Esophageal Migration During Left Atrial Catheter Ablation for Atrial Fibrillation

Jihn Han, MD; Eric Good, MD; Fred Morady, MD; Hakan Oral, MD

Because of the risk of atrio-esophageal fistula, a 38-year-old man with paroxysmal atrial fibrillation was asked to swallow barium contrast (barium sulfate esophageal cream 60% with water, EZ-EM Canada) before undergoing a left atrial catheter ablation with an electroanatomic mapping system (CARTO, Biosense Webster) to identify the location of the esophagus in relation to the posterior left atrium (Figure 1A). The location of the esophagus was tagged on the electroanatomic map at sites where the catheter tip overlay the esophagus in 2 orthogonal fluoroscopic views (Figure 2). During the course of the study it was noted that the esophagus had moved from close to the left-sided pulmonary veins (PVs) to close to the right-sided PVs (Figures 1B and 2). The location of the esophagus relative to the posterior left atrium can change during an ablation procedure. Therefore, fixed images such as tags on electroanatomic maps or digital image fusion technology may not be sufficient to prevent inadvertent esophageal injury. It may be necessary to use real-time imaging either by fluoroscopic monitoring of a radiocontrast agent or a probe in the esophagus or by real-time MRI.

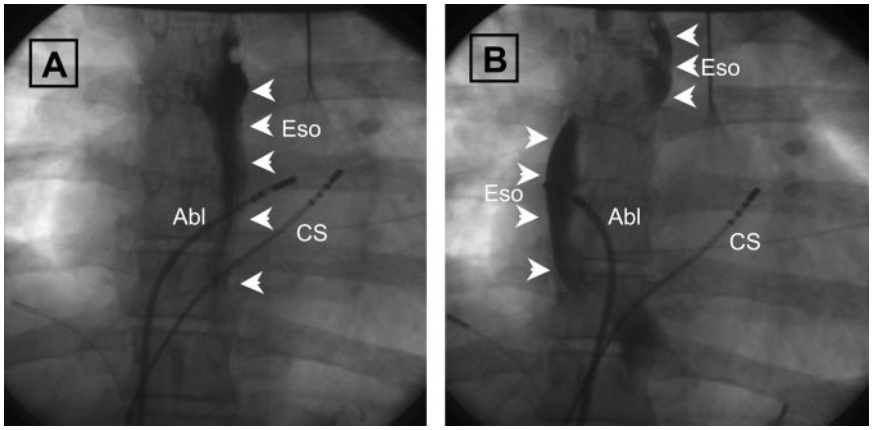

Figure 1. Fluoroscopic image of the esophagus after barium swallow in anteroposterior projection. An 8-mm-tip ablation catheter (Abl) and a quadripolar catheter in the coronary sinus (CS) also were shown. The esophagus (Eso), as identified by the radiodensity of barium, was marked with arrowheads. At the beginning of the procedure, the esophagus was on the left of the vertebral column (A). The esophagus was visualized 40 min later on the right of the vertebral column in exactly the same anteroposterior projection (B). Note the angulation of the esophagus between superior to the left atrium and posterior to the left atrium.

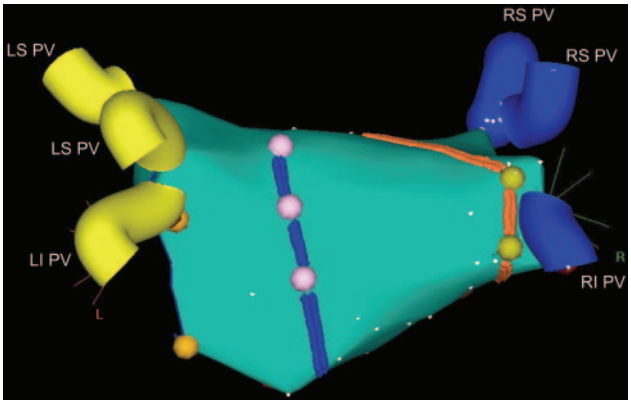

Figure 2. Electroanatomic map of the left atrium in posteroanterior projection. First position of the esophagus was marked with pink tags on the posterior left atrium in reference to Figure 1A and was closer to the ostia of the left-sided PVs. Subsequent positions of the esophagus were marked with the yellow tags in reference to Figure 1B and were closer to the ostia of the right-sided PVs. RS indicates right superior PV; RI, right inferior PV; LS, left superior PV; and LI, left inferior PV.

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