Paravalvular Aortic Regurgitation after Transcatheter Aortic Valve Replacement

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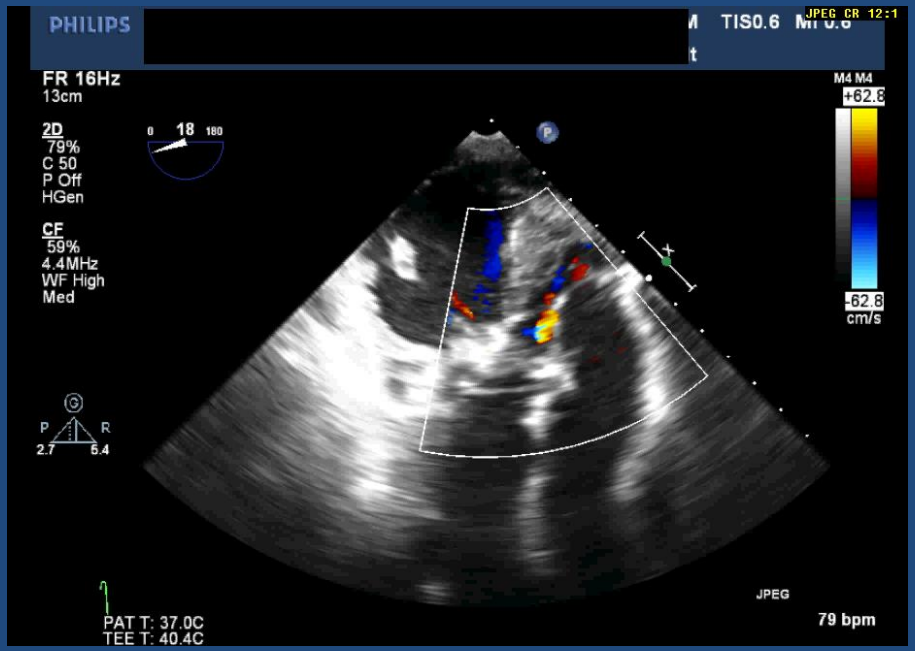
No disclosures

Case

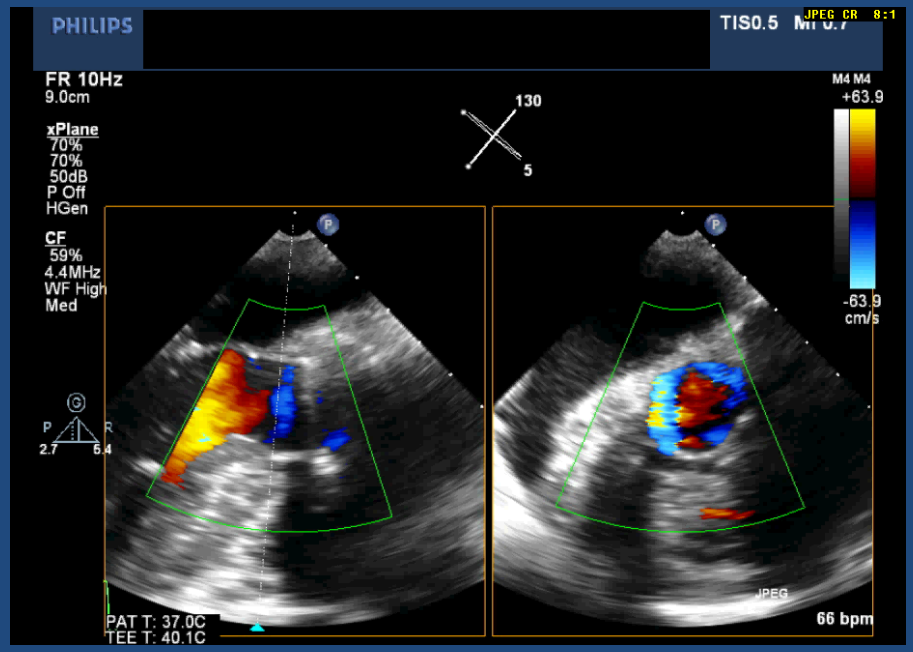
- 84 yo with PMH of HTN, DM, CAD, undergoes transfemoral TAVR.
- Post-procedure, TEE images show the following.

