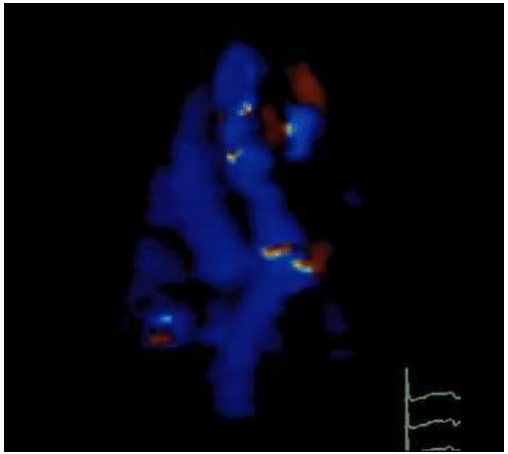
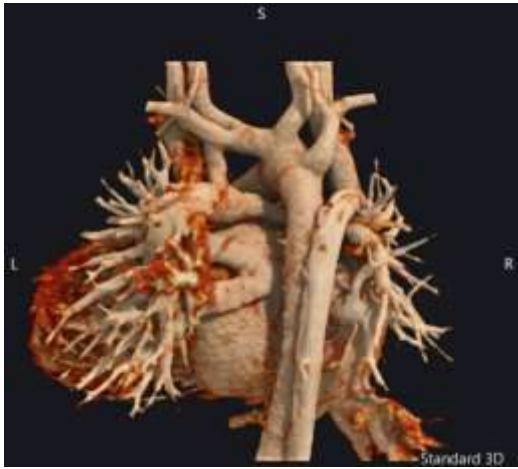
Imaging Evaluation of BTT shunts How do I do it ?



Anitha Parthiban MD, FASE, FACC
Medical Director, Echocardiography
Texas Children's Hospital
Baylor College of Medicine



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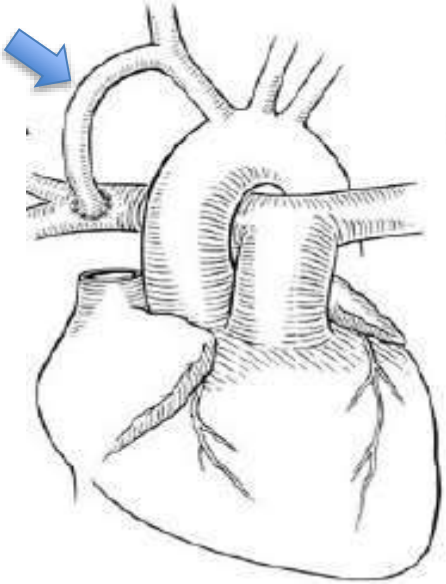
Classic Blalock Taussig Thomas Shunt



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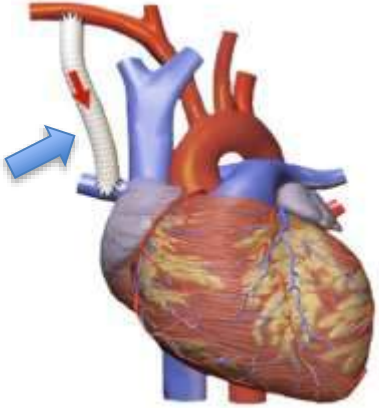
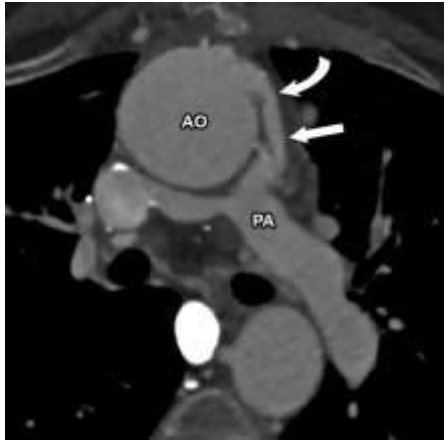
Systemic to Pulmonary Shunts

