



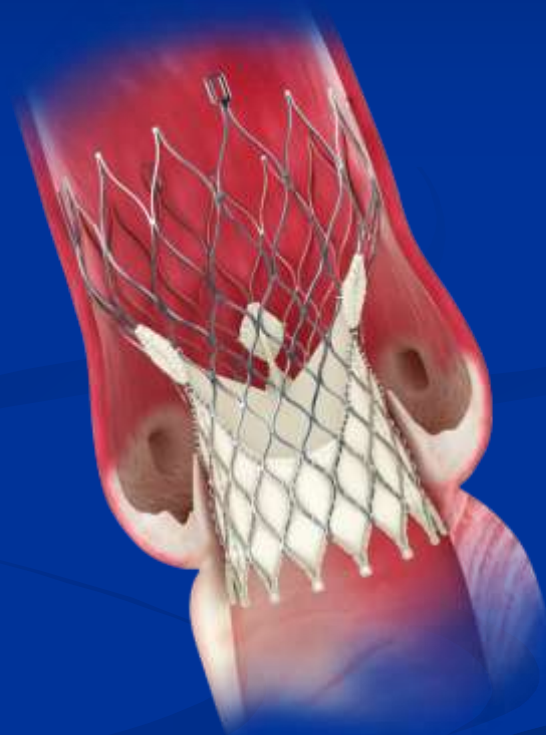
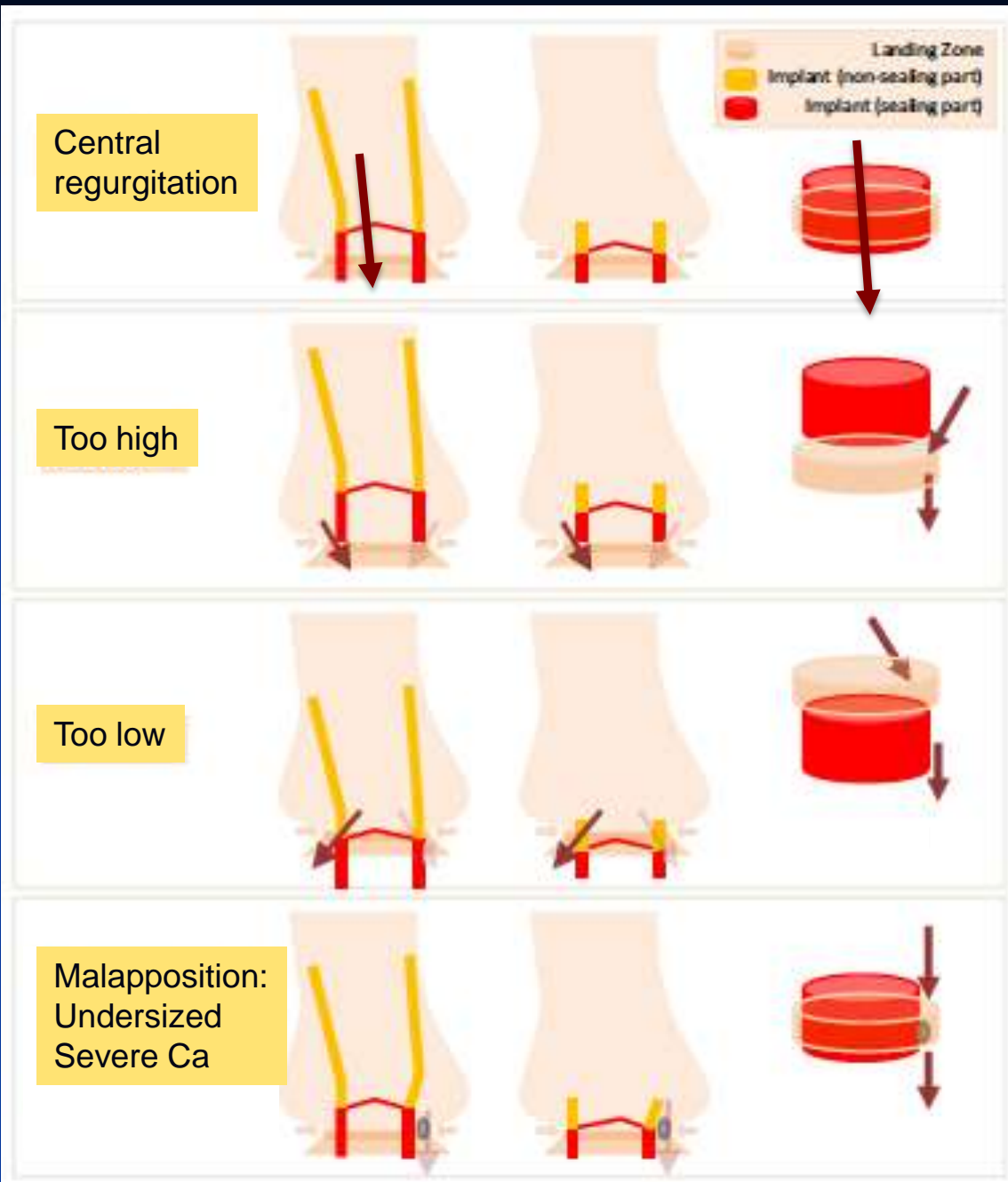
Paravavular Regurgitation Post-TAVR

