

The role of left atrial muscular bundles in catheter ablation of atrial fibrillation

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摘要

Abstract

OBJECTIVES: We sought to investigate the imaging of the left atrial (LA) muscular bundle and the relationship between the bundle and inducibility of tachyarrhythmia after pulmonary vein isolation (PVI).
BACKGROUND: Noninducibility is used as a clinical end point of atrial substrate ablation after PVI. However, little is known about the role of the LA muscular bundles in tachyarrhythmia after PVI.
METHODS: Forty-three consecutive patients with paroxysmal atrial fibrillation who underwent catheter ablation were included. Bi-atrial isochronal mapping was performed with the NavX system (St. Jude Medical Inc., St. Paul, Minnesota) during sinus rhythm. After 4 PVI, inducible organized LA flutter with or without transforming to atrial fibrillation (AF) (LA flutter/AF) was ablated with additional lines at the roof and/or mitral isthmus. **RESULTS:** The existence of bilateral muscular bundles was an independent predictor of LA flutter/AF after PVI ($p = 0.02$). Patients with LA flutter/AF after PVI had a greater index of the double potentials ($5.4 \pm 3.4\%$ vs. $2.8 \pm 1.8\%$, $p = 0.006$) and interpotential interval (33 ± 5 ms vs. 29 ± 4 ms, $p = 0.02$) than without LA flutter/AF. The muscular bundles were identified in 28% patients using 16-slice multidetector computed tomography, which were identical to the isochrone map. Patients with noninducible LA flutter/AF after PVI plus the additional linear ablation had a lower recurrence rate as compared with the patients without it (19% vs. 75%, $p = 0.02$). **CONCLUSIONS:** Left atrial muscular bundles may provide a conduction block line and barrier, which is important for the formation of LA flutter/AF after PVI. The noninducibility of LA flutter/AF achieved after additional linear ablation may contribute to a better outcome in RF ablation of paroxysmal atrial fibrillation.