Ten-year Outcomes of the PARTNER II Intermediate-Risk Studies:

A Propensity-matched Analysis of P2S3i TAVR and P2A Surgery

Raj Makkar, MD
on behalf of The PARTNER II Trial Investigators

TCT | San Francisco | October 27th, 2025

THE PARTNER II TRIAL

Disclosure Statement of Financial Interest

Raj Makkar, MD

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship	Company
• Grant/Research Support	• Edwards Lifesciences, St Jude Medical
• Consultant fee/Honoraria	• Edwards Lifesciences, Abbott Vascular, Cordis Corporation, Medtronic

Background (1)

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- The third-generation SAPIEN 3 transcatheter heart valve was introduced shortly after PARTNER 2A (P2A) trial enrollment.
- The PARTNER 2 SAPIEN 3 Intermediate-risk Registry (P2S3i) was subsequently designed using **the same eligibility criteria** as the P2A trial.
- P2S3i patients were **prospectively enrolled** to undergo S3 TAVR for a **pre-specified comparison** to the surgical arm of the P2A trial.

Background (2)

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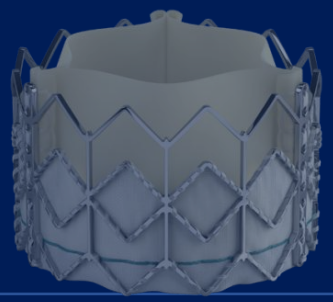
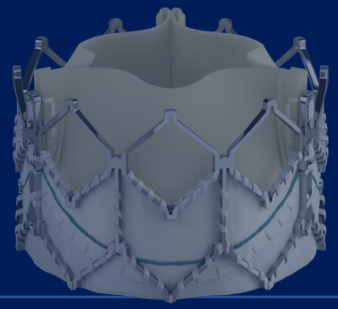
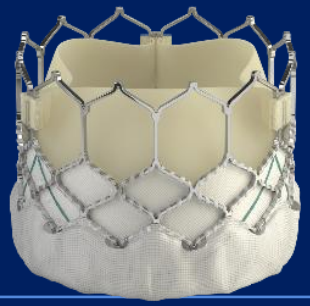
	SAPIEN*	SAPIEN XT*	SAPIEN 3
Valve Technology			
Sheath Compatibility	 22-24F	 16-20F	 14-16F
Available Valve Sizes	 23 mm  26 mm	 23 mm  26 mm  29 mm	 20 mm  23 mm  26 mm  29 mm

SAPIEN and SAPIEN XT valves are older models that has been discontinued and are not available for commercial use

Background (3)

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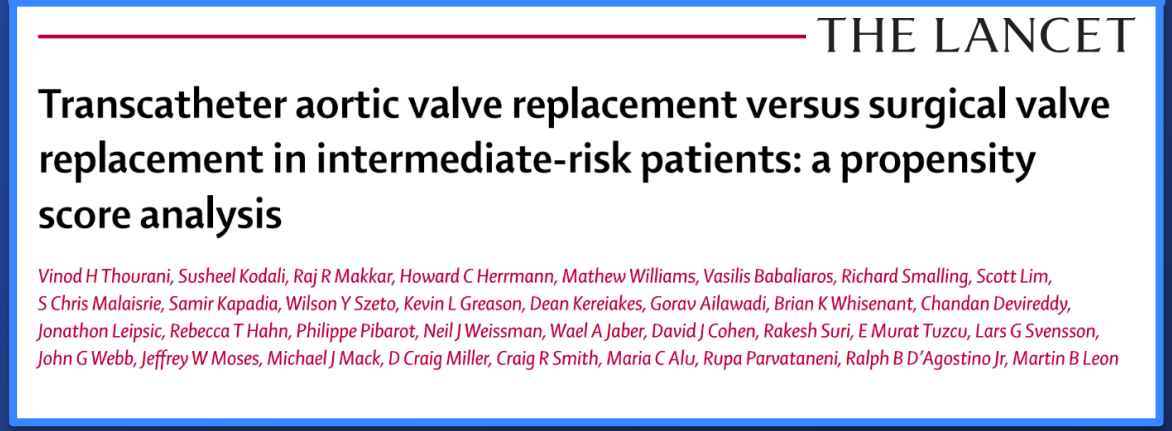
1-year Outcomes



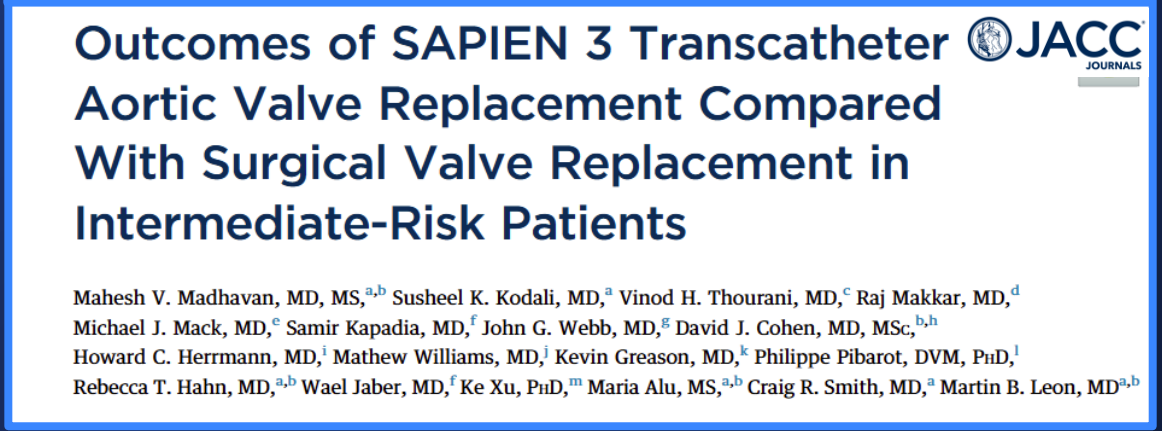
THE LANCET

Transcatheter aortic valve replacement versus surgical valve replacement in intermediate-risk patients: a propensity score analysis

Vinod H Thourani, Susheel Kodali, Raj R Makkar, Howard C Herrmann, Mathew Williams, Vasilis Babaliaros, Richard Smalling, Scott Lim, S Chris Malaisrie, Samir Kapadia, Wilson Y Szeto, Kevin L Greason, Dean Kereiakes, Gorav Ailawadi, Brian K Whisenant, Chandan Devireddy, Jonathon Leipsic, Rebecca T Hahn, Philippe Pibarot, Neil J Weissman, Wael A Jaber, David J Cohen, Rakesh Suri, E Murat Tuzcu, Lars G Svensson, John G Webb, Jeffrey W Moses, Michael J Mack, D Craig Miller, Craig R Smith, Maria C Alu, Rupa Parvataneni, Ralph B D'Agostino Jr, Martin B Leon

Thourani VH et al. Lancet 2016; 387:2218-2225.

