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Les Comtes de Méan
Liège, Belgium

6th International Meeting on Aortic Diseases

New insights into an old problem CHU Liège, APF

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Aortic regurgitation after TAVI – Can we do better?

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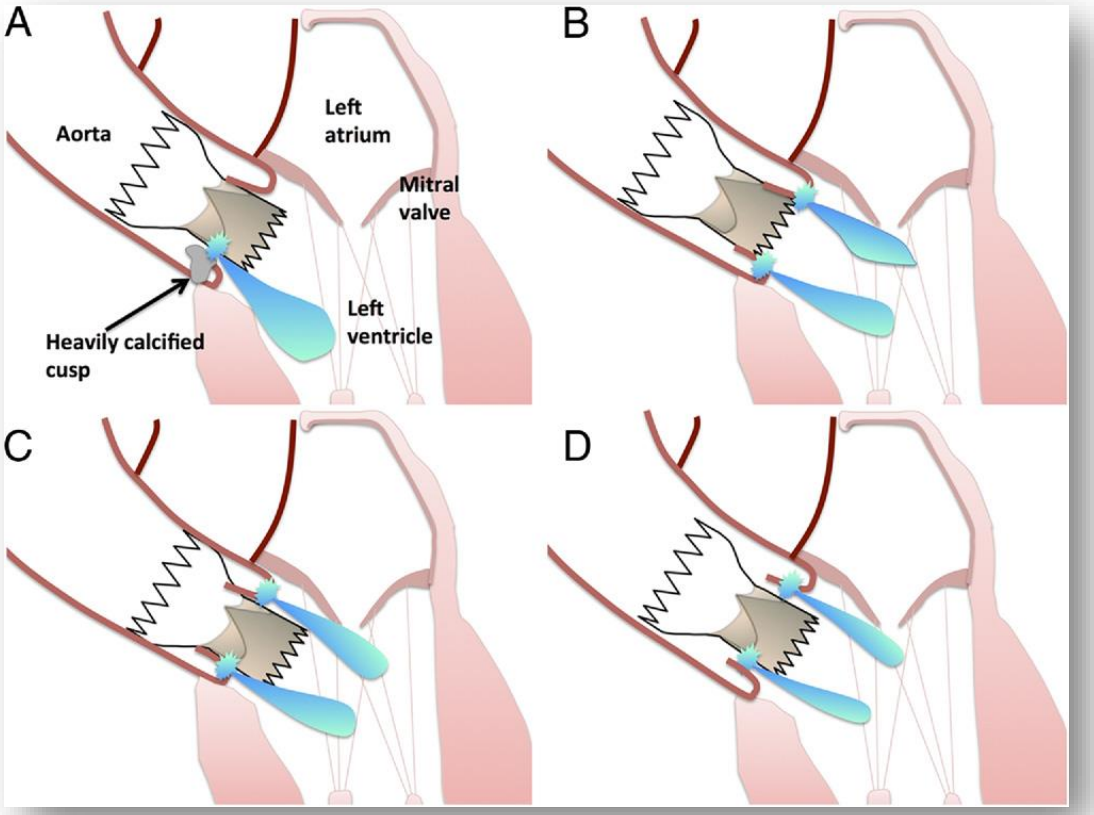
Disclosure of Interest

Speaker name:

