

Experimental Efficacy Of An Advanced Radiofrequency Ablation Clamp

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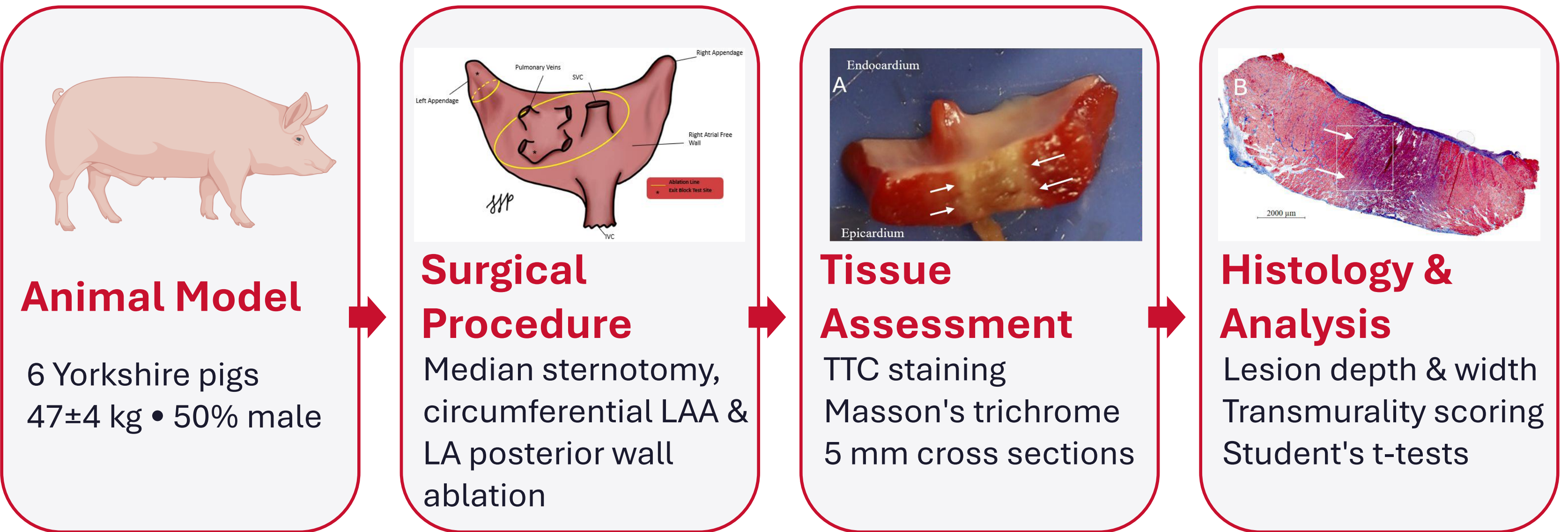
BACKGROUND

- The Problem**
- Atrial Fibrillation (AF) affects up to 10 million Americans
 - Cox-Maze IV (CM) is the gold standard
 - Adoption limited by perceived procedural complexity & added bypass time
 - Left atrial posterior wall (LAPW) isolation is a critical component of the CM lesion set
 - LAPW isolation with current, single generator clamp takes over 70 seconds

