One-step operation of catheter ablation combined with left atrial appendage closure for atrial fibrillation: Single center’s experience

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Introduction: To investigate the safety and efficacy of one-step operation combining catheter ablation and left atrial appendage (LAA) closure for non-valvular atrial fibrillation (AF).

Methods: 100 patients with non-valvular atrial fibrillation who underwent catheter ablation combined with left atrial appendage occlusion between November 2015 and December 2018 in our center were selected. The one-step operation strategy was chosen to ablate-first or occlusion-first according to the operator's wishes and patient conditions. Patients took anticoagulant and antiarrhythmic drugs within 3 months after operation. Transesophageal echocardiography (TEE) were performed at 3 months, 6 months, and 1 year after operation. The efficacy endpoints of this study were stroke, TIA, systemic thromboembolism, death, and cardiovascular events. The safety endpoints were operation-related and device-related embolization, left atrial esophageal fistula and severe bleeding events. Recurrence of AF is defined as atrial tachyarrhythmias that persists for more than 30s after 3 months of operation.

Result: The average age of patients was 68.1 ± 7.1 years, and 62% were male patients. The group included 39 patients with paroxysmal AF, 61 with persistent. The median CHA2DS2-VASc score was 4 (3.5, 5) and median HAS-BLED score was 2 (2, 3). Ultrasound data showed that the average left anteroposterior diameter of patients was 42.6 ± 5.9 mm. The mean operation time, intraoperative fluoroscopy time and X-ray exposure time were 186.4 ± 30.5 minutes, 15.8 ± 7.0 minutes and 783.2 ± 376.6 mGy. The immediate ablation success rate was 99%, whereas left atrial appendage occlusion success rate was 92%. Complete LAA closure without peri-device leaks was achieved in 81% during operation, but the rate was noted to decrease to 75.4% at initial TEE follow-up. The incidence of operation complications was 6%. At a median follow-up of 24 (12, 30) months, the total recurrence rate of AF was 25%; paroxysmal AF and persistent AF recurrence rate of patients were 28.2% and 23.0%, respectively. During follow-up, only 1 patient had efficacy endpoints. This patient developed acute myocardial infarction 4 months after operation and had an ischemic stroke 5 months after operation. In terms of bleeding events, 5 cases occurred during the follow-up period of this study, 1 patient developed cerebral hemorrhage 1 month after operation, 1 patient developed pericardial effusion 1 month after operation, and 3 minor bleeding events (1 gastrointestinal bleeding, 1 nasal bleeding, 1 gingival bleeding).

Conclusion: The outcomes support the safety and efficacy of performing combined procedures of catheter ablation and left atrial appendage closure for patients with non-valvular AF and high stroke risk.