Letters to the Editor

Are "Paradoxical Emboli" Really Paradoxical?

C.R. Conti: *Clin Cardiol* 2003;26:105–106

To the Editor:

I enjoyed reading Dr. Conti's editorial "Are 'paradoxical emboli' really paradoxical?" There is certainly nothing paradoxical about the passage of thrombus from the right to the left side of the heart in the presence of a patent foramen ovale (PFO) or atrial septal defect. Other lesions associated with a left-to-right shunt, such as ventricular septal defect or patent ductus arteriosus, may also be complicated by this phenomenon, but typically only when the pulmonary resistance rises enough to result in reversal of the shunt if the lesion is not repaired in a timely fashion (Eisenmeinger's physiology).

Dr. Conti correctly states that the best therapy for "paradoxical," or shall we call it "logical" embolism in the setting of a PFO remains a matter of debate. Options at this time include chronic anticoagulation, transcatheter PFO closure, and sur-

gical PFO closure. Two large multicenter trials are currently underway to evaluate the efficacy and safety of long-term coumadin versus transcatheter PFO closure. Neither of these trials considered including surgery as a treatment alternative. I was surprised to learn of Dr. Conti's preference for surgical closure. The risk is certainly small in good surgical candidates and it may obviate the need for chronic anticoagulation. In some cases, chronic anticoagulation may be recommended even after surgical PFO closure, since the recurrence rate of cerebrovascular accidents is not trivial. This is particularly true if atrial fibrillation develops following surgery.

If the goal is to close the PFO, a percutaneous device achieves that effectively with probably lower risk, and certainly speedier recovery. There is no clear advantage offered by surgery, but some potential disadvantages exist, such as higher risk of arrhythmias (particularly atrial fibrillation) and the possibility of post-pericardiotomy syndrome, complications associated with general anesthesia and longer hospital stay. Two devices are currently FDA approved for PFO closure under Humanitarian Device Exemption guidelines: the CardioSeal Septal Occluder™ (Nitinol Medical Technologies, Inc.) and the PFO Amplatzer Occluder™ (AGA Medical Corporation).

In our institution, the procedure is currently performed on an outpatient basis. Over the past two years, intracardiac ultrasound has replaced transesophageal echocardiography for guidance during device deployment, allowing us to perform the procedure under conscious sedation and eliminating the need for general anesthesia. Since 1998 we have closed 202 PFOs in patients with otherwise unexplained cerebrovascular accidents. There have been no procedural complications. The only patient who has had a recurrent stroke was found to have a newly ruptured carotid plaque at the time of that second event. Another patient has vague neurologic symptoms with no new abnormalities on brain imaging studies.

Before transcatheter closure became an option for the treatment of this entity, chronic anticoagulation was often preferred by patients and recommended by physicians over the only other alternative of open heart surgery. With FDA approval of the CardioSeal Septal Occluder in 1999 and the Amplatzer PFO Occluder in 2002, the trend is changing to favor device closure over long-term coumadin administration. One hopes that formal evaluation of the efficacy and safety of these two treatment modalities currently underway will settle the debate and standardize the treatment of "paradoxical" or "logical" embolism.

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