

Impact of low posterior left atrial wall voltage on outcomes of catheter ablation for persistent atrial fibrillation

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Background:

Pulmonary vein isolation (PVI) alone is less effective in patients with persistent atrial fibrillation (PsAF). Adjunctive ablation targeting low voltage areas (LVA) may improve arrhythmia outcomes. LVA are considered surrogate for atrial fibrosis, which is a known trigger and substrate for AF maintenance. However further data is required on the utility of ablation targeting these LVA

Aim:

To compare the outcomes of adding posterior wall isolation (PWI) to PVI, versus PVI alone, in PsAF patients with posterior wall LVA.

Method:

CAPLA was a multi-centre, randomized trial involving PsAF patients randomized to PVI alone or PVI with PWI. Voltage mapping performed during pacing pre-ablation was reviewed, with LVA defined as bipolar voltage of $<0.5\text{mV}$. The primary endpoint was freedom from any atrial arrhythmia of >30 seconds off anti-arrhythmic medication (AAD) at 12 months, after a single ablation procedure in patients with posterior LVA.

Results:

210 patients (average 64.6 ± 9.2 years, 73.3% males, median AF duration 4.5 months [IQR 2-8]) underwent multipolar LA mapping. Posterior LVA was present in 69 (32.9%) with median surface area 0.6cm^2 . The addition of PWI to PVI did not significantly improve freedom from atrial arrhythmia recurrence over PVI alone (PVI with PWI 44.8% vs PVI 41.9%, HR 0.95, 95% CI 0.51-1.79; $p=0.95$) (Figure 1). Patients with posterior LVA were more likely to have LVA in other atrial regions (91.7% vs 57.1%, $p<0.01$), larger left atrial diameter (4.8cm vs 4.4cm, $p<0.01$) and significantly increased risk of atrial arrhythmia recurrence at 12 months (LVA 56.5% vs no LVA 41.4%; HR 1.51, 95% CI 1.01-2.27, $p=0.04$) compared to no posterior LVA (Figure 2)