Modified BTTS



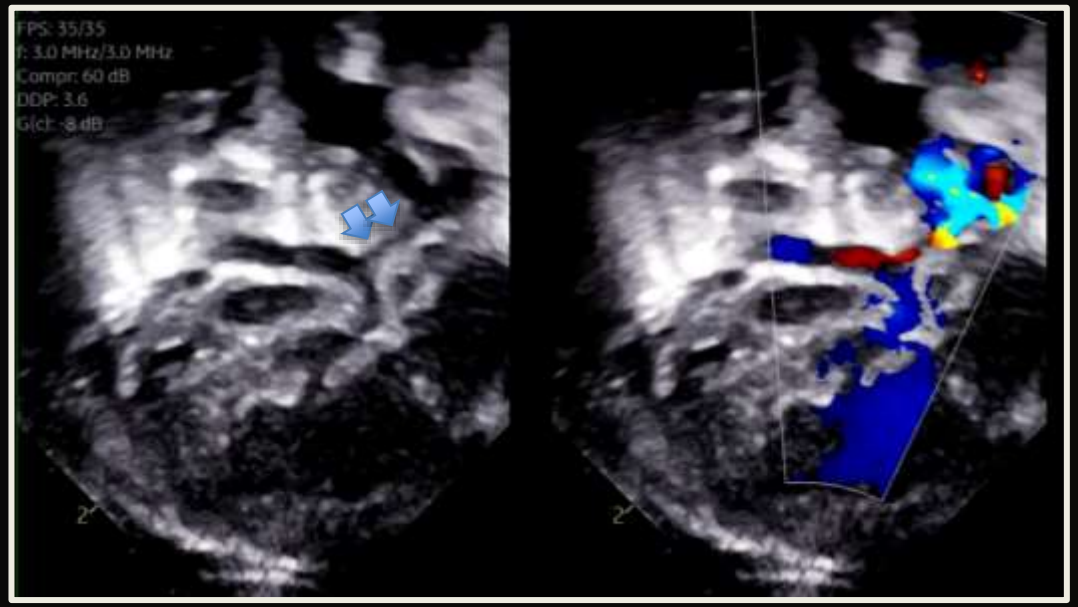
Central shunt

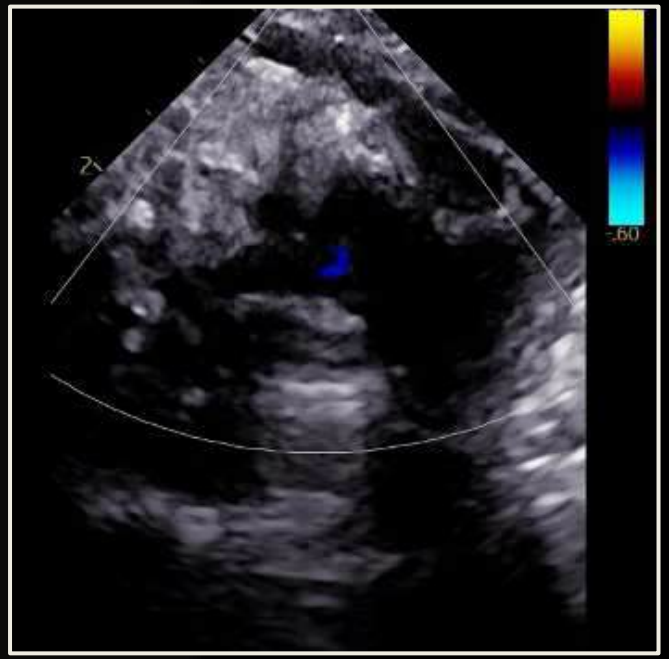


RV-PA Conduit

PDA stent

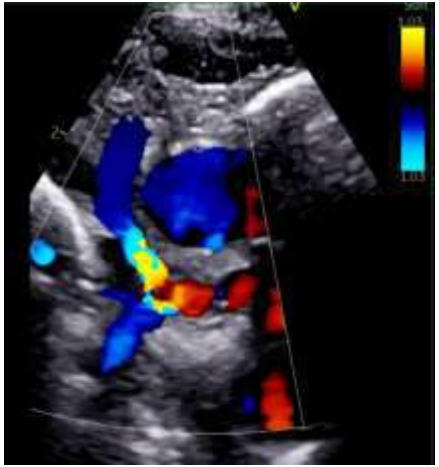
Preoperative Checklist



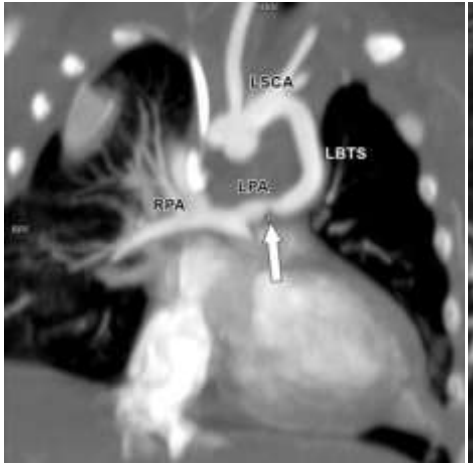


Multimodality Imaging

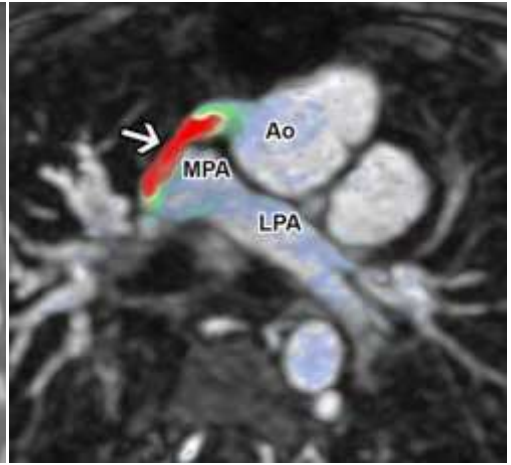
TTE



CCT



CMR



Angiography