5-year Outcomes



JACC JOURNALS

Outcomes of SAPIEN 3 Transcatheter Aortic Valve Replacement Compared With Surgical Valve Replacement in Intermediate-Risk Patients

Mahesh V. Madhavan, MD, MS,[a,b] Susheel K. Kodali, MD,[a] Vinod H. Thourani, MD,[c] Raj Makkar, MD,[d] Michael J. Mack, MD,[e] Samir Kapadia, MD,[f] John G. Webb, MD,[g] David J. Cohen, MD, MSc,[b,h] Howard C. Herrmann, MD,[i] Mathew Williams, MD,[j] Kevin Greason, MD,[k] Philippe Pibarot, DVM, PhD,[l] Rebecca T. Hahn, MD,[a,b] Wael Jaber, MD,[f] Ke Xu, PhD,[m] Maria Alu, MS,[a,b] Craig R. Smith, MD,[a] Martin B. Leon, MD[a,b]

Madhavan MV et al. JACC 2023; 82:109-123.

Here, we present 10-year outcomes of intermediate-risk patients with symptomatic, severe AS who underwent SAPIEN 3 TAVR (P2S3i) or surgery (P2A) using a propensity-matched analysis.

The PARTNER 2A and S3i Trials
Study Designs

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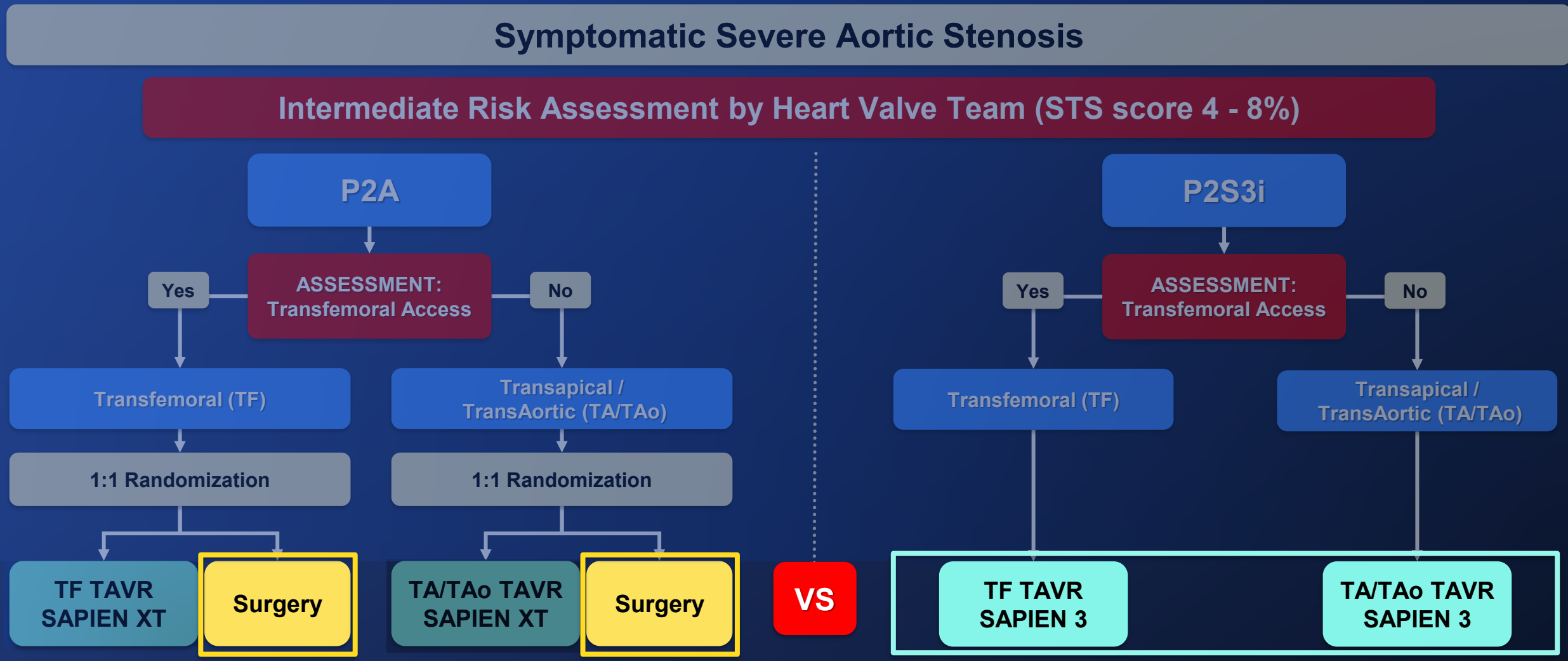

