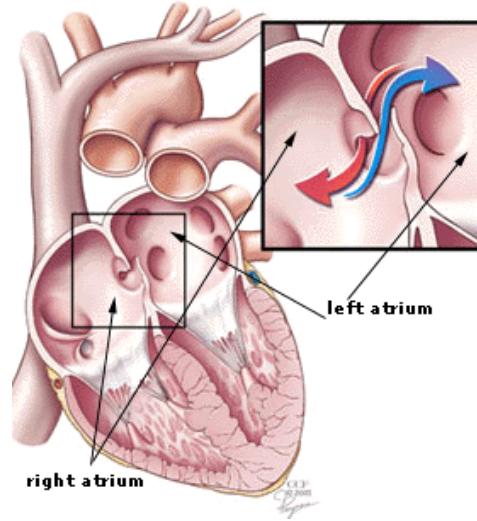


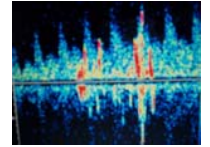
How to Detect Patent Foramen Ovale (PFO) With Air and Transcranial Doppler



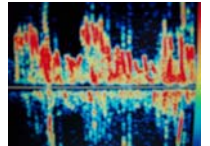
TCD probe is either fixed to the skull with a headband or manually held. The left or right MCA is monitored



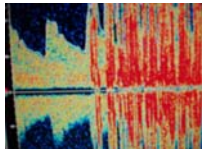
Fewer than 25 microbubbles reflects a PFO most probably undetectable by transesophageal echocardiography. (TEE)



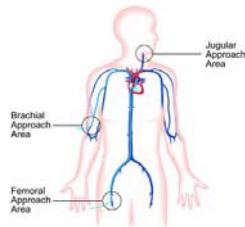
Greater than 25 microbubbles reflect a PFO that most probably will be detected by TEE.



A “curtain” of microbubbles reflect a PFO that will certainly be detected by TEE.

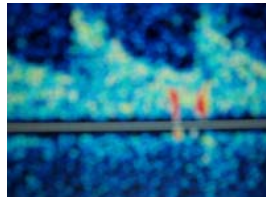


An IV line is run into an antecubital vein with a saline drip initiated. 9mL of saline and 1 mL of air are placed in a 20 mL syringe. A 3-way stopcock is used to agitate the saline creating an air bubble foam which is injected into the vein directly.



Bubble Run One

The 10cc agitated saline air mixture is injected at 1 mL per second. One or more air emboli detected by TCD strongly indicates that a right to left cardiac shunt exists.



Bubble Run Two

The 10 mL agitated saline-air mixture is injected at a rate of 1 mL per second. From time 5 seconds to time 10 seconds after the injection is initiated the patient performs a gauged valsalva maneuver of 40 – 60 mmHg over the 5 second period.