KEFER Joelle

- I do not have any potential conflict of interest

Mechanisms of paravalvular leak



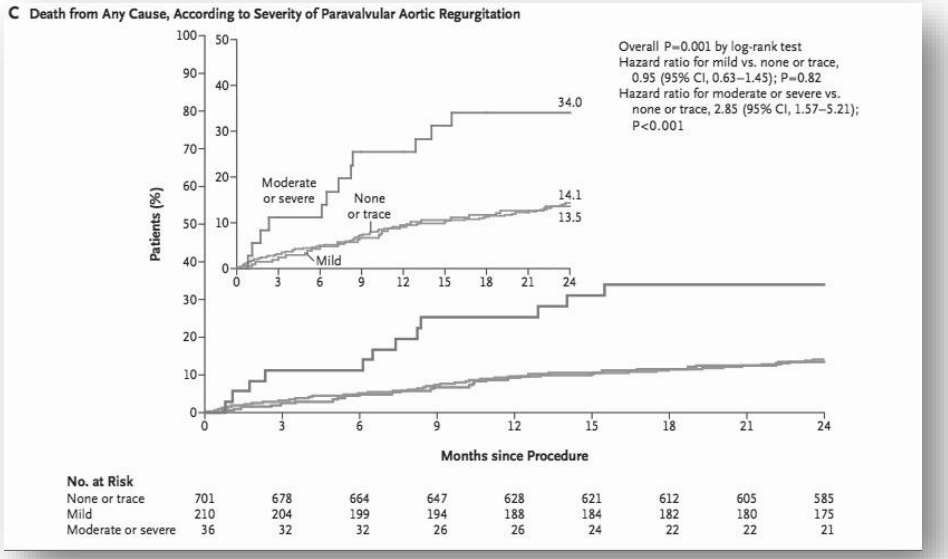
A : bulky calcified nodules

B-C : malpositionning

D : undersizing

Sinning, JACC 2012;59:1134-41

Impact of PVL



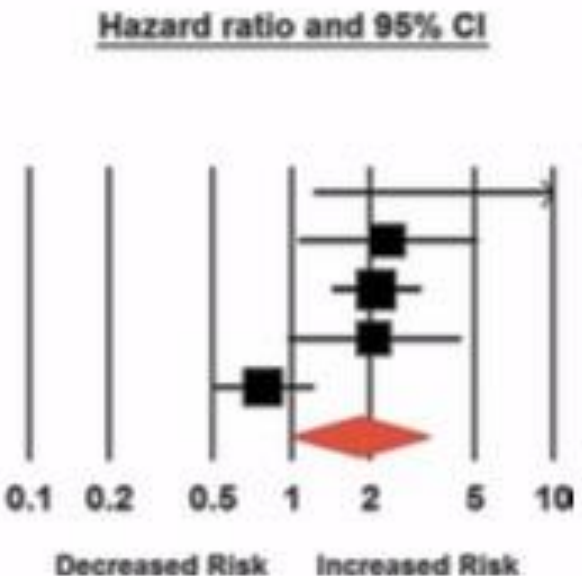
Leon M et al. NEJM 2016

Even mild, aortic regurgitation has an impact on overall mortality after TAVI

Hazard Ratio of Mild AR on Overall mortality

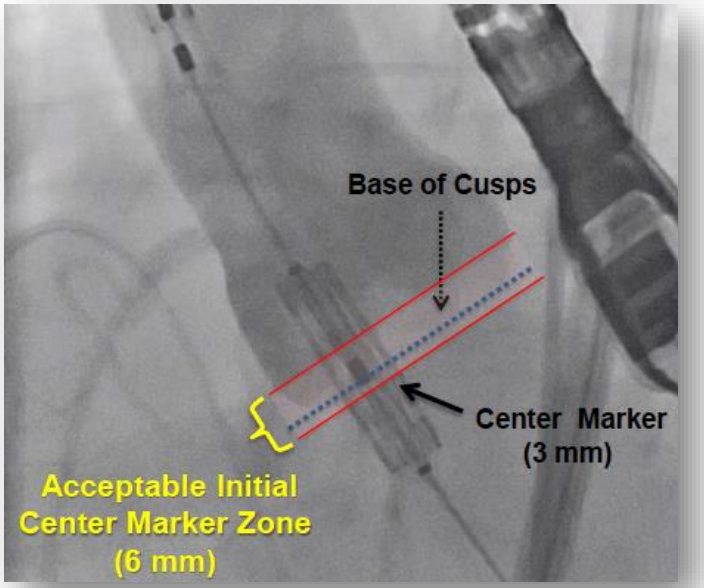
Study name	Hazard ratio	Lower limit	Upper limit	Z-Value	p-Value
Lemos	10.080	1.229	82.673	2.152	0.031
Sinning	2.342	1.066	5.145	2.119	0.034
Kodali	2.110	1.433	3.107	3.782	0.000
Fraccaro	2.064	0.968	4.400	1.876	0.061
Tamburino	0.780	0.499	1.218	-1.092	0.275
All (N=1620)	1.829	1.005	3.329	1.975	0.048

Statistics for each study

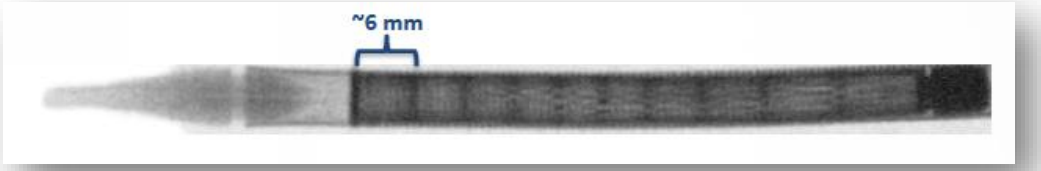


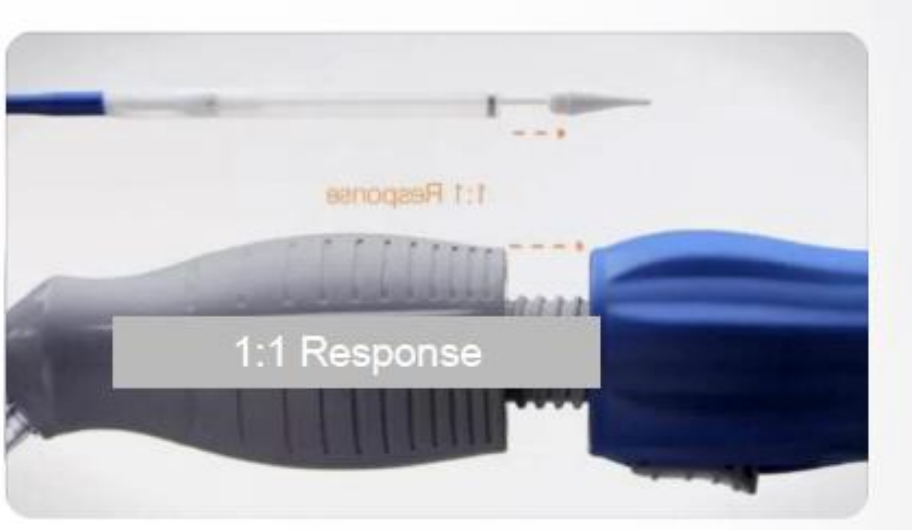
Metanalysis of 45 studies, 12.926 patients *Athappan et al. JACC 2013;61:1585-1595*