Tranesophageal Echocardiogram

Gastric



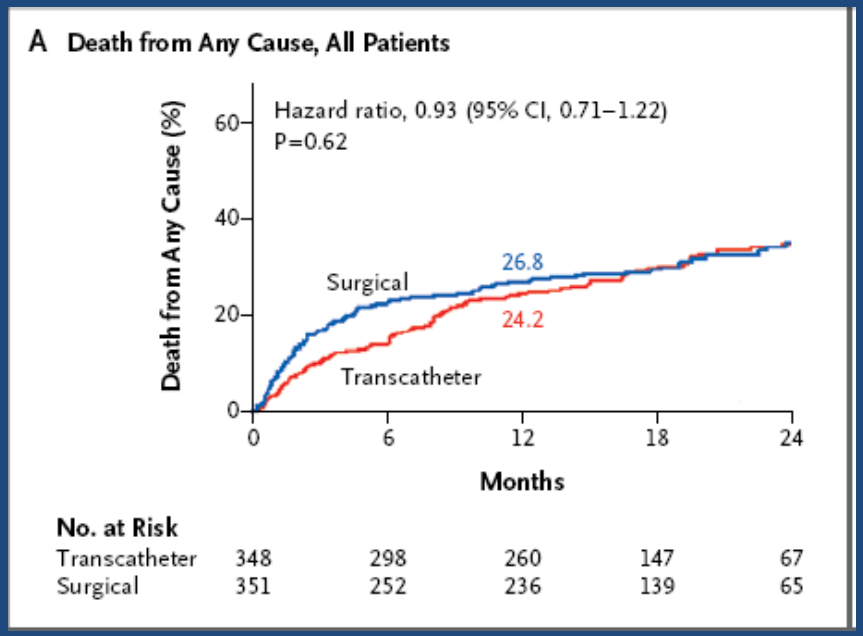
Mid-esophageal

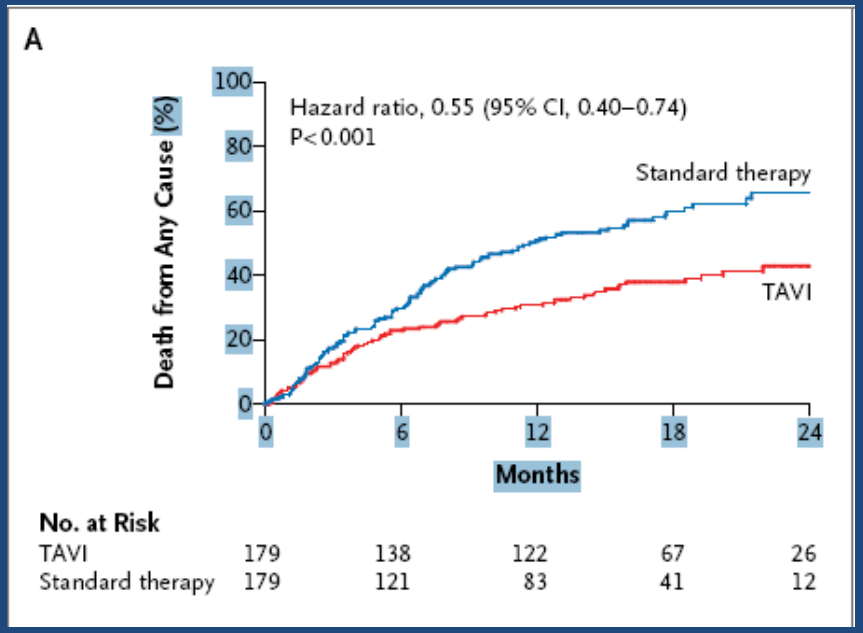


Courtesy of Dr. Jeff Hastings

What is the clinical signficance of paravalvular AI post-TAVR ?