PARTNER 2 – 10-year Follow-up

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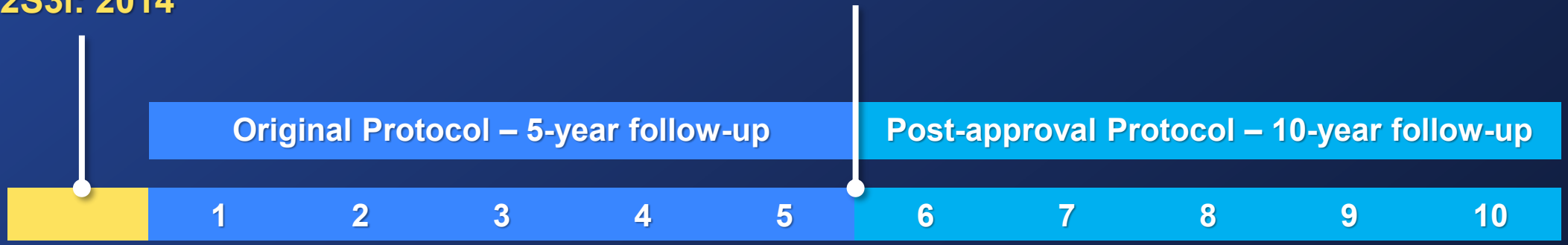
Trial Enrollment:
- **P2A: 2011 – 2013**
- **P2S3i: 2014**

Reconsent required for follow-up extension to 10 years per FDA request



A Vital Status Sweep (VSS) was performed by sites using patient/family phone calls, publicly-available data, and/or medical records in patients who withdrew, were lost to follow-up, did not reconsent, or missed a visit

Study Methodology

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- P2S3i TAVR patients were propensity-score matched 1:1 to P2A surgical patients using the **same methodology as the 5-year analysis.**[1]
- Matching was performed in the **valve-implant populations** of both studies.
- **Key endpoints available include:**
  - All-cause death (with VSS)
  - AV reintervention
  - Mean gradient
  - PVR

*Assessed by the **same echo core lab** for both studies*

1. Madhavan MV et al. JACC 2023; 82:109-123.

Patient Disposition
Available for All-cause Mortality Analysis

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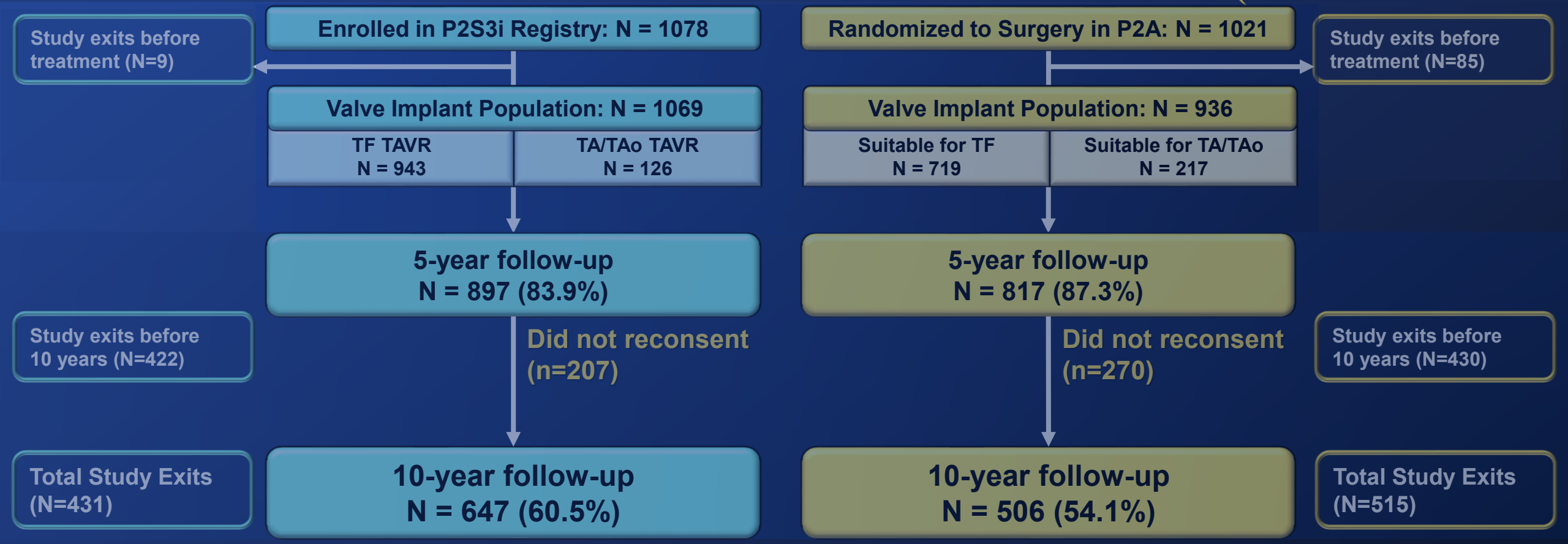

10-year follow-up with VSS
N = 959 (89.7%)

10-year follow-up with VSS
N = 838 (89.5%)

Baseline Characteristics
Unmatched

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Characteristic	TAVR (n = 1069)	Surgery (n = 936)	P-value
Age, y	81.9 ± 6.6	81.6 ± 6.7	0.35
Male	61.6	54.7	0.001
Annulus diameter, mm	21.9 ± 2.2	21.5 ± 2.1	<0.0001
STS Score, %	5.3 ± 1.3	5.8 ± 1.9	<0.0001
NYHA Class III/IV	72.7	75.9	0.06
Hypertension	92.1	94.8	0.01
CAD	69.7	66.4	0.12
Prior CABG	28.1	25.5	0.22
Prior atrial fibrillation	35.7	34.8	0.66
PVD	28.3	31.9	0.02
Renal insufficiency	7.6	5.5	0.02
LVEF, %	58.5 ± 13.4	55.4 ± 11.8	<0.0001
≥ Moderate MR	8.8	18.2	<0.0001