Malpositioning



Radio-opaque markers
Delivery Catheter System

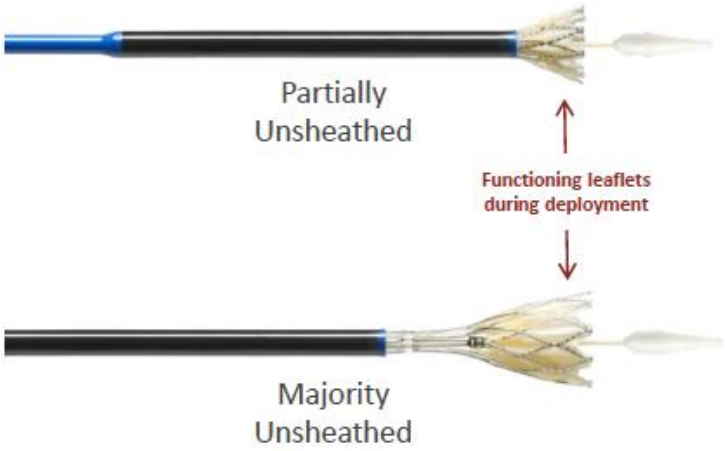




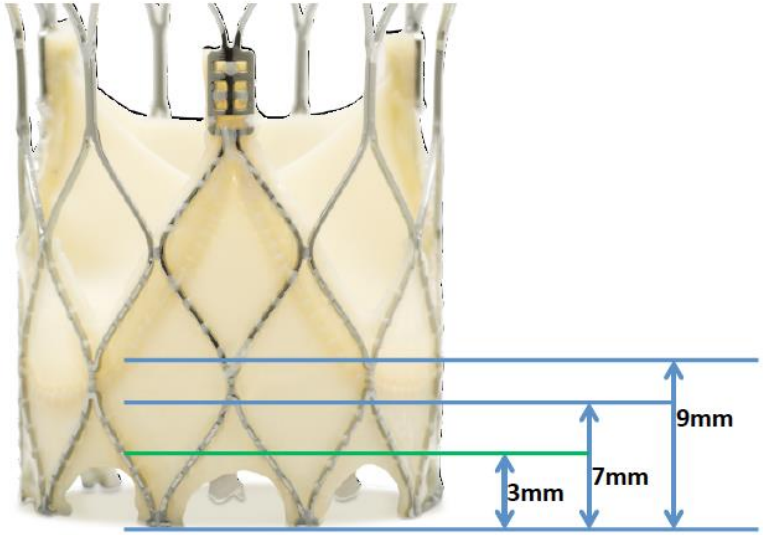
Portico : the first recapturable and repositionable TAV

Fully Sheathed

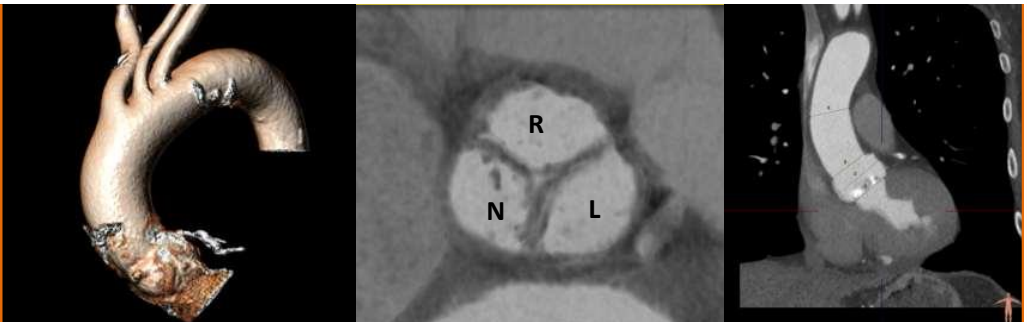
Landing zone : 3 mm (range 1-9 mm)