Figure 1

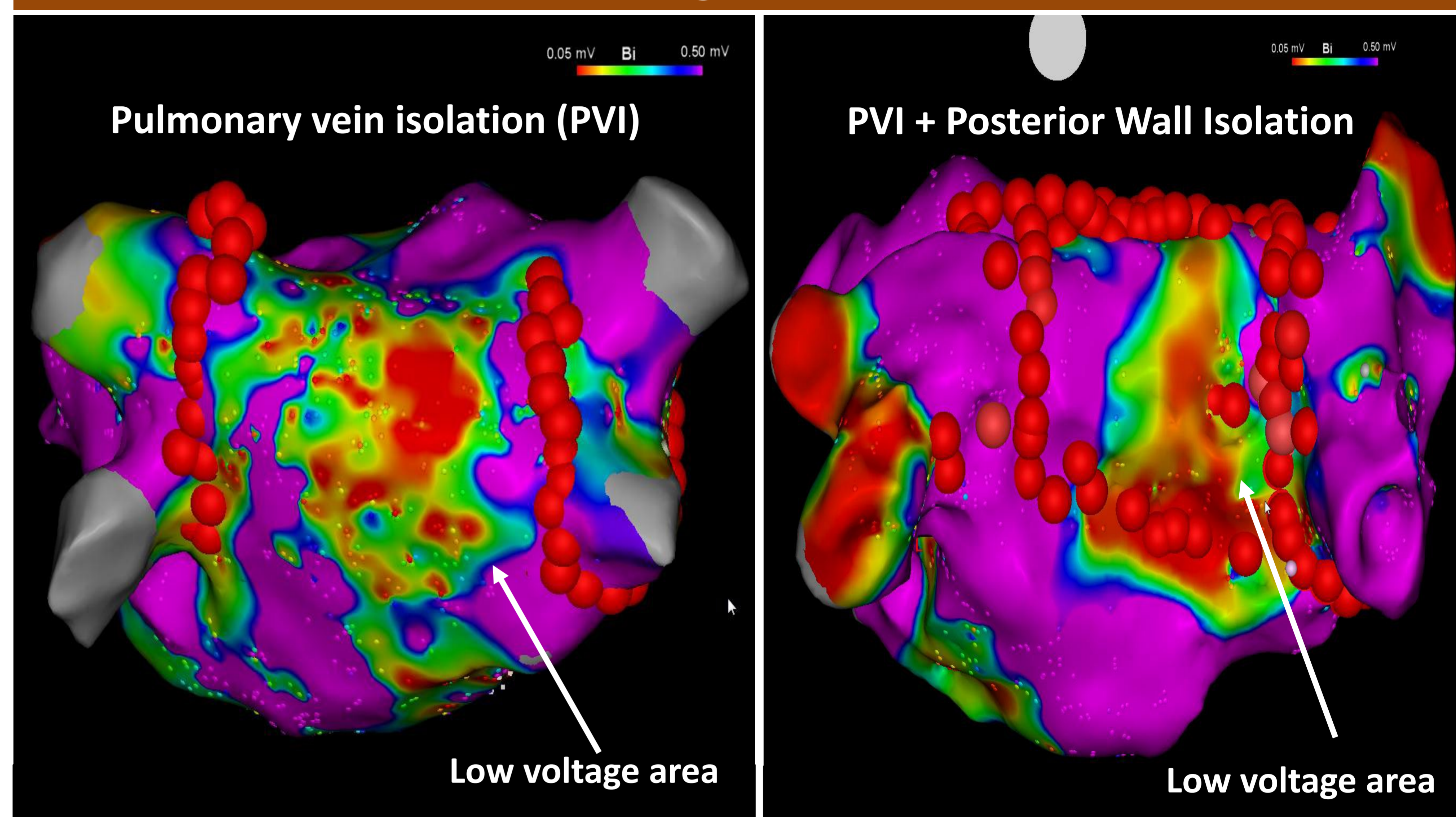
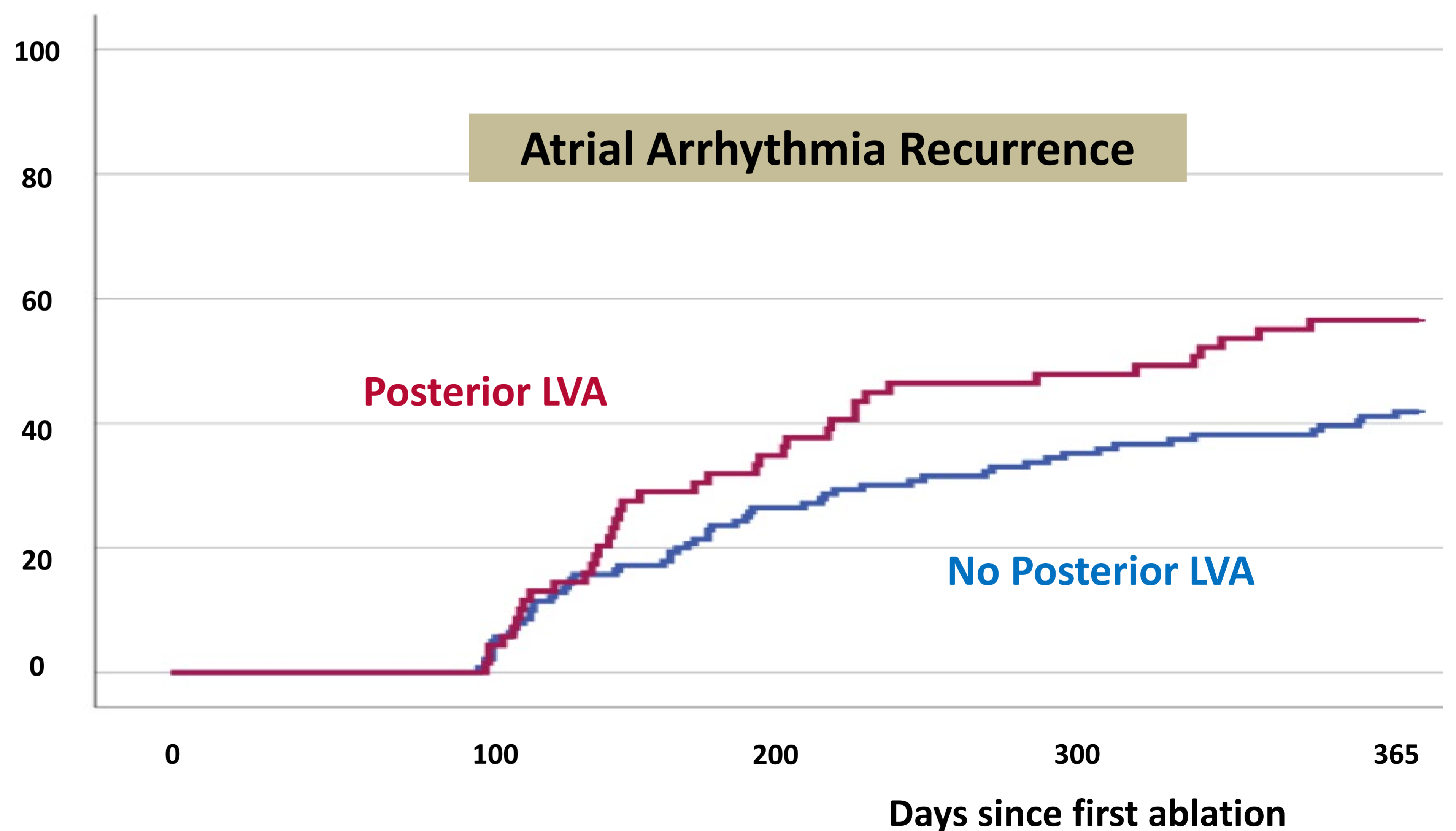


Figure 2



Conclusion:

In patients with PsAF undergoing catheter ablation, posterior LVA was associated with a significant increase in atrial arrhythmia recurrence. However, the addition of PWI in those with posterior LVA did not reduce atrial arrhythmia recurrence over PVI alone