PFO CLOSURE IN THE SETTING OF DEVICE LEADS WITH THROMBUS

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History and Physical

58-year-old man, stage 1 Hodgkin's lymphoma with 4 cycles of ABVD in extended remission, s/p emergent pericardial window, sinus pauses s/p dual chamber pacemaker, CVA in the setting of DVT with new diagnosis of lead thrombus and PFO with atrial septal aneurysm, presented to the clinic for PFO closure evaluation.

NYHA FC II.

Vital signs: BP 120/82 mmHg, P 92 bpm, Saturation 98% in RA.

Physical exam grossly unremarkable with no residual deficits.

Imaging

Transesophageal echocardiogram shows a PFO with atrial septal aneurysm and right-to-left shunt with agitated saline injection and color Doppler. Pacemaker wire is noted in the right atrial cavity with thrombus or fibrin build up.

Indication for Intervention

The neurologic event was deemed to be a paradoxical embolization from the DVT and/or lead thrombus. The patient was placed on therapeutic anticoagulation for 6 months. Repeat transesophageal echocardiography showed resolution of the lead thrombus. He was then referred for PFO closure with a plan to discontinue anticoagulation post closure.

Intervention

The procedure was initiated with careful intracardiac echocardiography. This showed residual organized thrombus on one of the pacer leads (Figure A, red arrow). Caution was made to avoid this area during the hemodynamics measurement. The PFO was crossed under ICE guidance to avoid interacting with the thrombus (Figure B). Given the thickness of the septum secundum, the length of the PFO tunnel and the atrial septal aneurysm, a 35 mm Amplatz PFO occluder was selected. The device was well seated with no residual shunt on ICE. However, it kept interacting with both pacer leads (Figure C, asterisks) despite multiple maneuvers. The device was then replaced with a 25 mm Amplatz PFO occluder. The device was well seated and left no residual shunting and did not interact with the pacer leads at initial deployment (Figure D) and after release (Video). The patient was discharged home later that day on anticoagulation with plan to reassess down the line in light of successful closure confirmation at 6 months and anticoagulation indication independently of PFO.

Learning Points of the Procedure

- Indwelling device leads are an inherent risk for matter build up and potential embolization.
- Transesophageal echocardiography is a powerful tool for investigation but still has limitations.
- ICE can provide additional helpful guiding information regarding PFO size and features, procedural success as well as evaluation of adjacent structures.
- PFO device size selection is a key step in a closure procedure and should take into consideration multiple variables, both PFO- and non-PFO-related.
- A key part of any procedure is an understanding of its subsequent effects. In this case, there was concern that having the device cover the leads may lead to their endothelialization and cause potential issues when/if they needed to be replaced/removed.
- An operator should have extensive familiarity with the full spectrum of device types and sizes available in order to adapt to any situation or development.