

INTRODUCTION

Convergent 3 is a first-in-human lesion set that addresses persistent arrhythmia following hybrid posterior wall isolation utilizing endocardial/epicardial (EN/EP) ablation via a subxiphoid and left video-assisted thoracoscopic surgery (VATS) entry. This newly described approach adds left atrial appendage (LAA) management & interrupts pathways supporting left macro-reentrant flutter; a frequent driver for AF recurrence.

METHODS

Patients with non-paroxysmal AF had staged hybrid procedure incorporating the modified lesion set:

- During the epicardial portion, a left atrial posterior wall (LAPW) ablation was performed with unipolar radiofrequency through subxiphoid incision
- Contiguous lesions were created between the pulmonary veins (PVs)
- A left-sided VATS approach was used to interrupt ligament of Marshall (LOM) and exclude the LAA with clip
- Epicardial ablation catheter used to begin an anterior mitral line adjacent to left PV and LAA (Figure 1C)
- During endocardial ablation, PV isolation and roof line were created
- Epicardial anterior mitral line was then connected to the mitral annulus with endocardial ablation
- Electroanatomic ultrasensitive map (EUM) was performed documenting transmural and integrity of linear lesions using wavefront propagation mapping
- All patient were followed with implantable loop recorders

RESULTS

A total of 18 patients with non-paroxysmal AF had the modified ablation technique. The cohort was 61.1% male, mean age 74.4 years, mean left atrial diameter 4.1cm, and 33% had prior ablation.

Figure 1 shows placement of epicardial ablation line extending from left superior PV (LSPV) adjacent to LAA base and endocardial line constructed using RF catheter to mitral annulus.

A voltage EUM demonstrated transmural scar extending from LSPV/LAA to mitral annulus shown in Figure 1A inset. Using an AF burden threshold of <5%, 91% of patients remained free of atrial arrhythmias at 12 months. No macroreentrant flutters were recorded during follow-up, and no complications were observed.

CONCLUSIONS

Prior Hybrid Convergent AF ablation techniques have been disadvantaged by the inability to address annular flutters or the LAA. The described Convergent 3 approach includes LAA exclusion while addressing targets known to trigger/sustain AF in non-paroxysmal AF using a comprehensive ablation strategy that is efficient and transmural. The lesion set incorporates multiple sites, including PV isolation, roof line, cavotricuspid line, LOM, electrical isolation of LAA and LAPW, and first ever described mitral annular line using an EN/EP approach.

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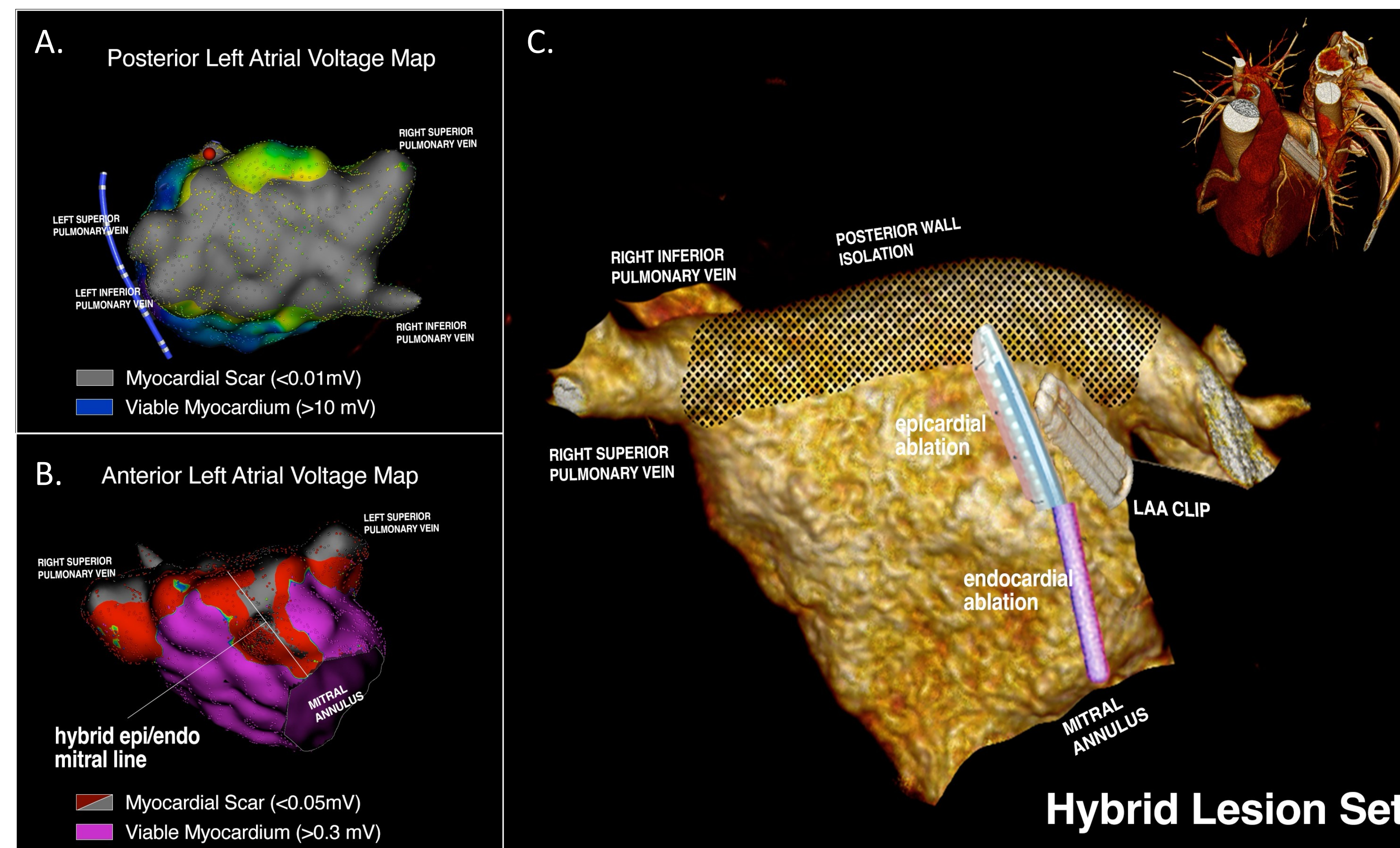


Figure 1. Placement of Epicardial and Endocardial ablation lines and voltage EUM results

- A. EUM showing scar from combined EN/EP posterior wall ablation
- B. EUM showing ablation scar from LSPV to LAA to mitral annulus
- C. Complete lesion set (PV, posterior wall, LAA ligation, hybrid mitral line)