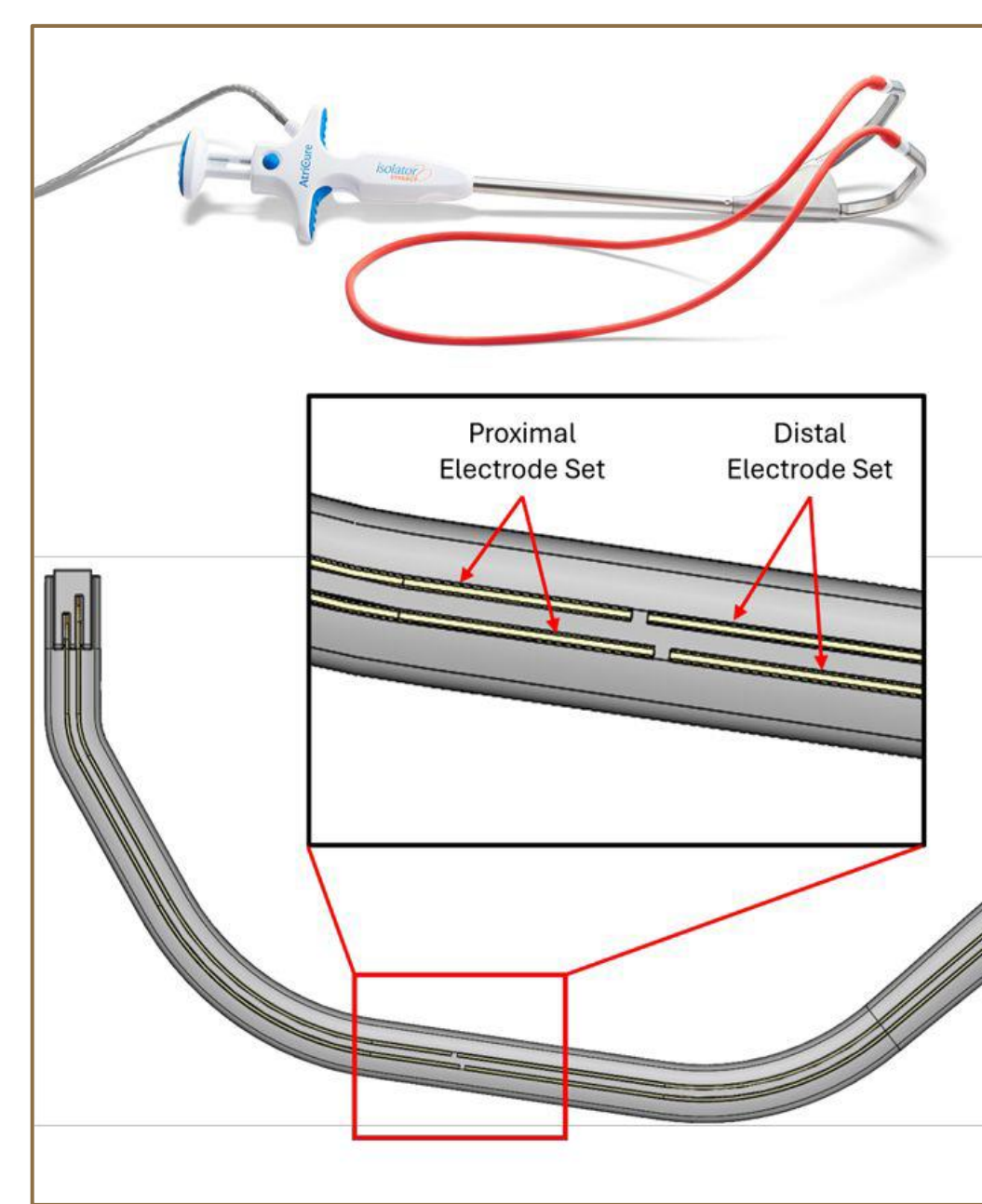
- The Innovation**
- Dual generator RF clamp (Encompass-A1, AtriCure, Cincinnati, OH) accelerates energy delivery without sacrificing transmuralty or efficacy

- Objective**
- Evaluate an advanced, dual-generator RF clamp designed for faster ablation to isolate the LAPW

METHODS



Device Design

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- Resistive heating via four electrode pairs (two pairs per jaw segment)
 - Dual generators independently power proximal and distal pairs
 - Impedance algorithm confirms transmuralty and terminates energy delivery
 - Magnetic guide enables safe passage
 - Parallel jaws apply uniform pressure

