

# RT-3D Intracardiac Echo: Hype or Underrated?

The Heart Center



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# Disclosures

- As a faculty member of the 3DI3 Conference, I have the following disclosures:
  - Siemens: Consultant RT-3D ICE

# RT-3D ICE

- Who makes the AcuNav V catheter ?
  - Only Siemens
  - 10 Fr



# RT-3D ICE

- What is the cost ?
  - Acuson SC 2000
  - \$260K
  - AcuNav V
  - \$10,500/box of 2  
(\$5,250/each)

Comparison with 2D AcuNav  
ICE catheter (\$3,300/ea)



# RT-3D ICE

- What have others said?
  - Bartel, et al. *Why is intracardiac echocardiography helpful? Benefits, costs, and how to learn*, European Heart Journal, 21, October, 2013.
  - Silvestry, et al. *Initial experience with a novel real-time three-dimensional intracardiac ultrasound system to guide percutaneous cardiac structural interventions: a phase 1 feasibility study of volume intracardiac echocardiography in the assessment of patients with structural heart disease undergoing percutaneous transcatheter therapy*. J Am Soc Echocardiography, Sep, 2014.
  - Maini, et al. *Real-Time Three Dimensional Intracardiac Echocardiography: An Early Single-Center Experience*. J Invasive Cardiology, Jan, 2015.



# RT-3D ICE

- What has it been used for so far ? Interventions that allow conscious sedation
  - TAVR procedures using conscious sedation
    - Good for balloon and wire placement, for valve positioning, and for post implant assessment
  - Mitral valve clips
    - Aides in pre and post assessment
  - LAA device closure
  - PFO closure
  - ASD closure... if not too large of defect

# RT-3D ICE

- Limitations
  - No M mode: **Minor?**
  - No CW Doppler: **Major**
  - Relative small volume image of  $22^\circ \times 90^\circ$ : **Major**
  - Higher cost of catheter: **Major?**
- All of these limitations were mentioned in 2014 !

# RT-3D ICE

- Examples

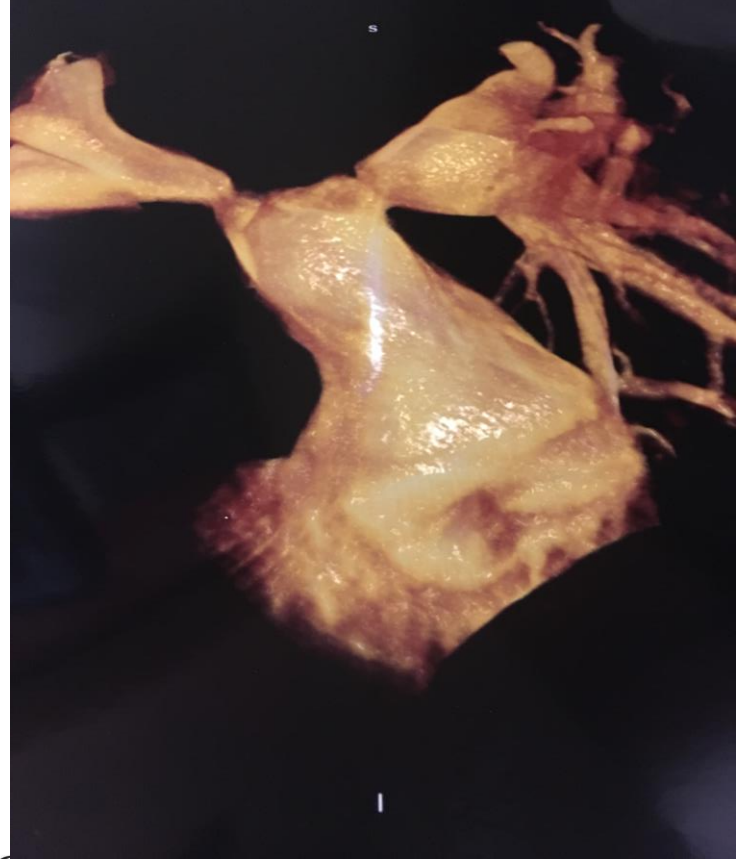
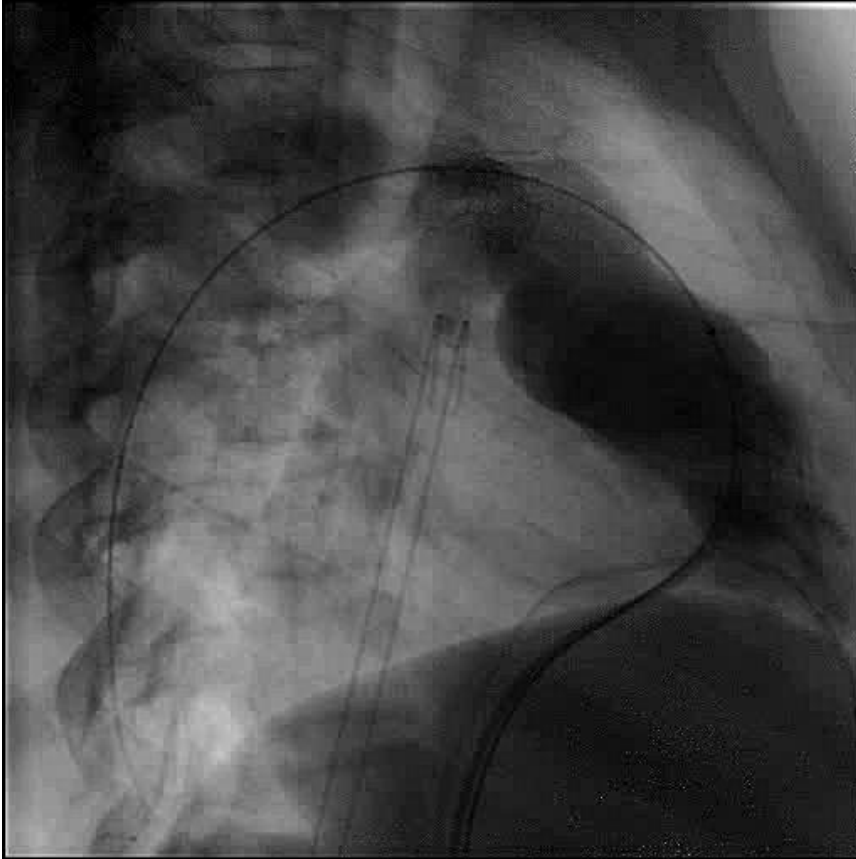