All-cause Mortality
Unmatched

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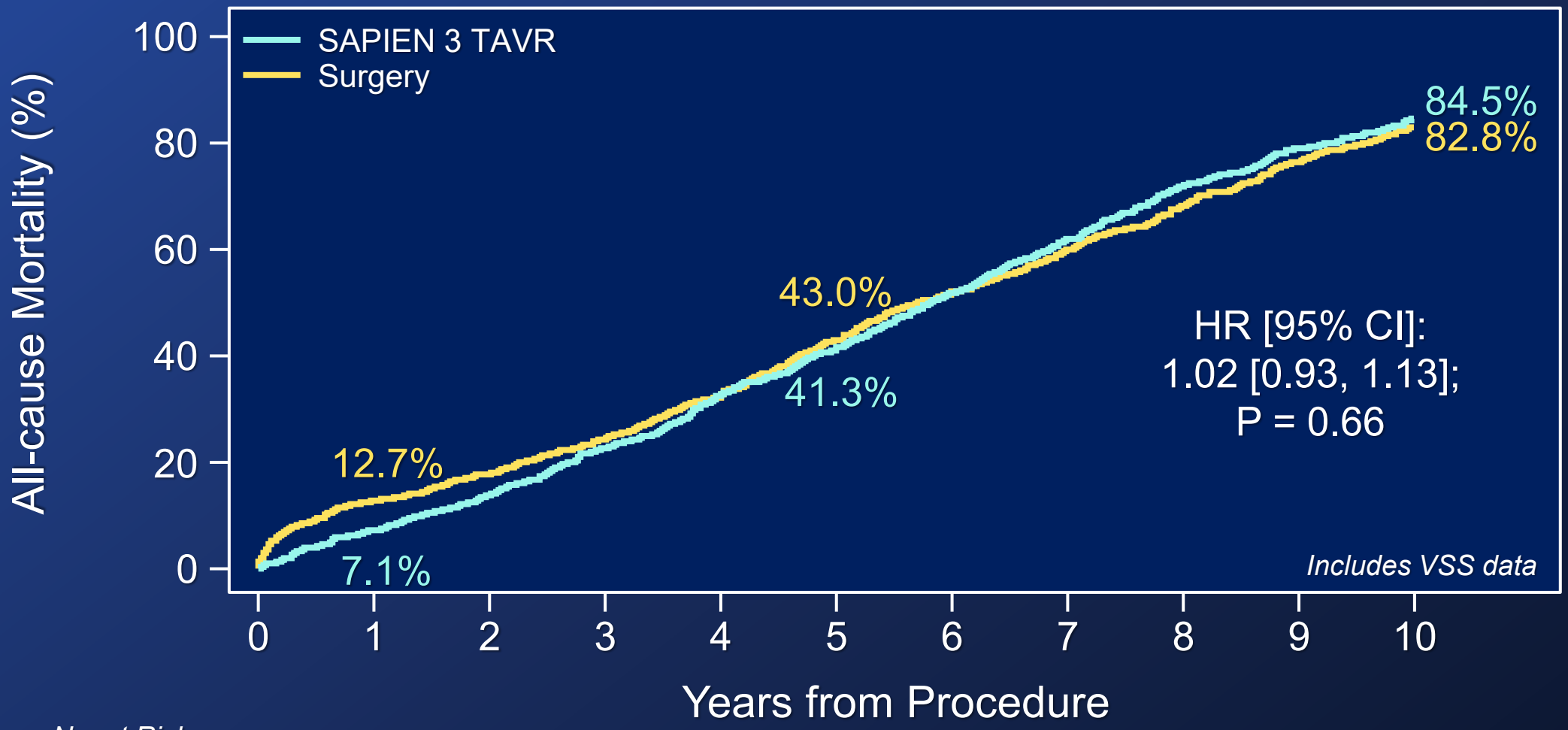

No. at Risk

S3 TAVR	1069	987	905	811	698	598	482	379	279	201	107
Surgery	936	813	763	701	624	503	396	327	254	184	120

Baseline Characteristics
After Matching

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Characteristic	TAVR (n = 783)	Surgery (n = 783)	P-value
Age, y	81.7 ± 6.7	81.5 ± 6.8	0.60
Male	58.0	57.0	0.80
Annulus diameter, mm	21.7 ± 2.2	21.7 ± 2.1	0.69
STS Score, %	5.5 ± 1.3	5.5 ± 1.5	0.74
NYHA Class III/IV	74.5	74.6	0.95
Hypertension	93.5	93.9	0.76
CAD	68.6	67.6	0.66
Prior CABG	27.1	25.9	0.61
Prior atrial fibrillation	35.1	34.0	0.63
PVD	29.9	29.5	0.87
Renal insufficiency	6.0	6.0	>0.99
LVEF, %	57.3 ± 14.0	57.0 ± 10.7	0.66
≥ Moderate MR	11.6	12.5	0.62

