surgical Complexity and Outcome of

Età media 51 anni

Renata Greco,[1] Mirko Muretti ,[1] Jasmina Djordjevic,[1] Xu Yu Jin ,[2,3] Elaine Hill,[4] Maurizio Renna,[4] Mario Petrou[5]

Long-term evaluation of biological versus mechanical prosthesis use at reo

Età media 58 anni

Vincent C ID,[a] Paul Hendry, MD,[a] Roy Masters, MD,[a] Thierry G. Mesana, MD, PhD,[a] and Marc Ruel, MD, MPH[a,b]

Reoperation is not an independent predictor of mortality during

Età media 59 anni

Piroze M. Davierwala, MD, Michael A. Borger, MD, PhD, Tirone E. David, MD, Vivek Rao, MD, PhD, Manjula Maganti, MSc, and Terrence M. Yau, MD, MSc

First implant

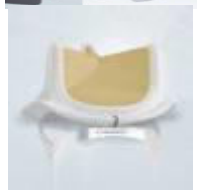
Second implant

Small aortic root
Shallow sinuses
Low coronary ostia

SAVR
(aortic root enlargement)

→

TAVR

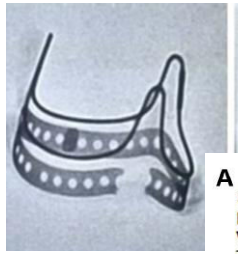


Inspiris
Vfit twechnology

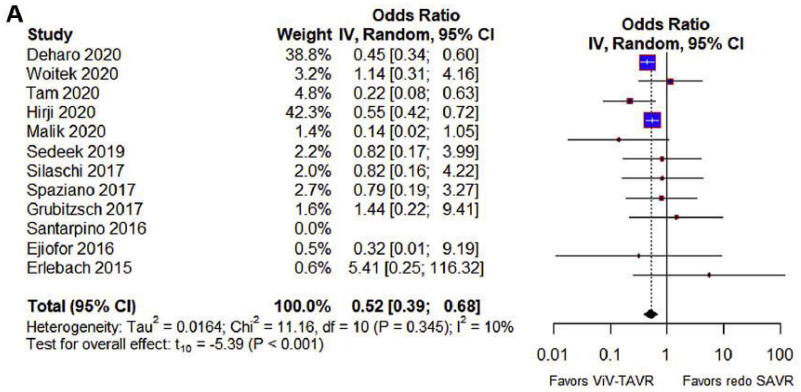
Y-incision

Rectangular patch

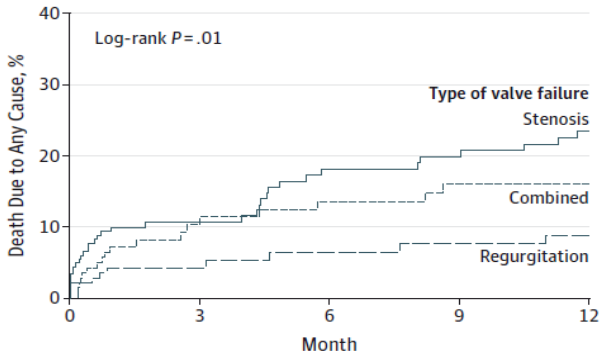
Large BHV



12 studies with 16,207 pts

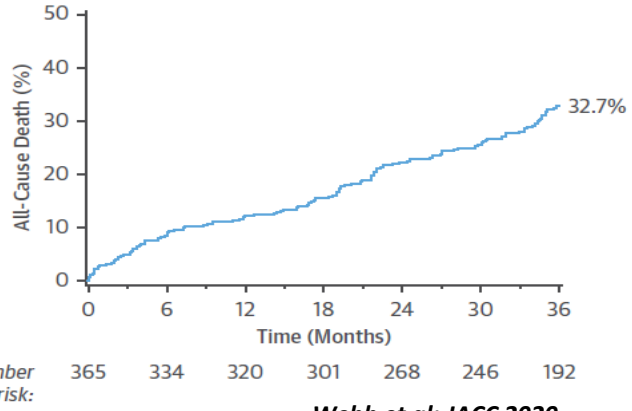


VIVID registry

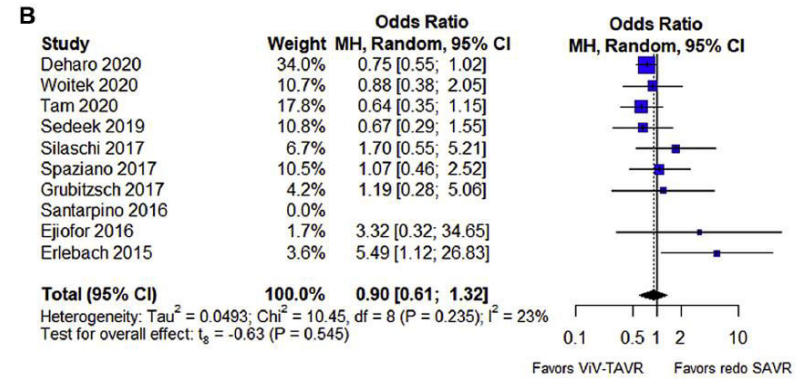


Dvir et al; JAMA 2014

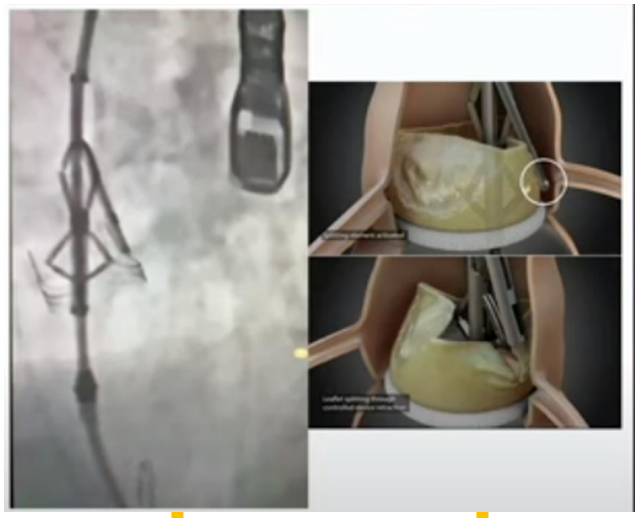
PARTNER 2 registry



