Redo-TAVR for Paravalvular Leak:

Insight and Early Outcomes from Timing and Combinations

Takayuki Onishi, MD*[1], Gilbert H. L. Tang MD, MSc, MBA*[1,2],, Lucy M. Safi, DO[1], Stamatios Lerakis, MD, PhD[1], Amit Hooda, MD[1], Samin K. Sharma, MD[1], Annapoorna S. Kini, MD[1], Sahil Khera, MD, MPH[1]

(1) Mount Sinai Fuster Heart Hospital, New York, New York, USA
(2) Department of Cardiovascular Surgery, Mount Sinai Health System, New York, New York, USA

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Disclosure of Relevant Financial Relationships

I, [Takayuki Onishi] DO NOT have any financial relationships to disclose.

Background

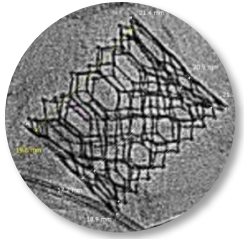
- **Paravalvular leak (PVL)** is a major cause of non-structural valve dysfunction leading to bioprosthetic valve failure.
- With the growing number of redo transcatheter aortic valve replacement (TAVR) procedures, variability in timing of reintervention for PVL has been observed.

Objective

- We investigated redo-TAVR for PVL with respect to redo timing and valve combinations.

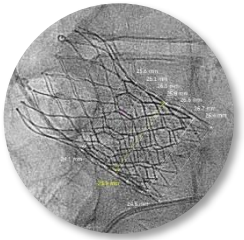
Methods

- **Redo TAVR** for **PVL** at our institution between 1/2023 and 9/2025



Total n=20

Age, y	80.3± 6.6
Female	5(25.0%)
STS PROM	4.8%± 3.4%

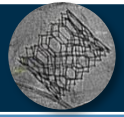
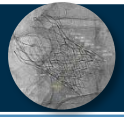


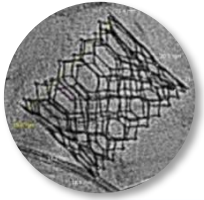
- **Short-in-Short n=9**
  - **Early redo-TAVR n=5**
  - **Late redo-TAVR n=4**
- **Short-in-Tall n=11**
  - **Early redo-TAVR n=7**
    - **Sapien-in-Evolut n=4**
    - **Sapien-in-Navitor n=3**
  - **Late redo-TAVR n=4**
    - **Sapien-in-Evolut n=4**

