

Comprehensive Evaluation of Mitral Valve-in-Valve and Valve-in-Ring

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On behalf of Valve-in-Valve International Data
(VIVID) Registry Investigators



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Potential conflicts of interest

Speaker's name : Matheus Simonato

☒ I do not have any potential conflict of interest to declare



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Why this study?

- There is limited data on the clinical significance of valve hemodynamics after transcatheter mitral valve-in-valve and valve-in-ring procedures.
- Our objective was to describe predictors for residual mitral stenosis and residual mitral regurgitation after these procedures and to determine whether there is a possible influence on meaningful long-term clinical outcomes.



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Methods

- Retrospective multicenter data collection.
- Outcome definitions from the Mitral Valve Academic Research Consortium.
- Residual stenosis was defined as mean gradient ≥ 10 mmHg.
- Residual mitral regurgitation was defined as \geq moderate MR.



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Baseline characteristics (n = 1,079)

	Mitral valve-in-ring (n = 222)	Mitral valve-in-valve (n = 857)
Male	50.9%	38.2%
Height (cm)	168.0 ± 9.3	164.9 ± 9.8
Weight (kg)	73.8 ± 17.2	69.1 ± 16.4
Age (years)	71.2 ± 12.8	74.1 ± 12.4
Label size (mm)	28.9 ± 2.5	28.2 ± 2.0
True ID (mm)	28.2 ± 2.8	24.7 ± 2.1
New York Heart Association class		
I	0.0%	0.6%
II	5.1%	10.0%
III	65.6%	57.7%
IV	29.3%	31.8%
Mechanism of failure		
Regurgitation, n (%)	35.6%	10.2%
Stenosis, n (%)	15.3%	30.7%
Mixed, n (%)	49.1%	59.1%
STS PROM (%)	7.4 [4.6 – 13]	9 [5.6 – 14.3]

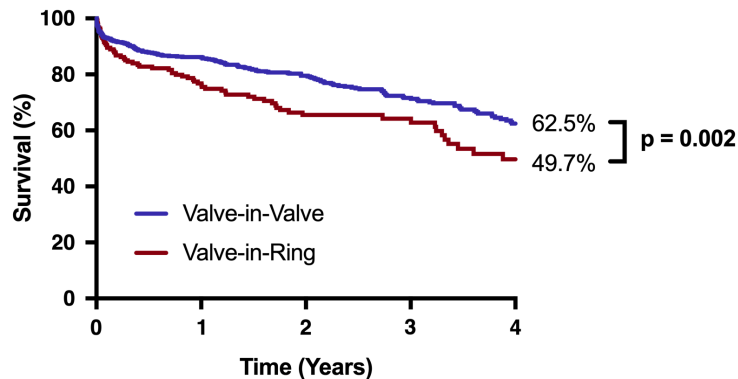


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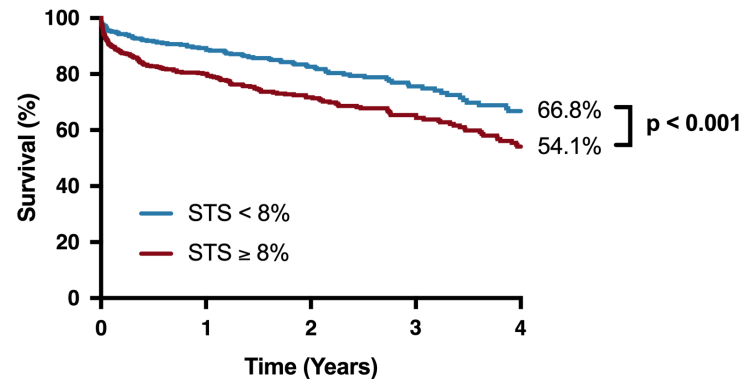
Selected results