# RT-3D ICE

- 16 y/o post TOF repair with TAP
- At 5 years, had 25mm long Genesis XD stent for RPA stenosis and 19mm long Genesis XD stent for LPA stenosis dilated to 12mm
- Lost to follow up
- Now with severe PR (29% RF ), bilateral PAB stenosis secondary to small and fractured stents
- Sent to cath lab to “fix her”

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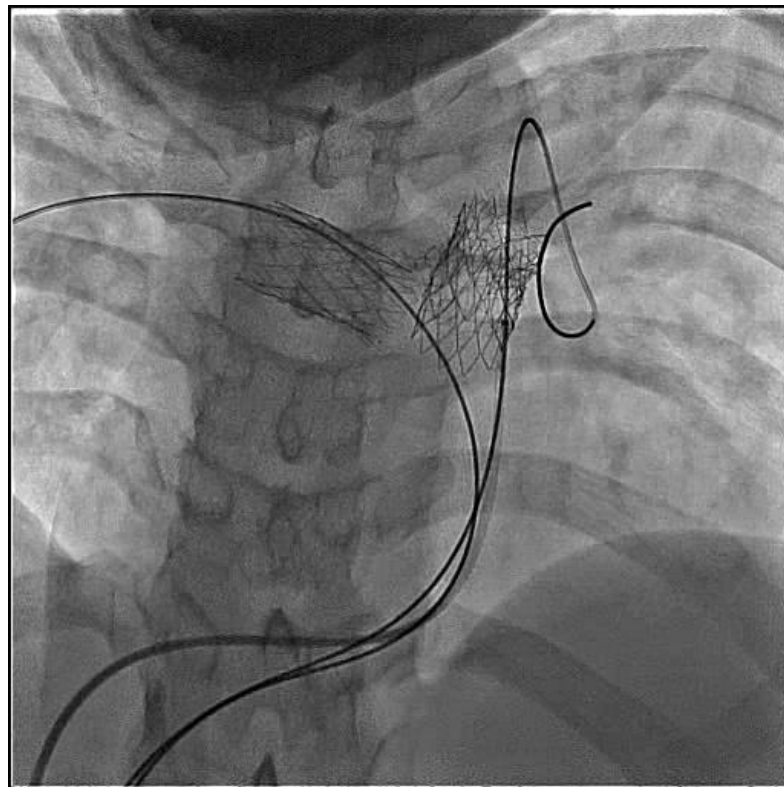
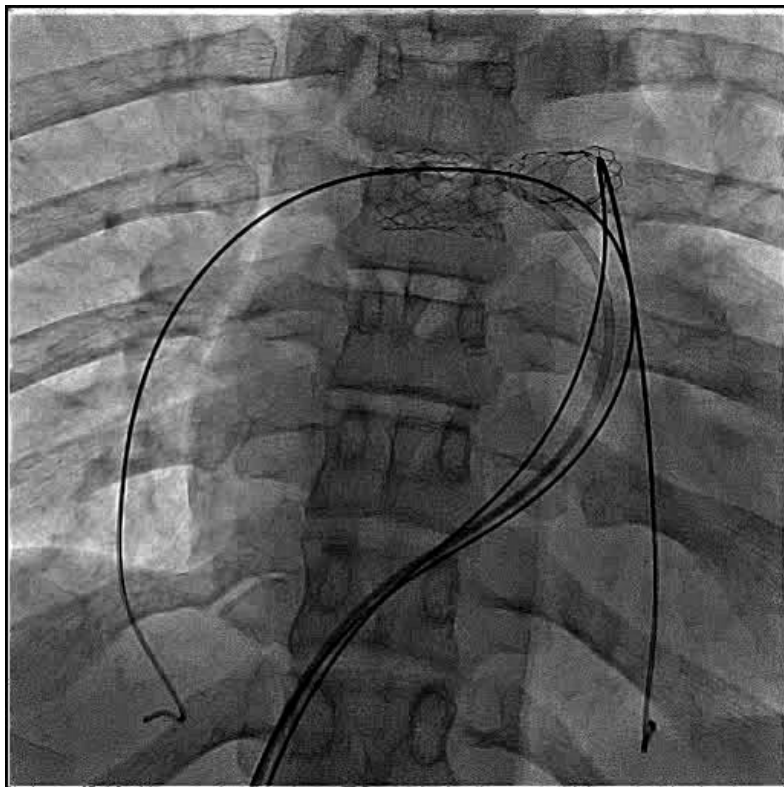