Webb et al; JACC 2020



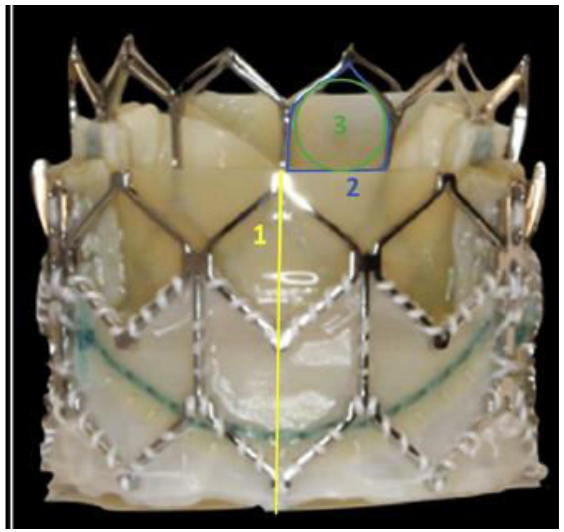
Pompeu et al; JACC Int 2020



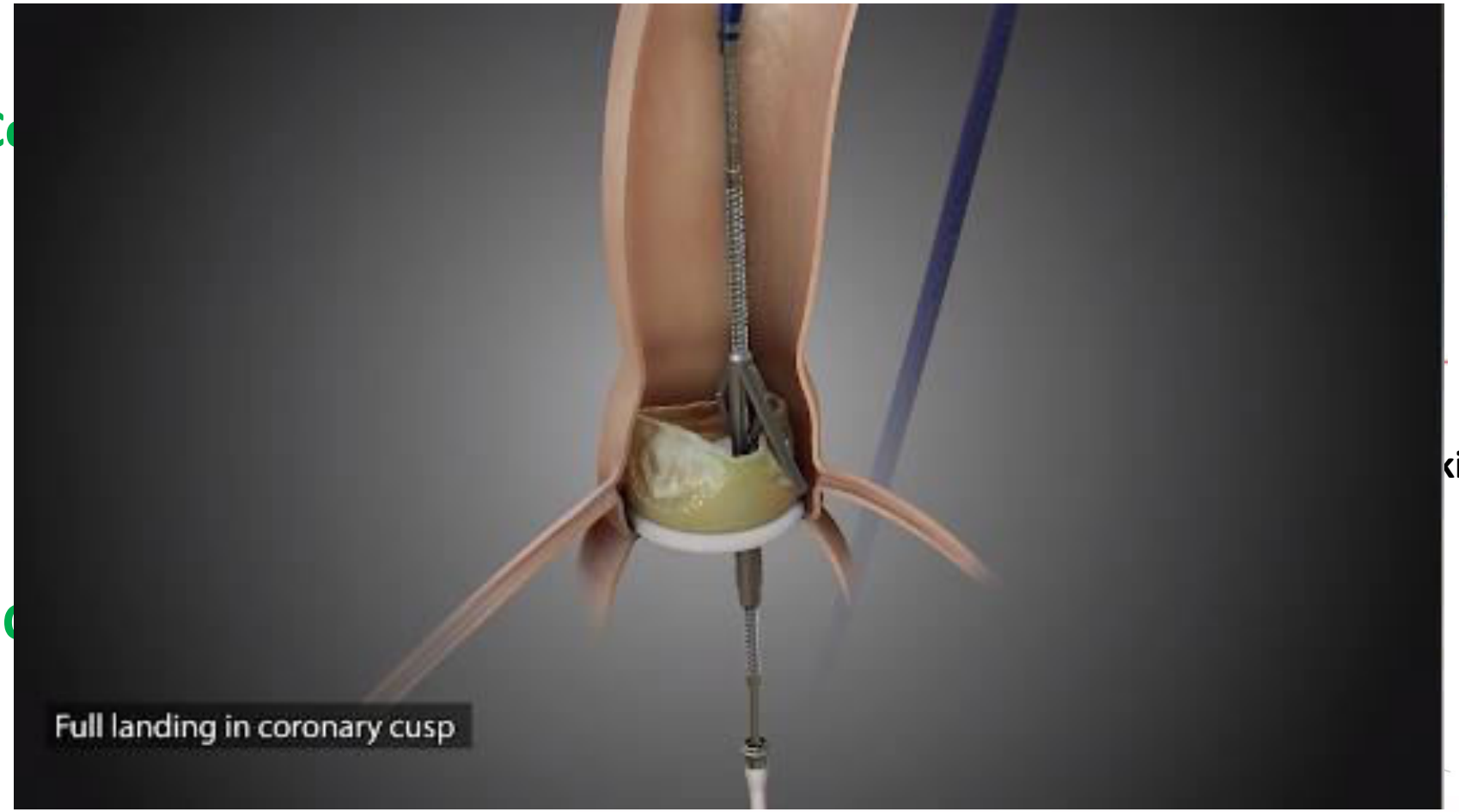
First implant

Second implant

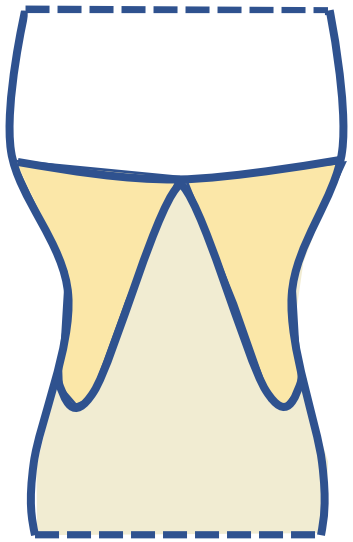
TAVR → TAVR



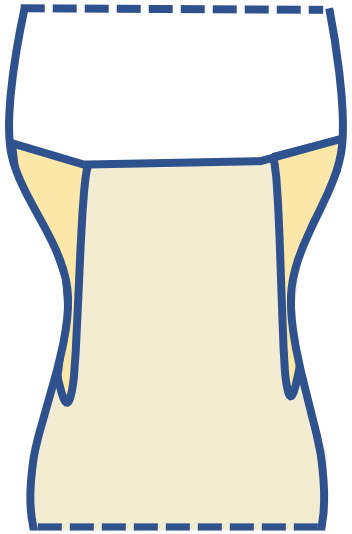
PPM



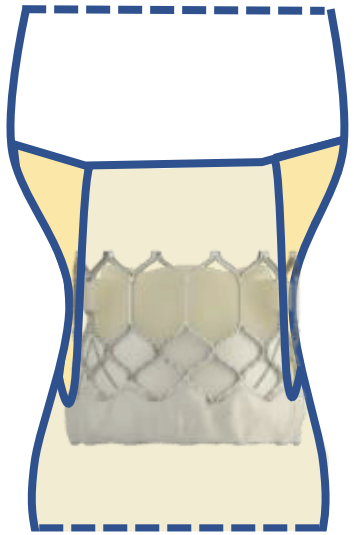
Closed valve



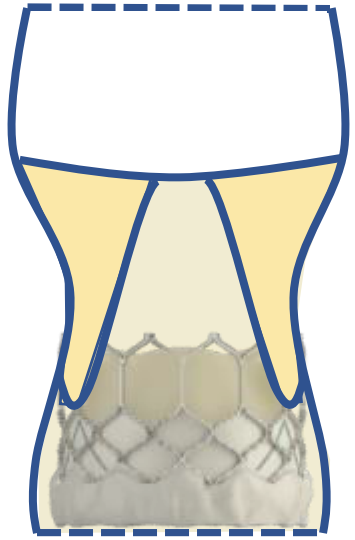
Open valve



THV in THV