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Transthoracic Echo

Windows

- Suprasternal/ High right parasternal
- Modified apical
- Subcostal

Goals

- Visualization of entire shunt
- Branch pulmonary arteries
- Hemodynamics
- 2D, Color, Spectral Doppler

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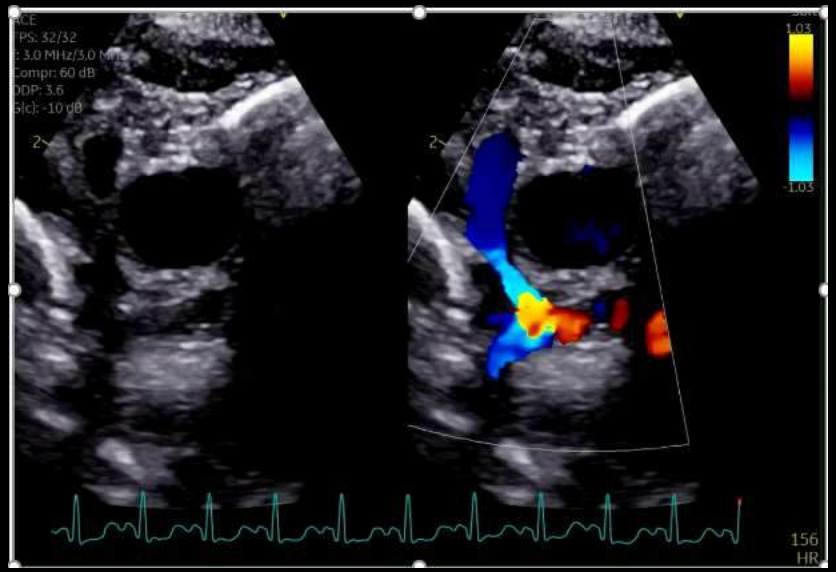
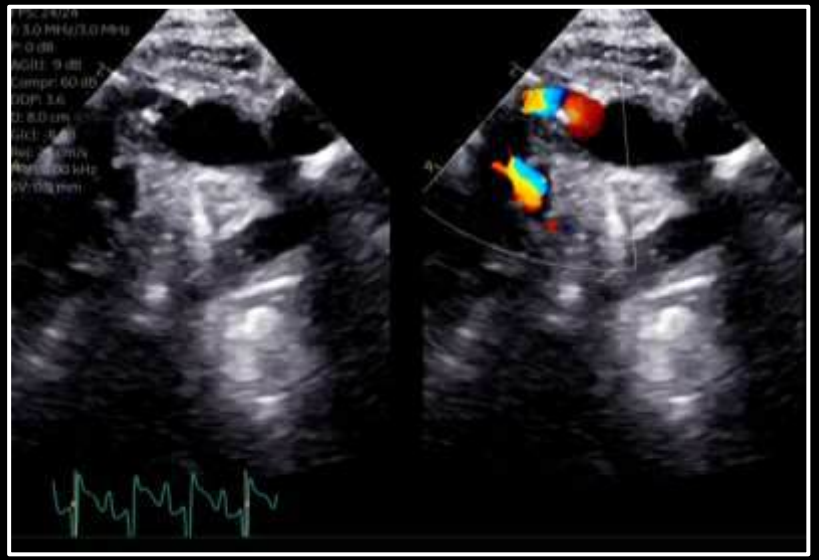
2D Imaging