Partner A and Partner B Trials





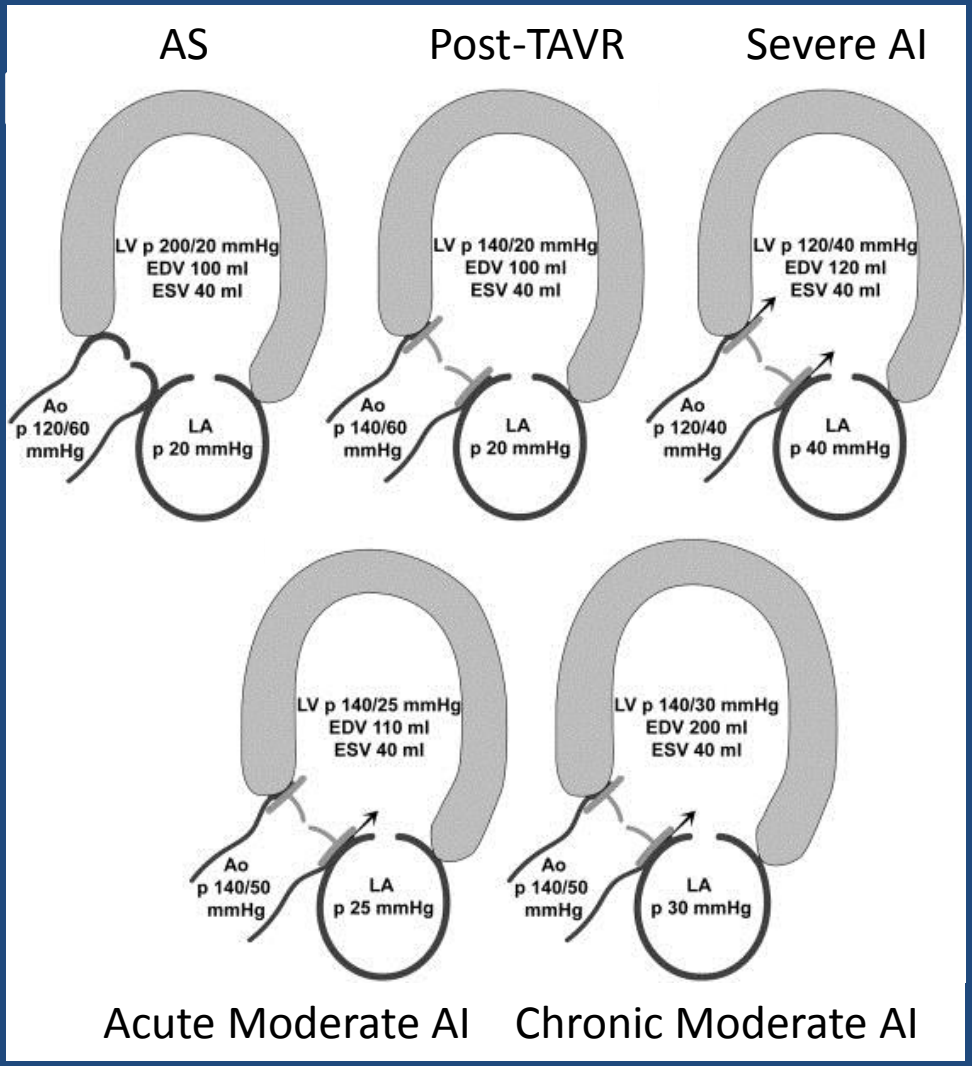
Smith CR et al NEJM 364: 2187
Leon M et al NEJM 363: 1591

Incidence of Post-TAVR AI

- ≥ Mild AI seen in ≈ 80% of post TAVR patients at discharge in Partner A and Partner B Trials
- Moderate to severe AI estimated to occur in ≈ 7%.

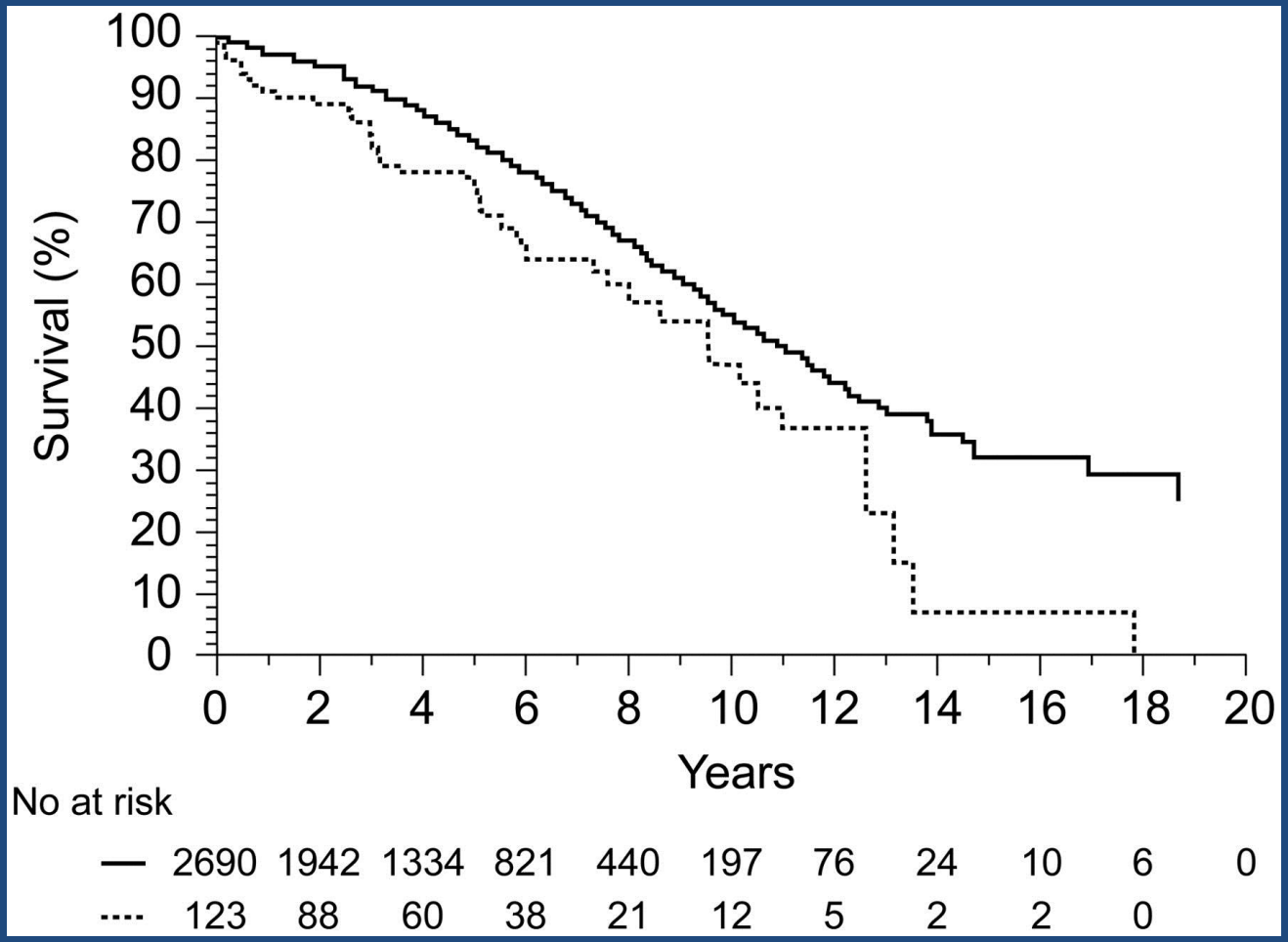
Leon MB et al. NEJM 363:1597-1607
Smith CR et al. NEJM 364: 2187-2198
Genereux P et al. JACC 59:2317-26