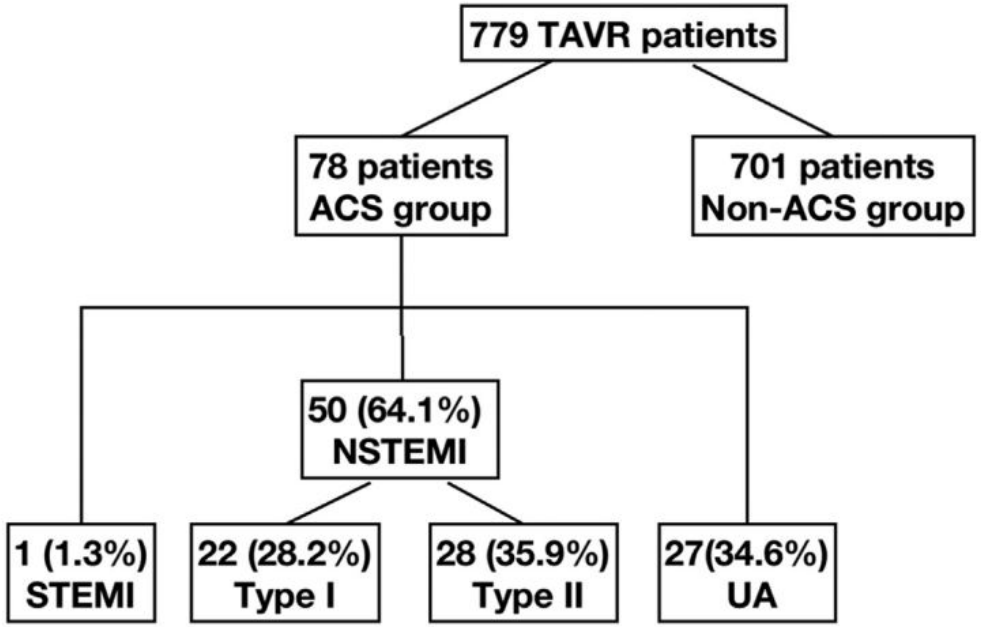


Covered stent effect



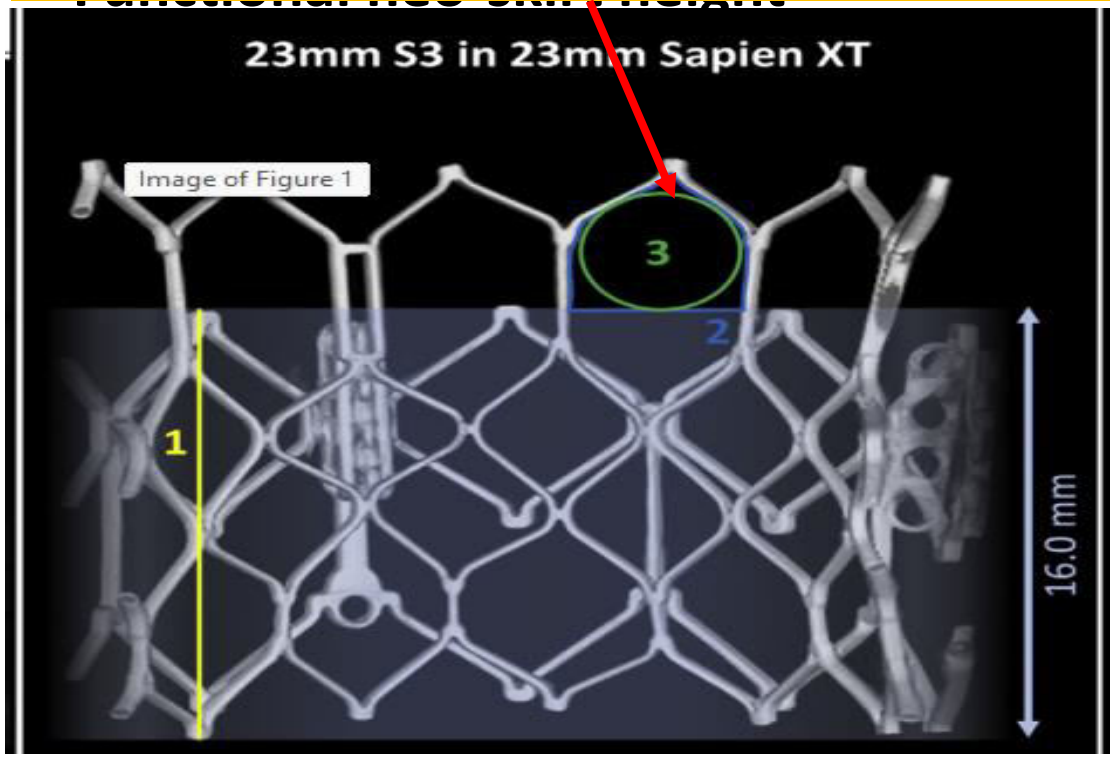
Leaflet overhanging over the S3

Redo TAVR combination and coronary access



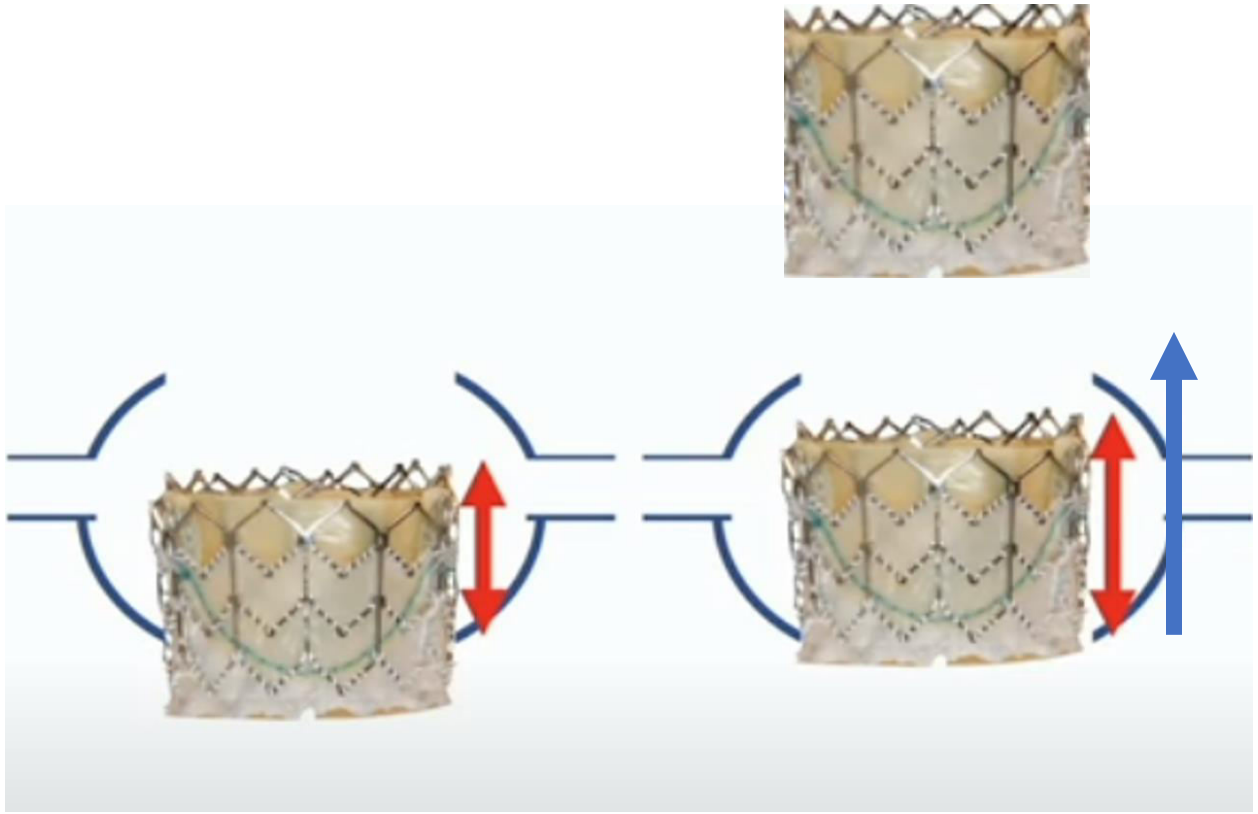
Vilalta et al; JACC Int 2018

First cell above the neoskirt



Functional neoskirt height

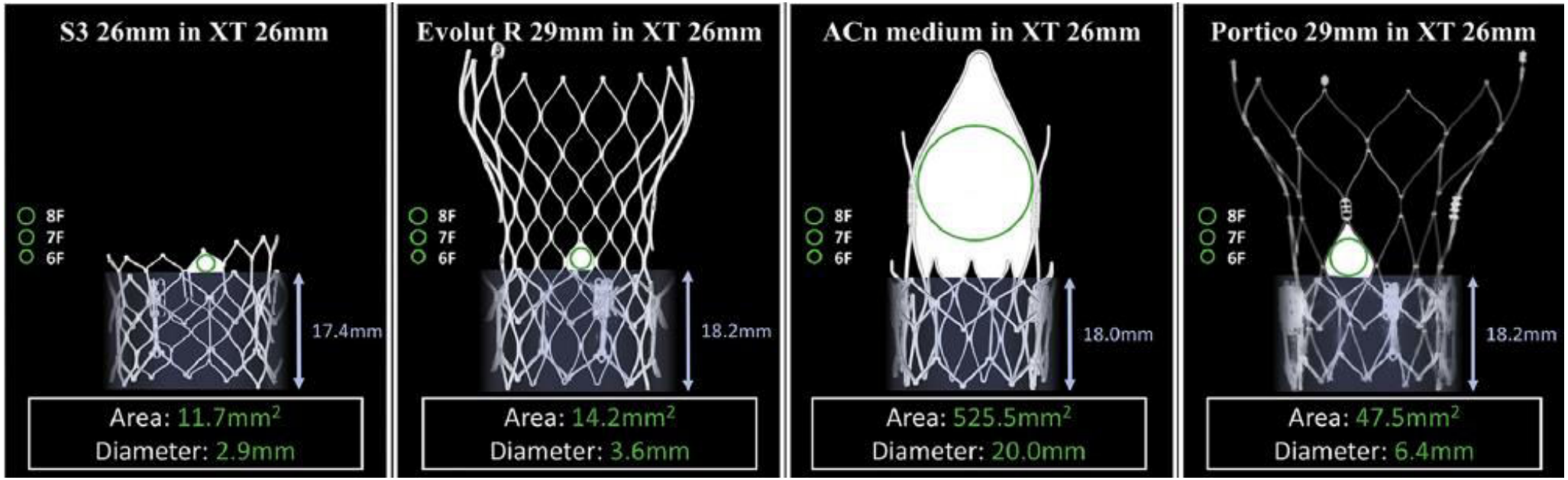
Implantation depth of first and second valve