# RT-3D ICE

- After **MANY** hours in the cath lab to try and “fix” the badly fractured, stenotic stents with restenting using P-XL stents and Atlas balloons, we began assessment to see if TPV was possible...maybe at a later date!

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Not perfect, but relieved all gradients. ? Still TPV candidate?



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Still possible

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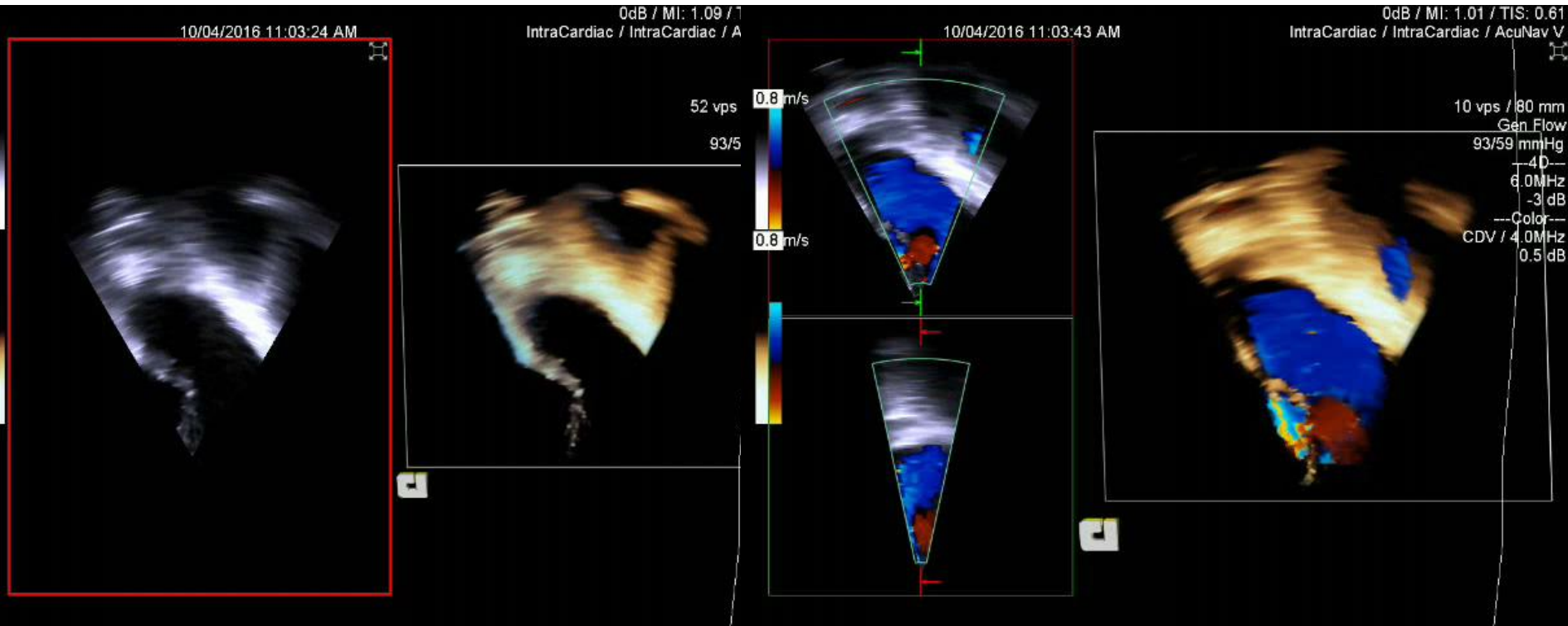