Early: < 1 year
Late: ≥ 1 year

→ ***Compare Early Group with Late Group in each configuration***

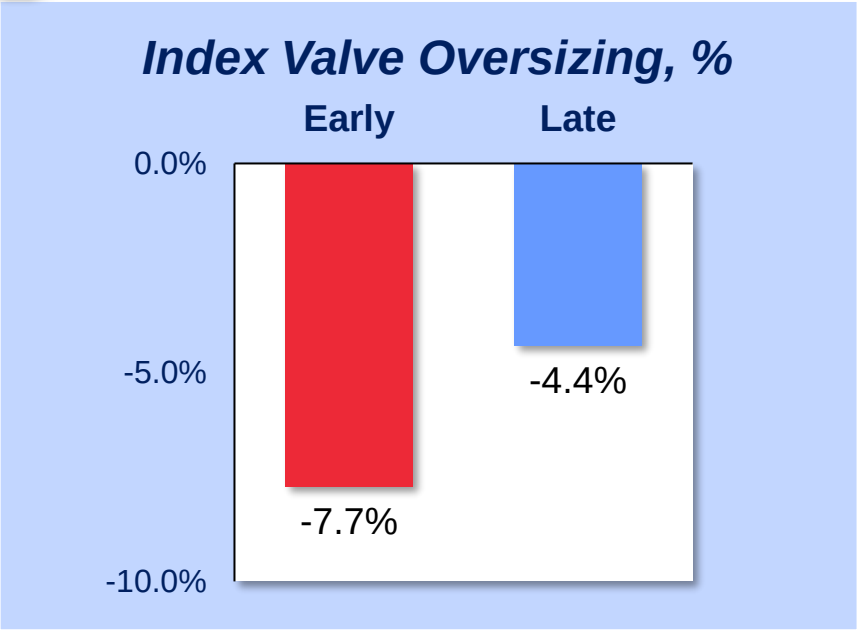
Procedural Characteristics

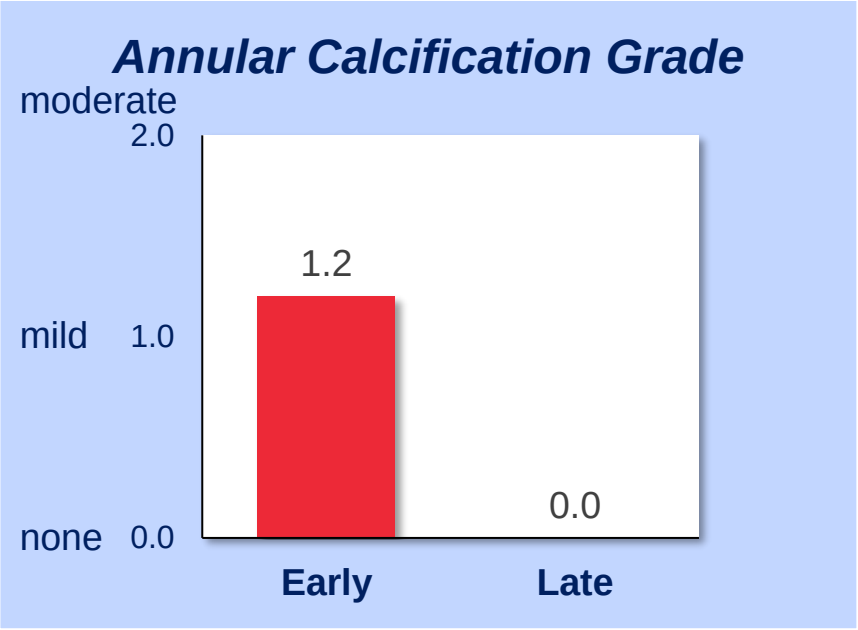
	 Short-in-Short n = 9		Short-in-Tall n = 11 	
	Early	Late	Early	Late
	n=5	n=4	n=7	n=4
Transfemoral under GA/TEE	5 (100%)	4 (100%)	7 (100%)	4 (100%)
Balloon Pre-dilatation	4 (80.0%)	4 (100.0%)	3 (42.9%)	3 (75.0%)
Balloon Post-dilatation	5 (100.0%)	4 (100.0%)	6 (85.7%)	4 (100.0%)
Sapien 3 Ultra / Ultra Resilia	5 (100%)	4 (100%)	7 (100%)	4 (100%)
Evolut R / Pro+ / FX / FX+			4 (57.2%)	4 (100%)
Navitor / Navitor Vision			3 (42.9%)	



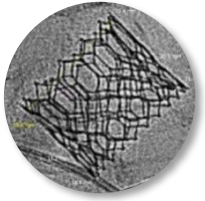
CT Analysis of Index Valve

Short-in-Short





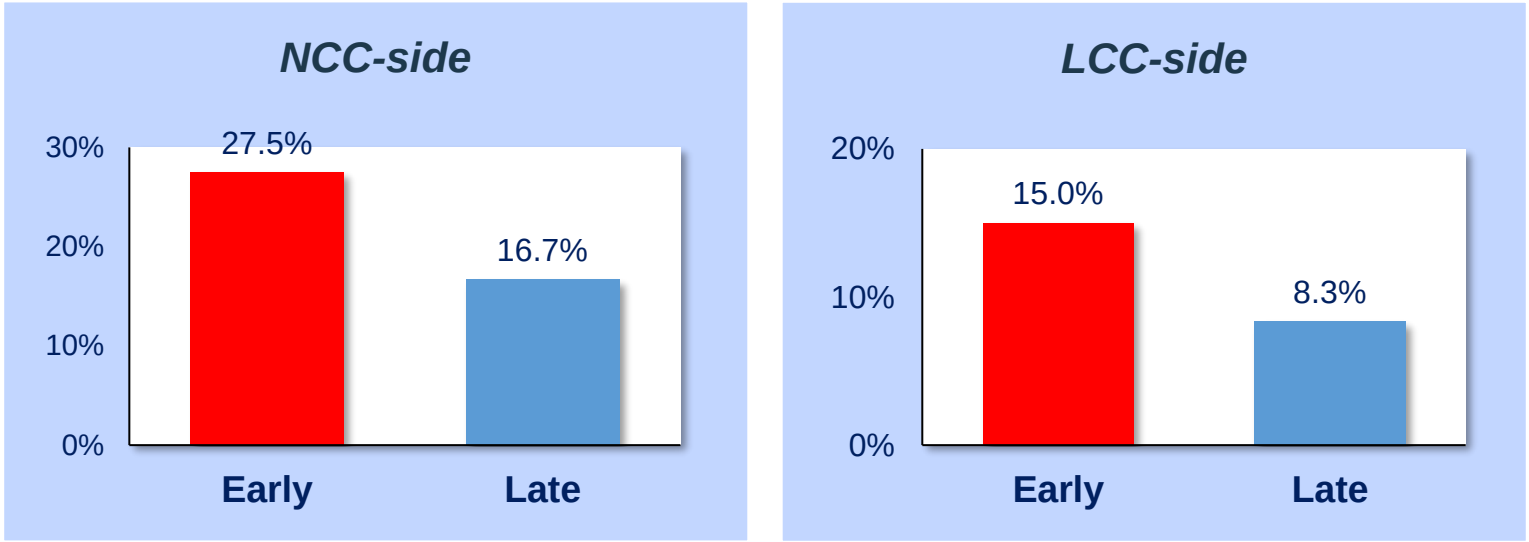
→ Undersizing deploy for Annular Calcification risks Early redo TAVR