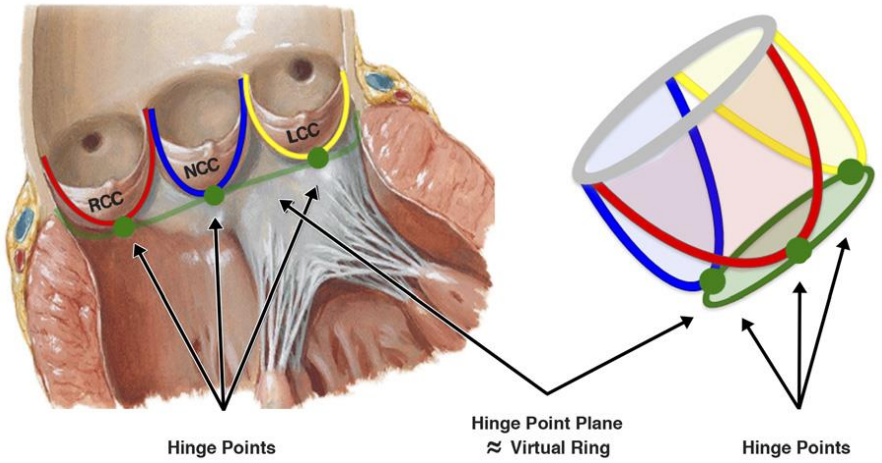


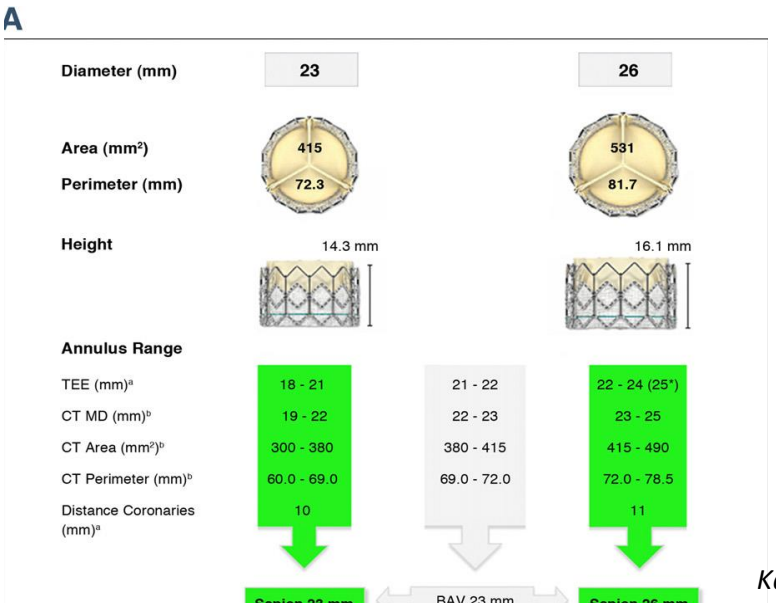
Manoharan G, TVT 2015

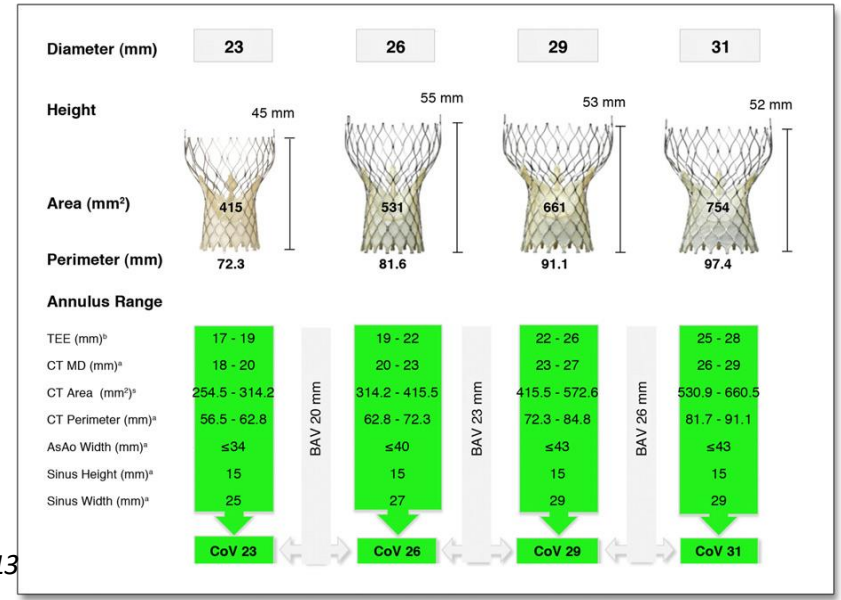


Missizing



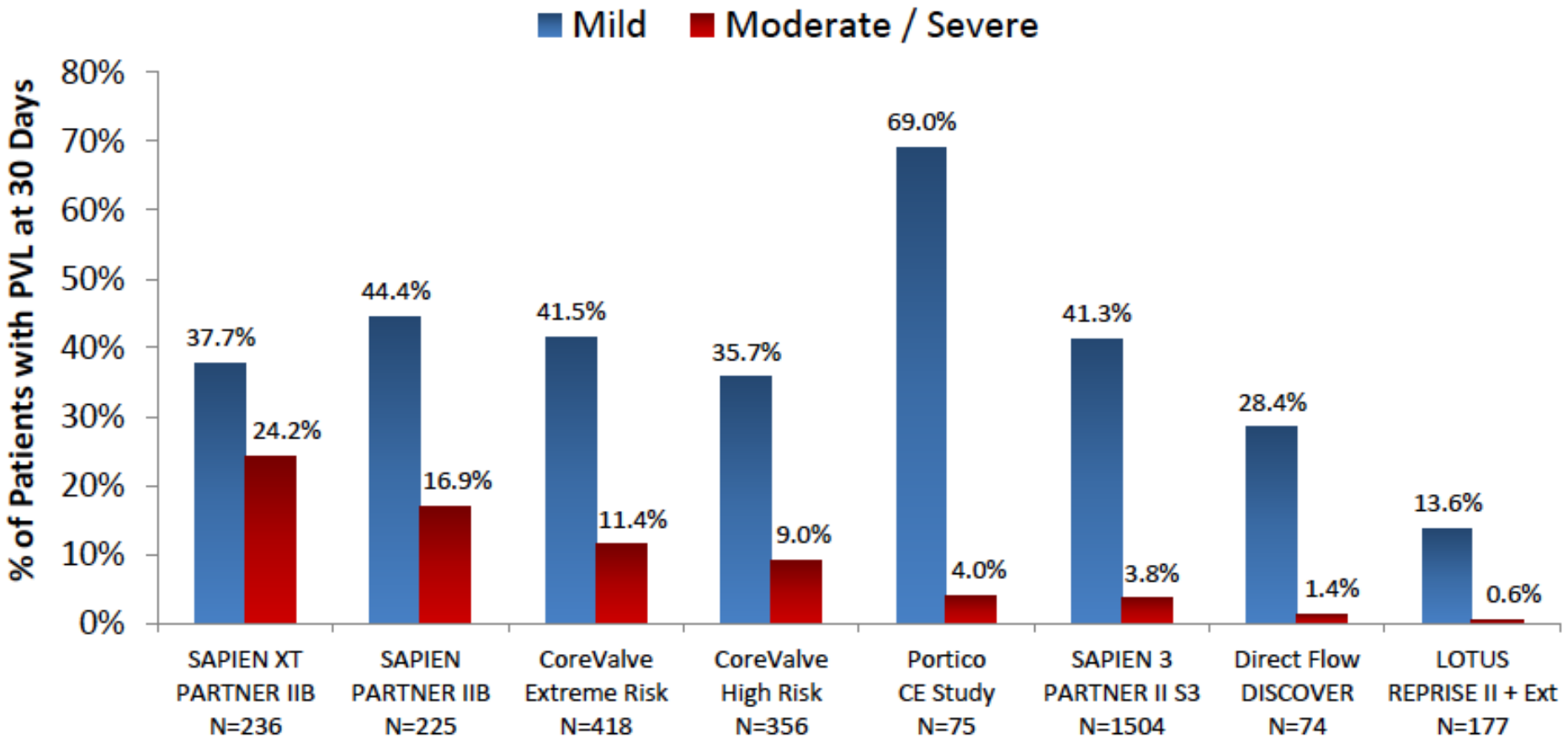






Kasel, JACC imaging 2013

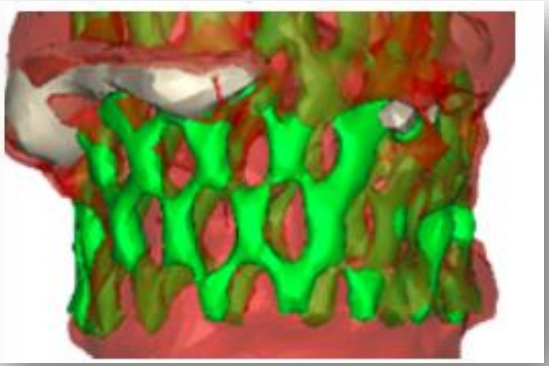
Paravalvular aortic regurgitation



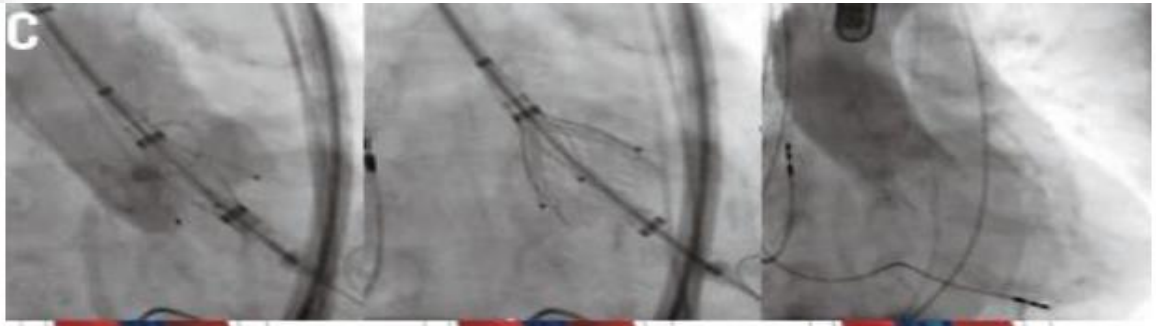
[1]Leon, et. al. presented at ACC 2013; [2]Popma, et al., *J Am Coll Cardiol* 2014; 63: 1972-81; [3]Adams, et al., *N Engl J Med* 2014; 370: 1790-8; [4]Manoharan, et al., et. al. presented at TCT 2014; [5]Kodali, et al., presented at ACC 2015; [6]Schofer, et al., *J Am Coll Cardiol* 2014; 63: 763-8; [7]Meredith, et al., presented at PCR London Valves 2014

