

# Left Atrial Size Does Not Influence Outcomes Following Catheter Ablation in Atrial Fibrillation and Systolic Heart Failure

Louise Segan MBBS<sup>a,b,c,d</sup>, David Chieng MBBS<sup>a,b,c,d</sup>, Hariharan Sugumar MBBS, PhD<sup>a,b,c,d</sup>, Liang-Han Ling MBBS, PhD<sup>a,b,c,d</sup>, Sonia Azzopardi RN<sup>a,b</sup>, Ziporah Nderitu<sup>a,b</sup>, Aleksandr Voskoboinik MBBS, PhD<sup>a,b,d,f</sup>, Joseph B Morton MBBS, PhD<sup>c,e</sup>, Alex J McLellan MBBS, PhD<sup>c,e</sup>, Geoffrey Lee MBChD, PhD<sup>c,e</sup>, Michael Wong MBBS, PhD<sup>c,e,g</sup>, Stephen Joseph MBBS, PhD<sup>c,g</sup>, Jonathan M Kalman MBBS, PhD<sup>c,e</sup>, Peter M Kistler MBBS, PhD<sup>a,b,c,d,e</sup>, Sandeep Prabhu MBBS, PhD<sup>a,b,c</sup>  
<sup>a</sup>The Alfred Hospital, Melbourne, Australia | <sup>b</sup>Baker Heart and Diabetes Institute | <sup>c</sup>University of Melbourne | <sup>d</sup>Cabrini Hospital | <sup>e</sup>Royal Melbourne Hospital | <sup>f</sup>Western Health

## Background

Significant left atrial (LA) enlargement accompanies AF and systolic heart failure (HF) and may deter patient selection for AF ablation. However, the impact of pre-ablation LA size on outcomes remains unclear.

## Aim

Evaluate the impact of baseline LA size on outcomes following catheter ablation in patients with and without systolic HF.

## Method

Patients undergoing first-time AF ablation from 2014-2021 across 11 centres were stratified by baseline LVEF (left ventricular systolic dysfunction (LVSD) defined as LVEF <50% or without LVSD ≥50%). The impact of LA size on 12-month AF recurrence was determined via remote rhythm monitoring.

## Results

Among 407 patients (age 63.4±9.8 years; 20% females, LAVI 49±15ml/m<sup>2</sup>, median continuous AF duration 6 [IQR 2-9] months), 196 had LVSD and 211 had normal LV systolic function.

The LVSD group (mean LVEF 36.2±9.6%) were younger (61.7±10.2 vs 64.9 ± 9.1years, p<0.001), with larger pre-ablation LA size (51.5±15.2ml/m<sup>2</sup> vs 45.4±13.4ml/m<sup>2</sup>, p<0.001) and long-standing persistent AF (PsAF) in 22.4% (vs 6.6% without LVSD, p<0.001).

Freedom from AF was comparable in those with and without LVSD (60.2% vs 52.1%, respectively; HR 0.78, 95% CI 0.58-1.05, p=0.104).

Freedom from arrhythmia recurrence was significantly lower in those with LA enlargement without LVSD (HR 1.79, 95% CI 1.11-2.86, p=0.021) compared to LA enlargement with LVSD, whereas rates of arrhythmia recurrence were comparable in those with normal LA size, irrespective of HF status (p=0.652).

At 12 months, 76% with LVSD experienced LV recovery (LVEF>50%; ΔLVEF: +17±13%, p<0.001). Reverse atrial remodeling was significantly greater in the LVSD group (ΔLAVI -8±16 vs -3±11 without LVSD, p=0.013; ΔRA area -5±7 vs -2±5, p<0.001) compared to those without LVSD. On multivariable analysis, pre-ablation LA size (p=0.762) did not predict AF recurrence.