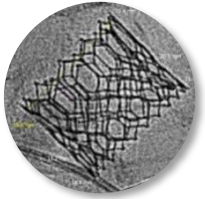
Fluoroscopic Analysis of Index Valve

Short-in-Short

% Ventricular Implant depth, %



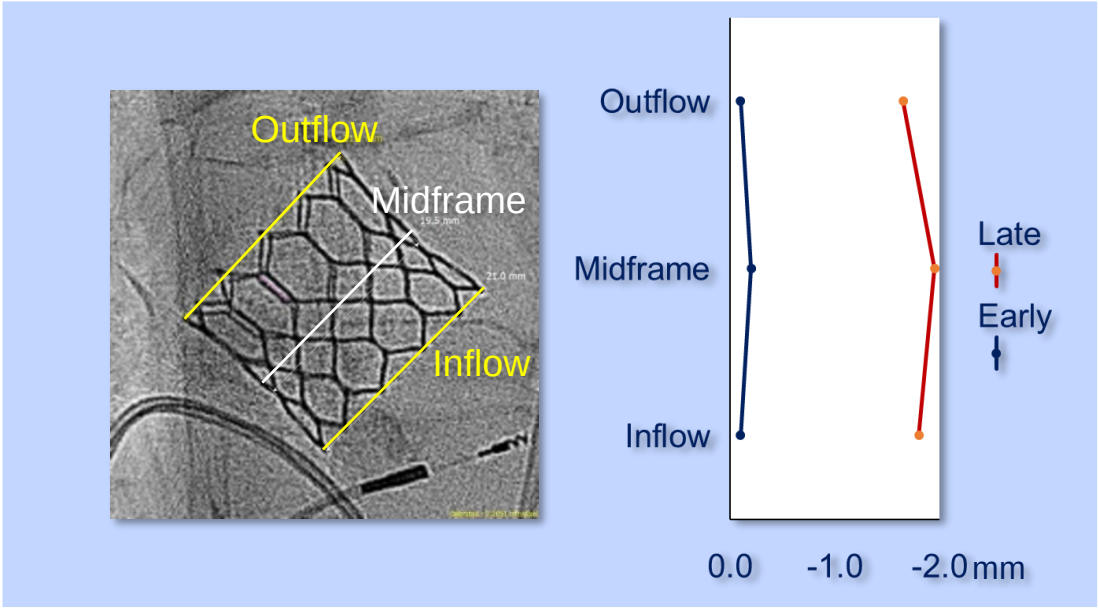
→ Deep Implant associated with Early redo TAVR



Fluoroscopic Analysis of Index Valve

Short-in-Short

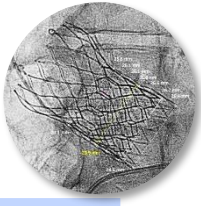
Change in Index Valve Frame Diameter from Post index TAVR to Pre redo TAVR



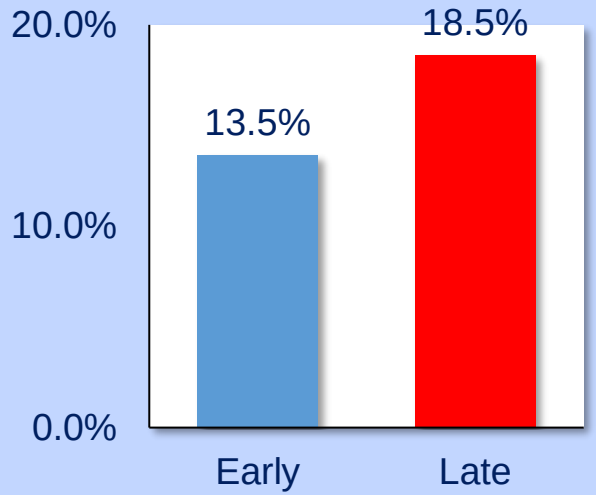
→ Index Valve Recoil relates to Late worsening PVL