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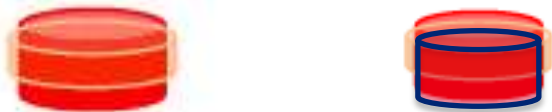
Western Australia



Assessment

- Confirm severity of aortic regurgitation
 - Echo – TEE
 - Aortography
 - Hemodynamics – AR index
- Assess valvular vs paravalvular
 - TEE
- Assess position of implantation
 - TEE
 - Aortography

Central regurgitation



Too high



Too low



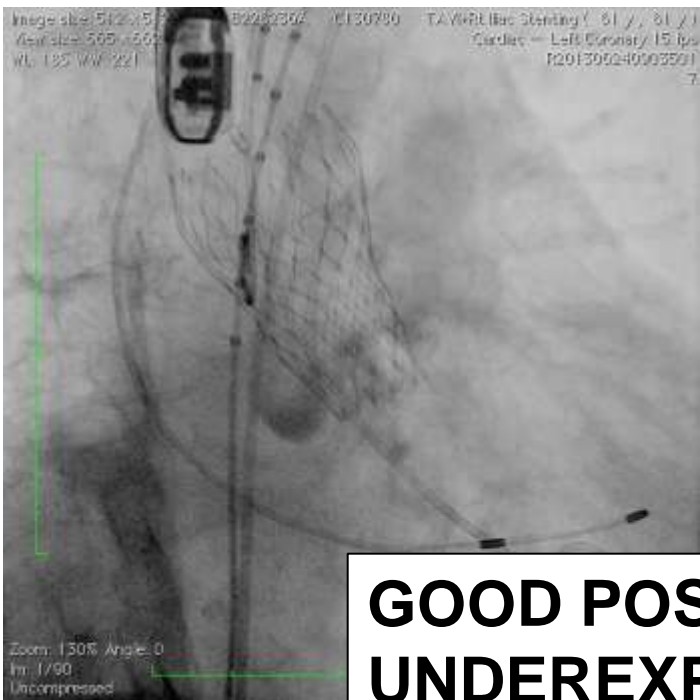
Malapposition:
Undersized
Severe Ca



?

