Hybrid AF™ Therapy Ablation for Long-Standing Persistent Atrial Fibrillation: a Case Study

Patient Presentation Example[1]

A symptomatic 66-year-old African American male presents with long-standing persistent (LSP) atrial fibrillation (AF), duration > 4 years (ICD-10-CM[2] I48.2). His medical history is significant for failure to achieve control with Class I/III anti-arrhythmic drugs. He is currently on an oral anti-coagulant, as well as a beta blocker for hypertension and a statin for high cholesterol. The patient has failed one catheter ablation, and he is refractory to conservative medical management.

Current diagnostic workup shows the left atrium is < 6.0 cm. The electrophysiologist in consultation with the cardiac surgeon recommends a same-day hybrid ablation consisting of a surgical ablation (epicardial) followed by a radiofrequency (RF) catheter ablation (endocardial) to treat this patient's LSP AF.

The EPi-Sense® Guided Coagulation System with VisiTrax®, used in the epicardial procedure, is intended for the treatment of symptomatic LSP AF that is refractory or intolerant to at least one Class I and/or III anti-arrhythmic drug. It is augmented with an endocardial RF catheter ablation procedure (2021 FDA PMA Approval).

Epicardial and Endocardial Hybrid Ablation Procedure: Provider Reimbursement[3]

A large percentage of patients with LSP AF who are eligible for surgery are over age 65, such as this case study patient. Commercial payer policies should also be considered; for example (but not limited to) leading medical policies listed in Table 1.

Table 1. Representative Commercial Plan Descriptors for the Hybrid Surgical Ablation Procedure for AF

Commercial Plan	Description of Hybrid Ablation in Policy
Anthem BCBS	Maze procedure for drug-resistant atrial fibrillation
BCBS Alabama	Hybrid Maze for stand-alone atrial fibrillation
Highmark BCBS DE, PA, WV; BCBS ND	Hybrid catheter and surgical ablation for drug-resistant atrial fibrillation

Ablation procedure codes are listed in Table 2, along with the Centers for Medicare and Medicaid Services (CMS) 2021 national average payments as well as payment rates from high-cost and low-cost geographies. For strategic planning purposes only, the Current Procedural Terminology (CPT®)[4] surgical code may include CPT 33265 or CPT 33266; the code is left to the discretion of the surgeon when preauthorizing the patient for inpatient surgery.

Table 2. Representative CPT Codes for Professional Fees[5]

CPT	Description	CMS National Average Base Payment 2021	CMS Low-Cost Geography Payment UAB (Birmingham, AL)	CMS High-Cost Geography Payment Maimonides (Brooklyn, NY)	Total RVU	Work RVU
Cardiac Surgeon (1 surgical ablation code chosen)						
33265	Endoscopy, surgical; operative tissue ablation and reconstruction of atria, limited (e.g., modified Maze procedure), without cardiopulmonary bypass	$1,298	$1,214	$1,713	40.1	23.7
33266	Endoscopy, surgical; operative tissue ablation and reconstruction of atria, extensive (e.g., Maze procedure), without cardiopulmonary bypass	$1,758	$1,646	$2,322	54.2	33.0
Electrophysiologist						
93656	Comprehensive electrophysiologic evaluation including transseptal catheterizations, insertion and repositioning of multiple electrode catheters with induction or attempted induction of an arrhythmia including left or right atrial pacing/recording when necessary, right ventricular pacing/recording when necessary, and His bundle recording when necessary with intracardiac catheter ablation of atrial fibrillation by pulmonary vein isolation	$1,074	$1,004	$1,412	33.1	19.8

The patient's epicardial-endovascular procedure for cardiac tissue ablation involves two distinct professionals who are rendering two distinct procedures. Commercial payment rates, which may be higher than CMS rates, and are dependent on specific payor contracts. Furthermore, other ancillary CPT codes (mapping, touchups, etc.) are not included, but they may be performed at the discretion of the provider.

Commonly reported International Classification of Diseases procedure codes (ICD-10 PCS) are shared for educational purposes only (Table 3).

Table 3. Representative ICD-10 PCS Codes[6]

ICD-10 PCS	Procedure	Description
02574ZZ	Minimally invasive surgical ablation (epicardial)	Destruction of left atrium, percutaneous endoscopic approach
02583ZZ	Catheter ablation (endocardial)	Destruction of conduction mechanism, percutaneous approach

The hospital's technical component—for the primary surgical procedure and the presence of any active co-morbidities—is dependent upon details in the patient's medical record. The patient's surgical discharge will likely be grouped to either MS-DRG 228 or 229 (Table 4).