All-cause Mortality
After Matching

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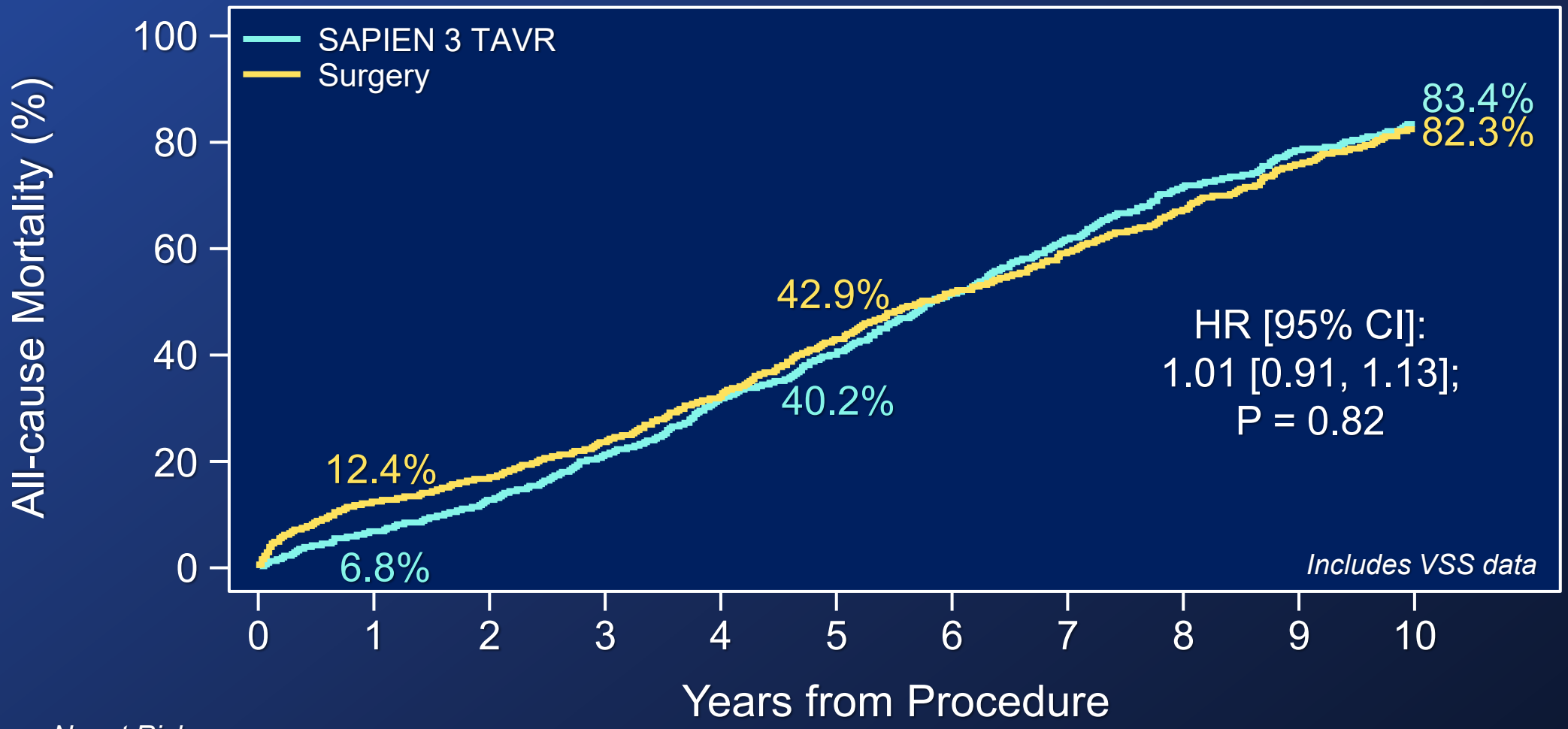

No. at Risk

S3 TAVR	783	726	671	605	515	443	352	276	206	151	80
Surgery	783	682	645	591	523	421	335	281	222	162	103

All-cause Mortality by Anatomical Access Route

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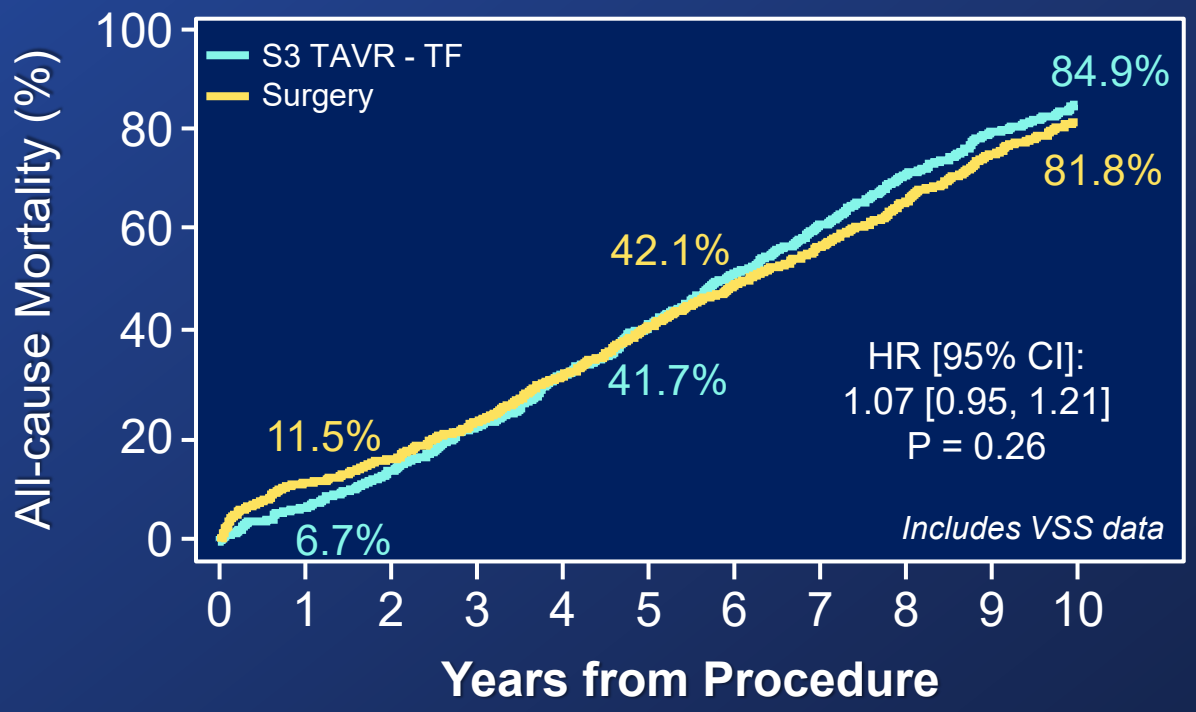
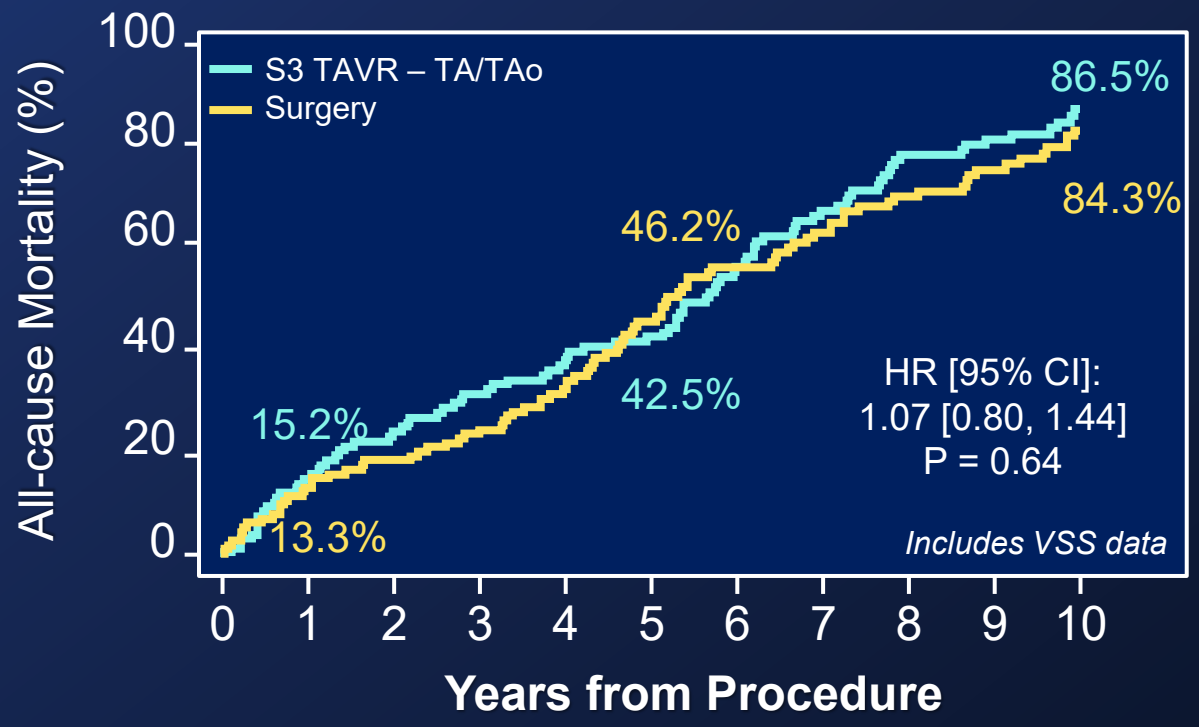
TF Access
N = 1,662 (82.9%)