Consequences of Post-TAVR AI



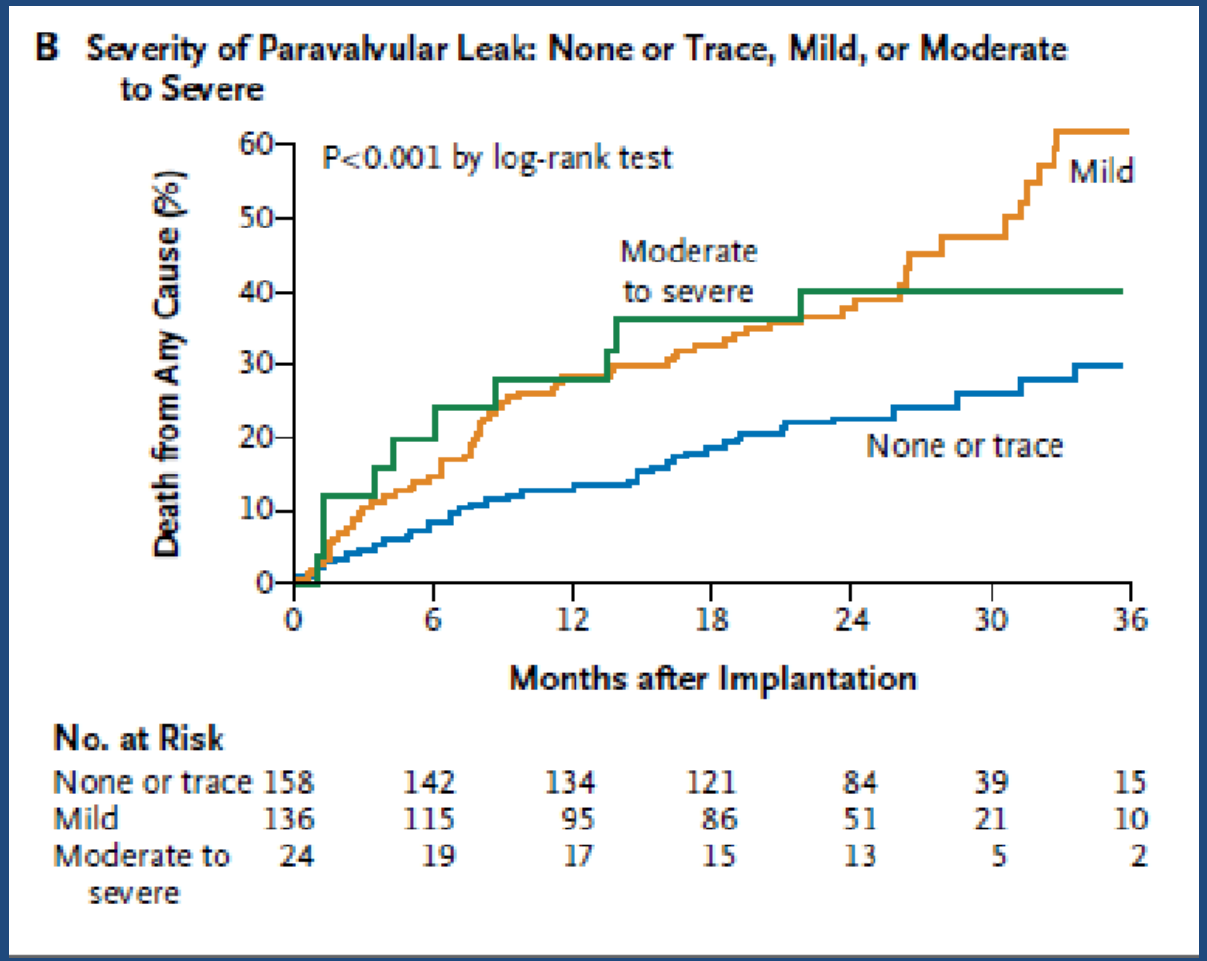
Goltzmann M et al. American Heart Journal 163:903 - 911

