# Left Atrial Surgical Ablation at Time of Closed Heart Surgery: An Update on Short Term Outcomes

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## BACKGROUND

Management of atrial fibrillation (AF) remains challenging, with the gold standard being the Cox Maze procedure.

The Encompass (AtriCure, Inc, Cincinnati, OH) device allows a complete box lesion in a single application without left atriotomy.

We sought to assess the rate of sinus rhythm at short term follow-up and now present an update on previous data whereby a higher percentage of patients have made it to 1 year follow up.

## METHODS

A retrospective review was performed with one hundred and fifty-five patients with a history of AF who underwent ablation during a concomitant cardiac surgical procedure with the AtriCure Encompass radiofrequency device between April 2022 and July 2024 at our institution. Patients were excluded if any additional device or lesion set was used.

Follow up was assessed at 1 month, 3 months, 6 months and 12 months.

## CONCLUSION

For patients undergoing 'closed heart' surgery, we suggest concomitant radiofrequency ablation with the AtriCure Encompass device may offer enticing rates of maintenance of sinus rhythm at short term follow up.

## RESULTS

**Demographic / Comorbidities For All Comers and Cohorts with Sinus Rhythm at 1 Year Postoperatively**

| | All Comers (n = 155) | Sinus Rhythm at 1 Year - YES (n = 44, 86%) | Sinus Rhythm at 1 Year - NO (n = 7, 14%) |
|---|---|---|---|
| Total Patients in Follow Up Period (n) | 155 (100%) | 51 (33%) | 51 (33%) |
| Age | 69.1 ± 8.9 | 68.6 ± 8.9 | 72.7 ± 6.0 |
| Hispanic / Latino | 8 (5%) | 1 (2%) | 0 (0%) |
| Race | | | |
| Caucasian | 116 (75%) | 33 (75%) | 6 (86%) |
| African American | 10 (7%) | 3 (7%) | 1 (14%) |
| Asian | 18 (12%) | 5 (11%) | 0 (0%) |
| Native American | 1 (1%) | 1 (2%) | 0 (0%) |
| Other | 6 (4%) | 3 (7%) | 0 (0%) |
| Height (cm) | 173.8 ± 10.0 | 175.0 ± 10.3 | 178.2 ± 9.3 |
| Weight (kg) | 90.7 ± 22.9 | 96.8 ± 28.9 | 90.44 ± 23.9 |
| BMI | 29.9 ± 6.4 | 31.4 ± 8.1 | 28.3 ± 5.6 |
| STS Predicted Variables | | | |
| Mortality | 2.4 ± 1.7 | 2.3 ± 1.8 | 2.8 ± 1.5 |
| Stroke | 1.5 ± 0.9 | 1.4 ± 1.0 | 1.8 ± 1.3 |
| Morbidity / Mortality | 15.5 ± 8.8 | 15.7 ± 10.2 | 21.8 ± 10.2 |
| Diabetes | 60 (39%) | | |
| Dialysis Dependent | 4 (3%) | 0 (0%) | 0 (0%) |
| Hypertension | 130 (84%) | 36 (82%) | 5 (71%) |

**Demographic / Comorbidities For All Comers and Cohorts with Sinus Rhythm at 1 Year Postoperatively**

| | All Comers (n = 155) | Sinus Rhythm at 1 Year - YES (n = 44, 86%) | Sinus Rhythm at 1 Year - NO (n = 7, 14%) |
|---|---|---|---|
| Cerebrovascular Disease | 21 (14%) | 4 (9%) | 2 (29%) |
| Syncope | 4 (3%) | 2 (5%) | 1 (14%) |
| Beta Blockers | 121 (78%) | 38 (86%) | 7 (100%) |
| Amiodarone | | | |
| Yes - home therapy | 8 (5%) | 3 (7%) | 0 (0%) |
| Yes - started on admission | 14 (9%) | 5 (11%) | 0 (0%) |
| None | 133 (86%) | 36 (82%) | 7 (100%) |
| Ejection Fraction (%) | 53 ± 12.5 | *54.1 ± 12.4** | *43.6 ± 13.8** |
| Left Atrial Dimension (cm) | 4.1 ± 0.9 | 3.9 ± 1.0 | 4.5 ± 0.6 |
| Mitral Regurgitation | | | |
| Trivial / Trace | 51 (33%) | 12 (27%) | 1 (14%) |
| Mild | 62 (40%) | 19 (43%) | 5 (71%) |
| Moderate | 23 (15%) | 8 (18%) | 0 (0%) |
| Severe | 15 (10%) | 3 (7%) | 1 (14%) |
| History of Ablation | 15 (10%) | 4 (9%) | 0 (0%) |
| Duration of Atrial Fibrillation | | | |
| Unknown | 72 (47%) | 14 (32%) | 3 (43%) |
| 0-1 year | 51 (33%) | 16 (36%) | 2 (29%) |
| 1-5 years | 19 (12%) | 10 (23%) | 2 (29%) |
| 5+ years | 13 (8%) | 4 (9%) | 0 (0%) |

