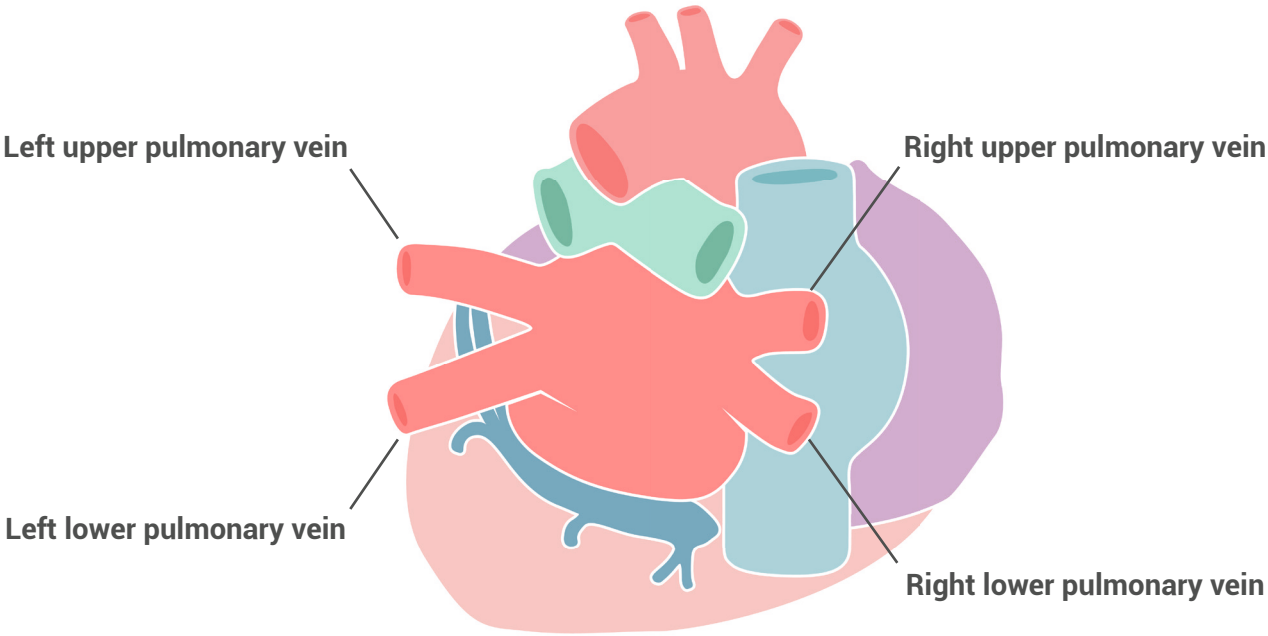
TEE ESSENTIALS

Assessment of the pulmonary veins: Anatomy of the pulmonary veins

The four pulmonary veins return oxygenated blood from the lungs to the heart, and they normally attach to the posterior aspect of the left atrium.

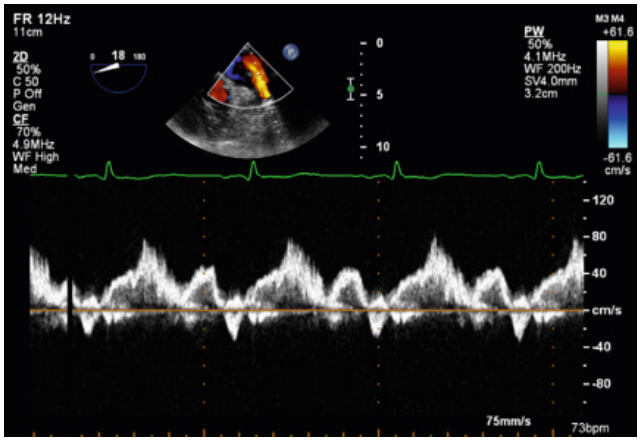


The left upper and lower pulmonary veins usually lie more superiorly than their right-sided equivalents.

TEE permits identification of the connections of the pulmonary veins. Anomalous pulmonary venous drainage is usually partial, where one or more of the pulmonary veins (but not all) drain into the right atrium instead of the left.

TEE also allows assessment of pulmonary vein flow using color and pulsed wave Doppler:

- S wave—antegrade flow in the pulmonary vein during ventricular systole
- D wave—antegrade flow in the pulmonary vein during ventricular diastole
- A wave—retrograde flow in the pulmonary vein during atrial contraction



Further reading

Silvestry FE, Cohen MS, Armsby LB, et al. 2015. Guidelines for the echocardiographic assessment of atrial septal defect and patent foramen ovale: From the American Society of Echocardiography and Society for Cardiac Angiography and Interventions. *J Am Soc Echocardiogr*. **28**: 910–958.