AI Post-SAVR



Sponga S et al. Eur J Cardiothorac Surg 2012;42:486-492

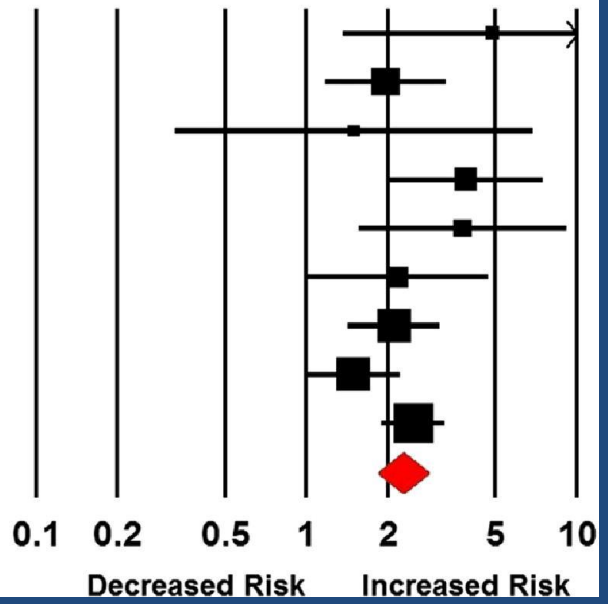
Two Year Partner Trial Results



Kodali SK et al. NEJM 366:1686-95

Long Term Prognosis

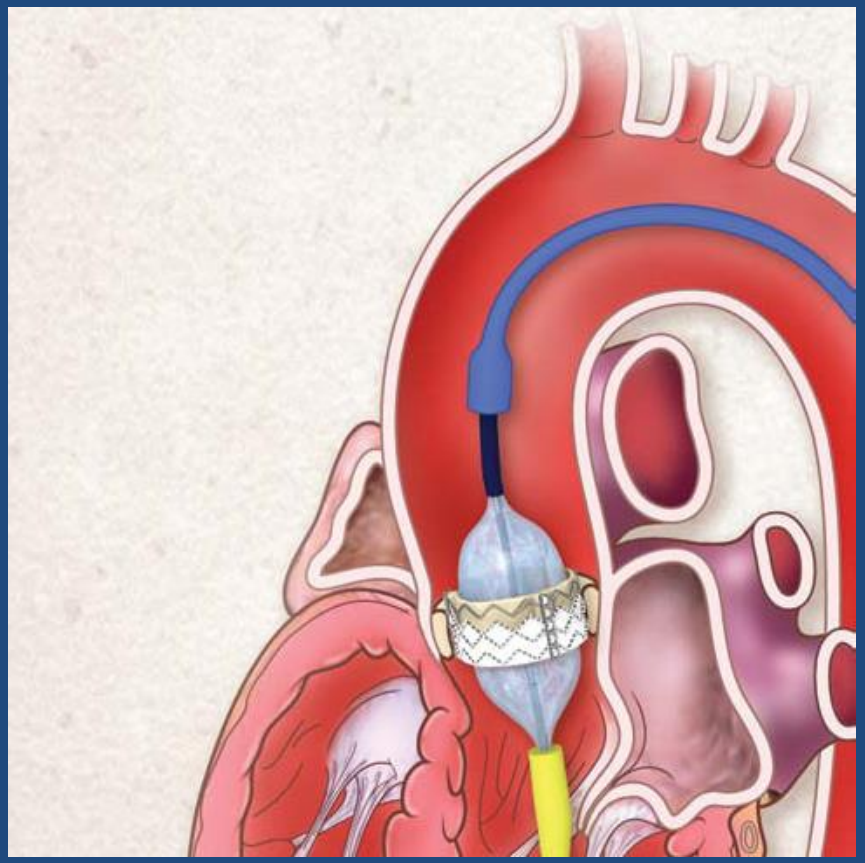
Study name	Hazard ratio	Lower limit	Upper limit	Z-Value	p-Value
Lemos*	4.900	1.367	17.570	2.439	0.015
Hayashida	1.970	1.187	3.271	2.621	0.009
Amabile	1.500	0.329	6.829	0.524	0.600
Sinning	3.890	2.020	7.491	4.063	0.000
Tamburino	3.785	1.572	9.112	2.969	0.003
Fraccaro	2.190	1.023	4.686	2.020	0.043
Kodali	2.110	1.433	3.107	3.783	0.000
Moat	1.490	1.002	2.215	1.971	0.049
Gilard	2.490	1.909	3.248	6.728	0.000
All (N=4791)	**2.273**	**1.840**	**2.808**	**7.609**	**0.000**