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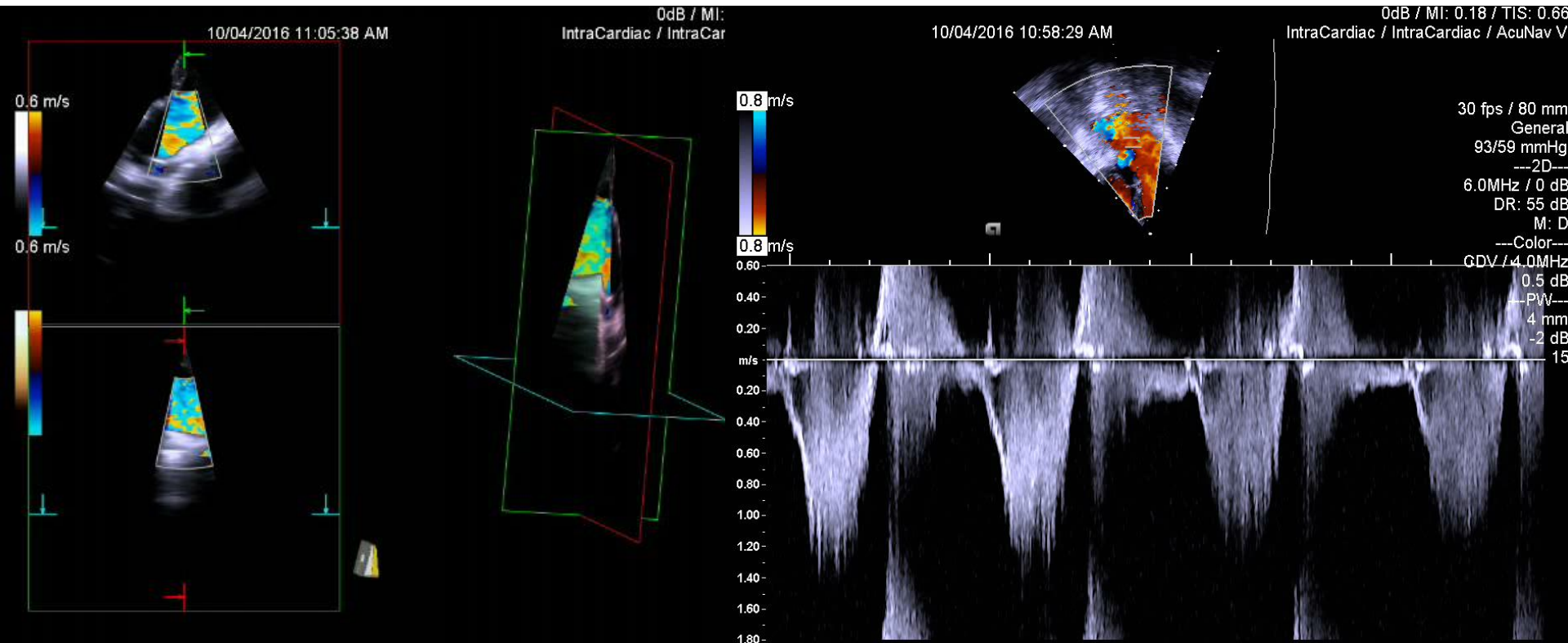
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# RT-3D ICE