Survival - ViV vs. ViR



30-day mortality:
ViR 8.6% vs. ViV 6.5%
 $p=0.29$

Survival - STS Score



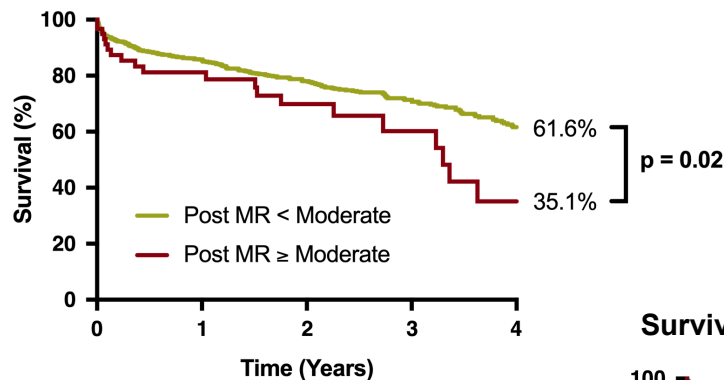


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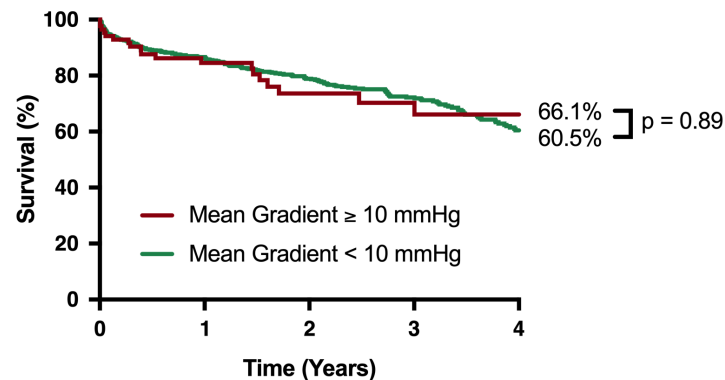
Selected results

Survival - Post-Procedural MR



**81.4% of cases
SAPIEN 3/SAPIEN XT**

Survival - Post-Procedural Stenosis



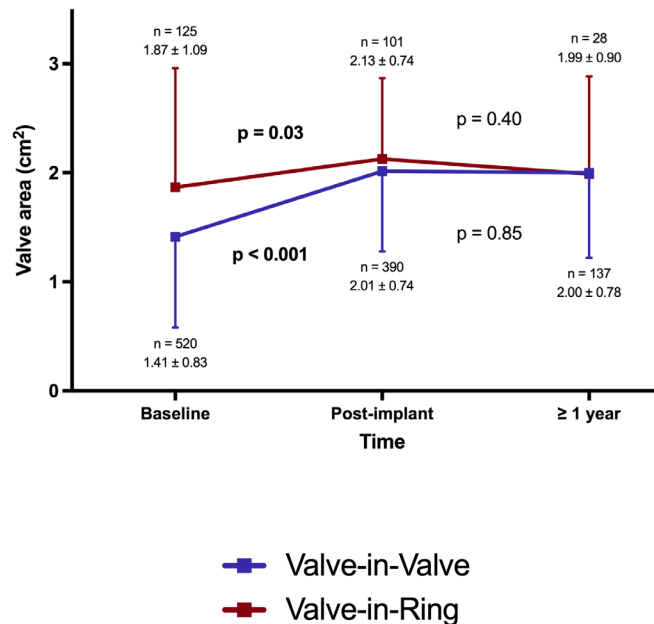


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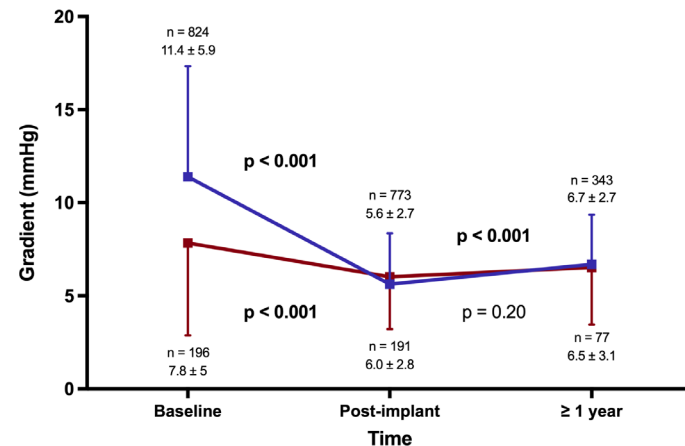
Selected results