Modified TAV design

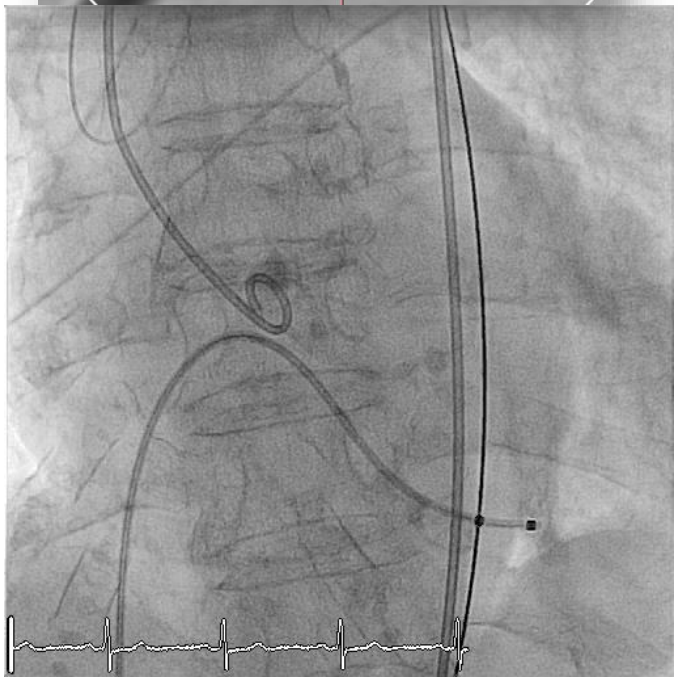
External skirt

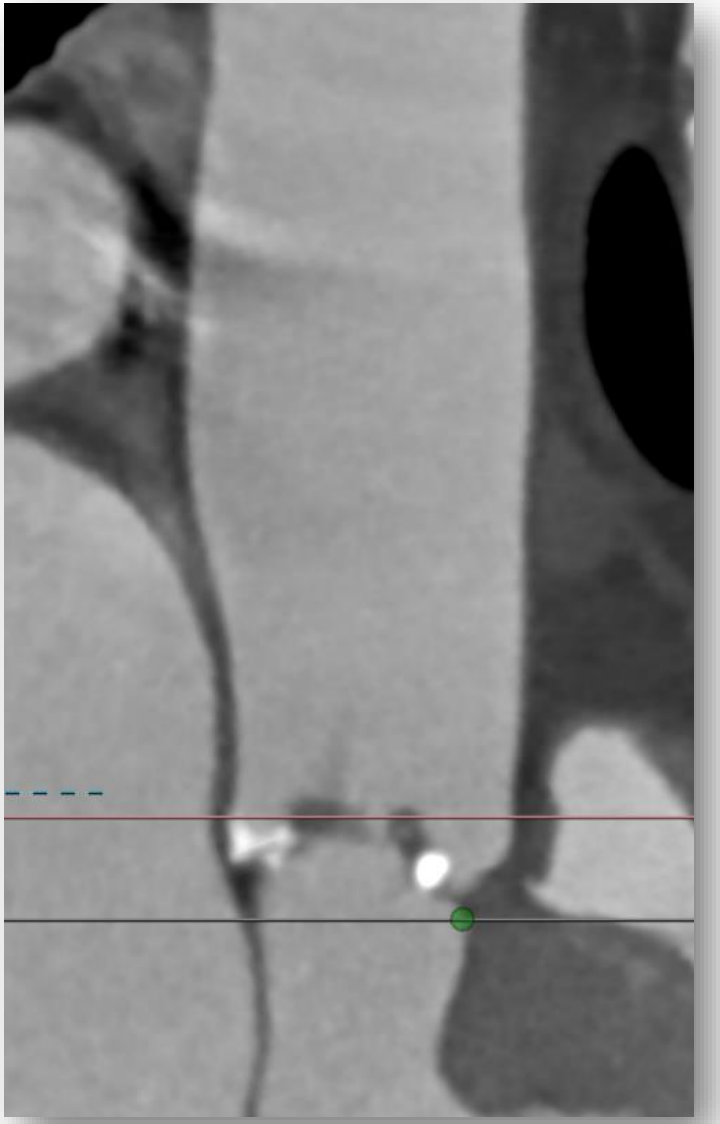


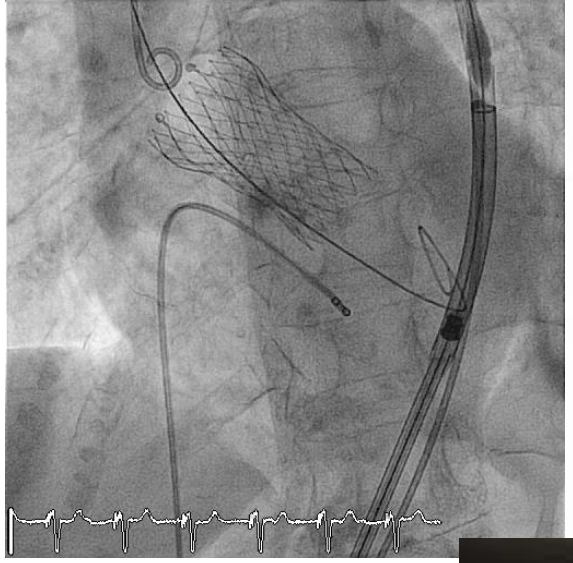
Clipping cusps

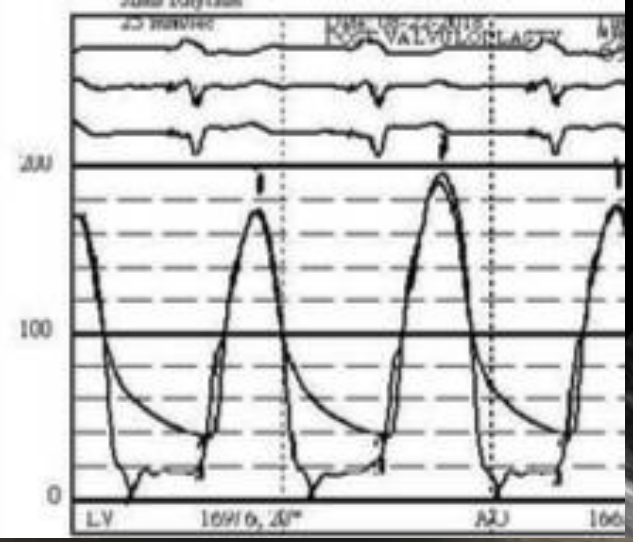


The bulky calcified nodule