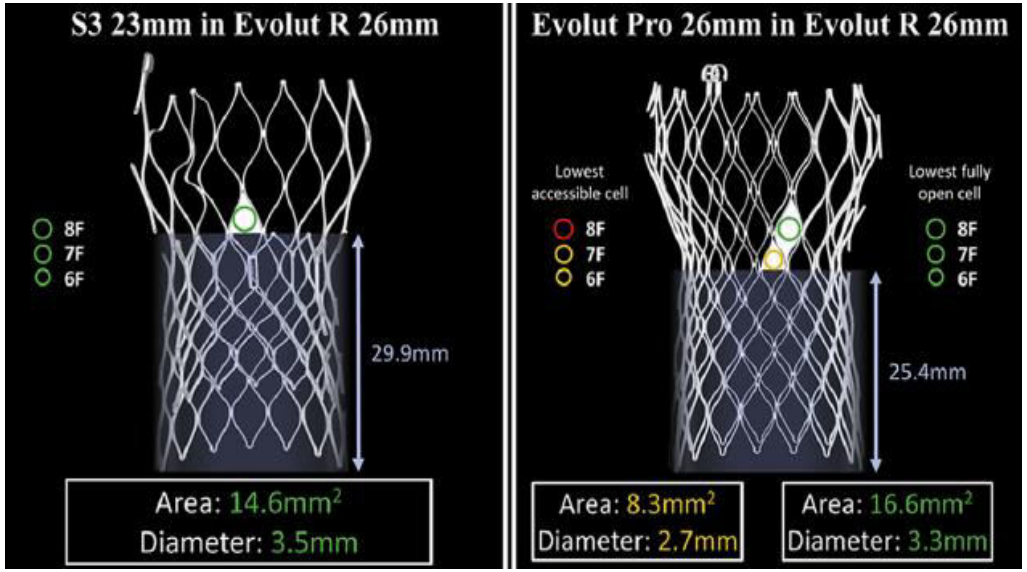


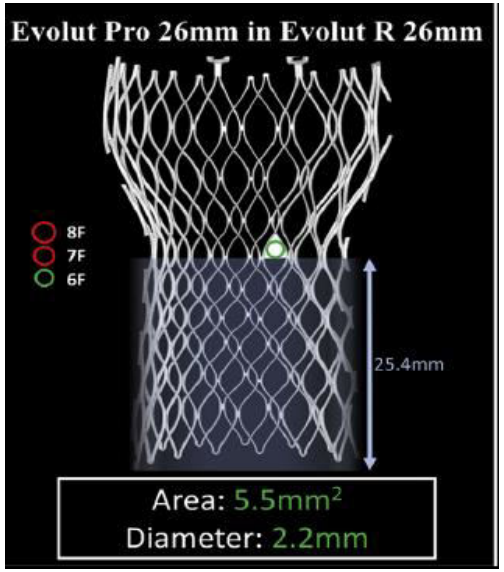
Type of valve combination

Index Valve	Redo Valve	Neoskirt Height (mm)
26-mm Sapien XT	26-mm S3	17.4
	29-mm Evolut R (+4 mm)	22.7
	29-mm Evolut R (0 mm)	18.2
	29-mm Evolut R (−4 mm)	18.2
	Medium ACURATE (+4 mm)	20.7
	Medium ACURATE (0 mm)	18.0
	Medium ACURATE (−4 mm)	18.5
	29-mm Portico (+4 mm)	18.2
	29-mm Portico (0 mm)	18.2
	29-mm Portico (−4 mm)	18.0
26-mm Evolut R	23-mm S3 + 1 cc (high)	29.9
	23-mm S3 (low)	23.5
	26-mm Evolut Pro (+4 mm)	31.6
	26-mm Evolut Pro (0 mm)	25.4
	26-mm Evolut Pro (−4 mm)	26.8

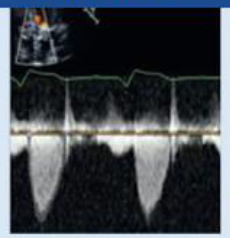
Meier et al; JACC Int 2022







Meier et al; JACC Int 2022

	Incidence	Residual Gradient	Coronary Flow Obstruction	Mortality at 30 days
Redo-TAVR For:				
Failed TAVR Valve	0.22%	13 mm Hg	0.7%	1.4%

Landes et al; JACC 2020

37 international centers
63,876 TAVR procedure
212 redo TAVR

MEDICARE setting
133,250 TAVR
617 redo TAVR

Contemporary Repeat Transcatheter Aortic Valve Replacement Outcomes in the United States

Fee-for-Service Medicare Beneficiaries | Nationally Representative, Multicenter Analysis | N = 133,250 patients | 2012-2017

N = 617 (0.46%)
Repeat TAVR procedure

154 days
(IQR 58-537)
Median Time-to-Intervention

30-Day Procedural Outcomes

Mortality
6.0%

Stroke
1.8%

Pacemaker Rate
4.2%

Repeat TAVR vs. TAVR Explant

Lower 30-Day Mortality
6.2% vs. 12.3%

Lower 30-Day MACE
Relative Risk: 2.92
(95% CI: 1.88-4.99)

Repeat TAVR can be performed with acceptable 30-day mortality and may be considered as a potential option in appropriate patients

Percy, E.D. et al. J Am Coll Cardiol Intv. 2021;14(15):1717-26.