CT Analysis of Index Valve

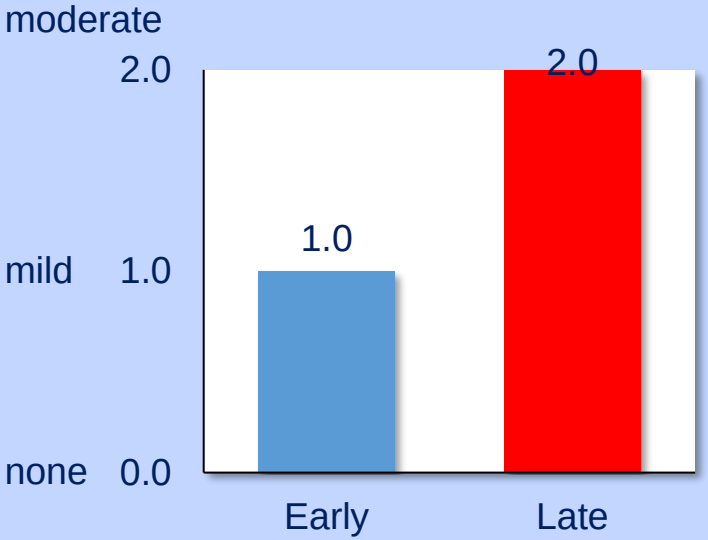
Short-in-Tall



Index Valve Oversizing Rate, %

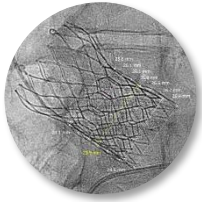


Annular Calcification Grade



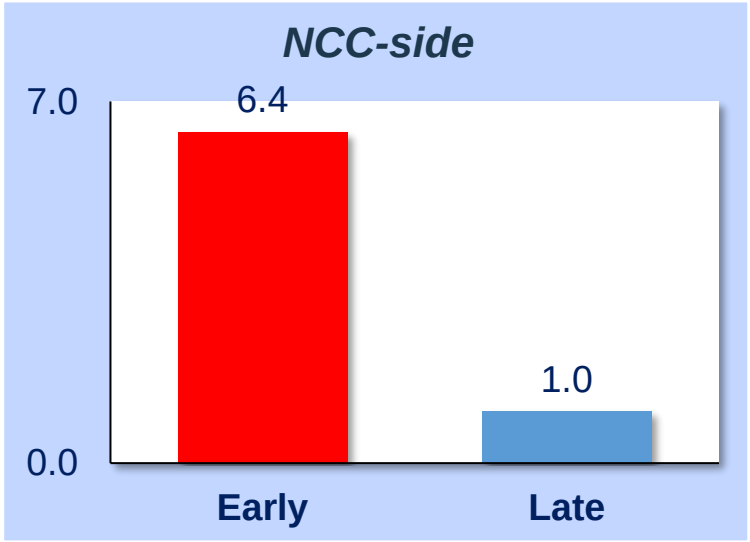
→ Annular Ca hampers Sealing causing Late PVL

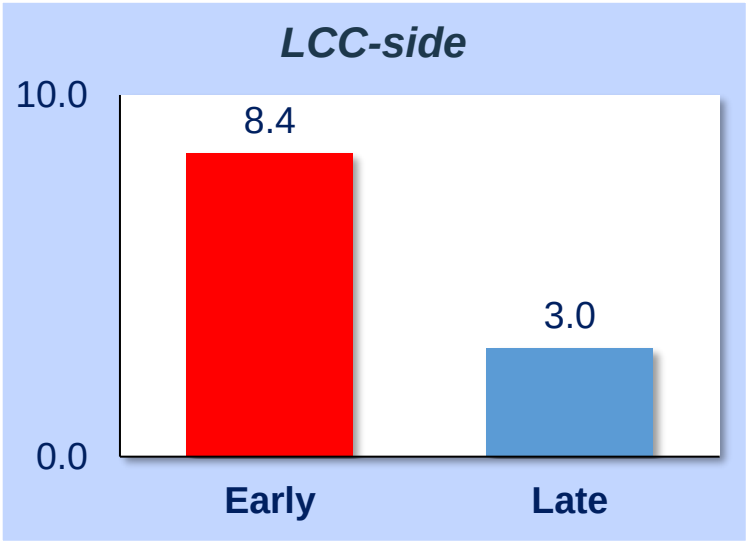
Fluoroscopic Analysis of Index Valve



Short-in-Tall

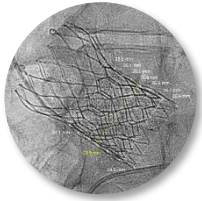
Implant depth, mm





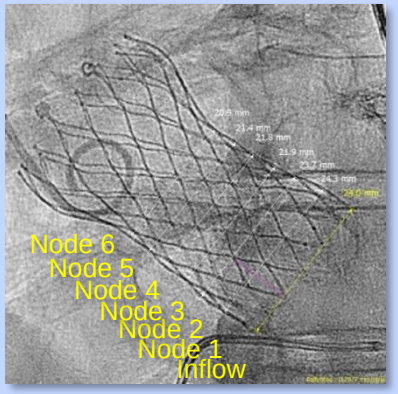
→ Deep implant related to early redo TAVR