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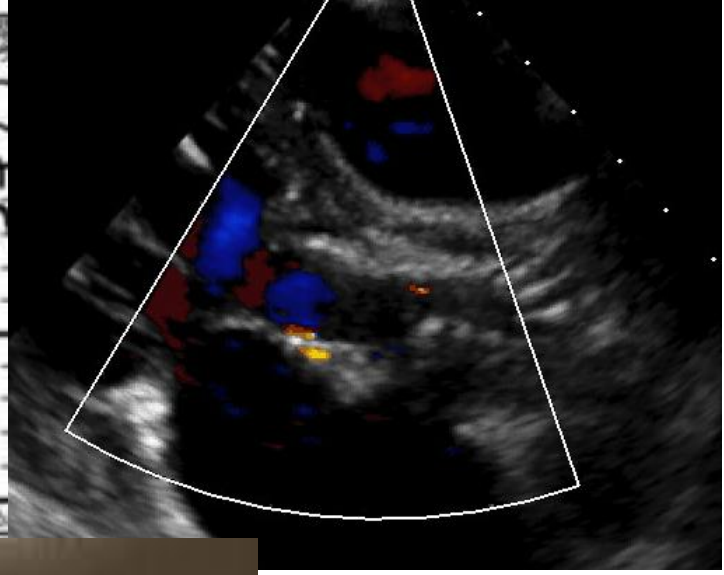

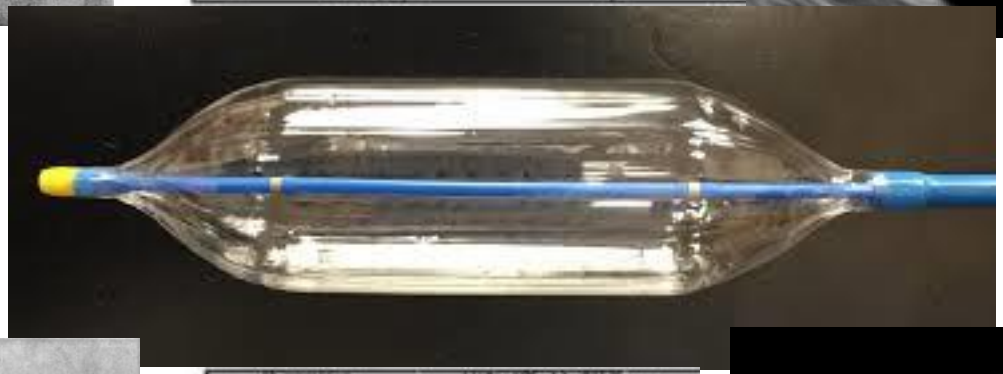

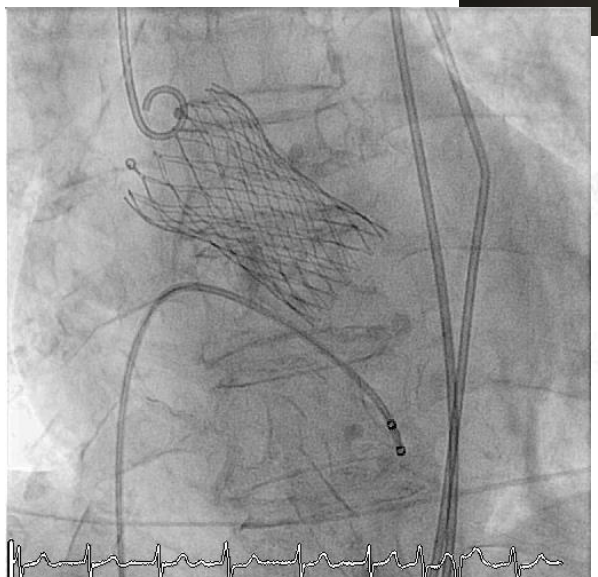

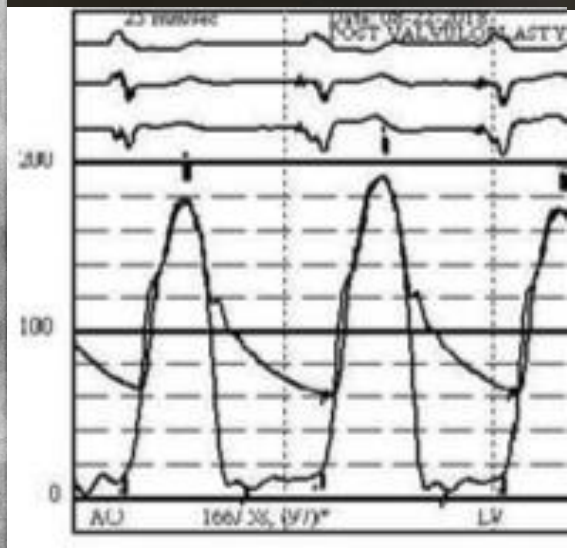
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Transcatheter resection devices