2D Imaging

Color Doppler

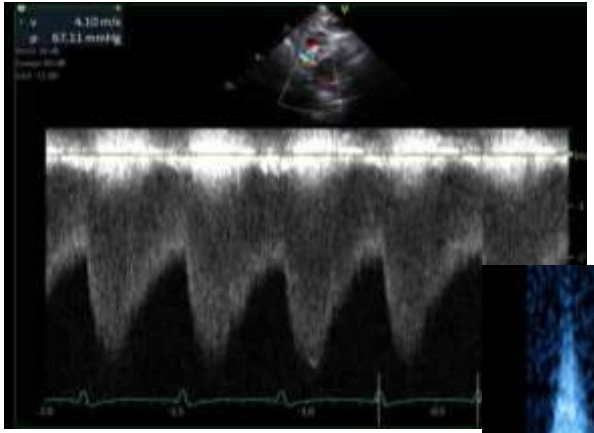
Color Doppler



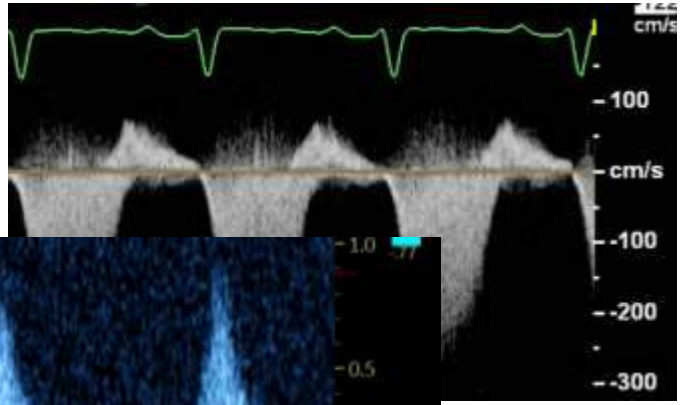


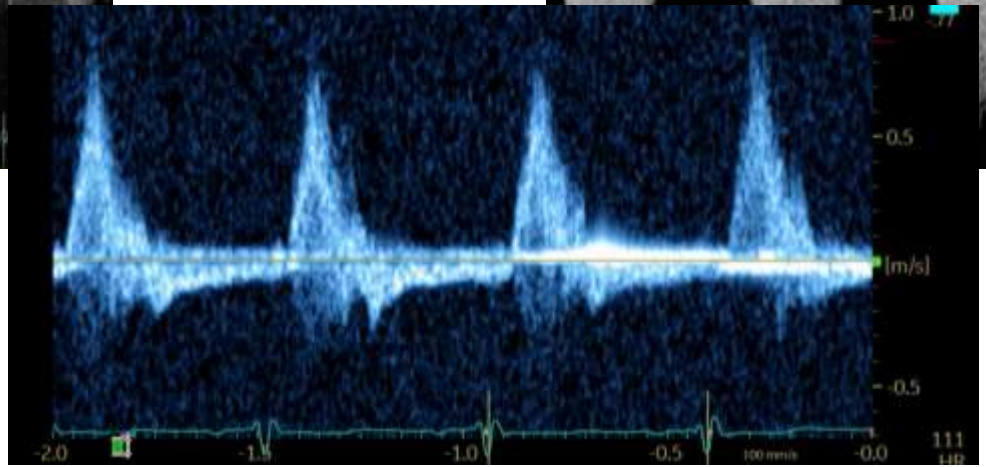
Spectral Doppler

Modified BTTS



RV-PA Conduit





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Volume 5, Issue 2
March 2004

JOURNAL ARTICLE

Usefulness of Blalock–Taussig shunt Doppler flow velocity profiles in the assessment of pulmonary artery pressure and flow

Get access

M. Chaudhari, C. Balmer, J.T. Heng, J. Wright, O. Stümper

European Journal of Echocardiography, Volume 5, Issue 2, March 2004, Pages 111–117,
https://doi.org/10.1016/S1525-2167(03)00052-0
Published: 01 March 2004 **Article history**

Diastolic flow velocity estimated pressure correlated with mean PAP, not peak or mean gradients

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Echocardiographic measured shunt velocity does not predict pulmonary blood flow in patients with Blalock–Thomas–Taussig shunt

Sarah Tucker[1], Matthew Cornicelli[2], Rohit Loomba[3], Jeremy Fox[4], Eric Wald[5] and Jamie Penk[6]