Athappan G et al. Journal of the American College of Cardiology 61: 1585 - 1595

Factors Associated with AI after TAVR

- Valve Undersizing
- Significant LVOT calcification
- Malpositioning of THV

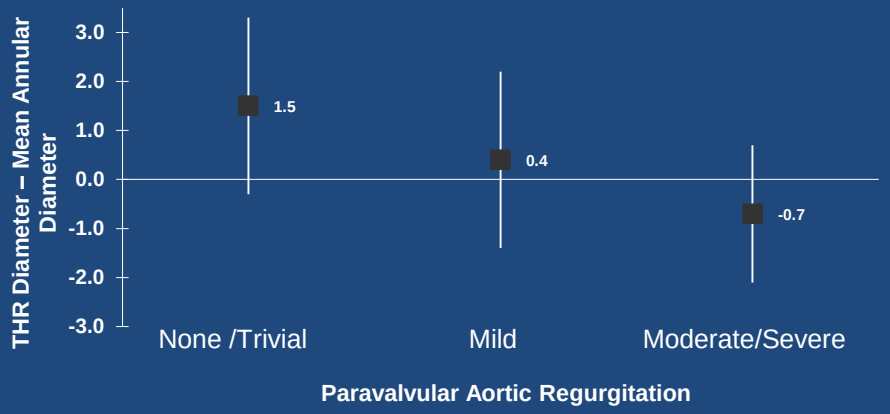


Leon M et al NEJM 363: 1591

Valve Undersizing

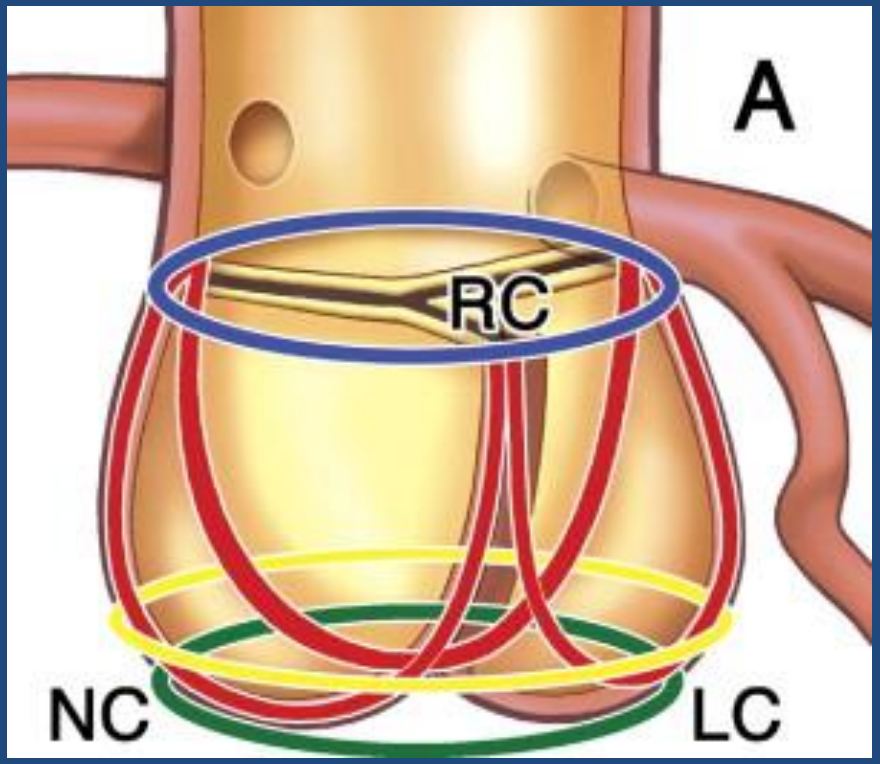
- Oversizing Valve 2-5 mm

- Area Cover Index:
  1-annulus area/prosthesis area
- Cover Index:
  100 x ([prosthesis diameter – TEE annulus diameter]/prosthesis diameter)



