Introduction: The radiofrequency catheter ablation (RFCA) of atrial fibrillation (AF) has been known as it can reduce AF burden and improve the left ventricular (LV) ejection fraction (EF). However, it remains to be investigated whether this procedure is also effective in patients with different types of cardiomyopathy, or even in patients with recurrence.

Methods: The 2028 consecutive patients (male 71.8%, 58.7±11.1 years old, paroxysmal AF 67.9%), who underwent RFCA for AF, were divided into non-ischemic/non-hypertrophic cardiomyopathy (CMP, n=142), ischemic cardiomyopathy (ICM, n=37), hypertrophic cardiomyopathy (HCM, n=60), and patients without cardiomyopathy (no CMP, n=1879) groups, and their clinical outcomes and 1-year follow-up echocardiographic data were compared.

Result: 1. Overall, the LVEF was improved in patients with CMP (ΔEF 9.2±11.1%, p<0.001), ICM (ΔEF 4.6±12.3%, p=0.030), and no CMP (ΔEF 1.0±6.7%, p<0.001) group 1-year after the RFCA. 2. The improvement in LVEF was more profound in the CMP group compared to the ICM or no CMP groups (both p<0.01). 3. In CMP group with recurrence within 1-year after RFCA (n=49), LVEF and stroke volume were also improved regardless of AF sustainment (p<0.05). 4. As a non-invasive parameter, pre-RFCA P-wave amplitude of lead II on 12-lead electrocardiogram was independently associated with LVEF improvement (β=65.75, 95% CI 25.83-105.67, p=0.002) in CMP group after adjusting clinical variables.

Conclusion: RFCA of AF improved LVEF and stroke volume even in CMP patients with recurrence within 1-year after RFCA, and EF improvement was independently associated with pre-RFCA P-wave amplitude of lead II on 12-lead electrocardiogram.