Cardiology in the Young 2024

- No correlation with catheter parameters for pulmonary blood flow

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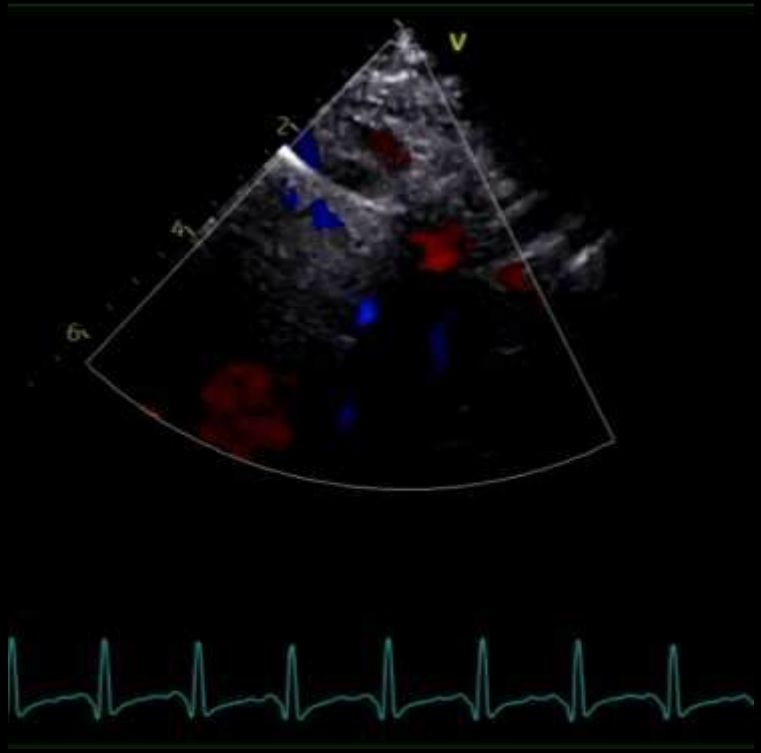
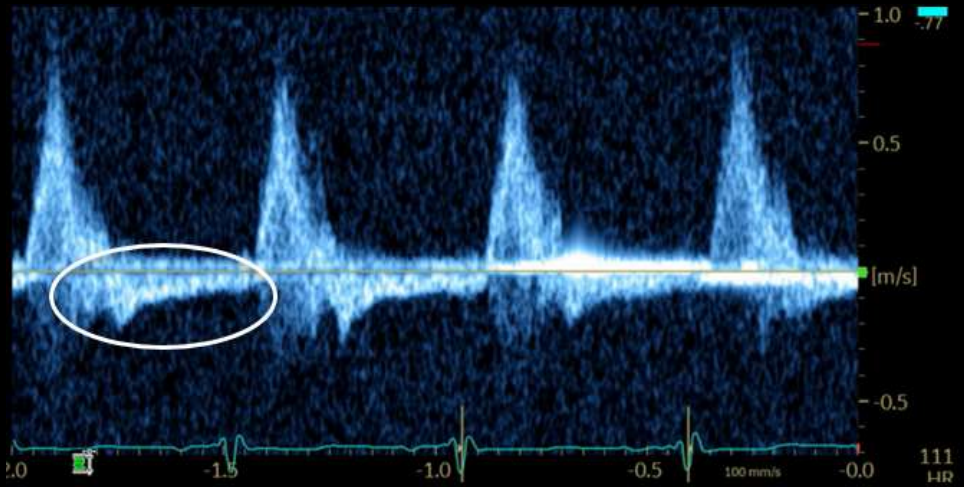
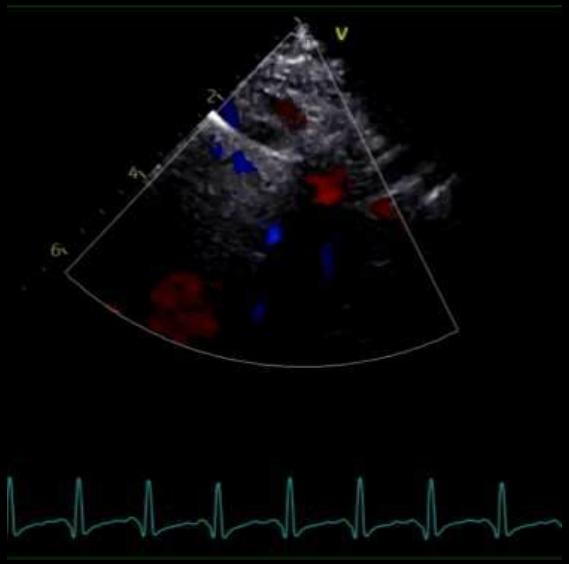
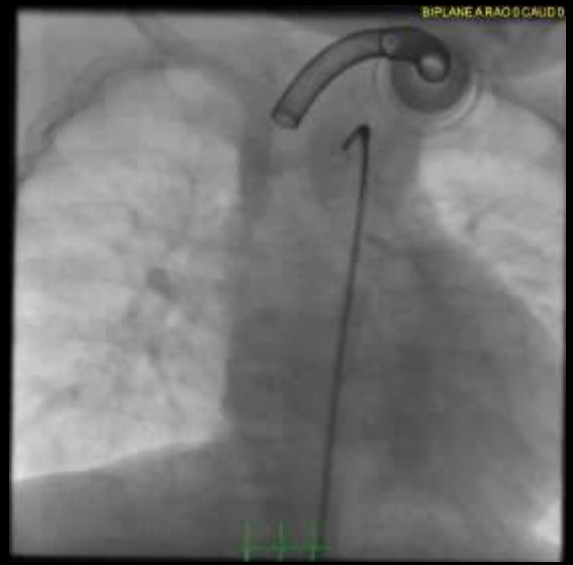
Shunt Occlusion



