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Commentary: A shot through the heart and perc to blame—an atrioesophageal fistula

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In the past decade, there has been a substantial increase in the percutaneous treatment of atrial fibrillation by cardiologists due to the aging population and expanding indications for intervention.¹ This increase in the number of procedures being performed will inevitably lead to an increase in the number of complications. Given the proximity of the esophagus to the left atrium, a thermal injury during percutaneous ablation can result in formation of a delayed fistulous connection. Studies using routine endoscopy for surveillance after atrial ablation demonstrate the incidence of thermal esophageal injury to be as high as 14% to 16%^{2,3} with a 0.1% to 0.25% incidence of atrioesophageal fistula (AEF) formation.⁴ Despite its rarity, this complication is associated with an extremely high mortality.^{5,6} AEF can present weeks after the index procedure with nonspecific findings and requires timely diagnosis and urgent operative intervention to prevent devastating consequences.

The scenario presented by Felmlly and Gibney⁷ describes a patient one month out from a percutaneous intervention who presented with neurologic changes and sepsis. The authors highlight the subtle nature of diagnosis and the need for a high degree of suspicion for AEF. The use of endoscopy or endoscopic ultrasound can introduce air and worsen the neurologic complications or lead to rapid

CENTRAL MESSAGE

Percutaneous atrial ablation can lead to devastating complications, such as atrioesophageal fistula. Prompt diagnosis with an appropriate workup to guide surgical approach are key to a successful outcome.

decompensation and death secondary to an air embolus. Therefore, suspicion based on presentation and noninvasive imaging with CT scan are the safest and most expeditious ways to diagnosis AEFs.

The imaging in this case led to the decision to proceed with a right thoracotomy for repair. Traditionally, and if not directed by preoperative imaging, a left thoracotomy offers a direct approach to repair and allows for clamping of the atrium for a controlled repair. Felmlly and Gibney also describe the risks and benefits of a sternotomy approach. They emphasize the ability to obtain cardiopulmonary bypass for central control and deairing with the risk of worsening neurologic outcomes due to hemorrhagic conversion in patients who present with acute stroke.

Although almost all case reports of AEF are located between the left atrium and the esophagus, the exact relationship of the esophagus to the posterior wall of the atrium and pulmonary veins is variable. In addition, the position of the esophagus can shift during the ablation procedure,⁴ further highlighting the importance of obtaining the appropriate imaging to help guide surgical planning. Owing to the rarity of AEF, there is limited literature comparing patient outcomes based on surgical approach, making it difficult to determine the optimal technique for repair. Because successful repair has been reported using a median sternotomy, left thoracotomy, and right thoracotomy, perhaps early

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diagnosis and intervention are the key factors for a positive outcome rather than the specific surgical approach.

The presence of AEFs is a terrifying yet increasingly common complication with the increased use of ablation for atrial fibrillation. The nuances of diagnosis and treatment of this complication is something that all thoracic surgeons need to be familiar with to prevent morbidity and result in a successful outcome for the patient.

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