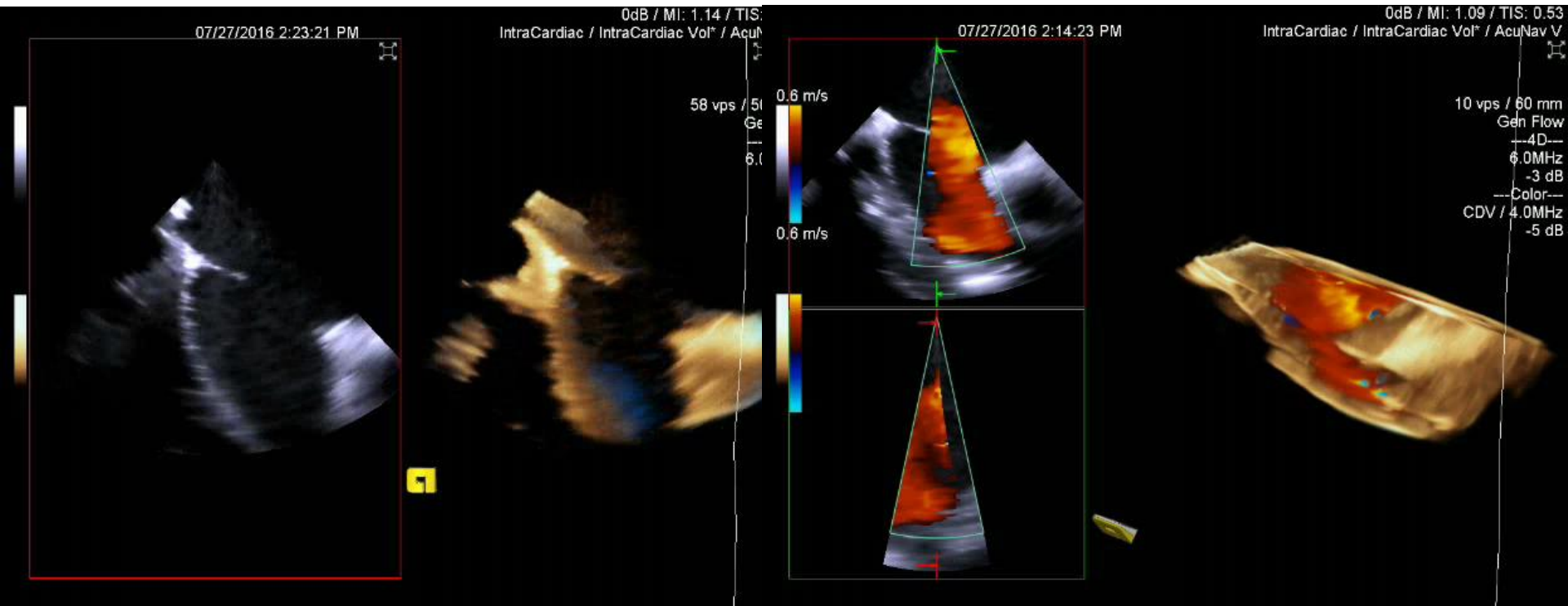




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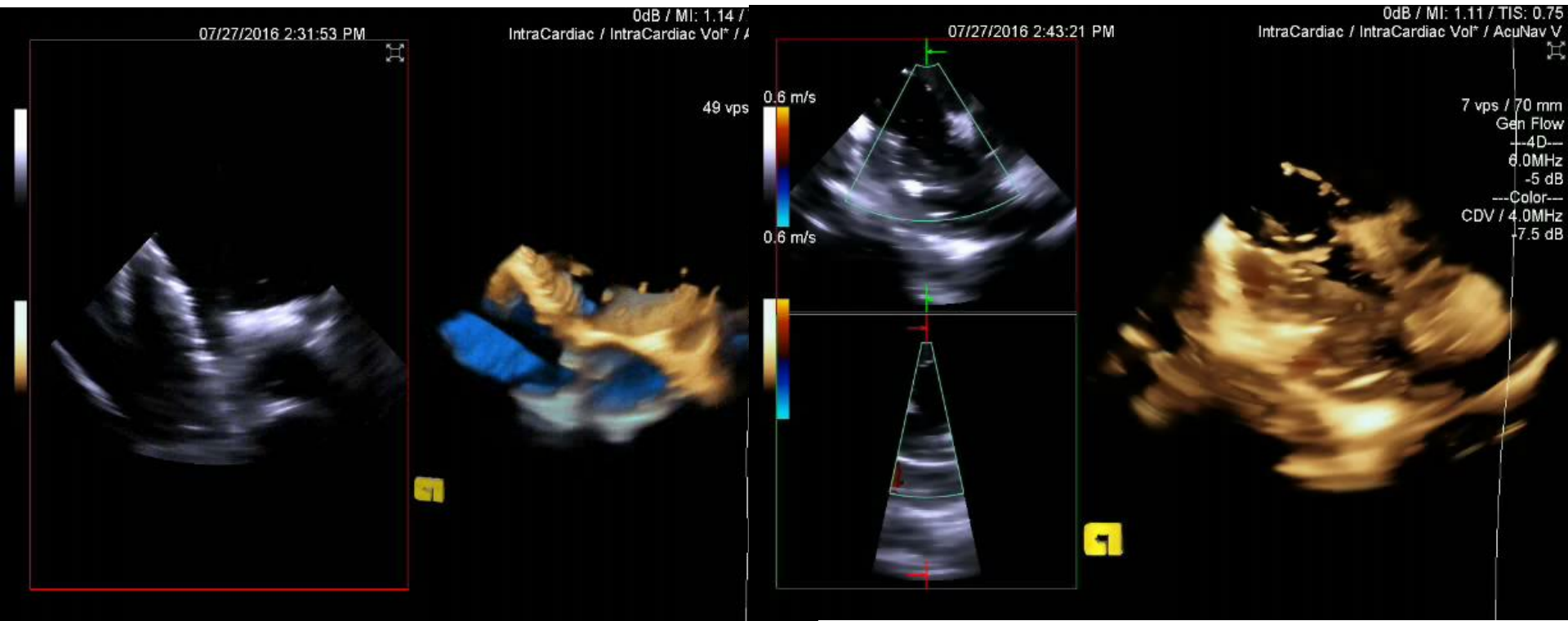
6 y/o with ASD, Qp/Qs 2/1, Balloon size 17mm, 18 mm ASO



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6 y/o with ASD, Qp/Qs 2/1, Balloon size 17mm, 18 mm ASO



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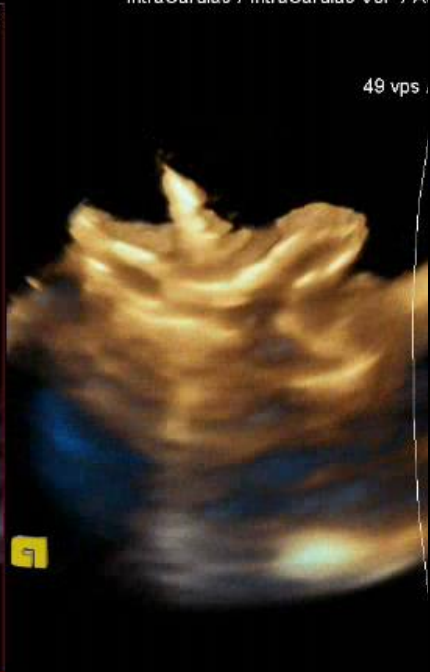
