

Left Atrial Surgical Ablation at Time of Closed Heart Surgery: Short Term Outcomes

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Introduction:

- Atrial fibrillation (AF) management is challenging, with the biatrial Cox-Maze IV procedure being the gold standard for persistent AF.
- A novel radiofrequency probe allows for a box lesion to be completed with a single clamp, avoiding the need for a left atrial incision¹.
 - Less invasive alternative strategy to create a box lesion.
 - Reduction in surgical time and need for open-heart procedure.
- We aimed to evaluate the short-term outcomes of sinus rhythm maintenance in patients undergoing left atrial posterior wall ablation with this single clamp device.

Methods:

Study Design: A retrospective review was conducted of patients undergoing first-time cardiac surgery with concomitant left atrial posterior wall ablation using a novel single clamp device between April 2022 and July 2024, with follow up at discharge, 1, 3, 6, 12 months.

Inclusion Criteria: Patients undergoing the single clamp ablation as part of their initial cardiac surgery.

Exclusion Criteria: Patients who received additional ablation devices or lesion sets, or who underwent postoperative ablation or cardioversion after hospital discharge.

Results

Table 1: Operative Data

	All Comers (n = 103)	Sinus Rhythm 1 Month Post Op (85%, n = 70)	Sinus Rhythm 1 Year Post Op (92%, n = 31)
Atrial Fibrillation at OR Entry*	32 (38%)	20 (35%)	6 (23%)
Duration of Atrial Fibrillation			
Unknown	43 (42%)	31 (44%)	9 (29%)
0-1 year	37 (36%)	23 (33%)	12 (39%)
1-5 years	13 (13%)	9 (13%)	6 (19%)
5+ years	10 (10%)	7 (10%)	4 (13%)
Operative Status			
Elective	57 (55%)	42 (60%)	20 (65%)
Urgent	46 (45%)	28 (40%)	11 (35%)
Concomittant Procedure			
CABG	65 (63%)	46 (66%)	22 (71%)
Aortic Procedure	19 (18%)	11 (16%)	6 (19%)
Aortic valve Procedure	37 (36%)	27 (39%)	7 (23%)
Mitral Valve Procedure	10 (10%)	6 (9%)	3 (10%)
Tricuspid Valve Procedure	2 (2%)	1 (1.4%)	0 (0%)
Left Atrial Appendage Occlusion			
Epicardial occlusion device	98 (95%)	66 (94%)	30 (97%)
Endocardial Suture	1 (1%)	1 (1%)	1 (3%)
None / Other	4 (4%)	3 (4%)	0 (0%)
Sinus Rhythm at End of Case**	51 (70%)	34 (72%)	14 (64%)

