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Unexpected high incidence of esophageal injury following pulmonary vein isolation using robotic navigation.

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Abstract

INTRODUCTION:

Robotic navigation (RN) is a novel technology for pulmonary vein isolation (PVI). We investigated the incidence of thermal esophageal injury using RN with commonly used power settings in comparison to manual PVI procedures. methods: Thirty-nine patients underwent circumferential PVI using a 3.5-mm irrigated-tip-catheter. In the manual (n = 25) and the RN(1) group (n = 4) power was limited to 30 W (17 mL/min flow, maximal temperature 43 degrees C, max. 30 sec/spot) at the posterior left atrial (LA) wall. In RN-based procedures, ablation was performed with a contact force of 10-40 g. The operator was blinded to the esophageal temperature (T(eso)). In the RN(2) group ablation power along the posterior LA wall was reduced to 20 W and ablation terminated at T(eso) of 41 degrees C. Endoscopy was carried out 2 days post-ablation.

RESULTS:

PVI was achieved in all patients. In the manual group no esophageal lesions, minimal lesions, or ulcerations were found in 15 of 25 (60%), 7 of 25 (28%), and 3 of 25 (12%) patients, respectively. All patients in the RN(1) group had an ulceration and one developed esophageal perforation. A covered stent was placed 14 days post-PVI and removed at day 81. In the RN(2) group, only a single minimal lesion was found.

CONCLUSIONS:

A high incidence of thermal esophageal injury including a perforation was noted following robotic PVI using 30 W along the posterior LA wall. During RN-based PVI procedures esophageal temperature monitoring is advocated. Reduction of ablation power to 20 W and termination of energy delivery at T(eso) of 41 degrees C significantly reduced the risk of esophageal injury.