A three-stage journey

60 years

25 years

Life expectancy

60 — 85

Valve durability

7-10 years | **7-10 years** | **7-10 years**

0 — 10 — 20 — 25

Implant 1 → **TAVR** / **SAVR**

Implant 2 → **TAVR** / **SAVR**

Implant 3 → **TAVR** / **SAVR**

First implant

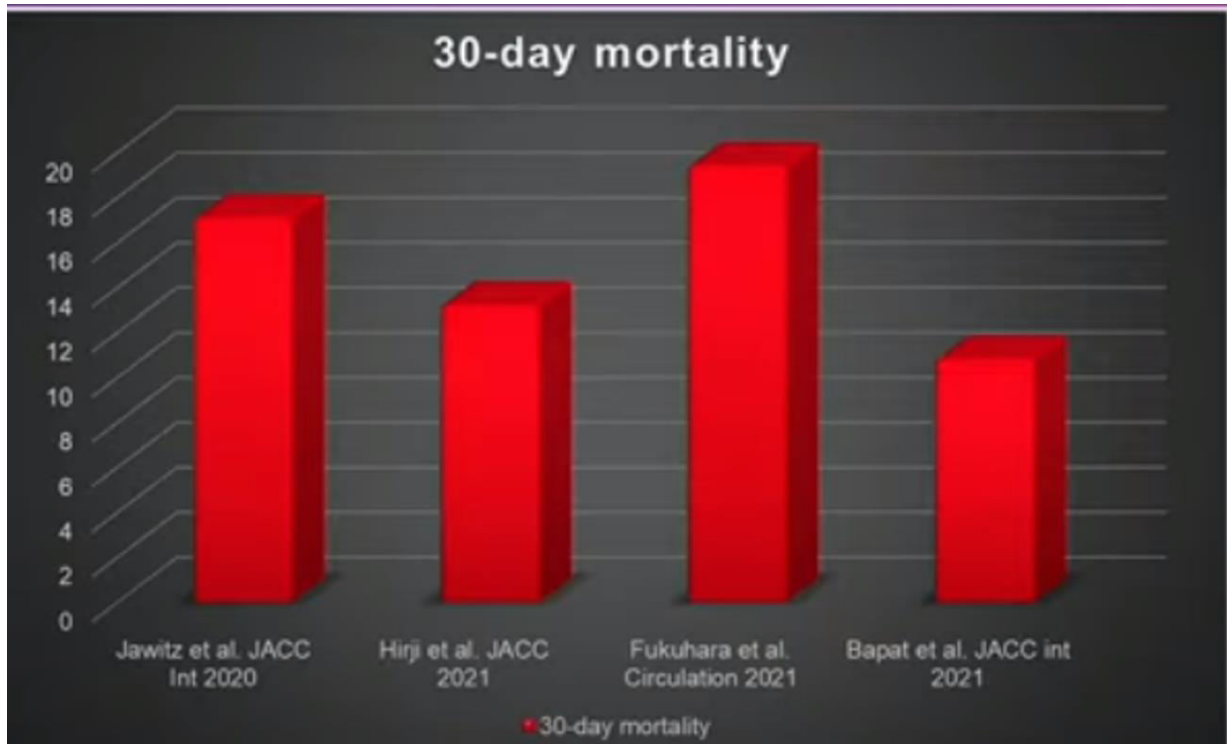
TAVR

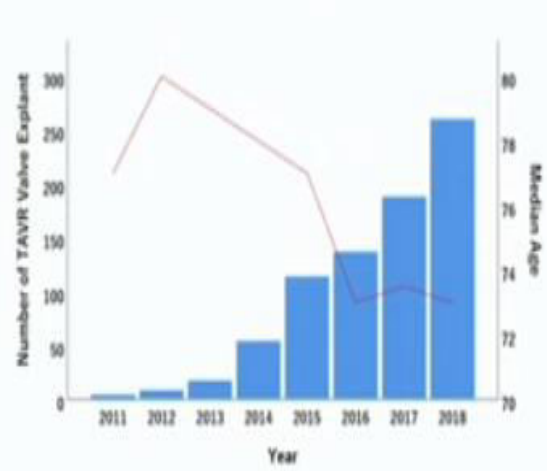
Second implant

SAVR

Third implant

TAVR

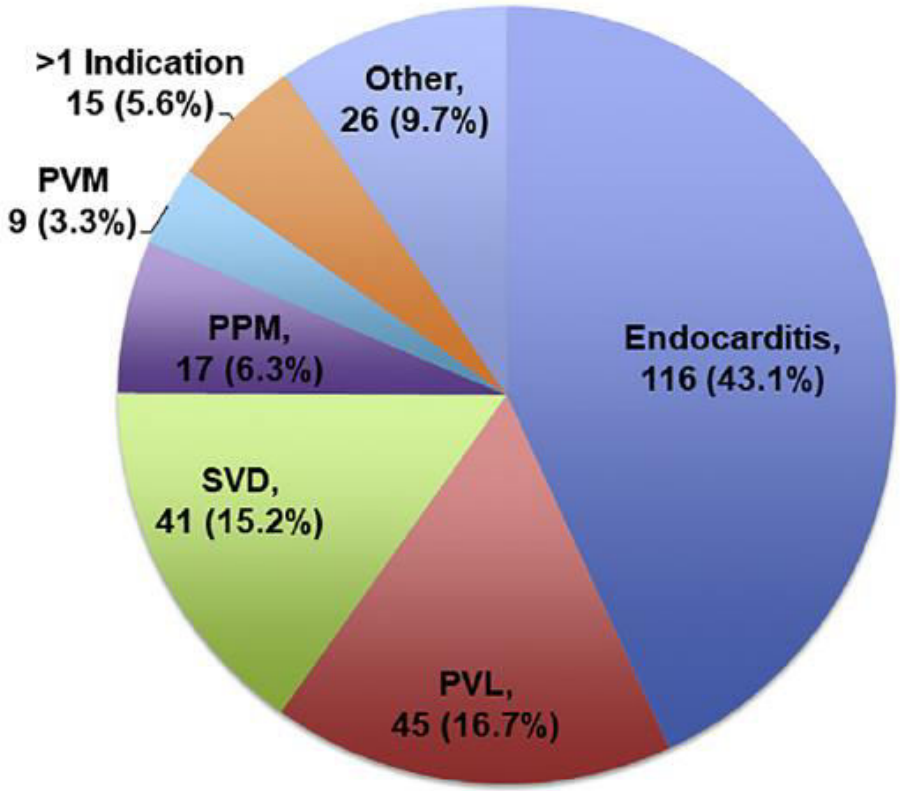




Performed by 483 surgeons (median 1.0 case per surgeon [IQR 1.0–2.0]) from 313 centers (median 1.0 case per center [IQR 1.0–3.0]).

Surgical Explantation After TAVR Failure

Mid-Term Outcomes From the EXPLANT-TAVR International Registry



Urgent or emergent cases: 53.1% of cases