Figure 1: Sinus Rhythm at Follow Up

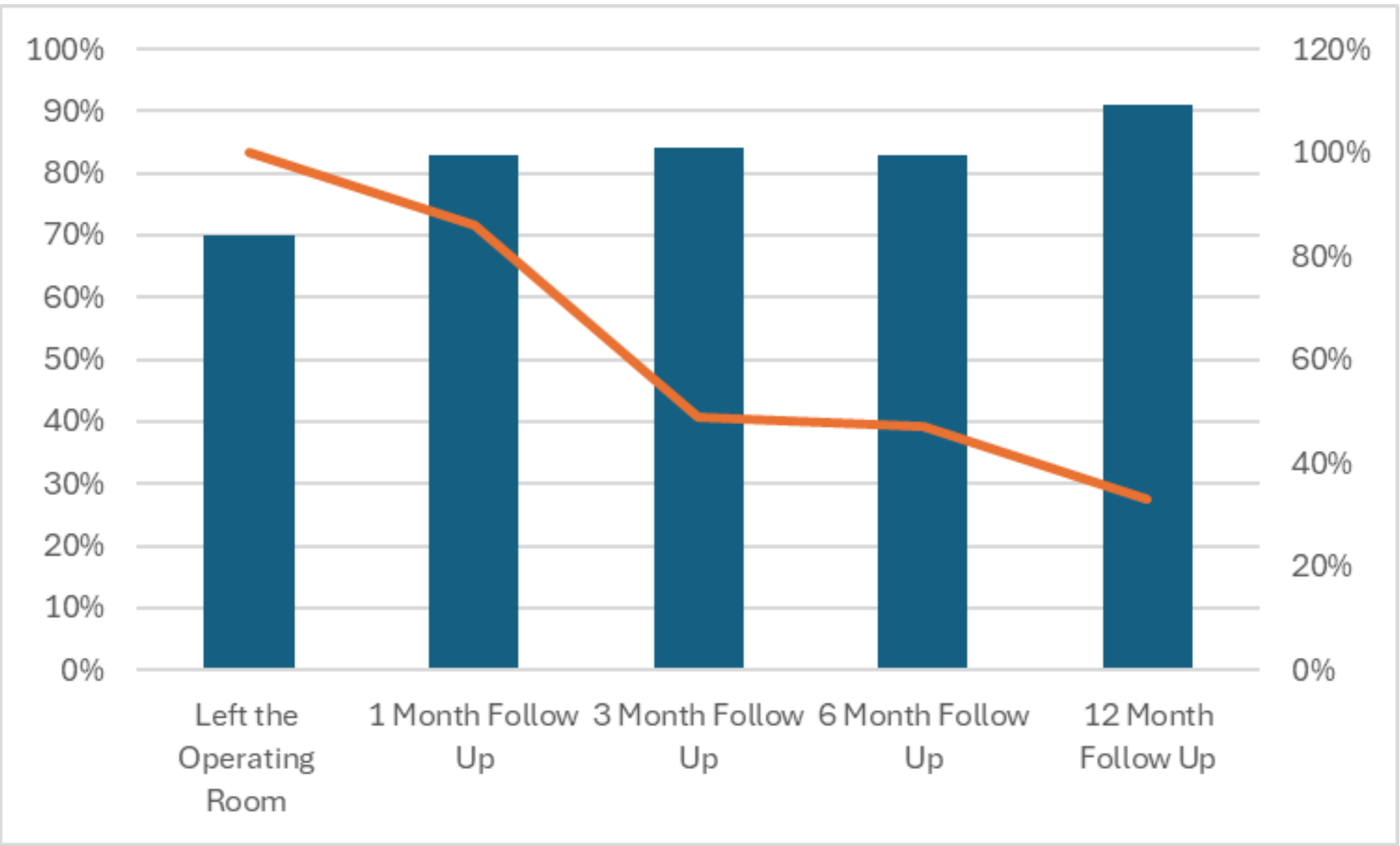
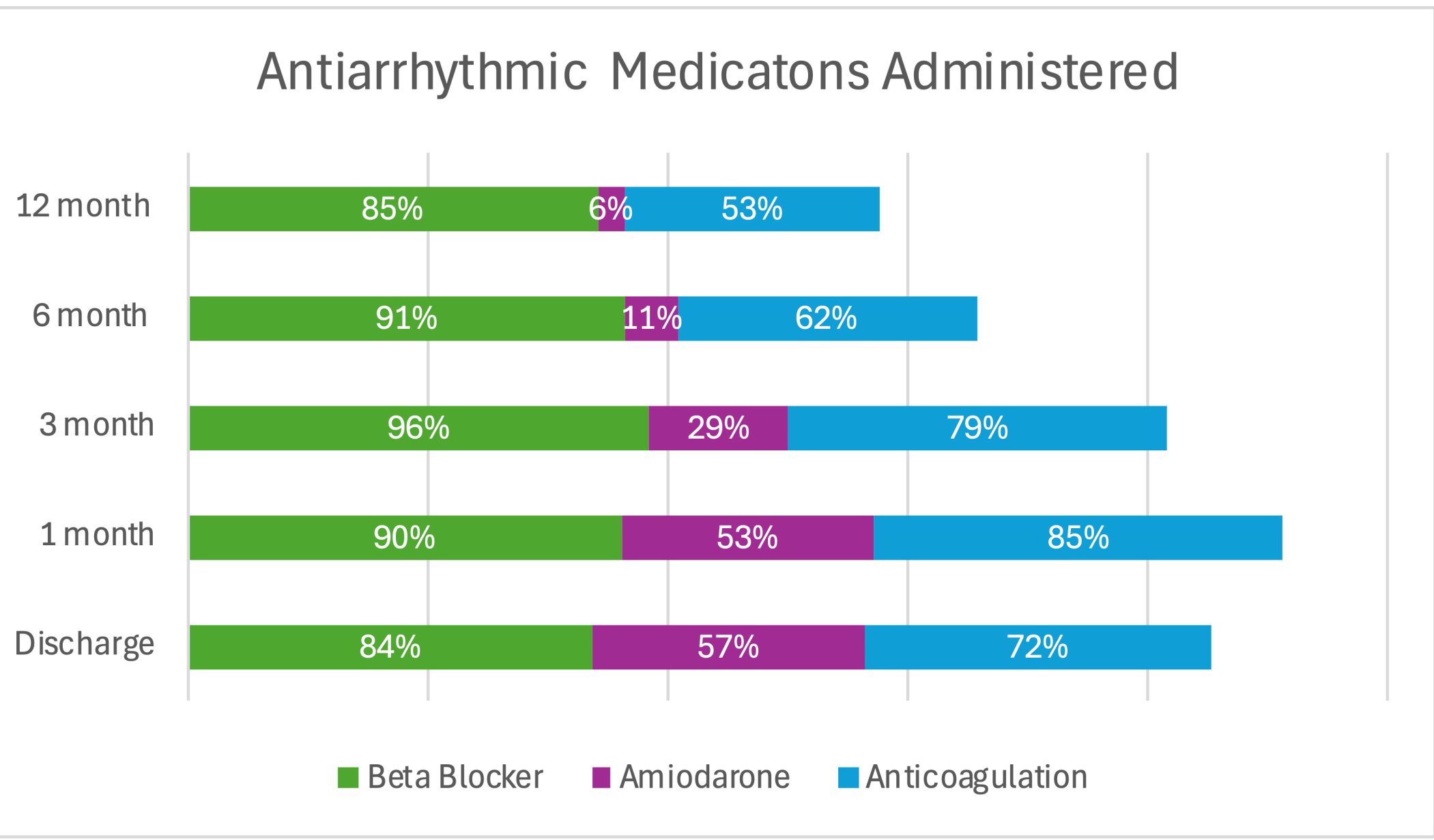