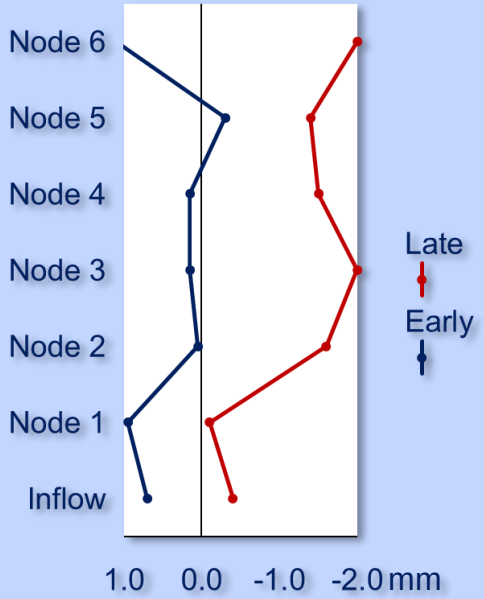
Fluoroscopic Analysis of Index Valve

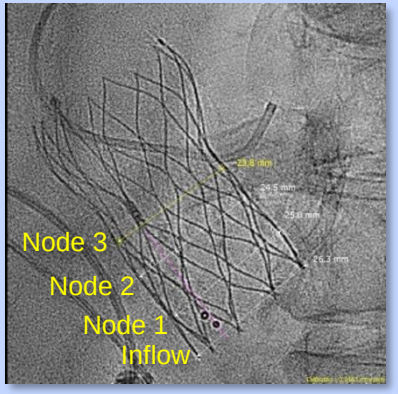


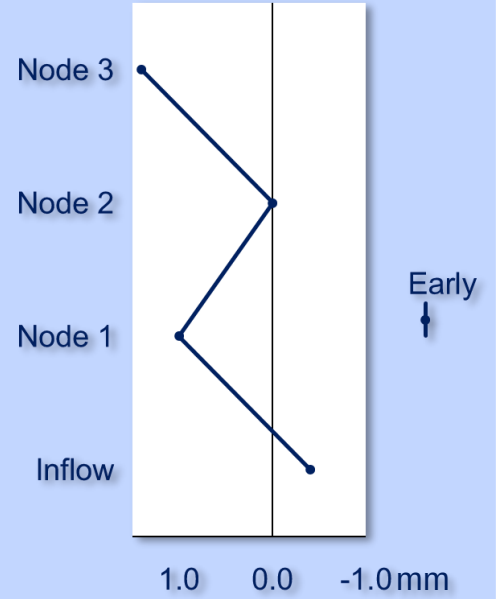
Short-in-Tall

Change in Index Valve Frame Diameter from Post index TAVR to Pre redo TAVR



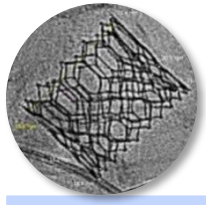




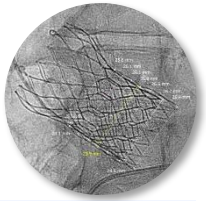


→ *Index Valve Recoil relates to Late PVL worsening*

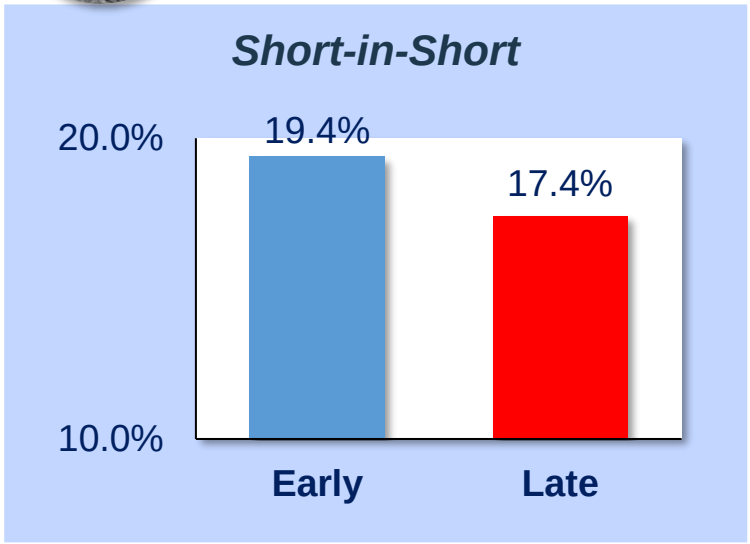
Redo TAVR Planning

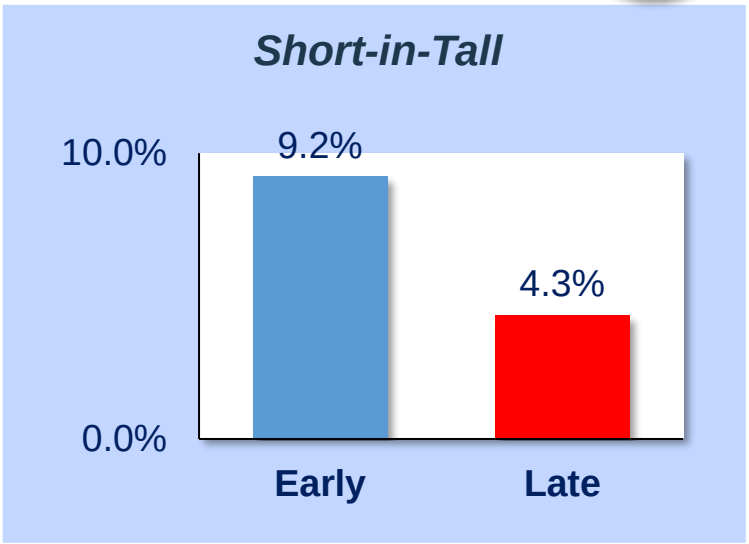


In-vivo CT sizing