Post-dilation
Occluder
?2nd Implant
Surgery

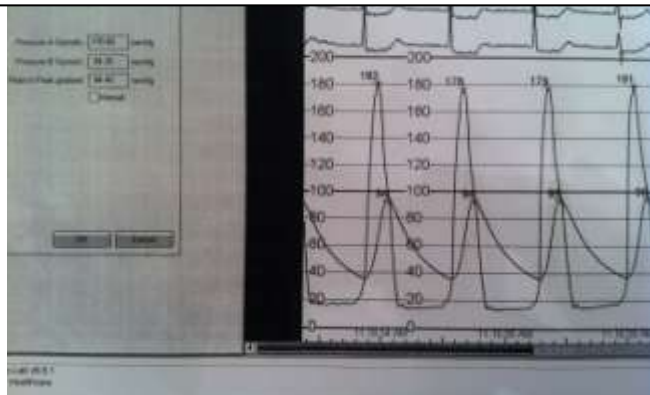
VALVE-IN-VALVE



GOOD POSITION
UNDEREXPANDED
SIGNIFICANT RESIDUAL GRADIENT
??IS THERE SIGNIFICANT AR
RX – POST-DILATE

26mm Corev
 peak to peak
 LVEDP: 18mm
 moderate to

expanded



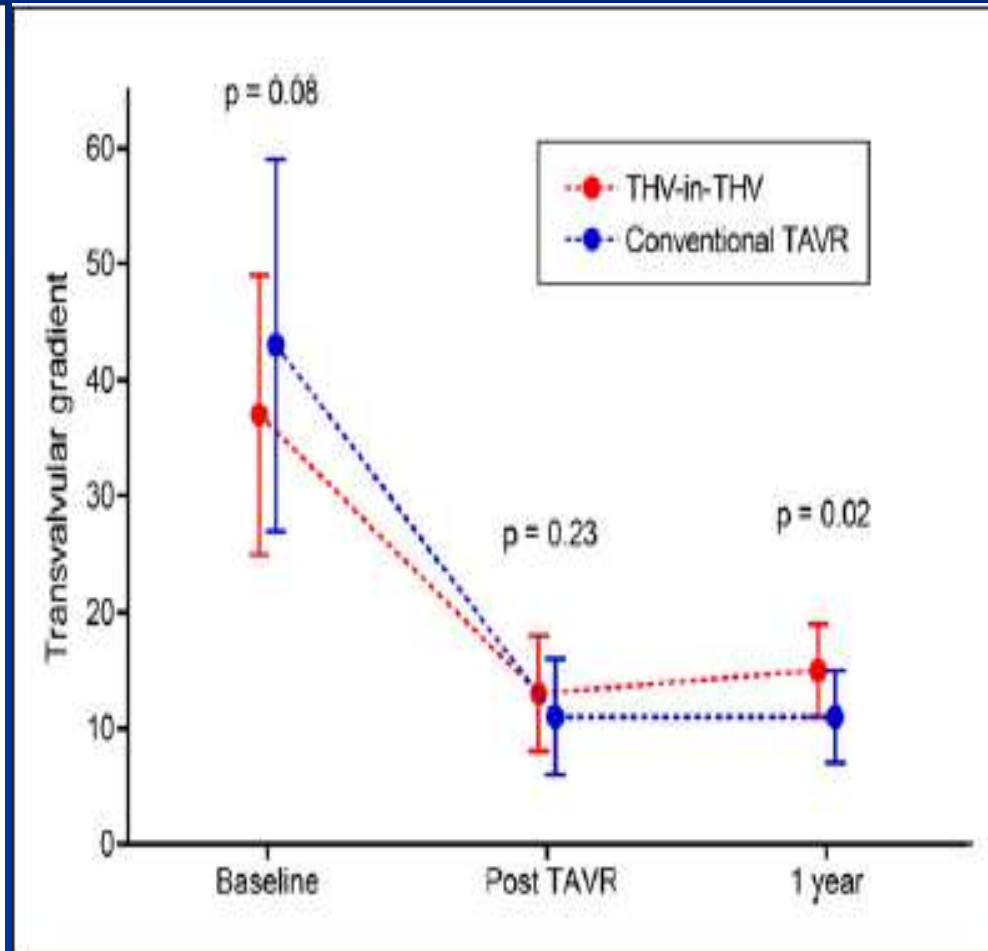
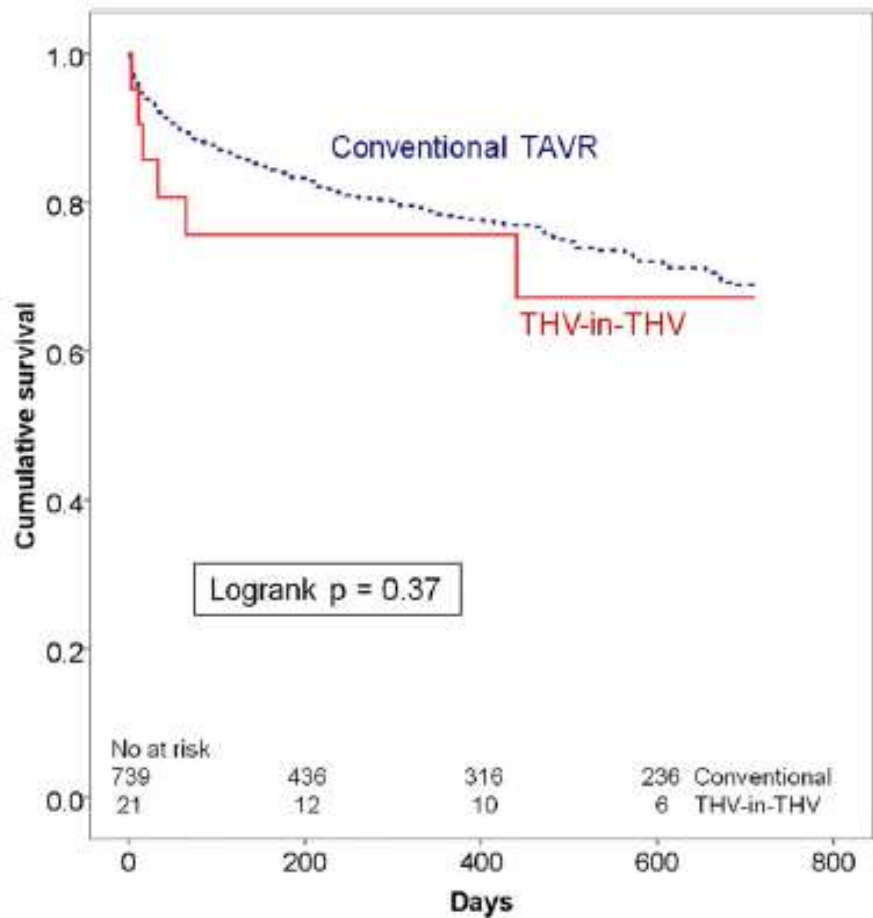
SUPPLEMENT1

Transcatheter Valve-In-Valve Implantation for Failed Balloon-Expandable Transcatheter Aortic Valves