Echocardiographic Follow-up - Mitral Valve Area



Residual mitral stenosis (≥ 10 mmHg):
ViR 12.0% vs. ViV 8.2%
p=0.09

Echocardiographic Follow-up - Mean Gradient



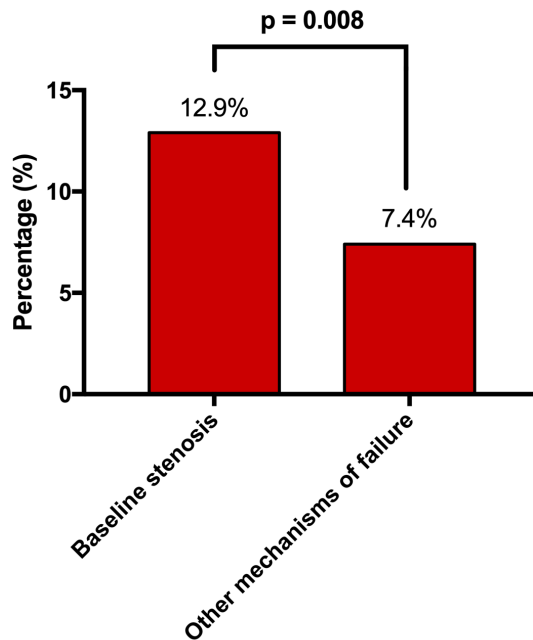


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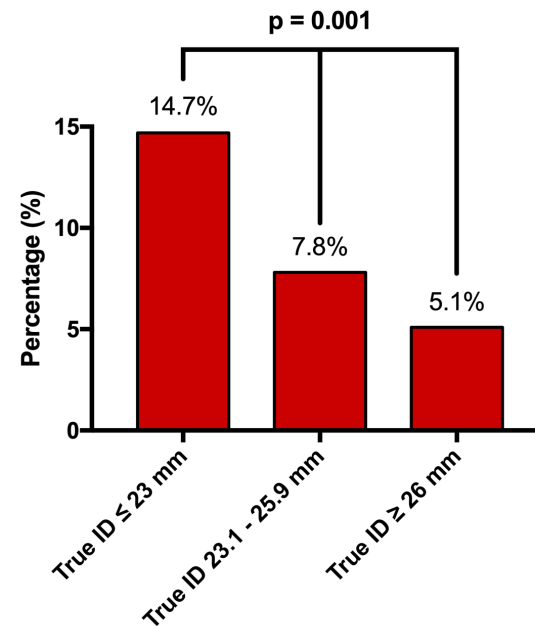


Selected results

Elevated Mean Gradients - Mechanism of Failure



Elevated Mean Gradients - True ID



■ Mean Gradient ≥ 10 mmHg



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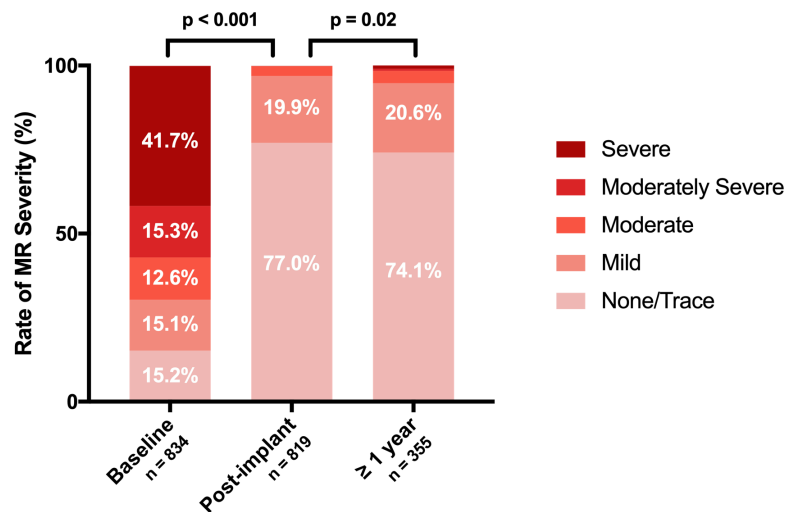
Selected results

Residual mitral regurgitation (\geq moderate):

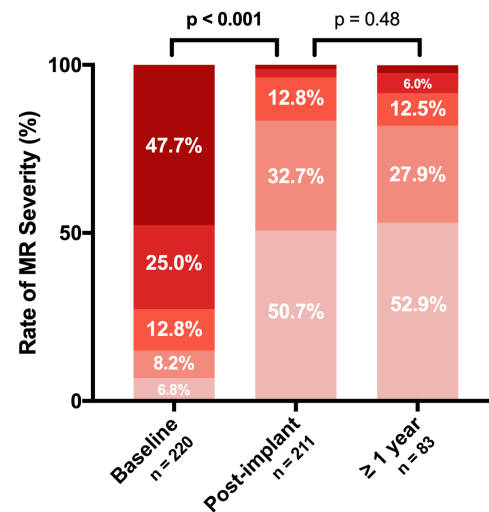
ViR 16.6% vs. ViV 3.1%

$p < 0.001$

MR Severity - Valve-in-Valve



MR Severity - Valve-in-Ring





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Selected results

Four-year repeat MVR:

ViR 5.9% vs. ViV 1.9%

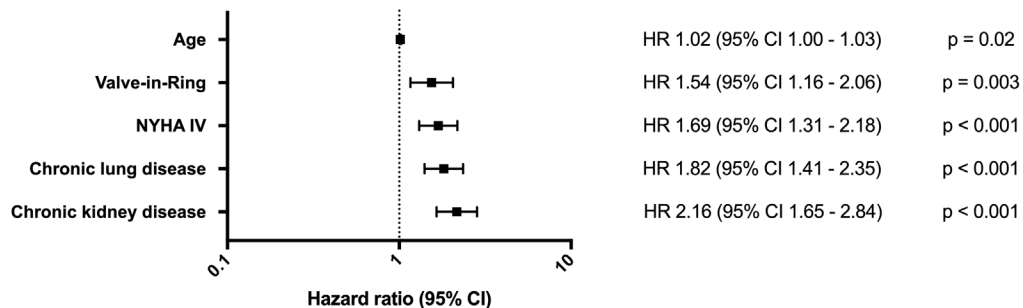
p<0.001

LVOT obstruction:

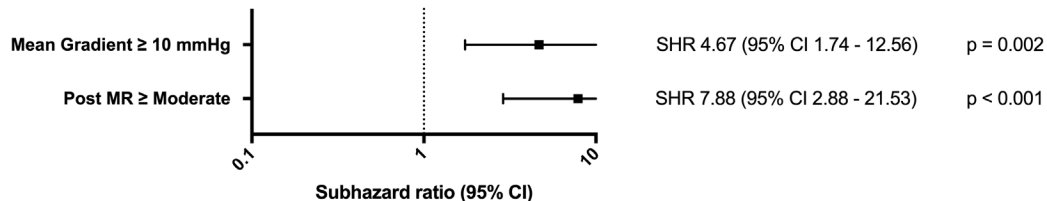
ViR 5.9% vs. ViV 1.8%

p=0.001

Independent Correlates of Mortality



Independent Correlates of Repeat Mitral Valve Replacement



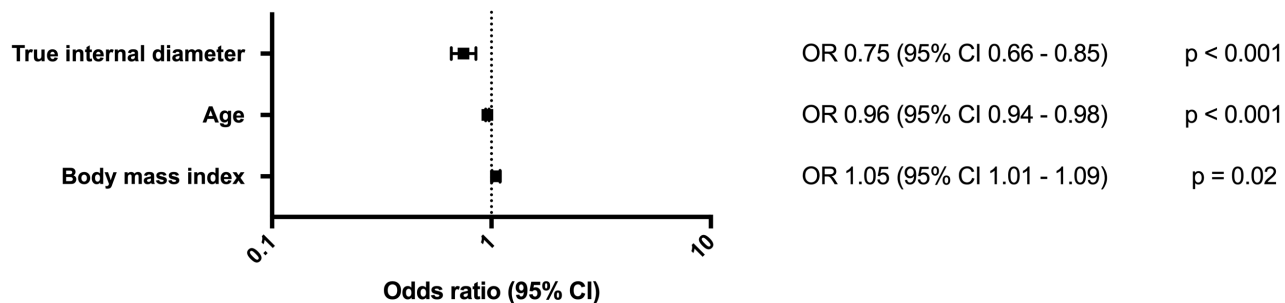


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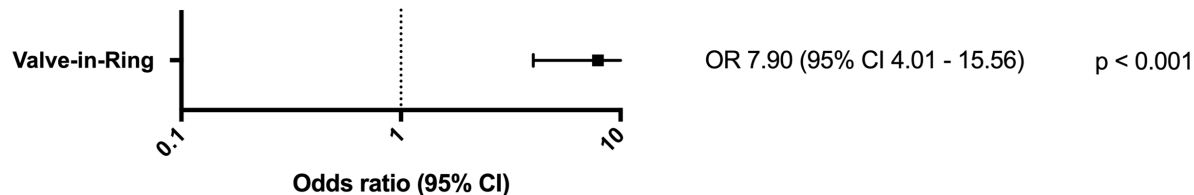


Selected results

Independent Correlates of Significant Residual Mitral Stenosis



Independent Correlates of Significant Residual Mitral Regurgitation





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The essentials to remember

- Mitral ViR patients had higher mortality and required more redo MVR at four-year follow-up.
- Both residual mitral regurgitation and residual mitral stenosis are relatively common after ViV and ViR.
- Residual mitral regurgitation was associated with higher mortality and need for repeat MVR.
- Residual mitral stenosis was not predictive of patient mortality but was associated with repeat MVR.
- Operators of ViV and ViR procedures should aim for achieving optimal hemodynamics in these procedures.



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