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6 y/o with ASD, Qp/Qs 2/1, Balloon size 17mm, 18 mm ASO

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0dB / MI: 1.14 / T  
IntraCardiac / IntraCardiac Vol\* / Ai

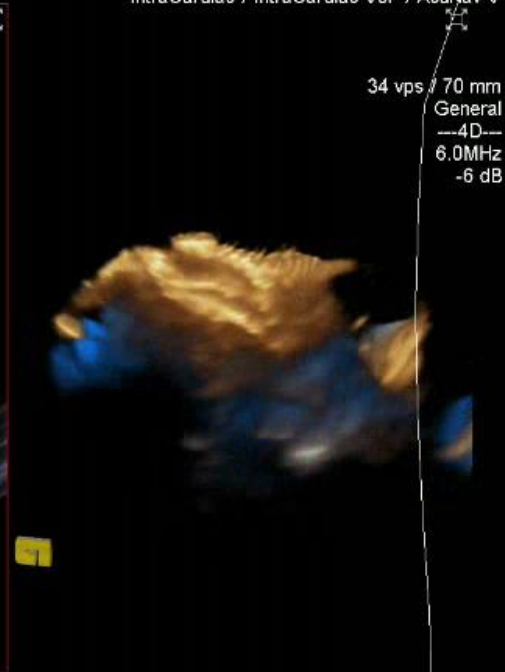


49 vps

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0dB / MI: 1.14 / TIS: 0.59  
IntraCardiac / IntraCardiac Vol\* / AcuNav V