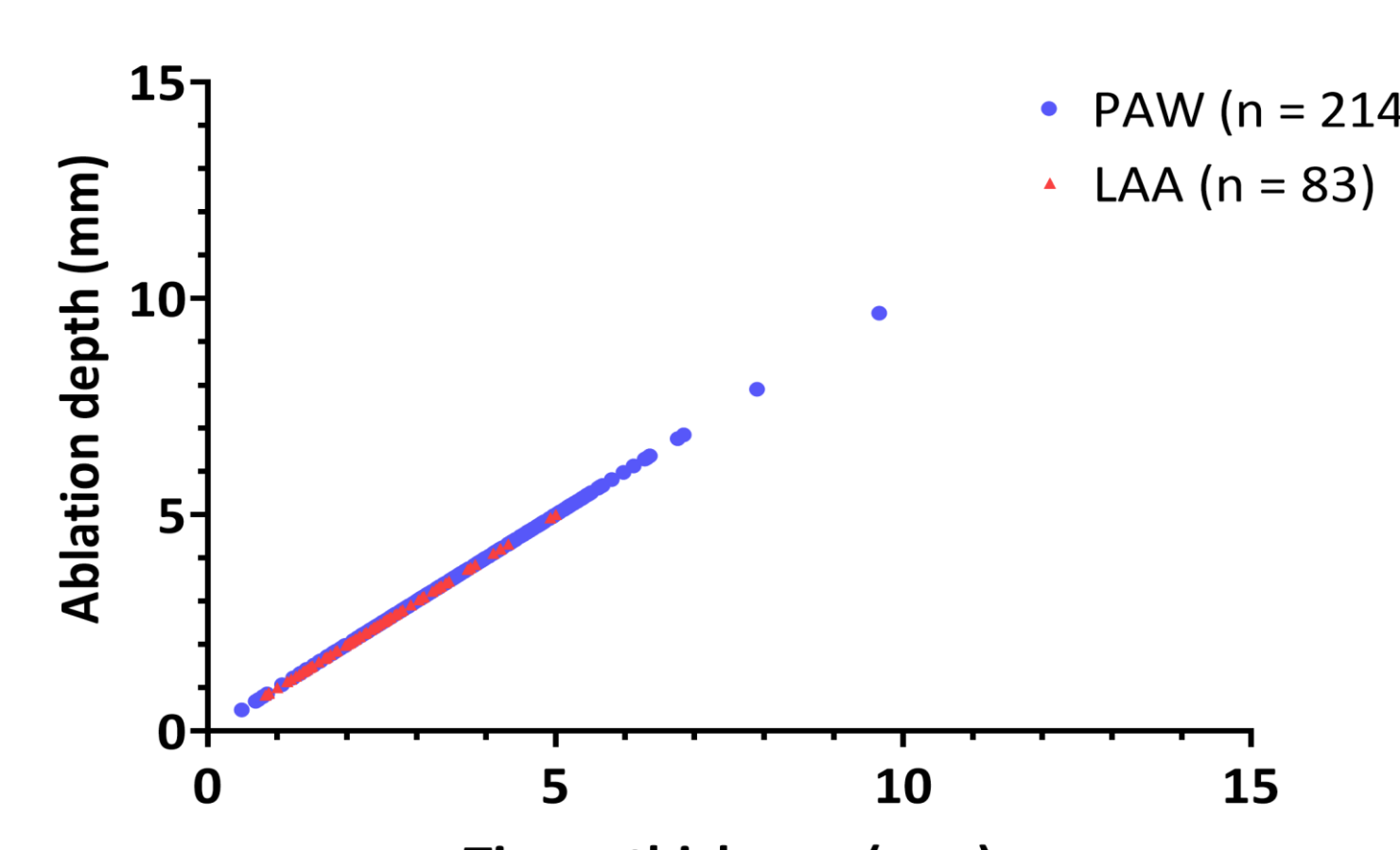