No. at Risk

S3 TAVR	656	607	557	501	426	362	292	233	174	120	61
Surgery	656	578	544	496	437	355	289	244	190	138	89

TA/TAo Access
N = 343 (17.1%)



No. at Risk

S3 TAVR	113	95	83	75	68	63	45	34	23	18	11
Surgery	113	98	92	86	76	58	43	36	28	21	14

AV Reintervention

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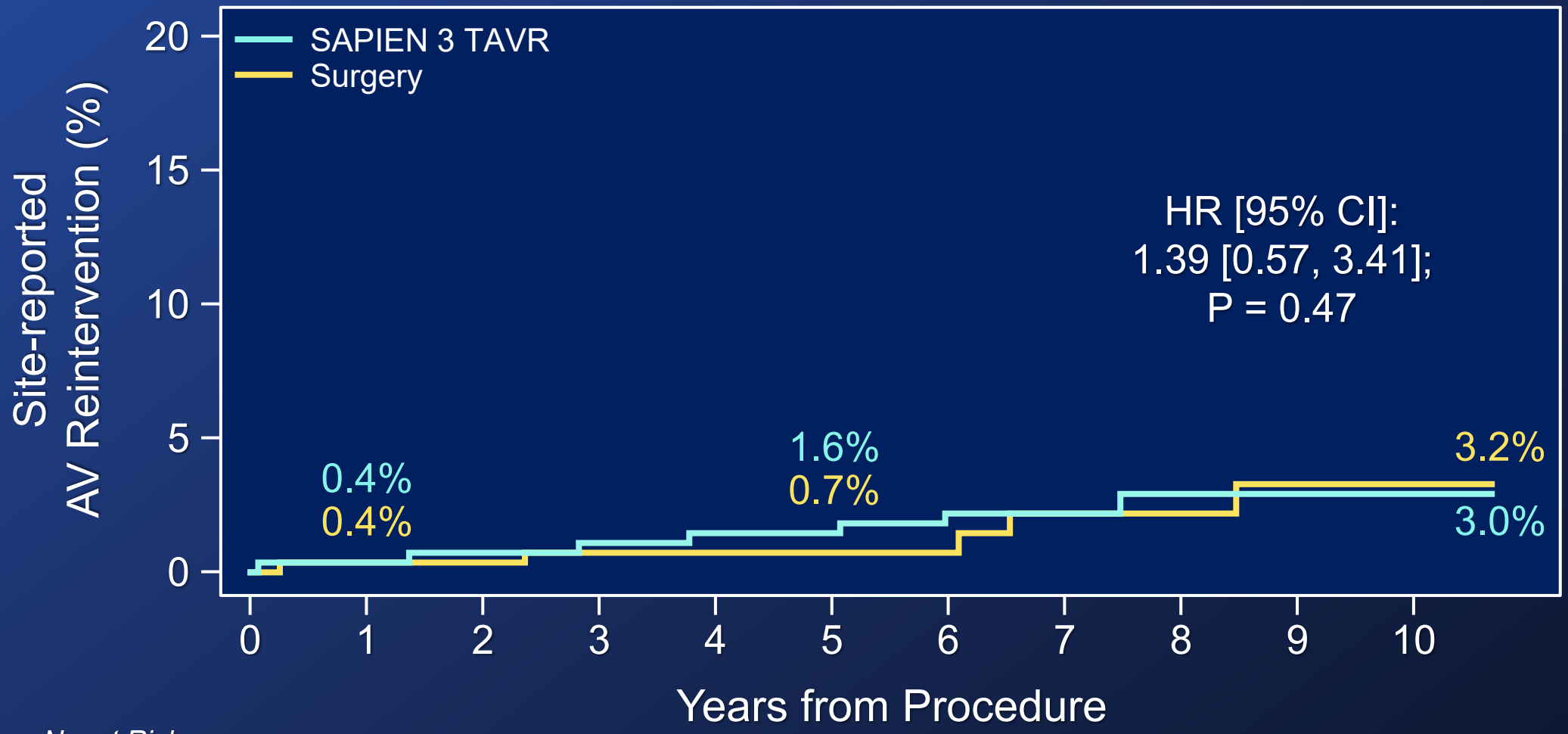

No. at Risk

S3 TAVR	783	712	647	566	458	310	165	125	101	75	32
Surgery	783	667	613	544	472	296	134	111	90	68	29