34 vps / 70 mm  
General  
--4D--  
6.0MHz  
-6 dB



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# RT-3D ICE

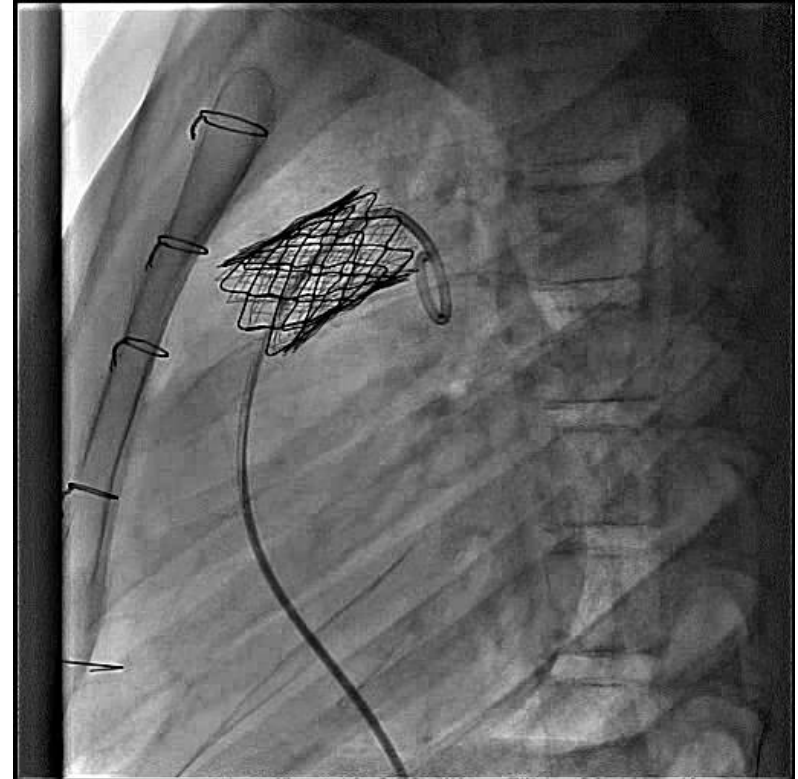
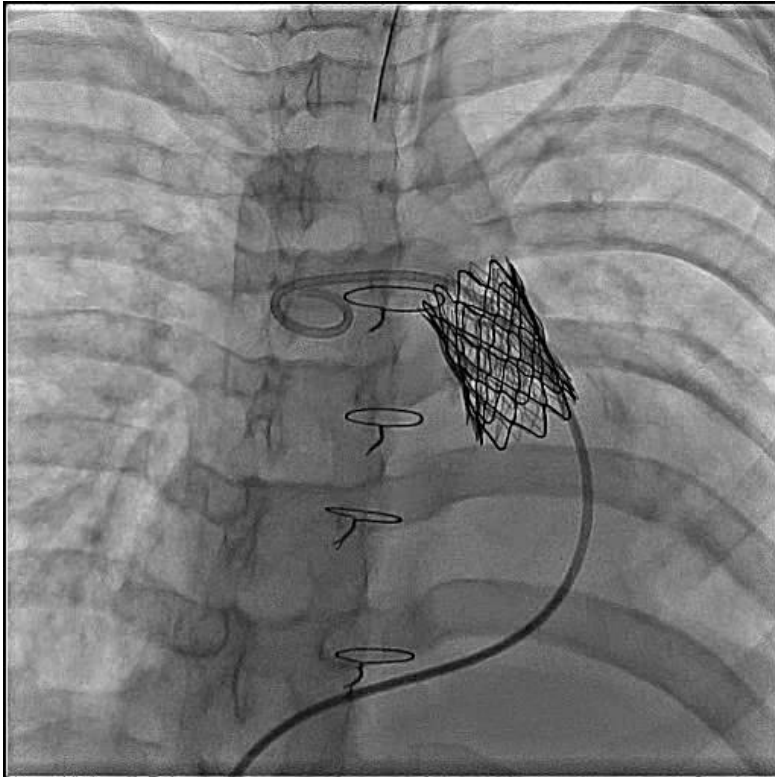
12 y/o CAVSD & TOF repair: s/p 3 P-3110XL & Melody TPV at 18mm



