

Clinical benefits of Live 3D TEE

A case study: Acquired Gerbode VSD Closure

By: RA Badawi, MD,
CJ White, MD, TJ Mulder, MD,
V Lucas, MD, Ochsner
Foundation, Heart and Vascular
Institute, New Orleans, LA

Supported by Stephen Short,
Philips Healthcare



Figure 1.1a

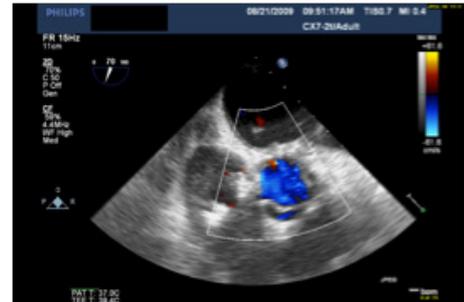


Figure 1.1b

Real-time 3D transesophageal echocardiography (3D TEE) provides a new dimension of clinical insight for the cardiologist and cardiac surgeon when managing structural heart disease as demonstrated in the following case study.

Patient history

The patient, a 44 year old male who presented with chest pain and dyspnea on minimal exertion (NYHA III).

Brief history of patient revealed:

1. HOCM s/p Myomectomy (2007)
2. CAD s/p PCI x2 (2005)
 - s/p 2V CABG (2007)
 - s/p PCI LAD (3/09)
 - s/p PCI PDA (7/09)
3. MVR for MR s/p Myomectomy/CABG (2007)
4. ICM EF 40%
5. VT/VF s/p AICD/BiV
6. pAF s/p AVN RFA on Coumadin
7. HTN, DLP

Diagnosis

2D Transthoracic Echo (TTE), Transesophageal Echo (TEE) and Right Heart Catheterization (RHC) findings revealed:

1. Severe LA Enlargement
2. LV-RA shunt (Acquired Gerbode)
3. LVEF 40%
4. Metallic St Jude MVR – well seated

RHC Evaluation:

5. SVC 69%, RA 61%, RV 76%, LPA 76%, FA 97%
6. CO 8.5
7. Qp/Qs 1.3

The results of the TTE, TEE and RHC allowed identification and localization of the defect and calculation of the shunt fraction (Qp/Qs).

It was determined that the patient was a candidate for a closure device. Patient was treated symptomatically for symptoms of angina, heart failure as per standard of care.

Diagnosis

Discussion:

The patient's 2D TEE images shown in figure 1.1a and 1.1b demonstrated severe left atrial enlargement with a LV-RA shunt (Acquired Gerbode). 2D TEE with color flow across ventricular septal defect (VSD) from Right Atrium (RA) to Left Ventricular Outflow Tract (LVOT) was seen just beneath the aortic valve (AV) in cross section. Also seen by TEE was a metallic St. Jude MV replacement that was well seated. RHC was suggested to evaluate hemodynamics of the shunt visualized during 2D TEE. RHC evaluation revealed a Qp/Qs ratio of 1.3.

Procedure

3D TEE images AGA 6mm VSD Closure device deployment (Figure 1.2)

3D TEE was performed during the interventional procedure to assist in identifying and localizing the Gerbode defect for closure.

1. Right common femoral vein 8Fr Agilist Nxt Introducer catheter was used to advance stiff angled guidewire 0.035x80 across VSD under 3D TEE guidance
2. AGA Amplatzer 24mm sizing balloon was inflated across VSD.
3. 7Fr x 80cm Fr AGA Delivery Cath was used to deploy a 6mm AGA Muscular Amplatzer VSD Closure Device.



Figure 1.2a

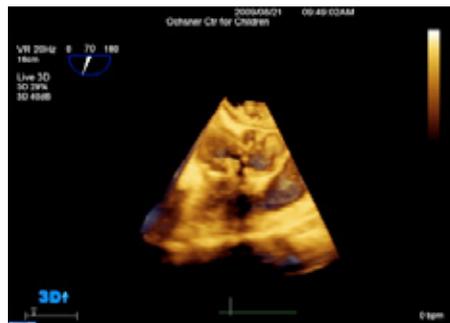


Figure 1.2b AGA Closure Device with LV disc deployed

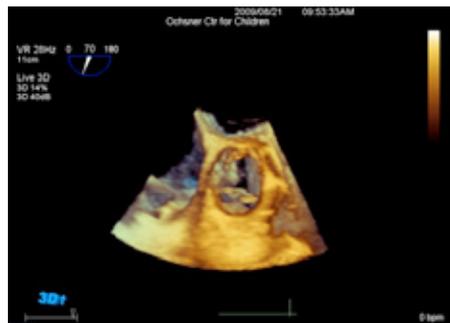


Figure 1.3 AGA Closure Device released with RA & LV disc deployed

Live 3D TEE

3D and 2D TEE images of AGA 6mm VSD Closure device placement after release with 2D CFD confirming shunt resolved (Figure 1.3)

The Live 3D image shown in figure 1.2 (a) (b) demonstrates 3D TEE images AGA 6mm VSD Closure device deployment. The surgeon's view in Live 3D delivers comprehensive information to the cardiologist, anesthesiologist, and cardiac surgeon. This information is necessary to make clinical decisions with accuracy and confidence. This information is useful in the pre-surgical planning phase of the case.

Conclusion

Discussion:

VSDs with an RA-LV communication are rare and were first described by Gerbode in 1958. They can be congenital or acquired due to infective endocarditis, trauma, myocardial infarction or surgery. Percutaneous closure has been described and the role of 3D TEE is gaining recognition.



Please visit www.philips.com/Live3DTEE



© 2010 Koninklijke Philips Electronics N.V.
All rights are reserved.

Philips Healthcare reserves the right to make changes in specifications and/or to discontinue any product at any time without notice or obligation and will not be liable for any consequences resulting from the use of this publication.

Philips Healthcare is part of Royal Philips Electronics

www.philips.com/healthcare
healthcare@philips.com

Printed in The Netherlands
4522 962 66981 * NOV 2010