Types and Reasons for AV Reintervention

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Outcome, No. of Events at 10 years	0 – 5 Years		> 5 – 10 Years	
	S3 TAVR (N=783)	Surgery (N=783)	S3 TAVR (N=165)	Surgery (N=134)
Total Aortic Valve Reintervention	10 pts (11 events)	5 pts (5 events)	2 pts (2 events)	3 pts (3 events)
Reintervention Reason				
Restenosis	1	0	1	2
Aortic Regurgitation	10	1	1	1
Endocarditis	0	4	0	0
Reintervention Type				
Valve-in-valve	8	0	1	3
Surgical Explant	2	5	1	0
BAV	1	0	0	0

Echocardiography in Survivors:
Mean Gradient

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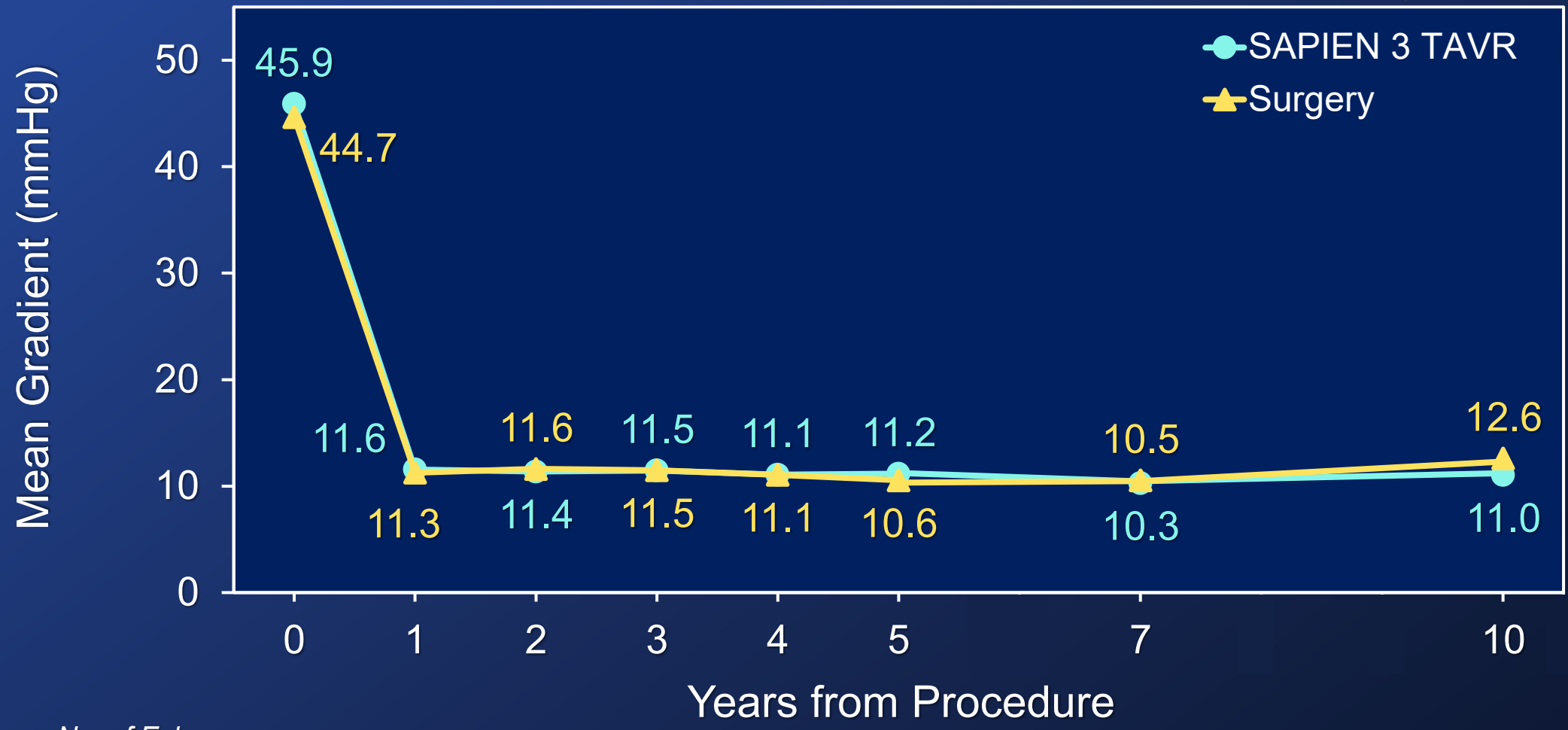

No. of Echos								
S3 TAVR	769	645	552	450	348	269	87	32
Surgery	767	535	458	384	325	249	68	30

Core-lab adjudicated; Patients with explants/VIVs were censored after reintervention