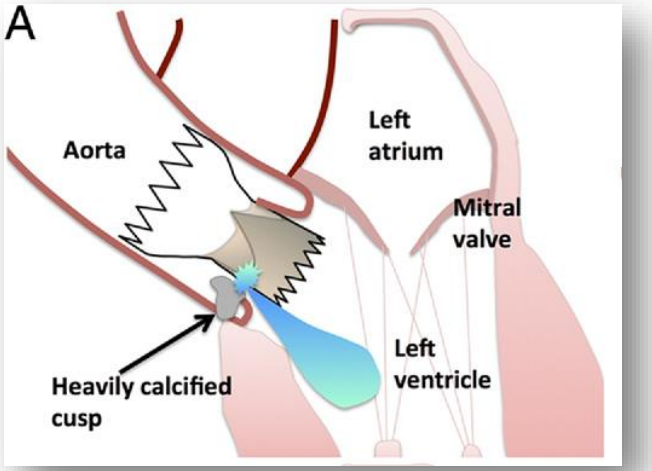
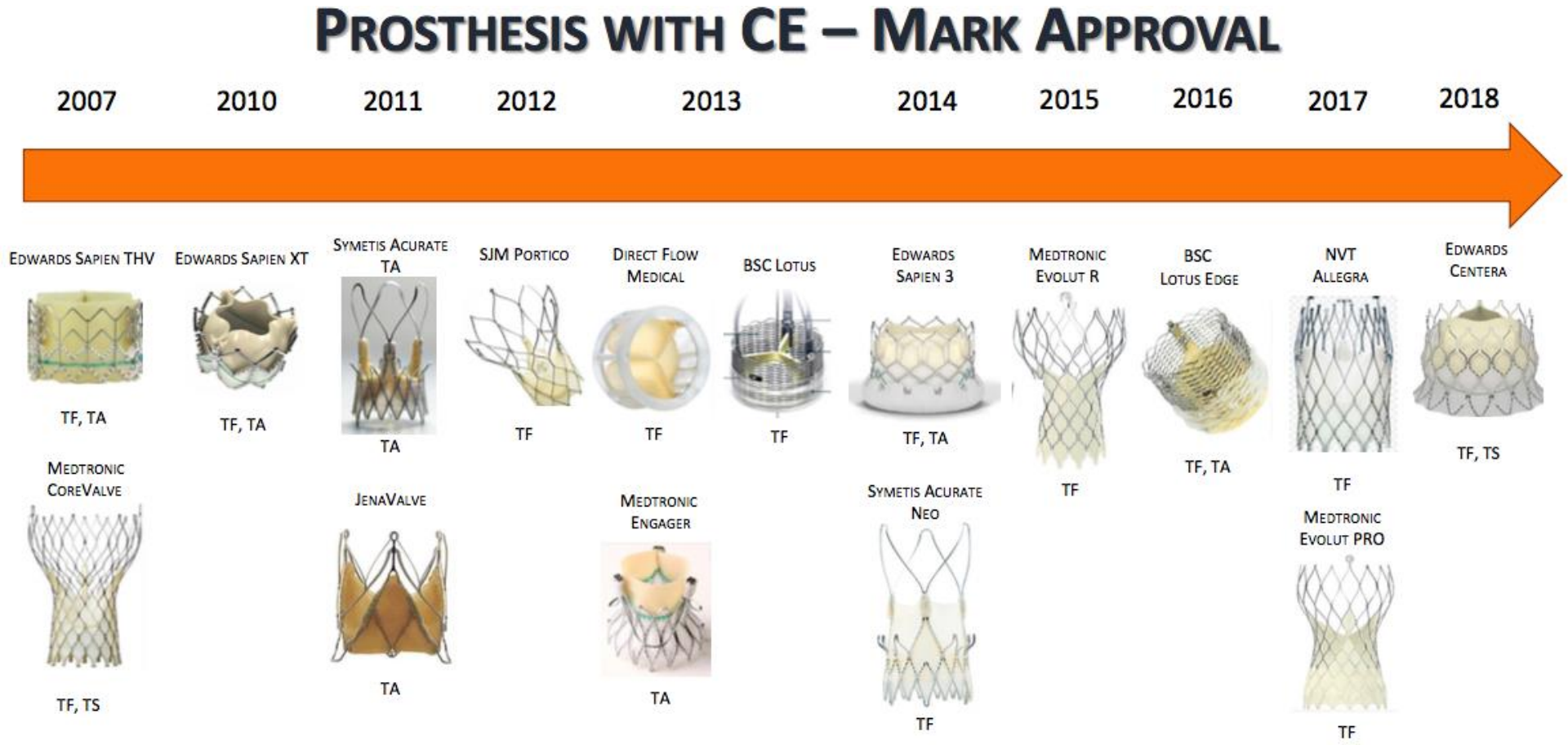


Figure 1: Image of the prototype of a device developed by the Brussels group.

