

# Esophageal damage during radiofrequency ablation of atrial fibrillation: impact of energy settings, lesion sets, and esophageal visualization.

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## Abstract

**INTRODUCTION:** Atrioesophageal fistula is an uncommon but often lethal complication of atrial fibrillation (AF) ablation. The purpose of our study was to prospectively investigate the incidence of esophageal ulcerations (ESUL) as well as the impact of energy settings, radiofrequency lesion sets, and direct visualization of the esophagus on esophageal wall injury.

**METHODS AND RESULTS:** One hundred seventy-five patients, 57.1% paroxysmal AF, 78.5% male, underwent AF ablation and esophagoscopy 24 hours thereafter. We performed a 2:1:1-randomization as follows: Control group: Ablation without visualization of the esophagus using 25 Watt (W) power limit on the posterior wall, n = 70. Visualization and 15 W maximum: Ablation guided by barium visualization of the esophageal course using a limit of 15 W, n = 35. Visualization and 25 W "short burns": Ablation guided by barium visualization using 25 W and "short burns" (max. 5 sec), n = 35. Patients performed under general anesthesia (n = 35) were separated as a nasogastric tube for visualization of the esophagus was used. In total, we found 2.9% of patients (5/175) presenting ESUL. Parameters discriminating the development of ESUL in a specific patient were type of AF, maximum energy delivered, usage of a nasogastric tube, and additional left atrial lines. Visualization of the esophageal course by barium contrast was not able to prevent ESUL.

**CONCLUSION:** ESUL is a rare finding when using a reasonable energy maximum of 25 W with open-irrigated tip catheters at the posterior wall. Lower energy settings may increase safety without losing efficacy. Additional linear radiofrequency lesions increase the risk of ESUL development.

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