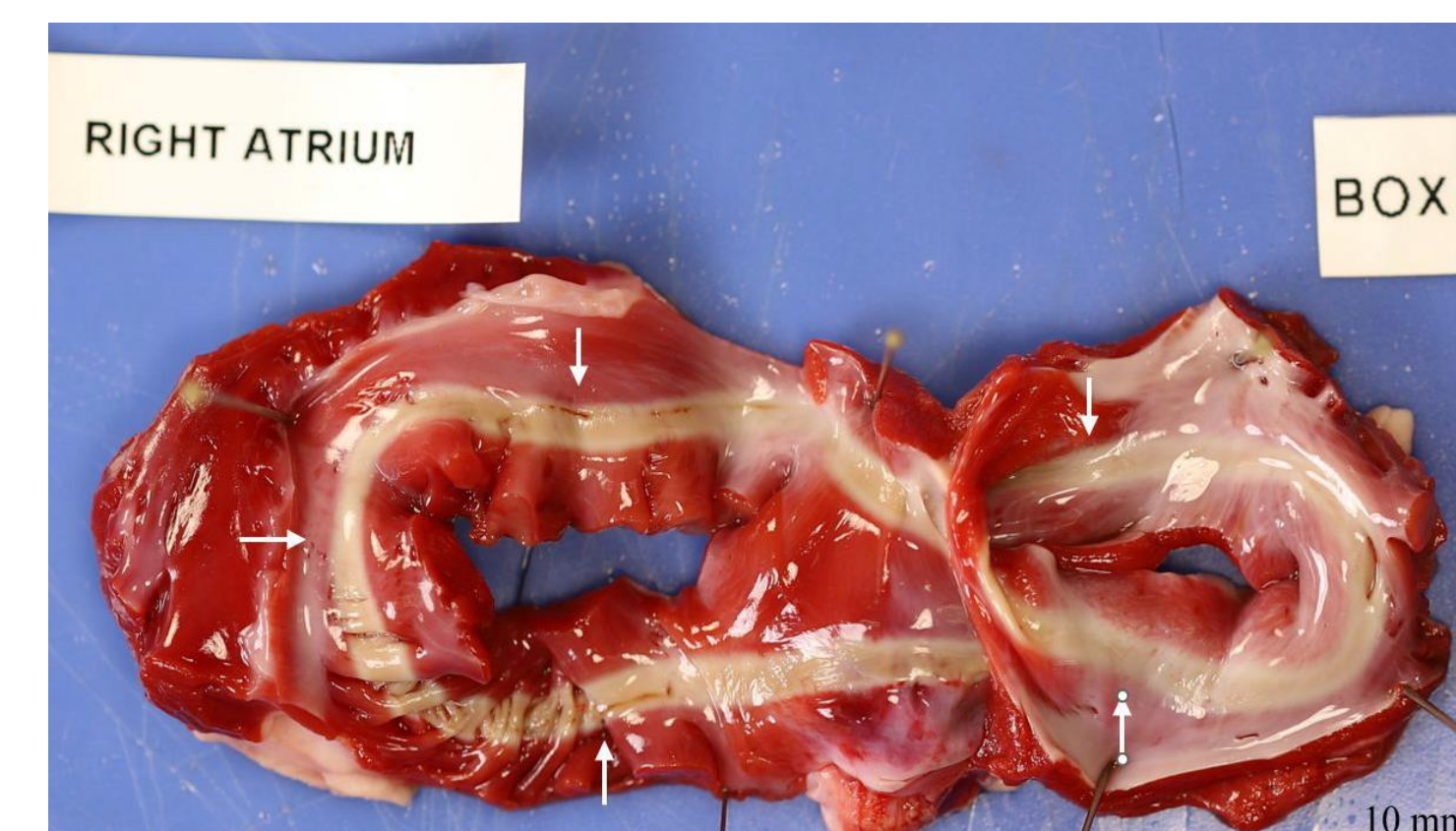
RESULTS