Oversizing Rate of 2nd Valve

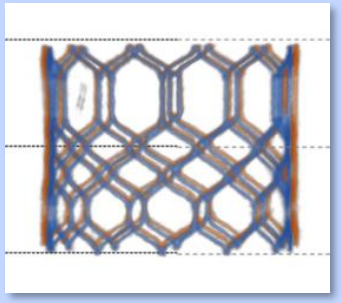


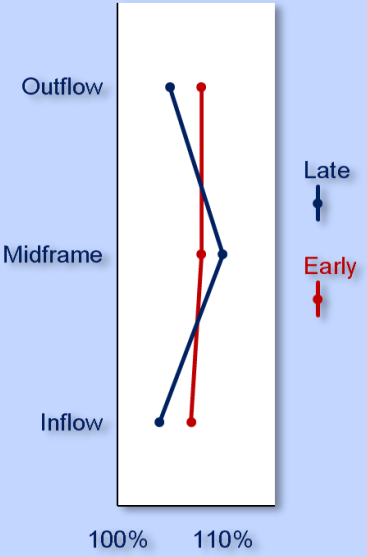


→ ***In late Short-in-Tall, the oversizing rate was lower***

Fluoroscopic % Expansion of Index Valve after Redo-TAVR

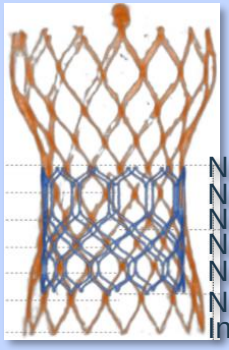
Short-in-Short



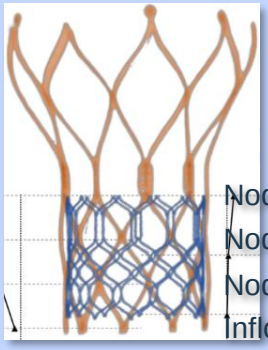


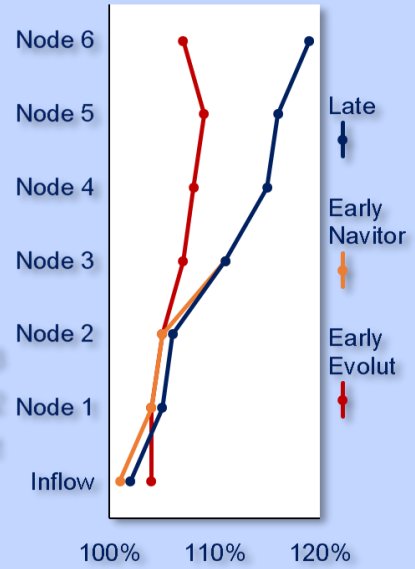
Short-in-Tall

Evolut



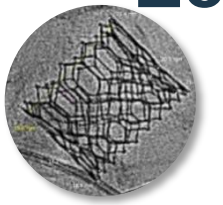
Navitor





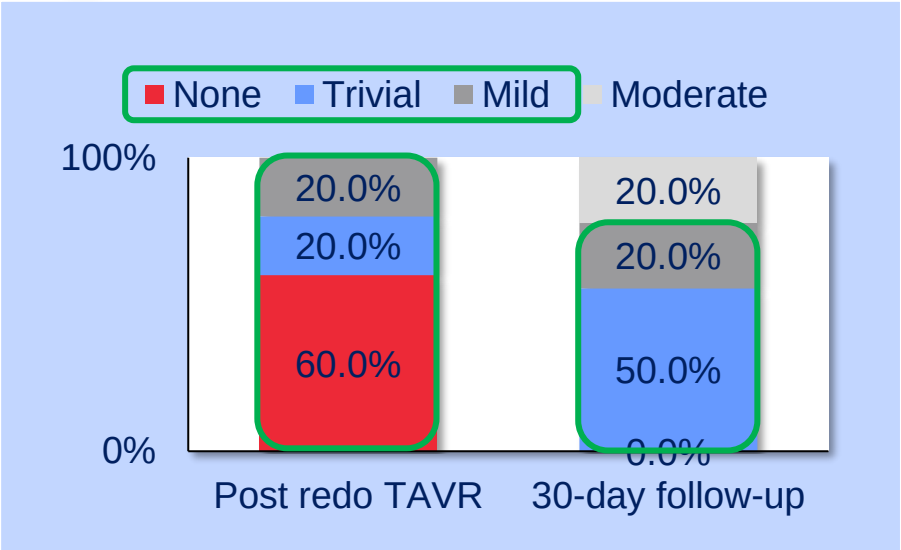
→ Index valve expanded by 1%-19% after redo TAVR