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Samir Kapadia, MD,‡ Alexander B. Willson, MBBS, MPH,* Jian Ye, MD,*
Anson Cheung, MD,* Jonathon Leipsic, MD,* Ronald K. Binder, MD,*
Ronen Gurvitch, MBBS,* Melanie Freeman, MBBS,* Christopher R. Thompson, MD,*
Lars G. Svensson, MD,‡ Eric Dumont, MD,† E. Murat Tuzcu, MD,‡ John G. Webb, MD*

Vancouver, British Columbia, and Quebec City, Quebec, Canada; and Cleveland, Ohio

- 760 consecutive TAVR in 3 centers with balloon expandable valve
- THV-in-THV performed in 21 cases due to severe AR (2.8%)
- Reasons:
 - Malposition: 10 too aortic, 8 too ventricular
 - Valvular regurgitation: 3
- Technically successful in 19 patients
 - Unsuccessful in 2 patients due to ventricular embolization in both cases
- PPM - 2/21 (9.5%) (vs. 6% in conventional TAVR; p=NS)
- Stroke - 1/21 (4.7%) (vs. 2% in conventional TAVR; p=NS)

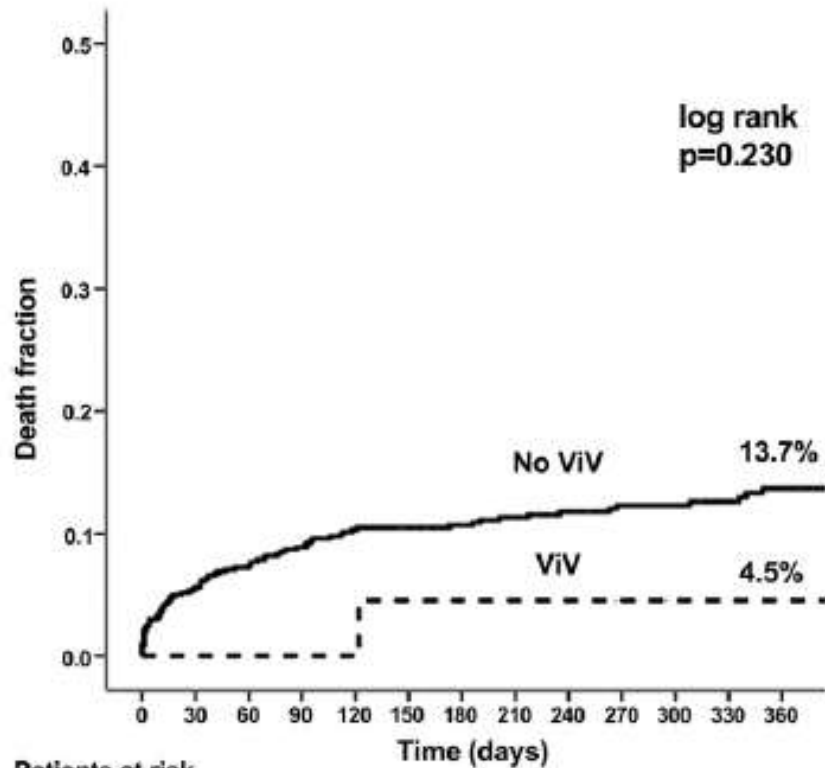


The Valve-in-Valve Technique for Treatment of Aortic Bioprosthesis Malposition

An Analysis of Incidence and 1-Year Clinical Outcomes From the Italian CoreValve Registry

Gian Paolo Ussia, MD,*† Marco Barbanti, MD,* Angelo Ramondo, MD,‡ Anna Sonia Petronio, MD,§ Federica Etori, MD,|| Gennaro Santoro, MD,¶ Silvio Klugmann, MD,# Francesco Bedogni, MD,** Francesco Maisano, MD,†† Antonio Marzocchi, MD,‡‡ Arnaldo Poli, MD,§§ Massimo Napodano, MD,‡ Corrado Tamburino, MD, PhD*†
Catania, Padova, Pisa, Brescia, Florence, Milano, Bologna, and Legnano, Italy

- 663 consecutives TAVR in 14 centers in Italy with CoreValve
- Valve-in-Valve rescue performed in 24 pts (3.6%)
- All successful technically
- No Coronary impairment
- Post-dilatation 50% (vs. 8.8% in conventional TAVR; $p < 0.001$)
- PPM 33.3% (vs 14.5% in conventional TAVR; $p = 0.02$)
- Stroke 0 (vs. 1.2% in conventional TAVR; $p = \text{NS}$)