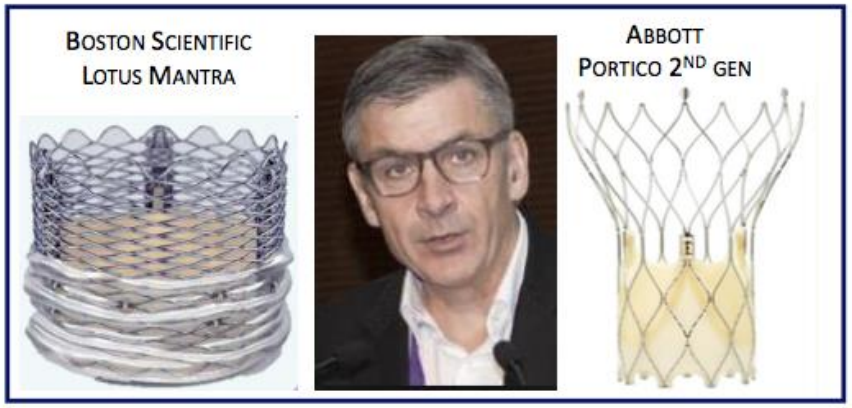
Navarra et al. EJCTS 2016

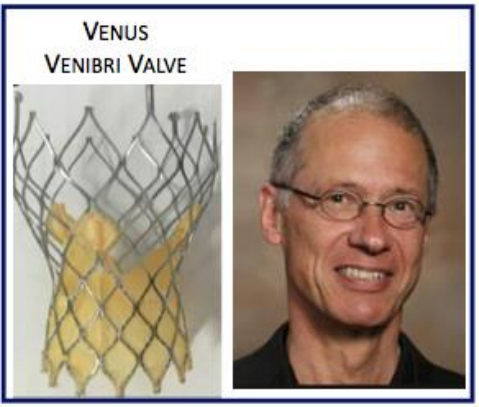
The TAVI parade

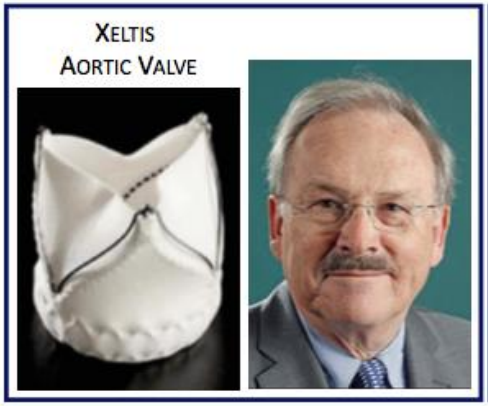


Tarantini, EuroPCR 2018

Mild AR : 27.6% 12% 15% 26%

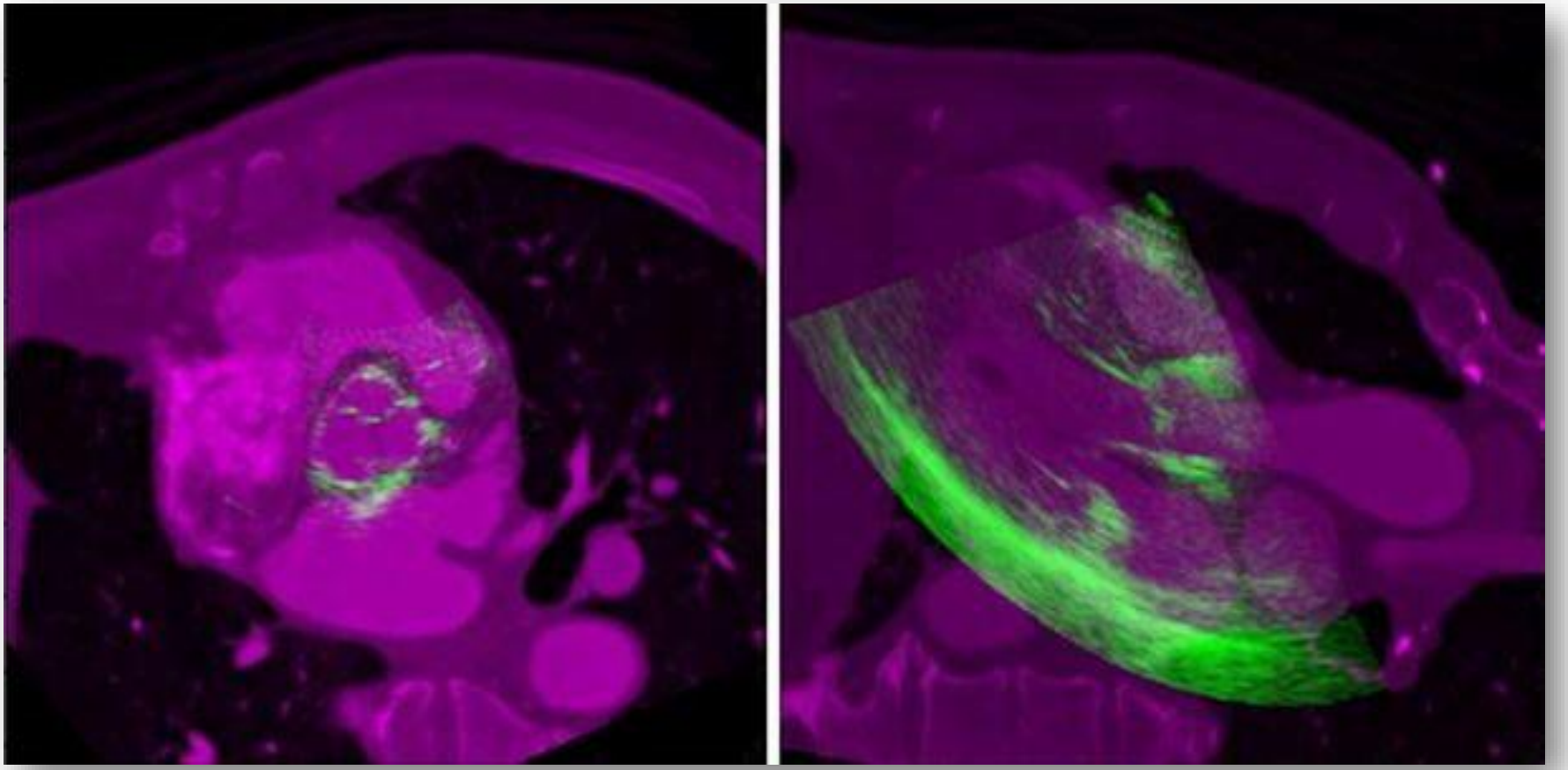






Mild AR : ? ? ? 21%

Fusion of echo and CT imaging



Khalil A et al. Med Biol Eng Comput 2017;55:1317-26

Conclusions

- ✓ PVL has a negative clinical impact after TAVI
- ✓ New generation devices : < 3% mod-severe PVL
- ✓ Mild PVL remains a challenge
- ✓ Multimodality imaging, new concepts of devices would be helpfull in the future