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12 y/o CAVSD & TOF repair: s/p 3 P-3110XL & Melody TPV at 18mm



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12 y/o CAVSD & TOF repair: s/p 3 P-3110XL & Melody TPV at 18mm

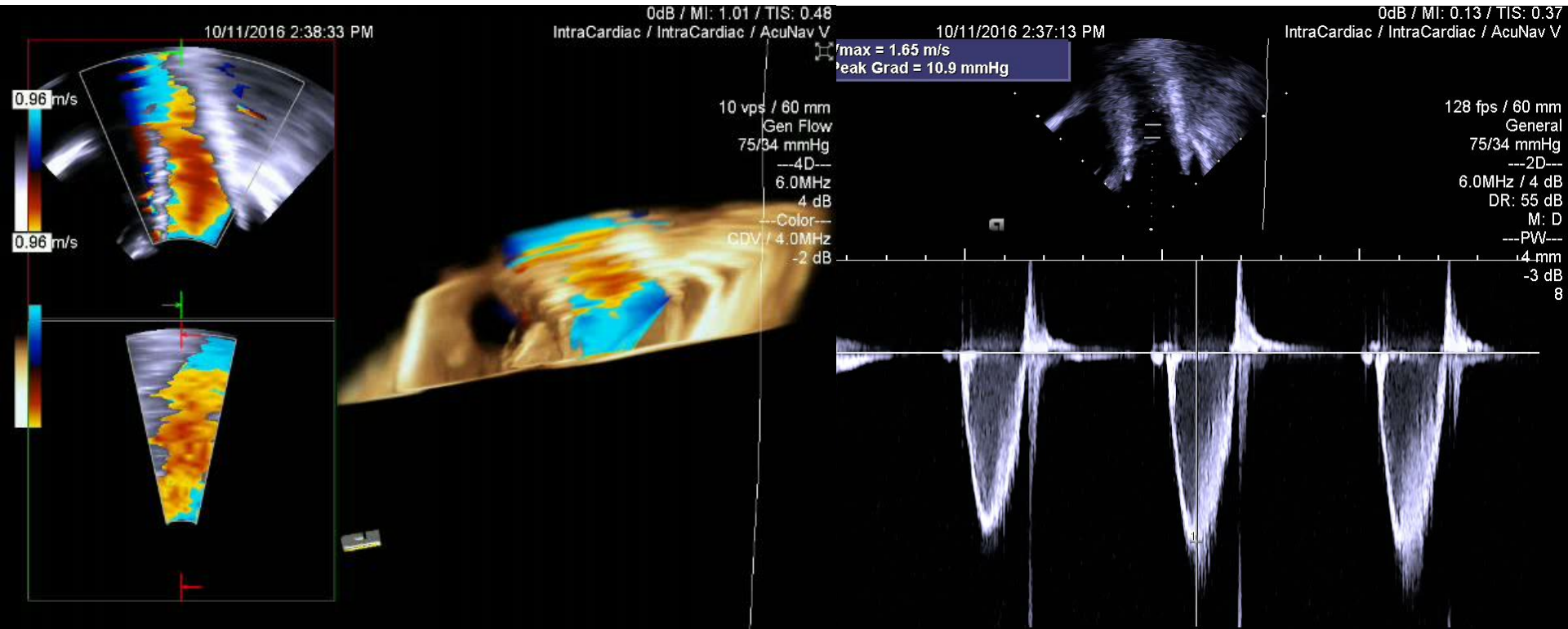


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12 y/o CAVSD & TOF repair: s/p 3 P-3110XL & Melody TPV at 18mm



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- What is being done and/or planned to improve the AcuNav V catheter?
  - Currently under a NDA...hopefully more info soon
  - Need to improve volumetric data set, while maintaining high resolution of image and color mapping
    - The 3D TEE volumetric data set is  $90^\circ \times 90^\circ$  vs ICE  $22^\circ \times 90^\circ$
  - Must add CW for the IC and M mode for the echo staff
  - Must contain costs: \$5,250 vs \$3,300
    - Resterilize ? The 2D AcuNav can be



# RT-3D ICE: Hype or Underrated?

- With the current AcuNav V, it is probably more Hype than Underrated at this time
- We will have to ask this question at a later date after Siemens improves the system and addresses the limitations as outlined...hopefully sometime in 2017

# THANK YOU

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