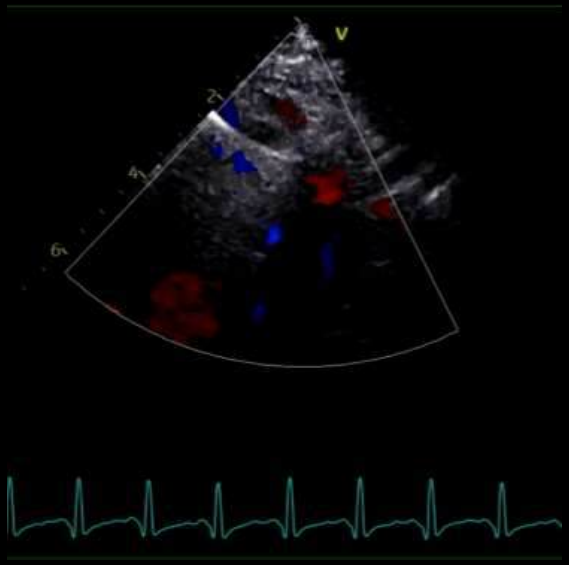


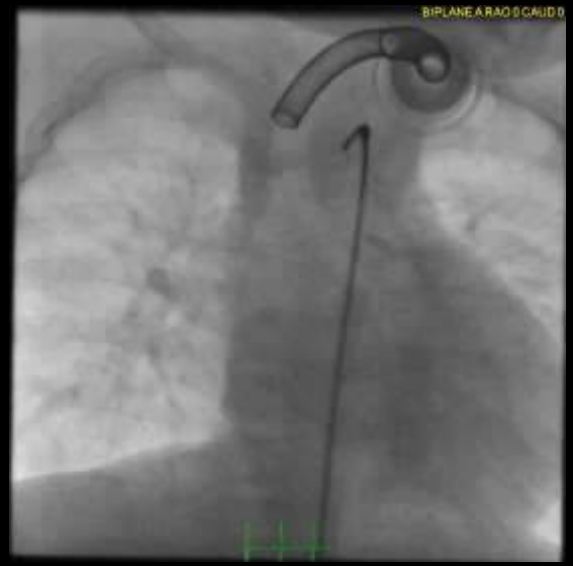
Shunt Occlusion

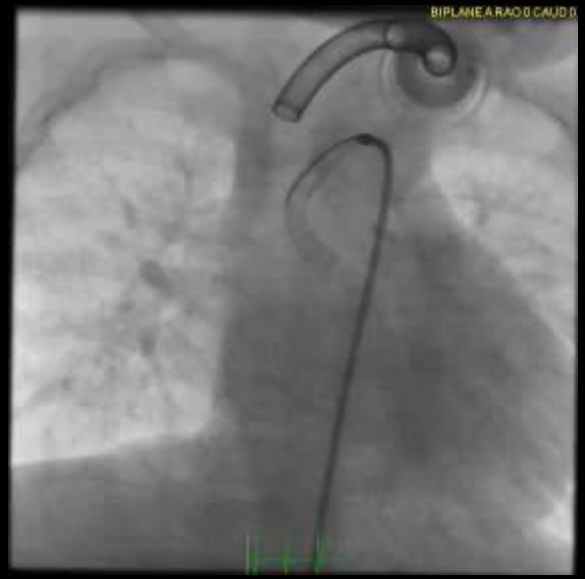




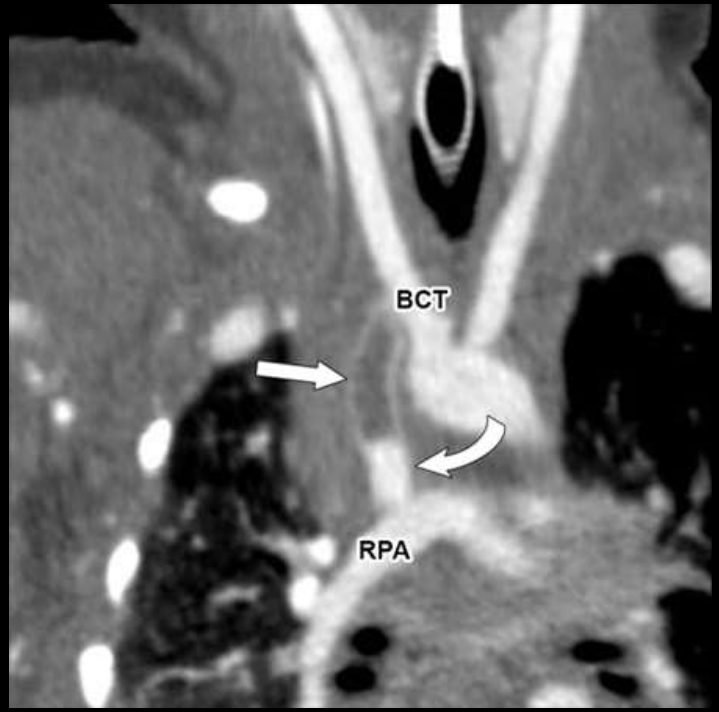
Shunt Occlusion





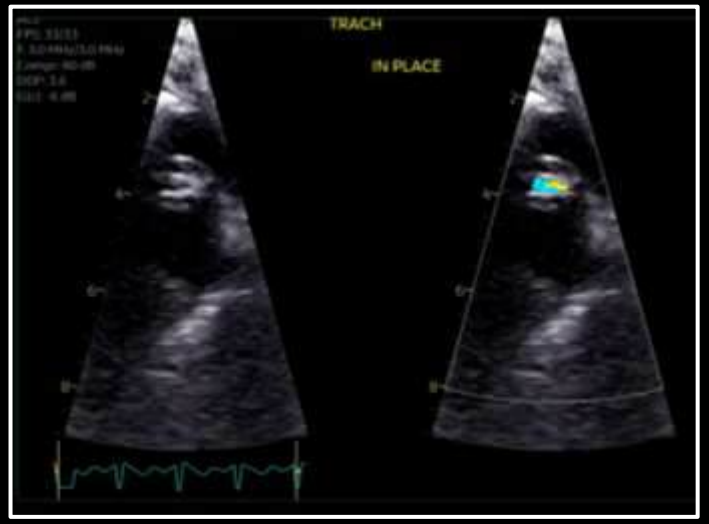


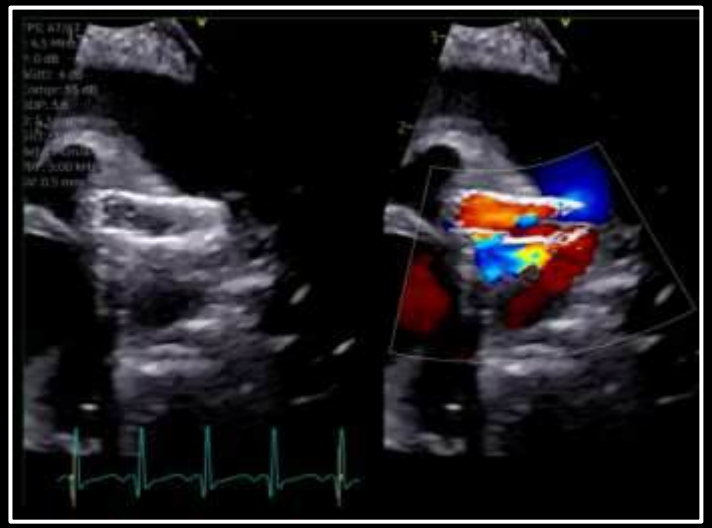
Shunt Occlusion



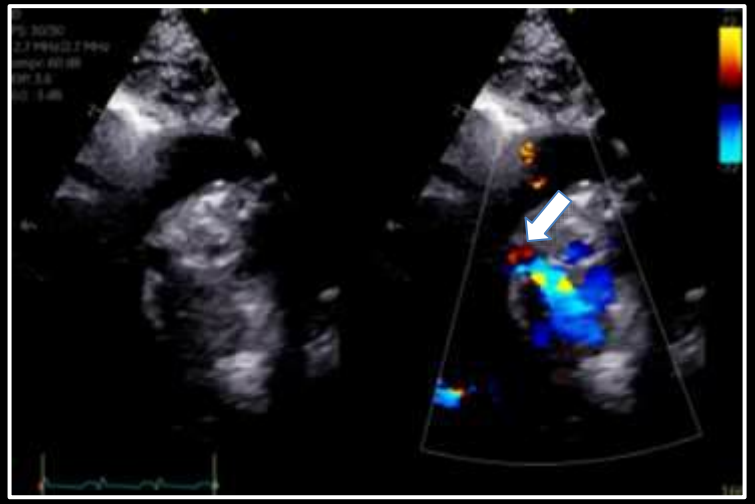
Rajiah PS. Published Online: March 23, 2023
https://doi.org/10.1148/rg.220049
RadioGraphics