Figure 1: freedom from arrhythmia according to HF status

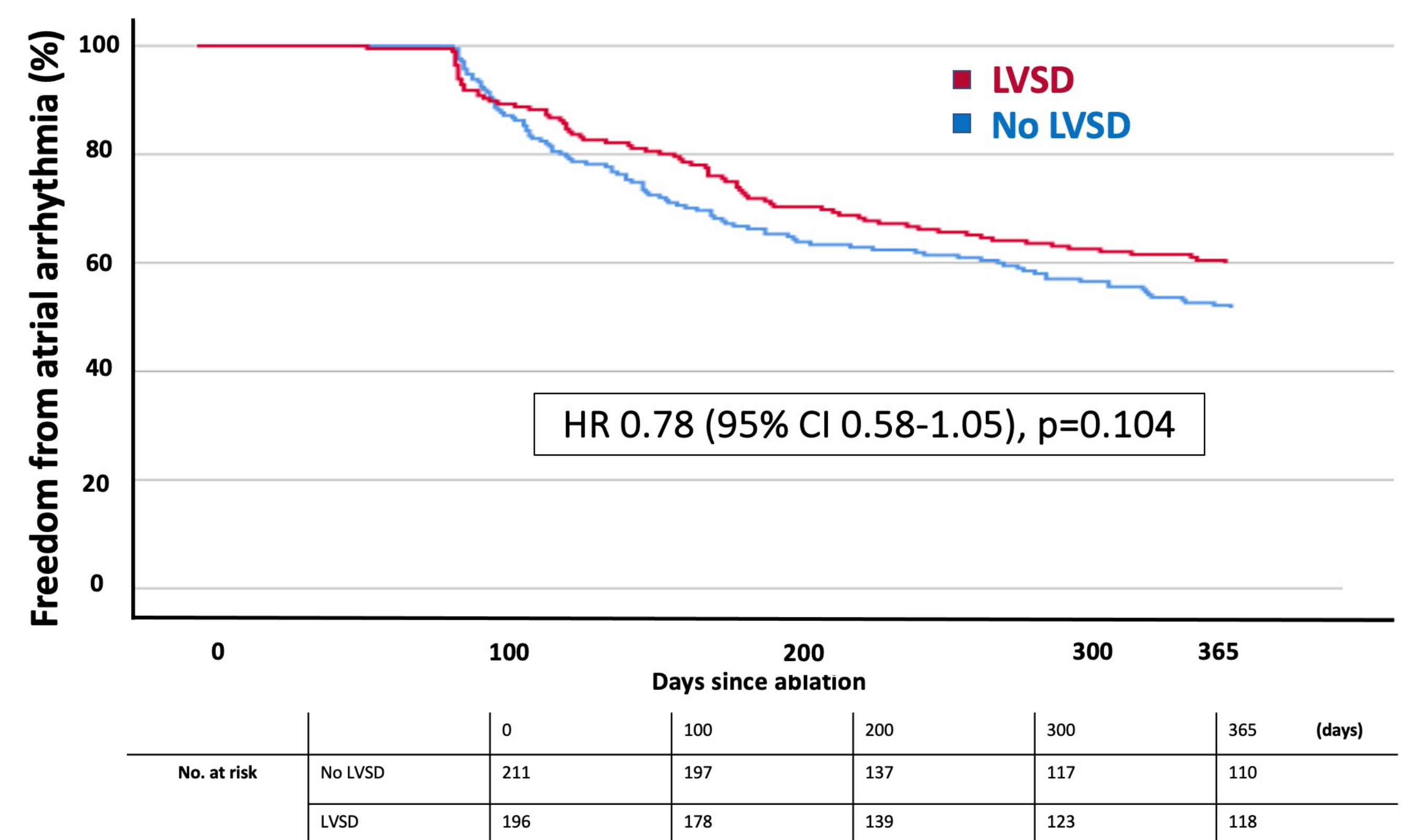
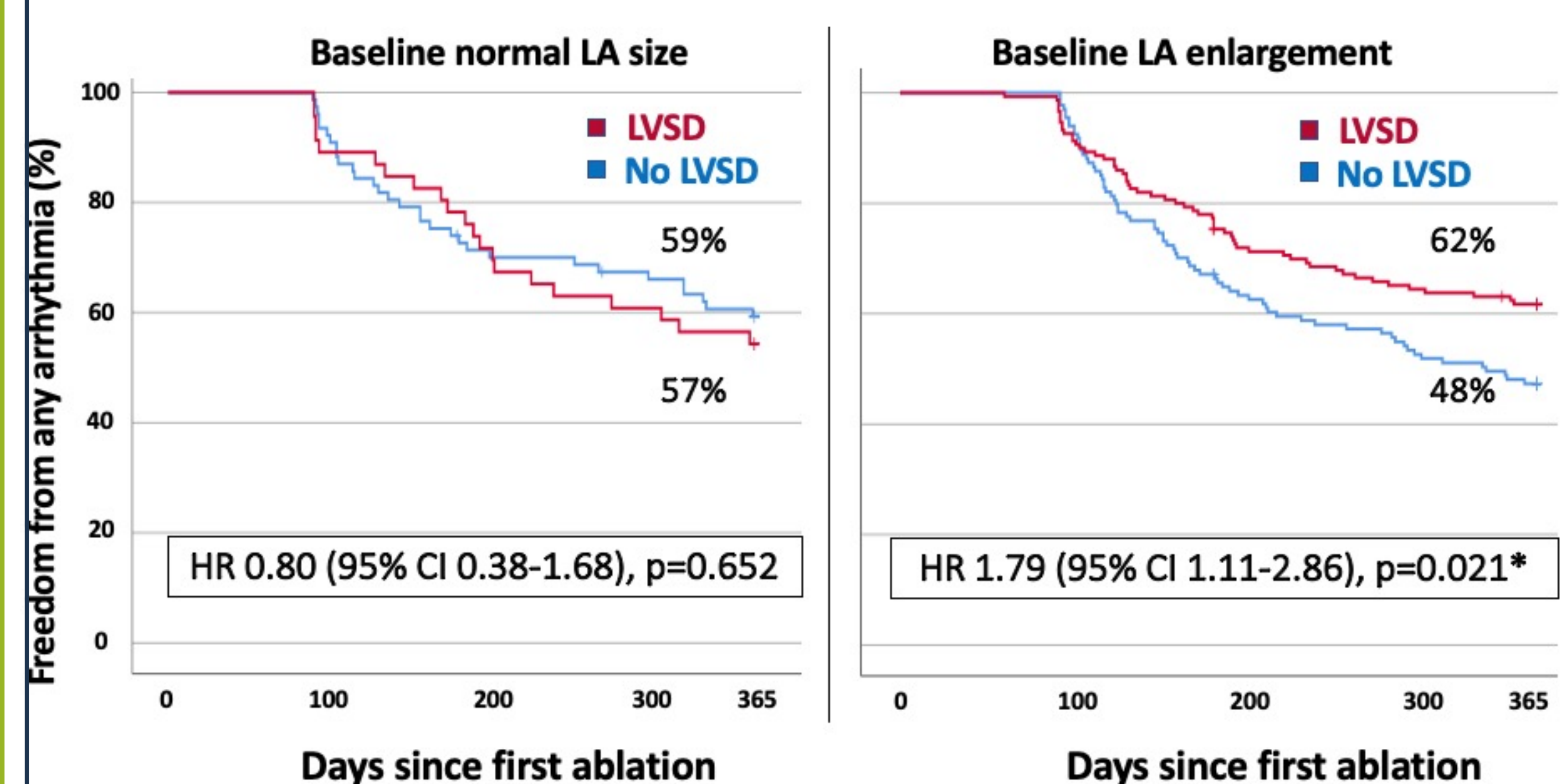


Figure 2: freedom from arrhythmia according to LA size



## Conclusion

Despite baseline LA enlargement, 12-month outcomes in patients with AF and LVSD are favourable with reverse remodelling and comparable rates of arrhythmia-free survival. LA size should not deter an ablation-based rhythm strategy in AF and systolic HF.