

Should Transesophageal Echocardiography-Guided Ventriculoatrial Shunt Insertion Become the Standard of Care?

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A 7-year-old girl with recurrent ventriculoperitoneal shunt dysfunction was planned for a ventriculoatrial (VA) shunt. After general anesthesia, the pediatric transesophageal echocardiography (TEE) probe (Vivid i/ Vivid q, GE Medical, Israel) was introduced till 20 cm to obtain a midesophageal four-chamber (→**Fig. 1**) and bicaval view (→**Fig. 2**). Patent foramen ovale was ruled out and normal anatomy was ensured (→**Figs. 1** and **2**). The child was positioned for surgery with the TEE in situ and the old shunt was removed. After tapping the ventricle, free flow of cerebrospinal fluid from distal end of shunt tube was confirmed, which was inserted into the right internal jugular vein through an open technique. TEE helped localize the shunt's tip in the right atrium (→**Fig. 3A** and **B**). It also helped monitor venous air



Fig. 1 Midesophageal four-chamber view on transesophageal echocardiography. LA, left atrium; LV, left ventricle; RA, right atrium; RV, right ventricle.

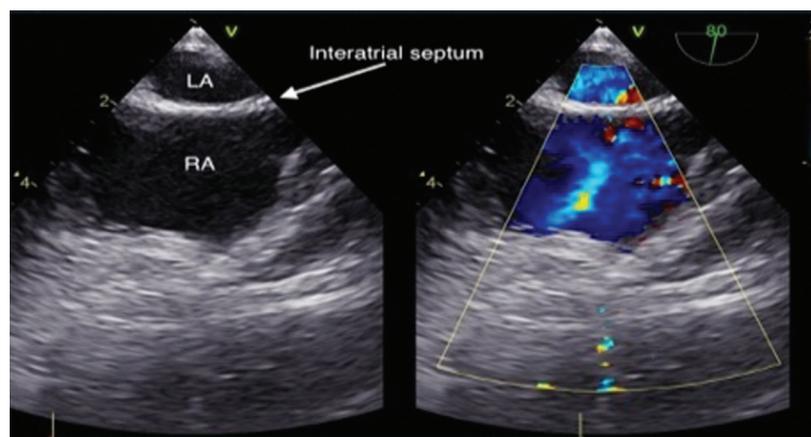


Fig. 2 Midesophageal bicaval view on transesophageal echocardiography with color flow Doppler. LA, left atrium; RA, right atrium.

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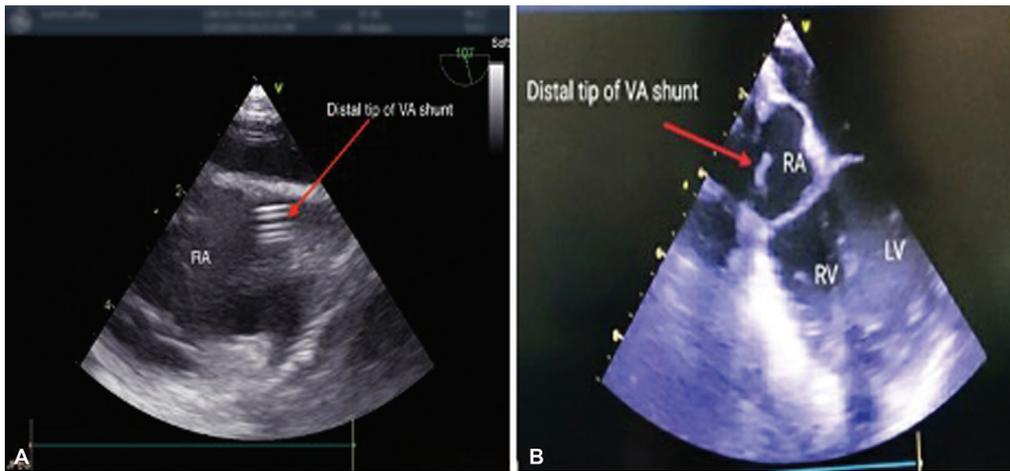


Fig. 3 (A, B) Tip of the shunt tube in the right atrium as visualized by midesophageal bicaval view. Tip of the shunt tube in the right atrium as visualized by four-chamber view. LV, left ventricle; RA, right atrium; RV, right ventricle; VA, ventriculoatrial.

embolism (VAE) as standard procedure involves opening the internal jugular vein. TEE facilitates a two-dimensional visualization of the cardiovascular anatomy, real-time and precise placement of distal tip of VA catheter, identifies possible VAE, and mitigates radiation exposure^{1,2} Although rare, TEE can be associated with complications like brief arrhythmias, hemodynamic instability, sore throat, laryngospasm, laryngeal and esophageal perforation.¹ With multiple benefits and minimal risk to the patient, using TEE should be considered an important tool during VA shunt placement.

Note

Part of this manuscript was presented in ISNACC e-Newsletter.

Conflict of Interest

None declared.

References

- 1 Isaacs AM, Krahn D, Walker AM, Hurdle H, Hamilton MG. Transesophageal echocardiography-guided ventriculoatrial shunt insertion. *Oper Neurosurg (Hagerstown)* 2020;19(01):25–31
- 2 Dhanyee AS, Singh G, Manayalil BP. Revision of ventriculoatrial shunt with transesophageal echocardiogram guidance. *J Neurosurg Anesthesiol* 2015;27(04):358–359