Shunt Stenosis

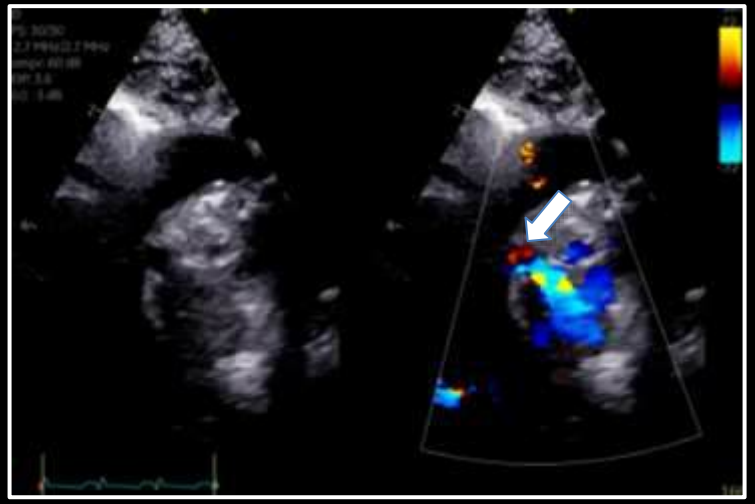


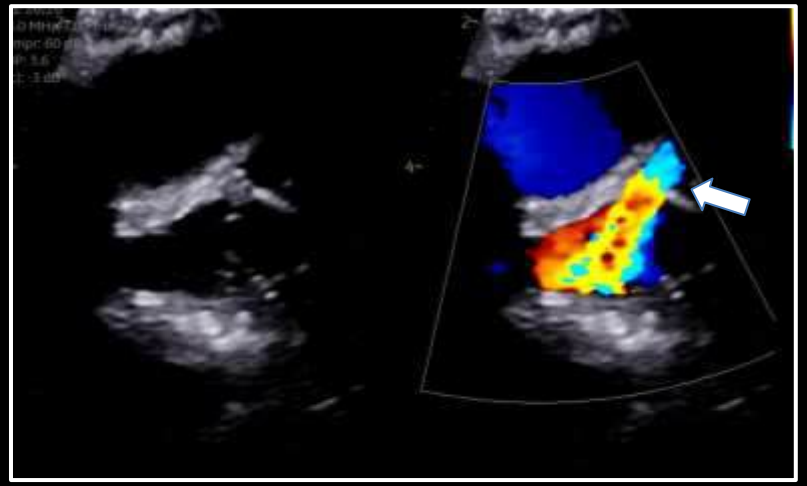


Shunt Stenosis



Shunt Stenosis





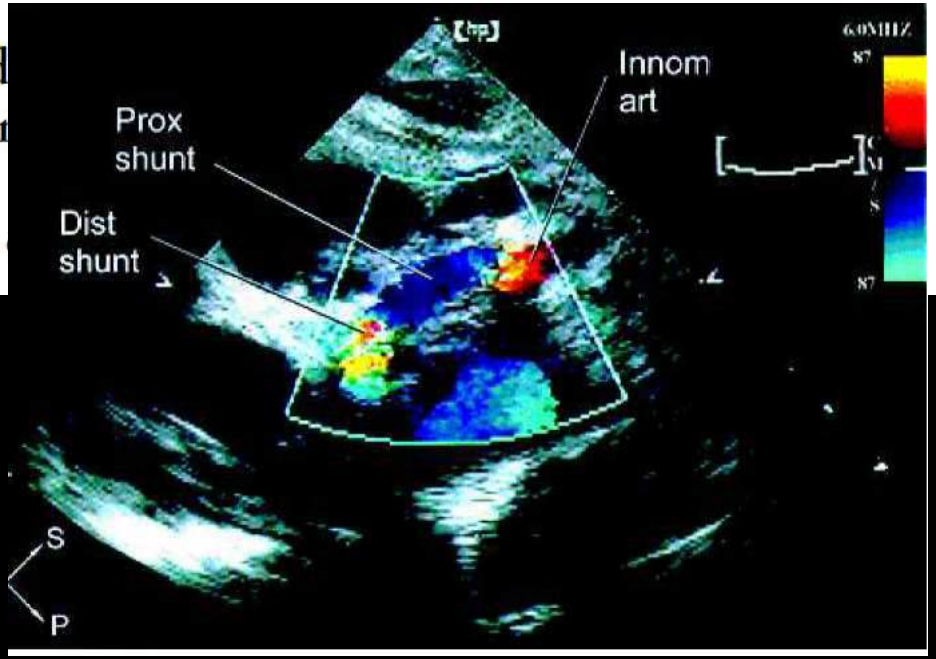
Cardiol Young 2001; 11: 189–191

ISSN 1047-9511

Brief Report

Echocardiographic d
Blalock-Taussig shu

Amy L. Juraszek, Andrew M. Atz,



Echocardiographic measured shunt velocity does not predict pulmonary blood flow in patients with Blalock–Thomas–Taussig shunt

Sarah Tucker[1], Matthew Cornicelli[2], Rohit Loomba[3], Jeremy Fox[4], Eric Wald[5] and Jamie Penk[6]

Cardiology in the Young 2024

- Decreased flow reversal in arch correlated with stenosis

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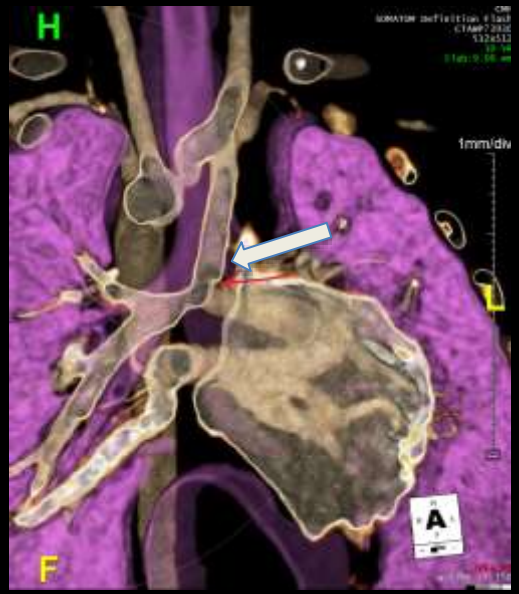
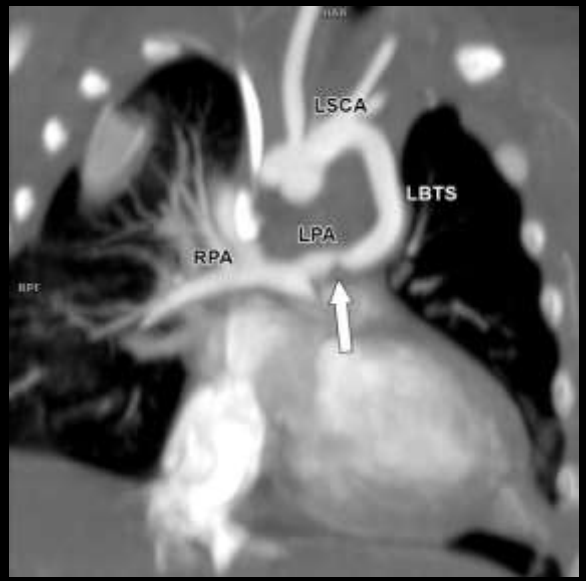
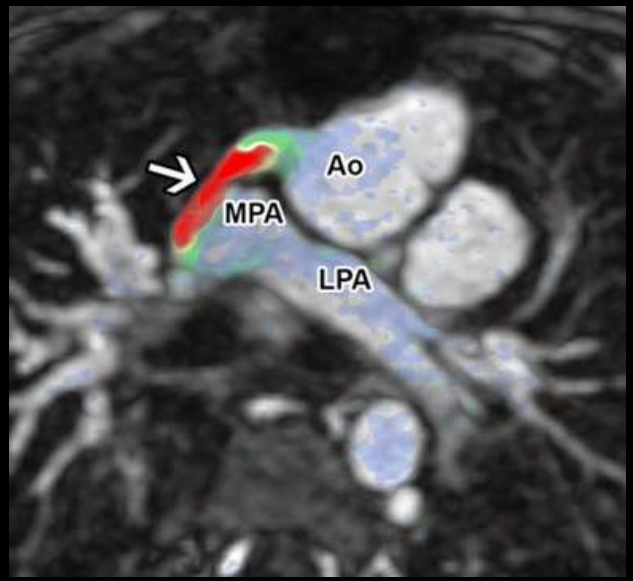
Shunt Stenosis







Courtesy: Sanket Shah

Rajiah PS. Published Online: March 23, 2023
https://doi.org/10.1148/rg.220049
RadioGraphics

Comparative Study > Eur Heart J Cardiovasc Imaging. 2017 Mar 1;18(3):332-341.
doi: 10.1093/ehjci/jew069.

Echocardiographic arterial measurements in complex congenital diseases before bidirectional Glenn: comparison with cardiovascular magnetic resonance imaging

Sylvia Krupickova [1], Vivek Muthurangu [1 2], Marina Hughes [1], Oliver Tann [1], Michelle Carr [1], Georgi Christov [1], Ram Awat [1], Andrew Taylor [1 2], Jan Marek [1 2]