100% TRANSMURALITY
214/214 Box cross sections
83/83 LAA cross sections

100% EXIT BLOCK
12/12 lesions tested

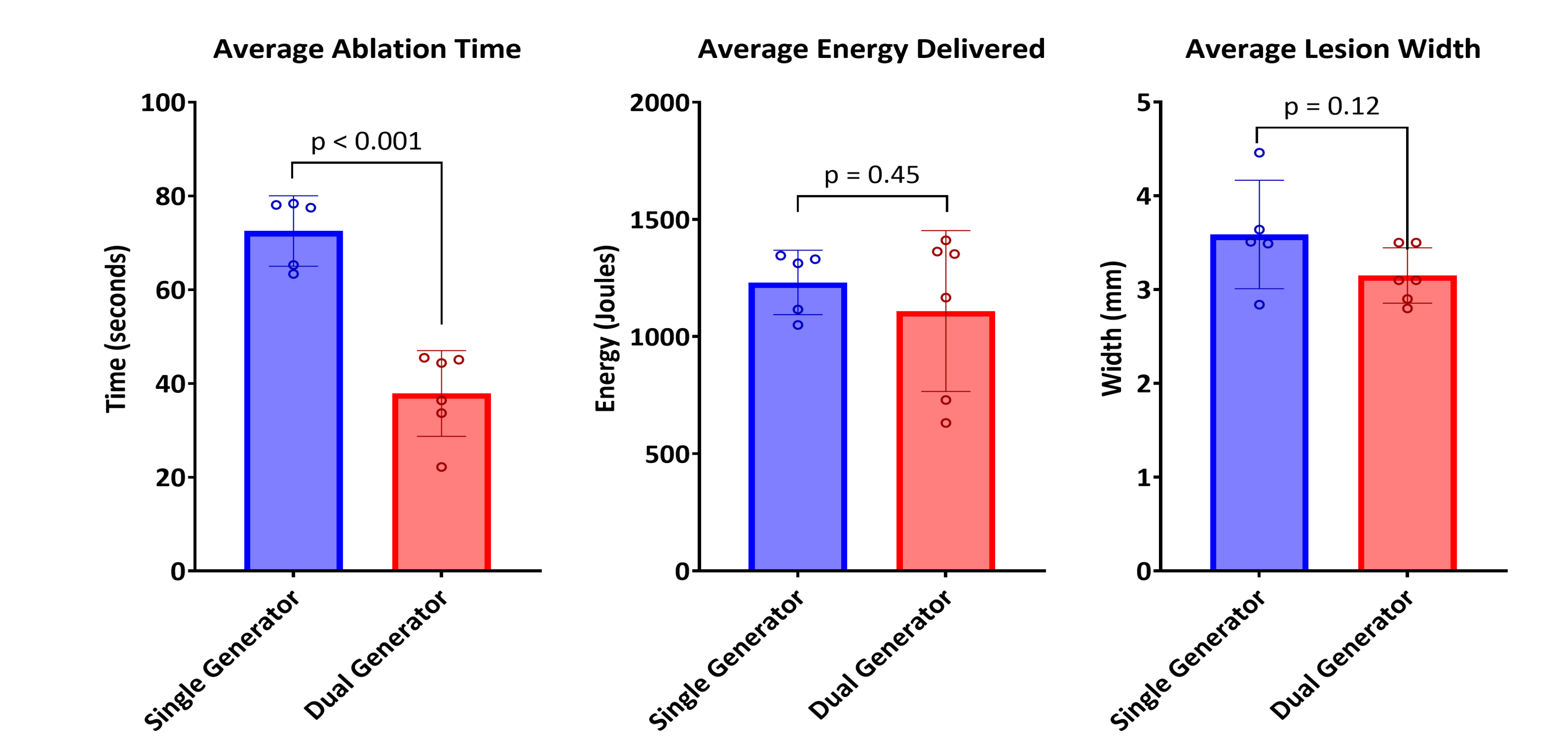
37.9 ± 9.1 s ABLATION TIME
↓48% vs single-generator (p<0.001)

3.5 ± 0.7 mm LESION WIDTH
Depth = 4.0 ± 1.5 mm



Dual vs. Single Generator RF Clamp

- 48% faster ablation on LAPW (37.9 vs 72.4 s, p<0.001)
- Equivalent energy delivered (1109 vs 1231 J, p=0.45)
- Equivalent lesion width (3.1 vs 3.6 mm, p=0.12)



DISCUSSION

- The dual generator clamp reduced LAPW ablation time by 48% while maintaining efficacy and safety.
- Energy delivery: same total energy delivered
 - Efficacy: 100% transmuralty and exit block
 - Safety: no bleeding, charring, or PV stenosis; 1 episode of AV block
 - Clinical implication: faster LAPW lesion creation may improve adoption
 - Limitations: normal porcine atria may underestimate difficulty of creating transmural lesions in patients with AF; clinical use expected to use cardiopulmonary bypass