



### H78 Atrioesophageal Fistulas (AEF) Caused by Percutaneous and Surgical Radiofrequency Ablation for Atrial Fibrillation (AF)

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**Learning Overview:** The goal of this presentation is to show the development of atrioesophageal after percutaneous and surgical radiofrequency ablation for chronic AF.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by highlighting that in patients with neurological clinical signs with a positive history of radiofrequency ablation (percutaneous or surgical) of AF, it is always desirable to consider the risk of an Atriobronchial Fistula (ABF) or AEF.

Atriobronchial Fistulas (ABF) and AEF are rare but potentially lethal complications that may arise following percutaneous or surgical radiofrequency ablation for (AF). The anatomic relationship between the left bronchus, the esophagus, and the posterior wall of the left atrium is changeable: the bronchus and esophagus are more susceptible to injury near the endocardial ablation areas. Bronchial and esophageal ulcers due to high temperature achieved by radiofrequency technology typically seem to precede fistula development. A high index of suspicion is recommended in patients who develop chest pain, fever, neurological deficit, and/or sudden hematemesis within days or weeks of AF ablation. Early detection by Computed Tomographic (CT) scanning is safe and feasible. Survival depends on rapid diagnosis and intervention; when untreated, the outcome is often fatal. In this study, two cases of ABF and AEF formation, respectively, arising after percutaneous and surgical radiofrequency ablation for chronic Rapid Atrial Fibrillation (RAF) are reported.

**Case 1:** A 35-year-old Caucasian man with a history of paroxysmal AF presented to the emergency room in Cefalù, Italy, due to repeated loss of consciousness, asthenia and pain, and tingling hyposthenia in the right upper limb 12 days after undergoing percutaneous radiofrequency ablation for AF. Brain CT and brain Magnetic Resonance Imaging (MRI) were normal. Laboratory studies were inconsistent with inflammation or sepsis; the patient demonstrated positive meningeal signs (i.e., neck stiffness and Brudzinski's sign.) The neurologist suspected viral encephalitis. Twelve hours later, the patient became comatose before subsequently dying due to serious heart rhythm disorders. Autopsy found a fistula between the left atrium, esophagus, and left bronchus with many septic emboli in the brain, heart, and kidney. The fistula walls showed coagulative necrosis with sites of acute suppurative inflammation and bacterial colonies.

**Case 2:** A 50-year-old Caucasian man with a history of paroxysmal AF presented to the emergency room in Cagliari, Italy, due to neurological deficit with tonic-clonic seizures and high fever arising one month after surgical radiofrequency ablation for AF. Laboratory studies revealed a slight leukocytosis, but the blood culture was negative. About two hours later, the patient died due to ventricular fibrillation. Autopsy found a fistula between the left atrium and esophagus and septic emboli in the brain and kidney. The fistula walls showed coagulative necrosis with sites of acute suppurative inflammation and bacterial colonies.

**Conclusions:** This study shows that adults presenting to emergency care with suspected meningitis, stroke, tonic-clonic seizures, disorders of consciousness and fever, and a recent history of radiofrequency ablation for AF (percutaneous or surgical) should be investigated. In these cases, the occurrence of AEF and/or ABF should be strongly considered. The diagnosis must be immediately confirmed by chest radiography or CT with contrast in order to promptly begin surgical therapy. In these two reported cases, the possibility of fistula formation wasn't considered despite the known history of radiofrequency ablation.

#### Radiofrequency Ablation, Fistula, Chronic Atrial Fibrillation