Table 4. CMS Hospital MS-DRG Payment and Weight[7]

MS-DRG	Description	CMS National Average Base Payment 2021	CMS Low-Cost Geography Payment UAB (Birmingham, AL)	CMS High-Cost Geography Payment Maimonides (Brooklyn, NY)	Weight	Average MS-DRG Length of Stay Days
228	Other cardiothoracic procedures with Major Complications/ Comorbidities (MCC)	$39,948	$42,698	$71,263	6.2	10.7
229	Other cardiothoracic procedures without MCC	$25,633	$27,397	$45,725	4.0	5.3

Anticipated Patient Outcome

The patient's hybrid procedure in the current case study was completed in the facility's hybrid operating room (OR). The total OR time for the entire procedure was 195 minutes. Hospital stay was 3.2 days, including 1 day in the step-down unit. The patient was discharged in normal sinus rhythm and prescribed an oral anti-coagulant.[8] After his post-surgical assessment by the cardiac surgeon, the patient resumed ongoing follow-up with his electrophysiologist.

Alternative Hybrid Ablation for AF Treatment Scenario

Occasionally, the cardiac surgeon and electrophysiologist will determine that it is in the patient's best interest to stage the procedure. The surgeon may determine that the heart needs time to remodel and edema needs time to subside before a catheter ablation can be scheduled with the electrophysiologist. As a result, the electrophysiologist would schedule the endovascular portion in the hospital's Cath Lab. The hospital's technical component for the primary procedure, CPT 93656, would be assigned to Ambulatory Payment Classification (APC) 5213: Level 3 EP Procedures, with Medicare's CY2021 National Average Payment of $21,464.

For additional information, please contact AtriCure's health policy helpline at 1 (888) 347-6403 or online at https://www.AtriCure.com/health-economics-and-reimbursement.

References

1. *Patient example is representative of typical presentation and not actual patient.*
2. *https://www.cdc.gov/nchs/icd/icd10cm.htm*
3. *Coding and reimbursement information is shared for informational and strategic planning purposes only.*
4. *CPT is a registered trademark of the American Medical Association (AMA).*
5. *American Medical Association CPT 2021 Professional Edition.*
6. *https://www.cdc.gov/nchs/icd/icd10cm.htm*
7. *FY21 Medicare inpatient rates based upon Final Rule release. Hospital rates will vary depending on geographical corrections and other adjustments.*
8. *Clinical data estimates taken from US FDA IDE trial; De Lurgio et al. Circ. AE 2020 Nov 13. doi: 10.1161/CIRCEP.120.009288 and Kress et al. JACC Clin Electrophysiol. 2017 3(4):341-349.*

Reference: *Nayak, H.M. et al. (2020). Indirect and Direct Evidence for 3-D Activation During Left Atrial Flutter: Anatomy of Epicardial Bridging. J Am Coll Cardiol EP, 6(14):1812-23.*
EPi-Sense® System Instructions For Use: PMA# P200002

EPi-Sense® Guided Coagulation System

U.S. Indications: *The EPi-Sense Guided Coagulation System is intended for the treatment of symptomatic long-standing persistent atrial fibrillation (continuous atrial fibrillation greater than 12 months duration) when augmented in a hybrid procedure with an endocardial catheter listed in the instructions for use, in patients (1) who are refractory or intolerant to at least one Class I and/or III antiarrhythmic drug (AAD); and (2) in whom the expected benefit from rhythm control outweighs the potential known risks associated with a hybrid procedure such as delayed post-procedure inflammatory pericardial effusions.* ***Contraindications*** *include patients with Barrett's Esophagitis, left atrial thrombus, a systemic infection, active endocarditis, or a localized infection at the surgical site at the time of surgery.* ***Adverse Events:*** *Reported adverse events associated with epicardial ablation procedure may include, but are not limited to, the following: pericardial effusion/cardiac tamponade, pericarditis, excessive bleeding, phrenic nerve injury, stroke/TIA/neurologic complication. Please review the Instructions for Use for a complete listing of contraindications, warnings, precautions and potential adverse events located at the following AtriCure web address: https://www.AtriCure.com/EPi-Sense-Coagulation-Device.* ***Warnings:*** *Physicians should consider post-operative anti-inflammatory medication to decrease the potential for post-operative pericarditis. and/or delayed post-procedure inflammatory pericardial effusions. Physicians should consider post-procedural imaging (i.e. 1-3 weeks post-procedure) for detection of post-procedure inflammatory pericardial effusions.* ***Precautions:*** *Precautionary measures should be taken prior to considering treatment of patients: (1) Deemed to be high risk and who may not tolerate a potential delayed post-procedure inflammatory pericardial effusion. (2) Who may not be compliant with needed follow-ups to identify potential safety risks. To ensure patients undergoing treatment with the EPi-Sense device are well informed, the benefits, potential risks and procedural outcomes associated with the EPi-Sense Hybrid Convergent procedure should be discussed with the patient. Physicians should document accordingly in the medical record. Qualified operators are physicians authorized by their institution to perform surgical sub-xyphoid pericardial access. The coagulation devices should be used by physicians trained in the techniques of minimally invasive endoscopic surgical procedures and in the specific approach to be used. Operators should undergo training on the use of EPi-Sense device before performing the procedure. Safety and effectiveness of concomitant left atrial appendage closure was not evaluated in the CONVERGE study. Follow-up should be conducted at approximately 30 days post-procedure to monitor for signs of delayed onset pericarditis or pericardial effusion.* ***Rx Only.***