Concomitant cardiac procedure: 54.6% of cases

Prior THV in inTHV: 7.2% of cases

Median age: 72 years

Median time of explantation: 11.5 months

First implant

TAVR

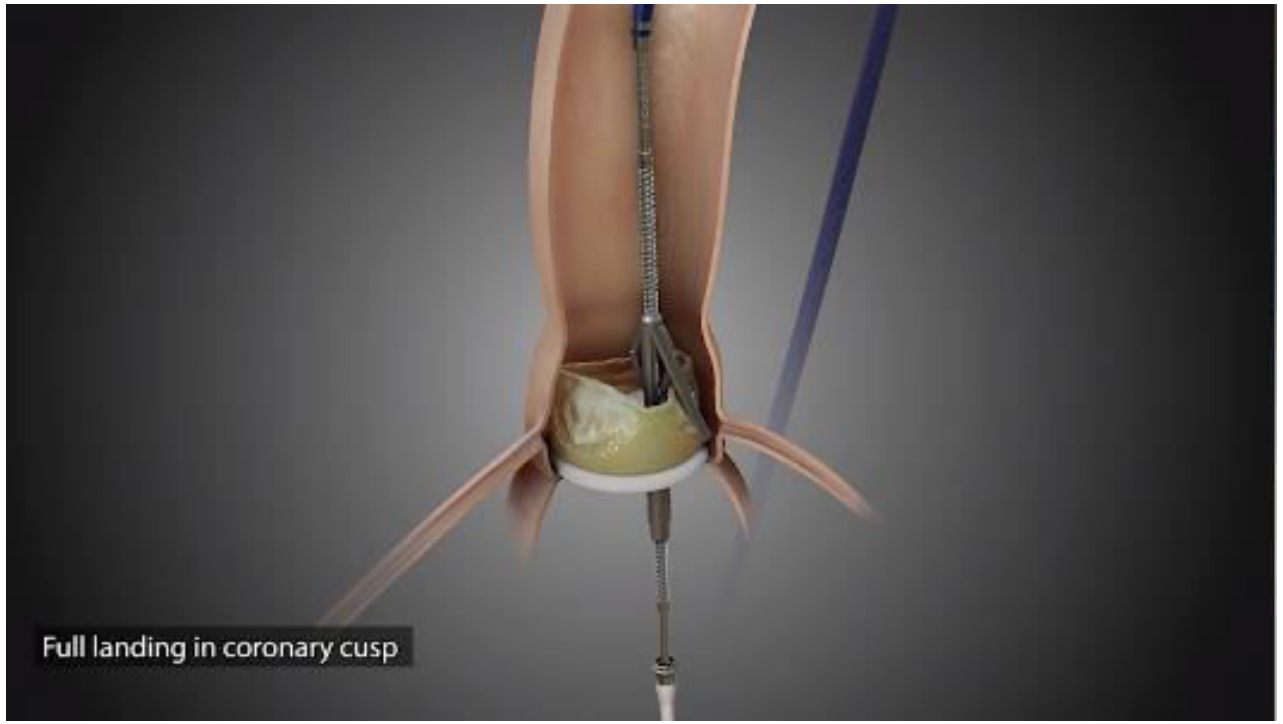
Second implant

TAVR

Third implant

TAVR

- Large annulus
- Wide sinuses of Valsalva
- BEV with short frame



Conclusions

- **A significant proportion of younger patients are being offered TAVI nowdays**
- **Although several issues are still unsettled, iteration of devices with better commissure alignment and leaflet modification devices will likely make REDO-TAVR feasible for a significant proportion of patients**
- **At the moment, an approach tailored on patient anatomy, lifetime expectations and preferences appears the optimal strategy**