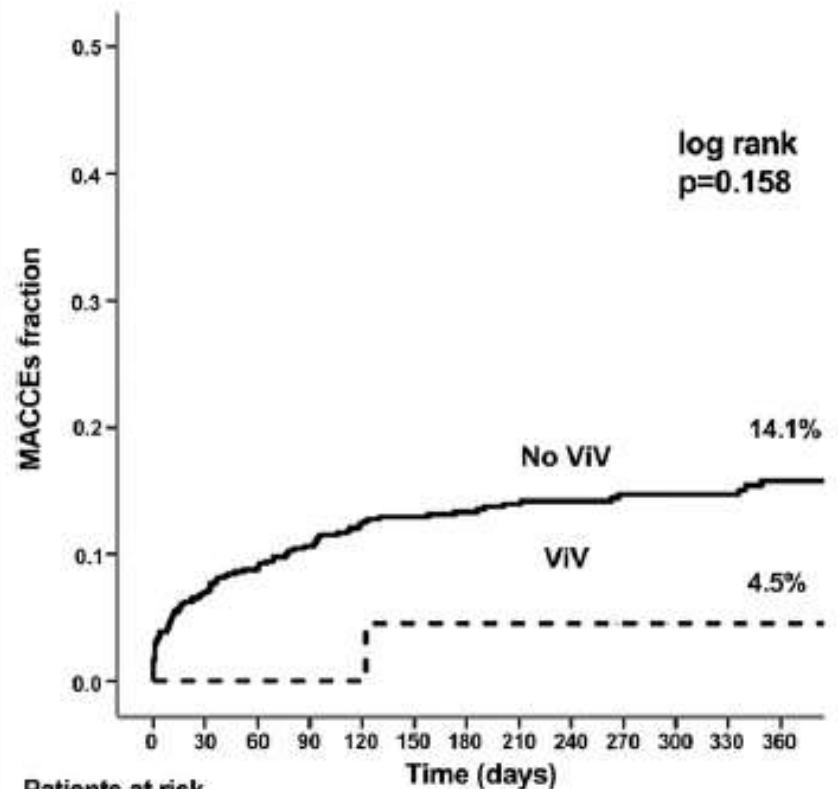


Patients at risk

no ViV	639	550	445	401	289
ViV	24	24	23	23	23

Figure 3 Time-to-Event Curves for the Mortality End Point

Event rates were calculated with the use of Kaplan-Meier methods and were compared with the use of the log-rank test. ViV = valve-in-valve.