Echocardiographic data: PVL after redo TAVR

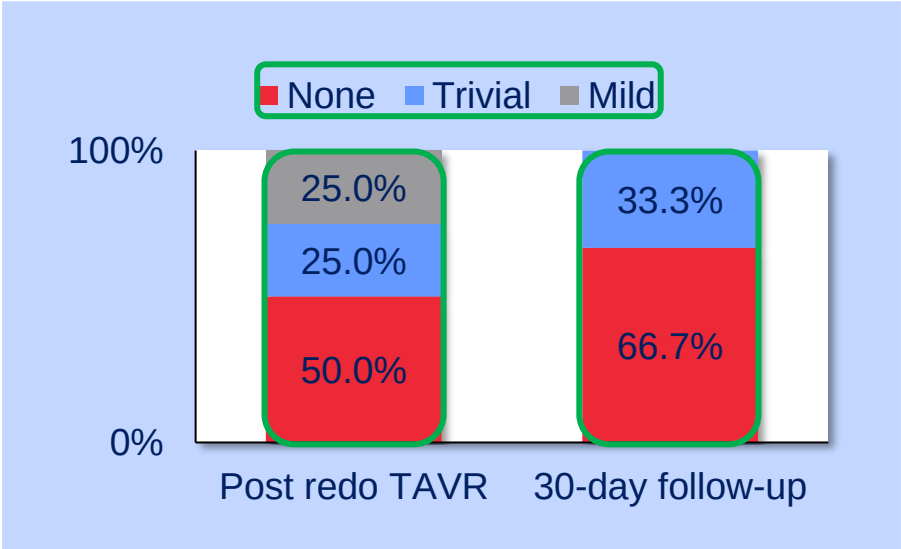


Short-in-Short

Early group

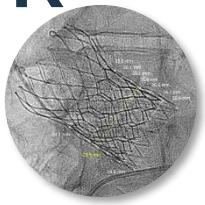


Late group



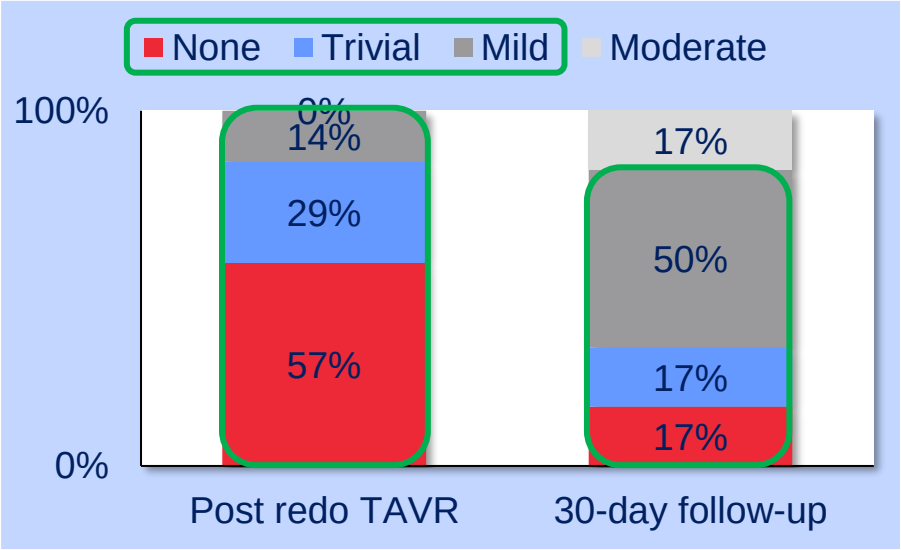
→ Reduced to Mild or less PVL except one moderate PVL in early group at 30 days

