

**First clinical experience with a novel, variable radius, endoscopic laser balloon for pulmonary vein isolation of atrial fibrillation.**

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**Introduction:**

PV isolation using a standard point-to-point radiofrequency ablation strategy is limited by the technical challenges of maintaining catheter stability, and chronic recurrence of conduction due to the lack of lesion contiguity. We report the initial clinical experience with a novel variable diameter balloon ablation catheter equipped with a) an endoscope that allows direct visualization of the atrial-venous junction, and b) an optical fiber which projects a 30° arc of ablative laser energy (980 nm) onto the tissue.

**Methods:**

Based on the maximal balloon diameter, the only anatomical exclusion criterion was a PV diameter > 30 mm. Under ICE visualization, the balloon was placed at the PV ostium. The balloon radius varied according to the inflation pressure used. Under direct endoscopic visualization, ablation lesions were placed in a visually overlapping manner. All veins were reassessed for isolation after 30 minutes.

**Results:**

The patient cohort included 10 paroxysmal AF patients with a total 37 veins (including 3 common veins) ranging from 13-27 mm in diameter. After the initial encircling lesion set, 35/37 (95%) PVs were isolated; the remaining PVs required additional laser ablation. Total laser energy application was 63.7 min/case. Only one balloon was required per patient. All veins remained isolated after the 30 min waiting period. Including this period, the total case time was 233 min (174-365). The total fluoroscopy time was 20.7 min/case (11.9-35.8). There were no complications.

**Conclusion:**

Visually-guided PV isolation is reliably feasible using a variable radius endoscopic laser balloon.