Patients at risk

no ViV	639	509	432	394	292
ViV	24	24	23	23	23

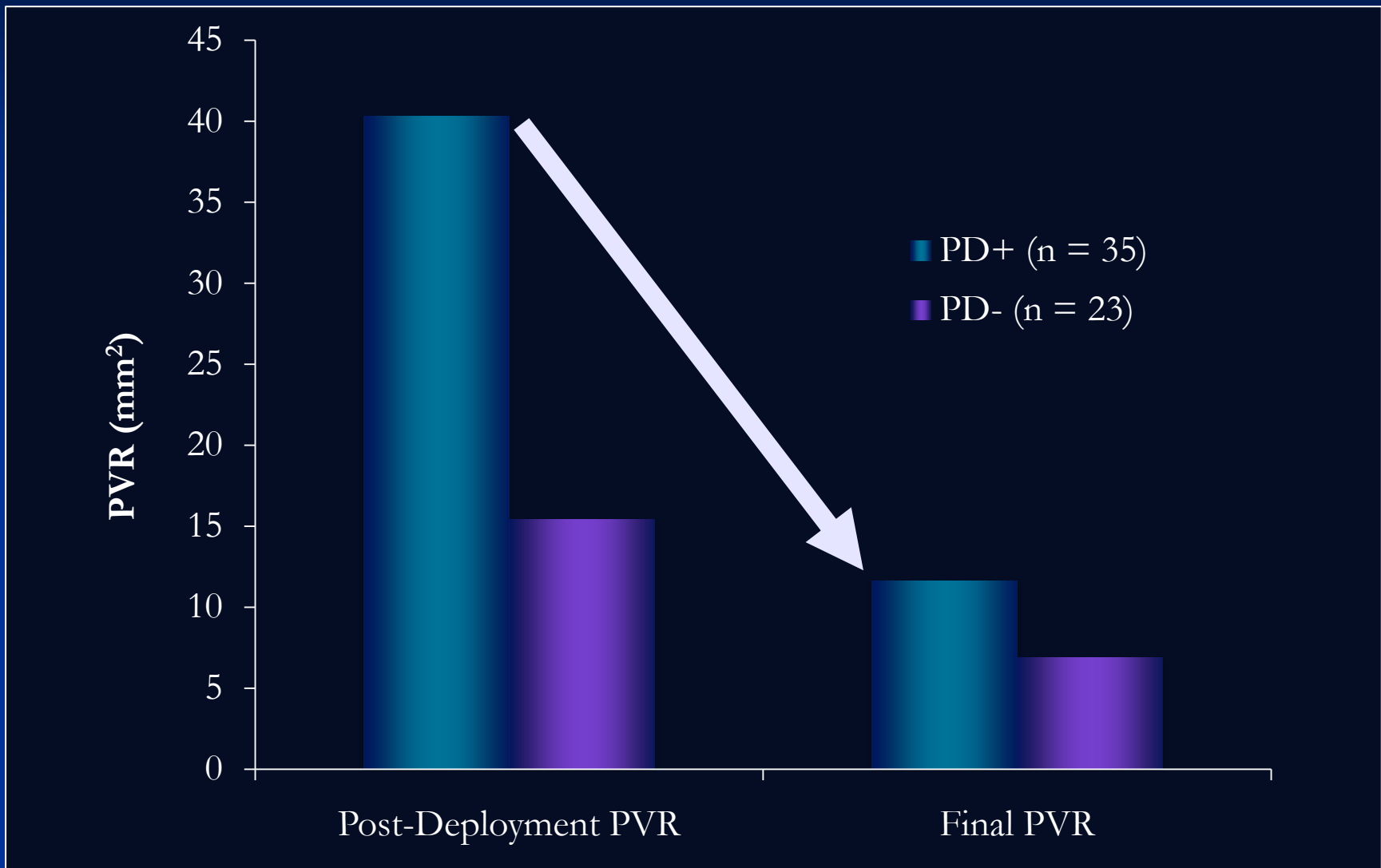
Figure 4 Time-to-Event Curves for MACCE

Event rates were calculated with the use of Kaplan-Meier methods and were compared with the use of the log-rank test. MACCE = major adverse cardiovascular and cerebrovascular events; ViV = valve-in-valve.

Efficacy and Safety of Postdilatation to Reduce Paravalvular Regurgitation During Balloon-Expandable Transcatheter Aortic Valve Replacement

Benoit Daneault, MD; Elana Koss, MD; Rebecca T. Hahn, MD; Susheel Kodali, MD; Mathew R. Williams, MD; Philippe Généreux, MD; Jean-Michel Paradis, MD; Isaac George, MD; George R. Reiss, MD; Jeffrey W. Moses, MD; Craig R. Smith, MD; Martin B. Leon, MD

- 258 consecutive TAVR patients with balloon expandable valve in single centre
- Post-dilatation systematically performed if paravalvular regurgitation $\geq 2+$ - in 106 patients (41%)
- Same balloon as valve-deployment used
 - Between 0-2ml additional contrast added. Most common 1ml (86%)
- Post-dilatation patients
 - Larger annulus (on echo) – 23.2mm vs 21.9mm ($p=0.009$)
 - Lower cover index – 6.9% vs 10.1% ($p=0.02$)



30-day Clinical Outcomes

Post-dilatation vs No Post-dilatation

Table 3. Clinical Outcomes

	Postdilatation (n=106)	No Postdilatation (n=153)	OR (95% CI)	<i>P</i> Value
30-day mortality	2 (1.9%)	11 (7.2%)	0.25 (0.05–1.14)	0.06
30-day cardiac mortality	1 (0.9%)	6 (3.9%)	0.23 (0.03–1.97)	0.25
In-hospital cerebrovascular events				
All stroke or TIA	5 (4.7%)	2 (1.3%)	3.74 (0.71–19.64)	0.13
All stroke	4 (3.8%)	1 (0.7%)	5.96 (0.66–54.10)	0.16
Aortic dissection	1 (0.9%)	1 (0.7%)	1.45 (0.09–23.4)	1.00
Aortic wall hematoma	1 (0.9%)	3 (2.0%)	0.48 (0.05–4.64)	0.65
PPM implantation during index hospitalization	6 (5.7%)	13 (8.5%)	0.65 (0.24–1.76)	0.39

Diameter (mm)

23

26

29

Area (mm)²

415

531

661

Perimeter (mm)

72.3

81.7

91.1

Height

14.3 mm

17.2 mm

19.1 mm

Annulus Range

TEE (mm)^a

18 - 21

21 - 22

22 - 24

24 - 25

25 - 27

CT MD (mm)^b

19 - 22

22 - 23

23 - 25

25 - 26

26 - 28

CT Area (mm²)^b

300 - 380

380 - 415

415 - 490

490 - 530

530 - 620

CT Perimeter (mm)^b

60.0 - 69.0

69.0 - 72.0

72.0 - 78.5

78.5 - 81.5

81.5 - 88.0

Distance Coronaries (mm)^b

10

10

11

SXT 23

BAV 23 mm

SXT 26

BAV 25 mm

SXT 29

Diameter (mm)

23

26

29

31

Height

45 mm

55 mm

53 mm

52 mm

Area (mm²)

415

531

661

754

Perimeter (mm)