Echocardiography in Survivors:
Total Aortic Regurgitation

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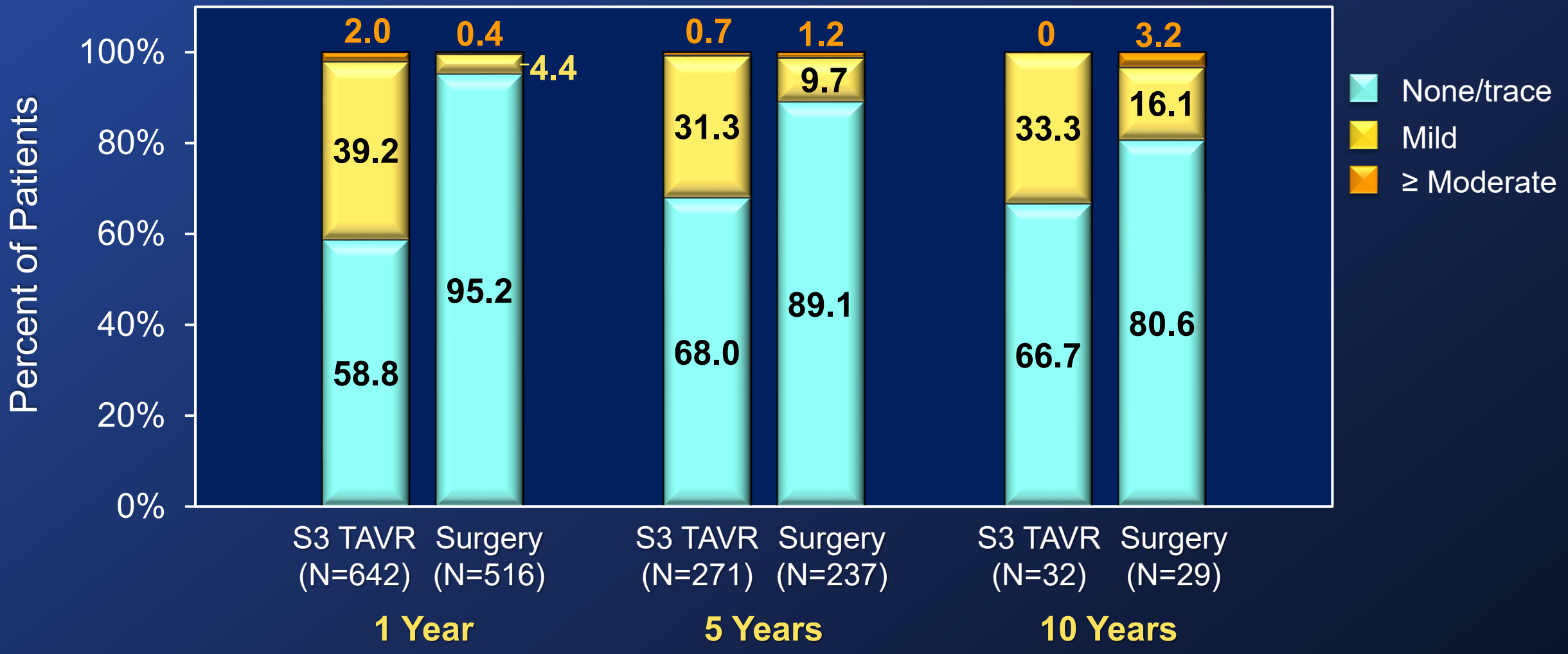

Core-lab adjudicated; Patients with explants/VIVs were censored after reintervention

Echocardiography in Survivors:
Paravalvular Regurgitation

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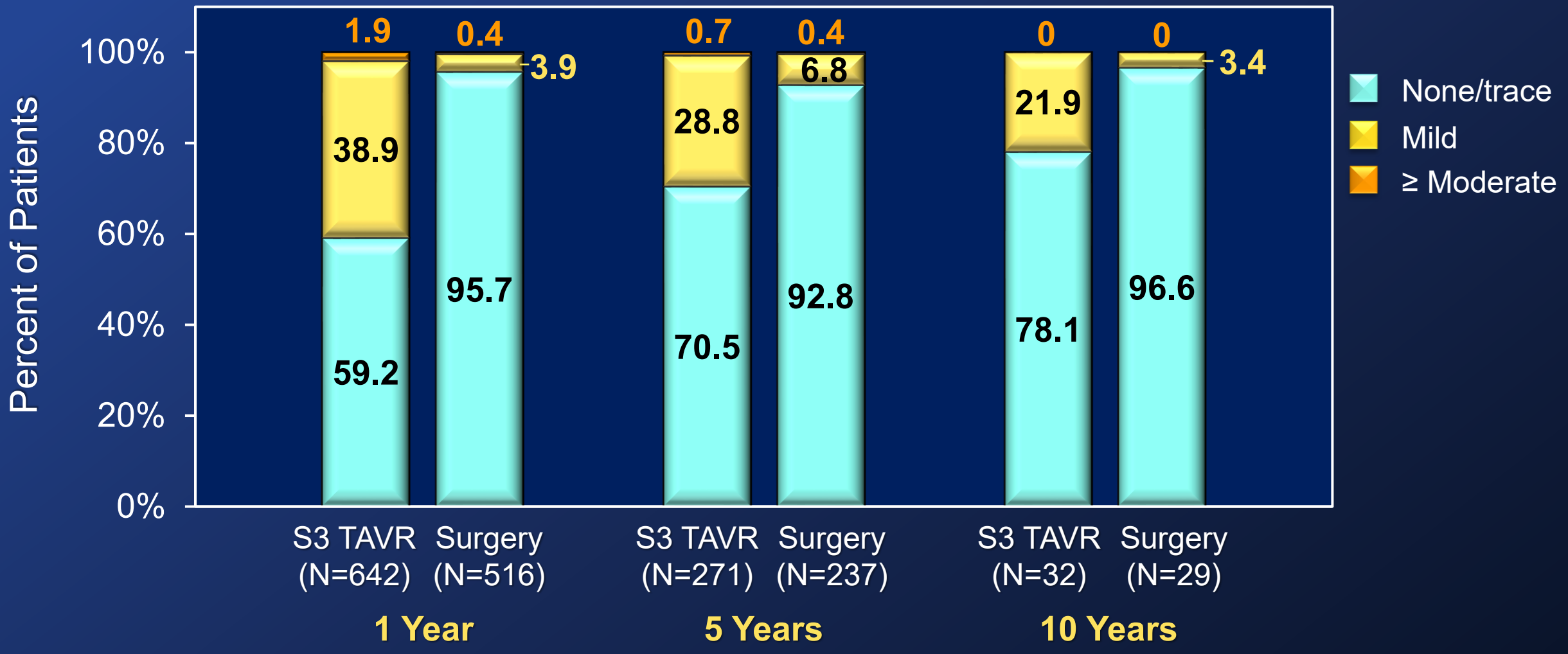

Core-lab adjudicated; Patients with explants/VIVs were censored after reintervention

Study Limitations

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- This study compared SAPIEN 3 TAVR to surgery using a propensity-matched analysis; as it was not a randomized trial, unmeasured confounders may influence results.
- There was significant missing data at 10 years due to the requirement for patient reconsent for extended follow-up, disproportionate reconsent and study withdrawal, loss to follow-up, and the competing risk of death in this elderly population.

Conclusion

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At 10 years of follow-up in intermediate-risk patients with symptomatic, severe aortic stenosis, we observed similar mortality and valve durability in SAPIEN 3 TAVR and surgery.

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Thank you!

Thank you

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