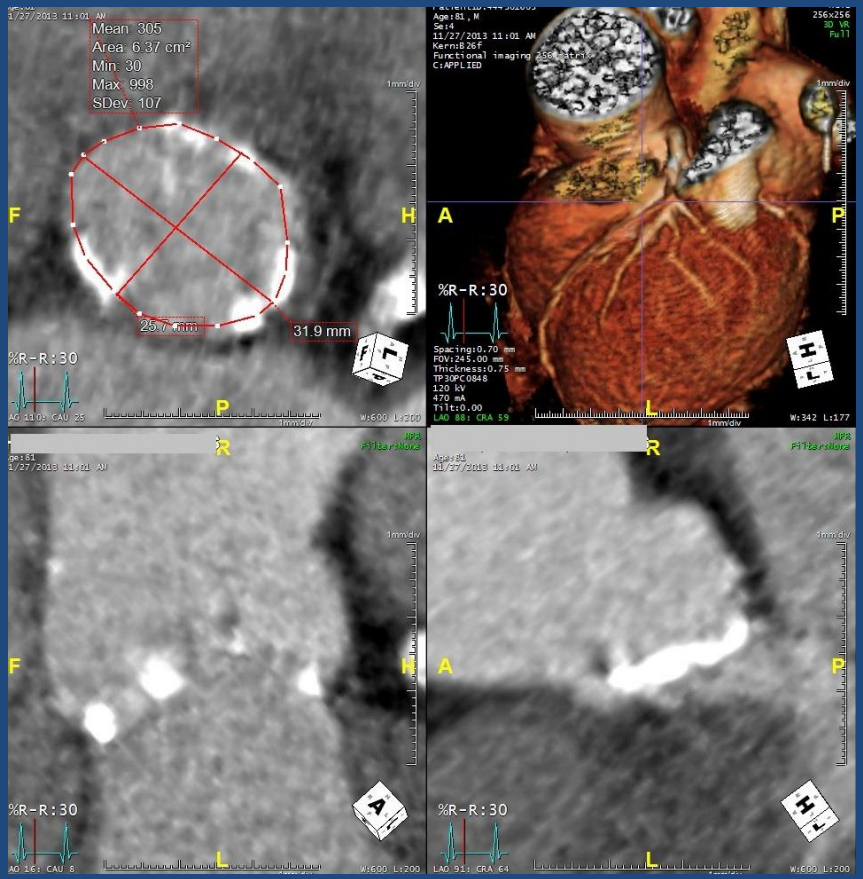
Wilson AB et al. JACC 60:581-586

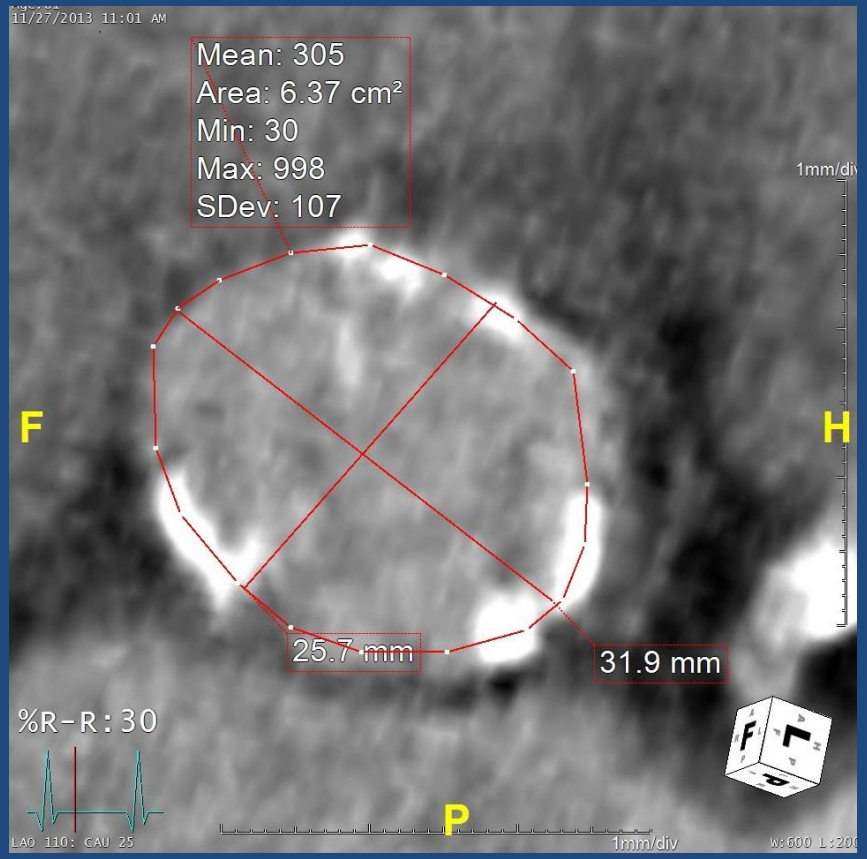
Aortic Annulus Anatomy



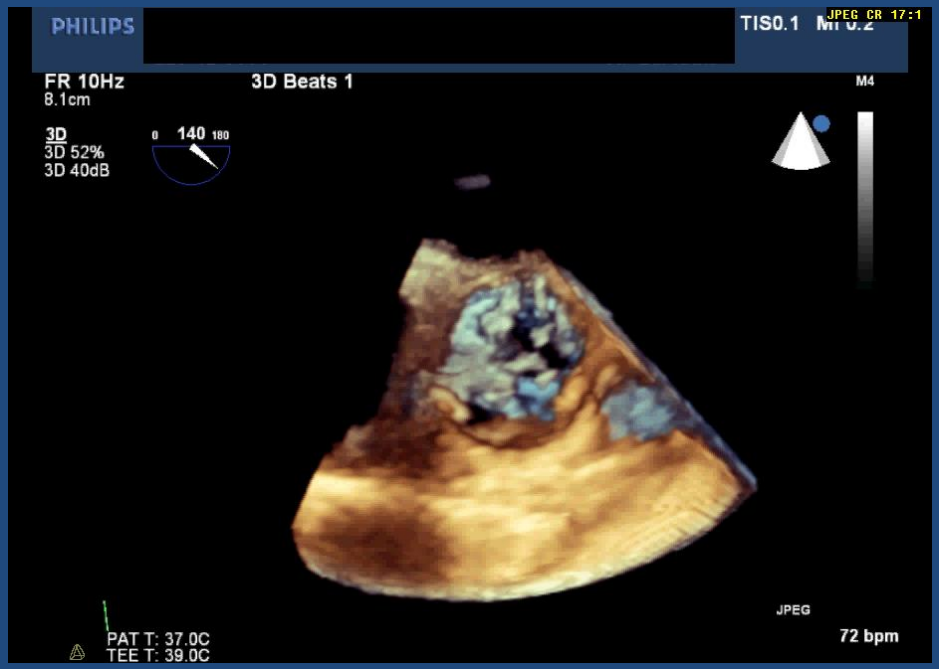
JACC: Cardiovascular Imaging Volume 4, Issue 4 2011 416 - 429

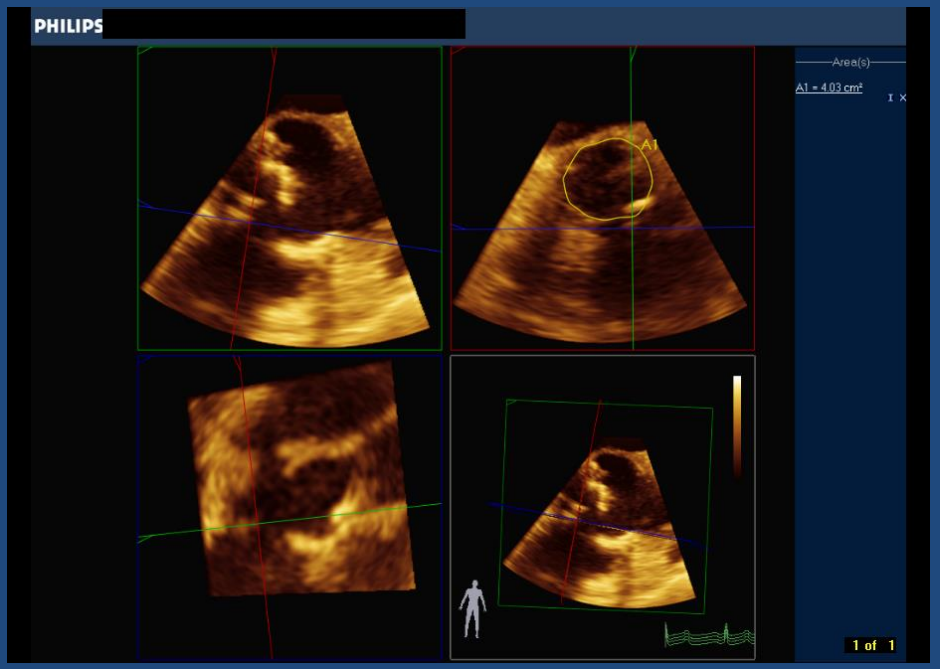
Using MDCT to evaluate valve size





TEE





Courtesy of Dr. Jeff Hastings

Treatment of Paravalvular Leaks

- Repositioning the valve
- Balloon Post-dilatation
- Valve-in-Valve Implantation
- Percutaneous Occluders

Conclusions

- TAVR has lead to improved mortality in patients who are deemed not be candidates for surgical AVR.
- Paravalvular aortic regurgitation occurs commonly after TAVR, and the degree of regurgitation is associated with prognosis.
- Proper sizing and imaging of the aortic annulus is essential to decrease the risk of paravalvular regurgitation post-TAVR.