## RESULTS FOR 1 YEAR FOLLOW UP

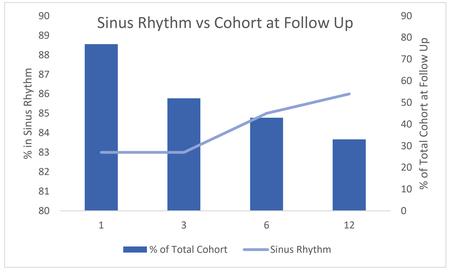
**Operative Data for Patients in Sinus Rhythm at 1 Year**

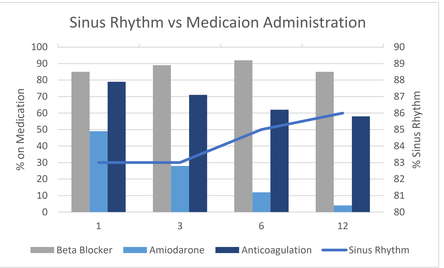
| | All Comers (n = 51) | Sinus Rhythm 1 Year Post Op (n = 44) | Abnormal Rhythm 1 Year Post Op (n = 7) |
|---|---|---|---|
| Total Patients in Follow Up Period (n) | 51 | 51 | 51 |
| Atrial Fibrillation at OR Entry* | 12 (24%) | 10 (23%) | 2 (29%) |
| Operative Status | | | |
| Elective | 31 (61%) | 27 (61%) | 4 (57%) |
| Urgent | 20 (39%) | 17 (39%) | 3 (43%) |
| Concomittant Procedure | | | |
| CABG | 34 (67%) | 29 (66%) | 5 (71%) |
| Aortic Procedure | 12 (24%) | 10 (23%) | 2 (29%) |
| Aortic valve Procedure | 15 (29%) | 13 (30%) | 2 (29%) |
| Mitral Valve Procedure | 4 (8%) | 4 (9%) | 0 (0%) |
| Tricuspid Valve Procedure | 1 (2%) | 1 (2%) | 0 (0%) |
| Cardiopulmonary Bypass Used | 50 (98%) | 44 (100%) | 6 (86%) |
| Left Atrial Appendage Occlusion | | | |
| Epicardial occlusion device | 49 (96%) | 42 (95%) | 7 (100%) |
| Endocardial Suture | 1 (2%) | 1 (2%) | 0 (0%) |
| None / Other | 1 (2%) | 1 (2%) | 0 (0%) |
| Sinus Rhythm at End of Case** | 21 (41%) | 20 (45%) | 1 (14%) |

**Discharge Information for Patients With 1 Year Follow Up**

| | All Comers (n = 51) | Sinus Rhythm 1 Year Post Op (n = 44) | Abnormal Rhythm 1 Year Post Op (n = 7) |
|---|---|---|---|
| Length of Stay | 9.7 ± 9.2 | 8.5 ± 9.9 | 10.3 ± 5.1 |
| Discharge Location* | | | |
| Home | 43 (84%) | *39 (89%)** | *4 (57%)** |
| Rehab | 8 (16%) | *5 (11%)** | *3 (43%)** |
| Discharge Anticoagulation | | | |
| NOAC | 31 (61%) | 27 (61%) | 4 (57%) |
| Warfarin | 2 (4%) | 2 (5%) | 0 (0%) |
| Other Anticoagulant | 1 (2%) | 1 (2%) | 0 (0%) |
| Discharge Antiarrhythmic | | | |
| Amiodarone | 26 (51%) | 24 (55%) | 2 (29%) |
| Beta Blocker | 42 (82%) | 35 (80%) | 7 (100%) |

## RESULTS FOR 1 YEAR FOLLOW UP




## DISCUSSION

- For those patients undergoing closed heart cardiac surgery, concomitant ablation using the AtriCure Encompass device has demonstrated promising rates of maintenance of sinus rhythm at one year follow up.
- Inclusion of the limited box lesion radiofrequency ablation adds operative time, no additional cross clamp time, minimal additional morbidity to the operation and can be performed in an off-pump setting
- Our findings require further exploration as they are from a single institution and offer only a snapshot of rhythm data at follow up assessment with the majority of patients not having outpatient prolonged cardiac monitoring.

## DISCLOSURES

A Luckert: Intuitive Surgical Solutions (Consultant)

DR Brinster: Cook Medical (Consultant), Terumo Aortic (Consultant), Artivion (Consultant)

NC Patel: Intuitive Surgical Solutions (Consultant)

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## CONTACT INFORMATION

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