72.3

81.6

91.1

97.4

Annulus Range

TEE (mm)*

17 - 19

19 - 22

22 - 26

25 - 28

CT MD (mm)*

18 - 20

20 - 23

23 - 27

26 - 29

CT Area (mm²)*

254.5 - 314.2

314.2 - 415.5

415.5 - 572.6

530.9 - 680.5

CT Perimeter (mm)*

56.5 - 62.8

62.8 - 72.3

72.3 - 84.8

81.7 - 91.1

AsAo Width (mm)*

≤34

≤40

≤43

≤43

Sinus Height (mm)*

15

15

15

15

Sinus Width (mm)*

25

27

29

29

CoV 23

CoV 26

CoV 29

CoV 31

BAV 20 mm

BAV 23 mm

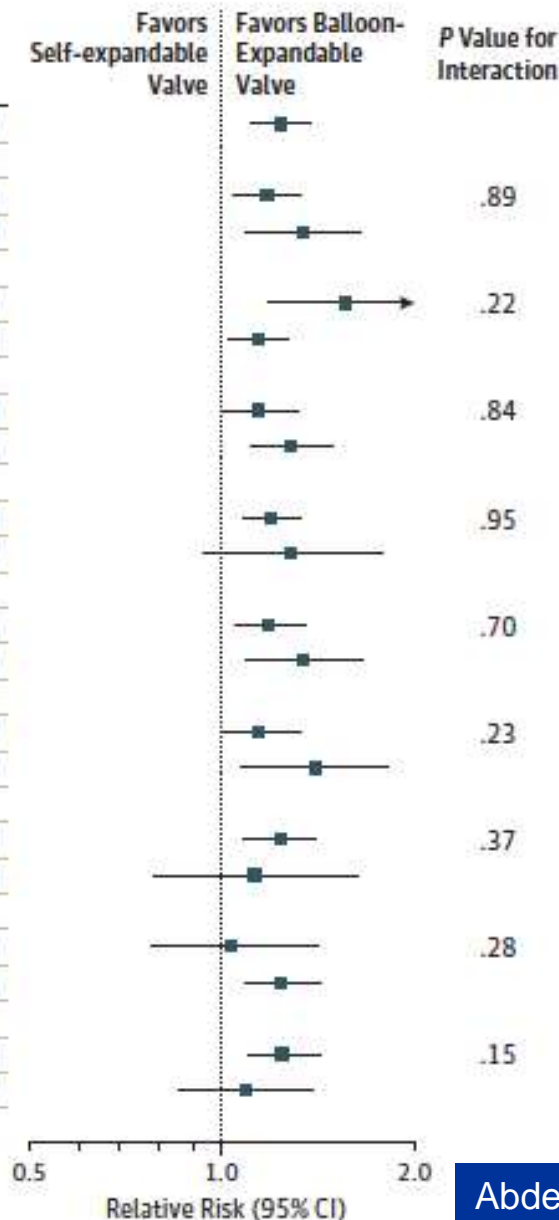
BAV 26 mm

Comparison of Balloon-Expandable vs Self-expandable Valves in Patients Undergoing Transcatheter Aortic Valve Replacement

