

IMAGES IN INTERVENTION

# Thrombus in a Hypercoagulable Patient Following Patent Foramen Ovale Closure With the Gore Septal Occluder



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A 31-year-old woman with a hypercoagulable disorder not yet diagnosed experienced paradoxical emboli secondary to her patent foramen ovale and underwent closure with a 25-mm Gore Septal Occluder (W.L. Gore & Associates, Inc., Flagstaff, Arizona). Her international normalized ratio remained  $<2$  despite maintenance warfarin (11 mg/day) and dipyridamole/acetylsalicylic acid (200/25 mg/day). Echocardiography on routine follow-up demonstrated a large, multilobulated mobile echogenic mass (46 × 11 mm) (Figure 1A) in the presence of an intact interatrial septum (Figure 1B) attached to the left atrial disc of the device (Figures 1C and 1D). The mass prolapses through the mitral valve into the left ventricular during diastole (Figures 1C and 1D). The patient had a normal left ventricular systolic function with no valvular abnormalities. Following 7 months of aggressive

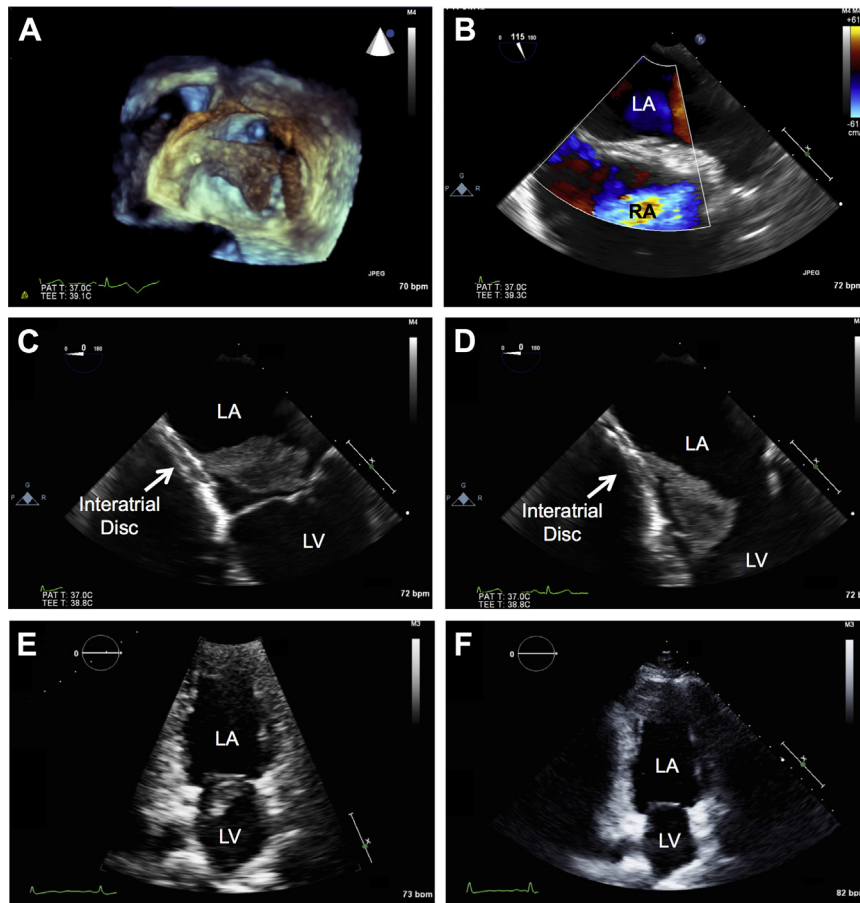
anticoagulation on warfarin and maintenance of international normalized ratio at 3.1 to 3.5, she remained asymptomatic, with follow-up echocardiography demonstrating complete resolution of thrombus (Figures 1E and 1F). Given promising results of patent foramen ovale closure with the Gore Septal Occluder compared with antiplatelet therapy in the Gore REDUCE clinical study (1,2), the present case is a timely report that highlights a unique complication and resolution of thrombus development following patent foramen ovale device closure.

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**FIGURE 1** Thrombus in a Hypercoagulable Patient Following Patent Foramen Ovale Closure With the Gore Septal Occluder



(A) Three-dimensional transesophageal echocardiography (TEE), zoom mode, demonstrating a multilobulated mobile echogenic mass (46 × 11 mm). (B) TEE, midesophageal view, showing that the patient has an intact interatrial septum. (C) TEE, midesophageal 4-chamber views, demonstrating that the mass is attached to the left atrial disc of the Gore Septal Occluder (arrow) and (D) prolapses through the mitral valve into the left ventricle (LV) during diastole. (E) Transthoracic echocardiography, apical 2-chamber view, on follow-up with presence and (F) complete resolution of thrombus following aggressive anticoagulation. LA = left atrium; RA = right atrium.

## REFERENCES

1. Kasner SE, Thomassen L, Søndergaard L, Rhodes JF, Larsen CC, Jacobson J. Patent foramen ovale closure with GORE HELEX or CARDIOFORM Septal Occluder vs. antiplatelet therapy for reduction of recurrent stroke or new brain infarct

in patients with prior cryptogenic stroke: design of the randomized Gore REDUCE Clinical Study. *Int J Stroke* 2017;12:998-1004.

2. Søndergaard L, Kasner SE, Rhodes JF, et al. Patent foramen ovale closure or antiplatelet

therapy for cryptogenic stroke. *N Engl J Med* 2017; 377:1033-42.

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