Figure 2: Postoperative Antiarrhythmics



Discussion

Including a complete biatrial ablation in cardiac surgeries can significantly increase cross-clamp time and operative complexity.

For patients undergoing ‘*closed heart*’, concomitant ablation using the novel single clamp device demonstrates promising rates of sinus rhythm at short term follow up.

Potential reduction in operative time compared to complete biatrial ablation.

References:

¹Sternik L, Schaff HV, Luria D, Glikson M, Kogan A, Malachy A, First M, Raanani E. Left atrial ablation for atrial fibrillation: creating the "box lesion" with a bipolar radiofrequency device. Tex Heart Inst J. 2011;38(2):127-31. PMID: 21494518; PMCID: PMC3066805.)
²Ji Y, He L, Cheng Z, Shi J, Liu L, Guo Y. Five-year follow-up report: Box lesion radiofrequency ablation procedure for atrial fibrillation under video-assisted thoracoscope. Clin Case Rep. 2021 Dec 5; 9(12):e04837. doi: 10.1002/ccr3.4837. PMID: 34917358; PMCID: PMC8645180.

Limitations:

Absences of granular history of AF and control group.

Limited assessment of AF at follow up with ‘snapshot’ assessment.

Conclusion:

Inclusion of a posterior left atrial box lesion at the time of closed heart surgery confers minimal additional operative time and complexity with encouraging freedom from atrial fibrillation at short term follow up.