The CHOICE Randomized Clinical Trial

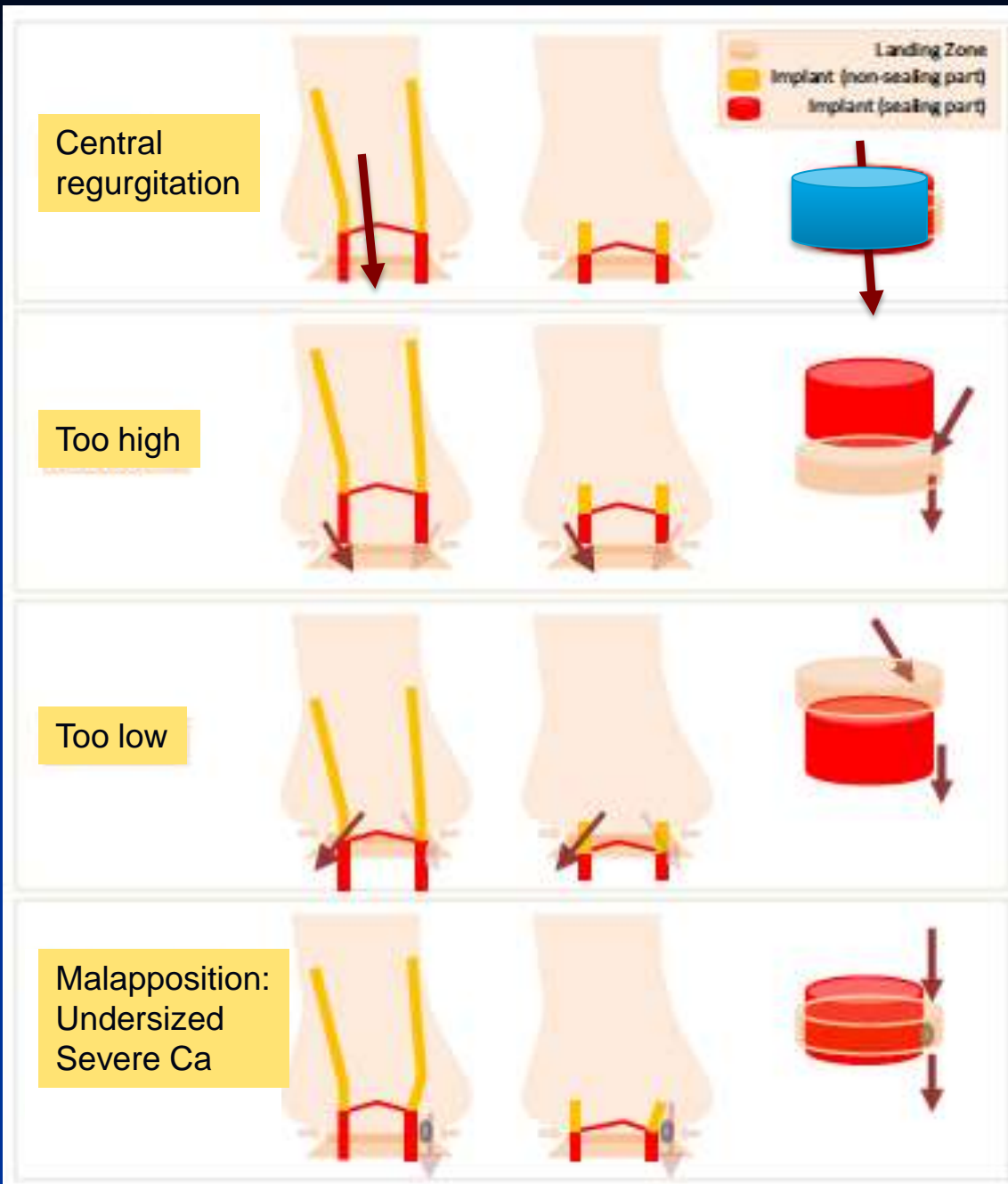
Mohamed Abdel-Wahab, MD; Julinda Mehilli, MD; Christian Freyler, MD; Franz-Josef Neumann, MD; Thomas Kurz, MD; Ralph Tölg, MD; Dirk Zachow, MD; Elena Guerra, MD; Steffen Massberg, MD; Ulrich Schäfer, MD; Mohamed El-Mawardi, MD; Gert Richardt, MD, for the CHOICE investigators

Subgroup	Device Success		Relative Risk (95% CI)
	Balloon-Expandable Valve No./Total (%)	Self-expandable Valve No./Total (%)	
Overall	116/121 (95.9)	93/120 (77.5)	1.24 (1.12-1.37)
Age, y			
≥80	82/85 (96.5)	62/76 (81.6)	1.18 (1.05-1.33)
<80	34/36 (94.4)	31/44 (70.4)	1.34 (1.09-1.65)
Sex			
Men	50/52 (96.1)	21/34 (61.8)	1.56 (1.19-2.04)
Women	66/69 (95.6)	72/86 (83.7)	1.14 (1.03-1.27)
Coronary artery disease			
No	47/48 (97.9)	35/41 (85.4)	1.15 (1.00-1.31)
Yes	69/73 (94.5)	58/79 (73.4)	1.29 (1.12-1.49)
LV ejection fraction, %			
>35	97/101 (96.0)	80/100 (80.0)	1.20 (1.08-1.33)
≤35	18/19 (94.7)	11/15 (73.3)	1.29 (0.94-1.78)
Mitral regurgitation			
None/mild	72/75 (96.0)	63/78 (80.8)	1.19 (1.06-1.34)
Moderate/severe	42/44 (95.5)	27/38 (71.1)	1.34 (1.09-1.66)
CT annulus diameter, mm			
<25	56/60 (93.3)	55/68 (80.9)	1.15 (1.01-1.32)
≥25	34/35 (97.1)	18/26 (69.2)	1.40 (1.08-1.82)
Aortic valve eccentricity index			
≤0.25	81/84 (96.4)	60/77 (77.9)	1.24 (1.09-1.40)
>0.25	8/9 (88.9)	11/14 (78.6)	1.13 (0.79-1.62)
Aortic leaflet calcification			
None/mild	8/9 (88.9)	17/20 (85.0)	1.04 (0.78-1.41)
Moderate/severe	81/85 (95.3)	56/73 (76.7)	1.24 (1.09-1.42)
LVOT calcification			
None/mild	64/66 (97.0)	55/71 (77.5)	1.25 (1.10-1.43)
Moderate/severe	25/28 (89.3)	18/22 (81.8)	1.09 (0.86-1.38)



SUPPLEMENT 2

Mechanism of AR post-TAVR



Possible Mechanisms of Severe Regurgitation Post-TAVR

- Central valvular regurgitation
- Malapposition
- Inadequate apposition
 - Calcium
 - Underzing