Echocardiographic data: PVL after redo TAVR

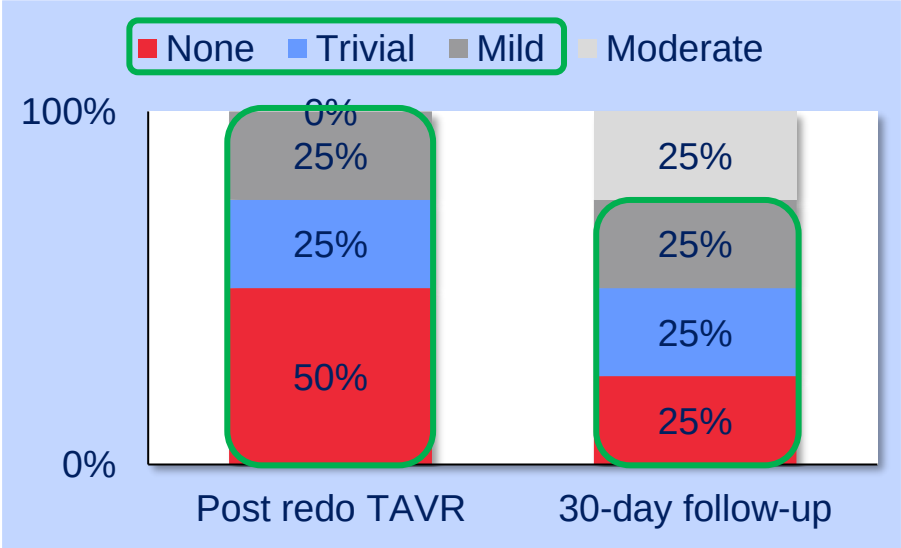


Short-in-Tall

Early group



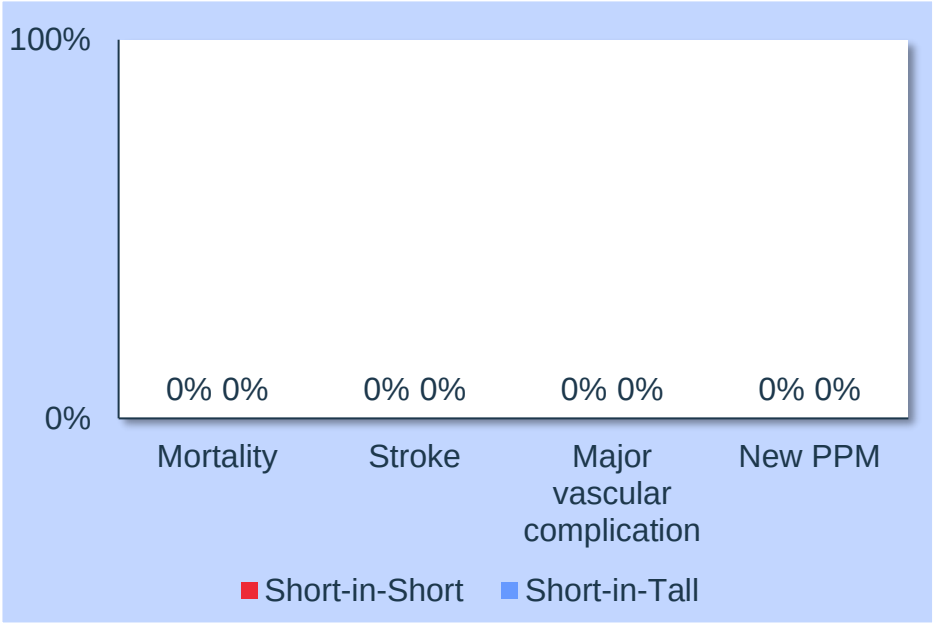
Late group



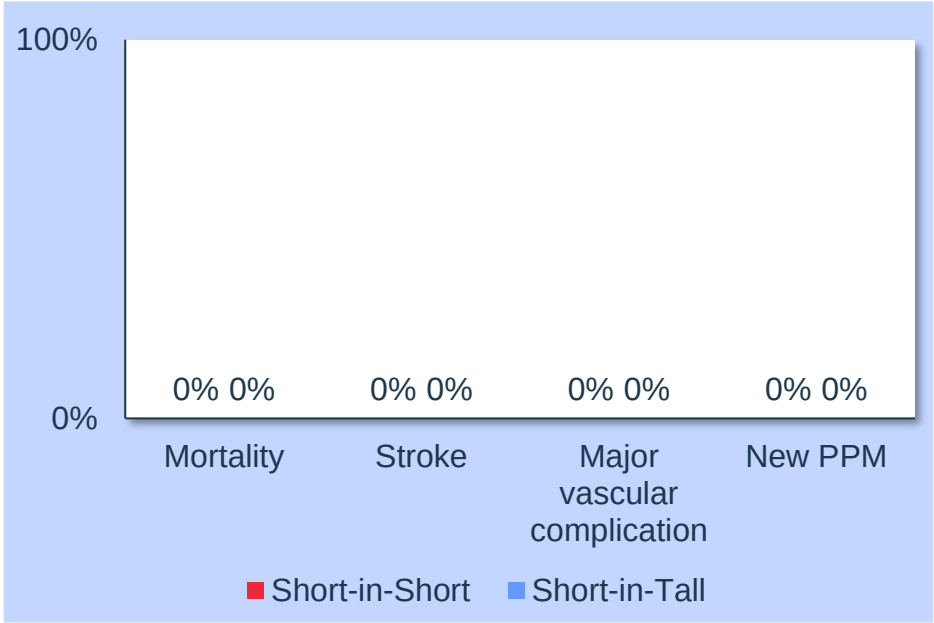
→ Reduced to Mild or less PVL except one moderate PVL in each group at 30 days

Clinical Outcomes

In-hospital



30-day follow-up



Conclusions

Redo TAVR for PVL: Insight from Timing and Combinations

- **In Short-in-Short**
  - More undersizing and deeper implantation to calcified annulus may predispose to early PVL requiring redo TAVR
  - Valve frame recoil may contribute to late PVL progression
- **In Short-in-Tall**
  - Deeper implantation may lead to early redo TAVR for PVL
  - Valve frame recoil may contribute to late PVL progression
- Redo TAVR guided by in-vivo CT sizing led to PVL reduction and improved clinical outcomes. However, mild or more PVL was observed at 30 days.
- Further larger-scale study is warranted