- 25% not measureable
- Poor agreement between CMR and echo for stenosis

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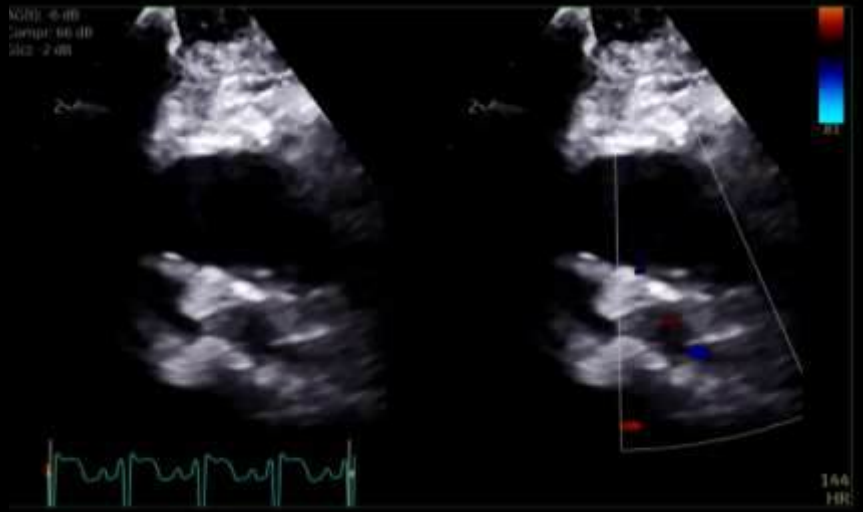
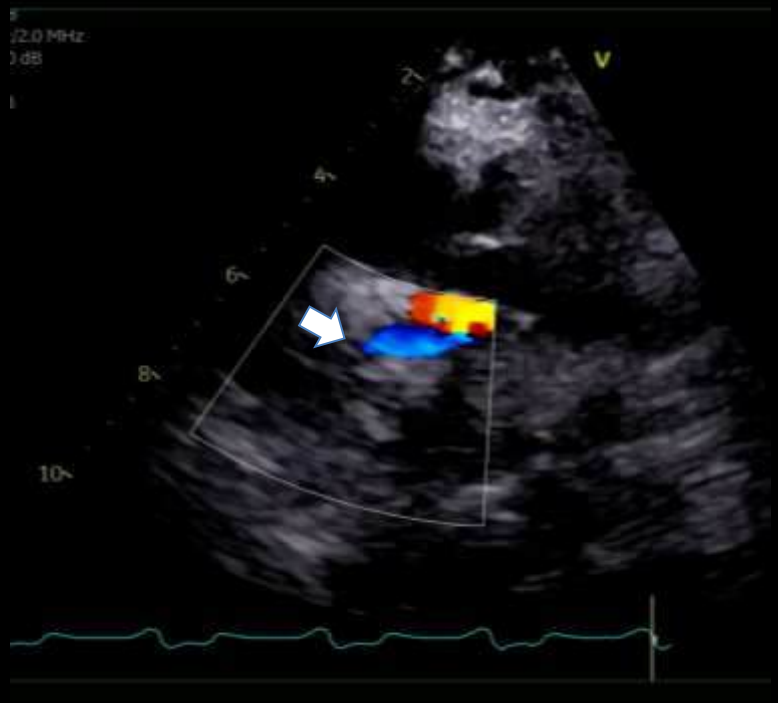
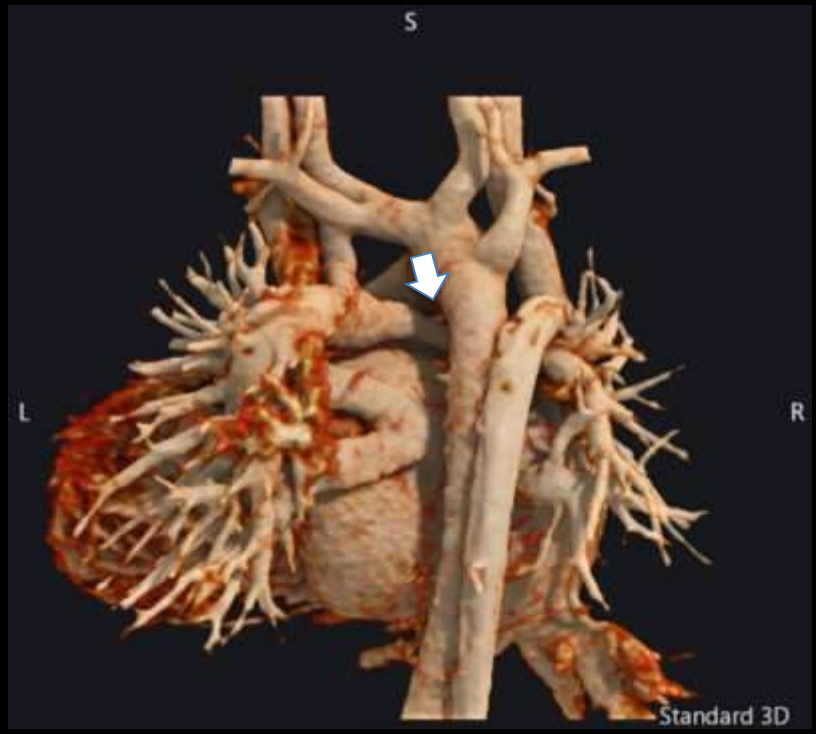
Branch Pulmonary Arteries

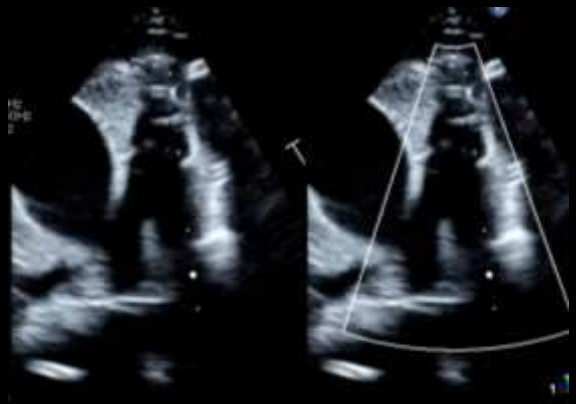


Branch Pulmonary Arteries





Branch Pulmonary Arteries



How do I (echo) image a BTT shunt?

- Preoperative checklist
- Review operative/cath reports
- Image thoroughly (more 2D and color)
- Interpret thoughtfully
- Recognize limitations and state them as such
- Correlate with other modalities
- Clinical picture is paramount

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3D Echo Angiogram

Courtesy of Dr Girish Shirali circa 2006

Thanks to the TCH Sonographer Team