

Inside the New Atrial Fibrillation Ablation Program at Inova Loudoun Hospital

Interview by Jodie Elrod

In this interview, we highlight the new atrial fibrillation (AF) ablation program at the Inova Heart and Vascular Institute (IHVI) – Inova Loudoun Hospital Schaufeld Family Heart Center in Leesburg, Virginia. We're joined by Chirag Sandesara, MD, Cardiac Electrophysiologist with Virginia Heart, David Reich, MHA, RCIS, Director of Cardiovascular Services and Cardiac and Pulmonary Rehabilitation at Inova Loudoun Hospital, and Brett Atwater, MD, Director of Electrophysiology and Director of Electrophysiology Research at IHVI.

Tell us about the creation of the new AF ablation program. Why was an AF ablation program established?

Chirag Sandesara, MD: AF is the most common arrhythmia we manage in clinical practice. Catheter ablation has become a first-line approach for treatment in the management of certain patients who are relatively young and without significant structural heart disease. We have been fortunate to have a very robust AF ablation program at the flagship IHVI, located on the IHVI – Inova Fairfax Medical Campus in Falls Church, Virginia. However, we met constraints in lab space due to a growing volume of procedures being performed there. We needed another, more local option for our patients to receive care for their AF symptoms. Thus, the idea for establishing a regional site distinct from our main hospital was conceived. IHVI's Schaufeld Family Heart Center in Leesburg, Virginia, already had an EP lab where we performed relatively low-risk catheter ablations for supraventricular tachycardias. More complex procedures

requiring left atrial mapping and ablation, as well as ventricular tachycardia ablation in patients with or without significant structural heart disease, were not being performed at Inova Loudoun Hospital since on-site cardiac surgical backup was not available.

David Reich, MHA, RCIS: We were fortunate to utilize the space that was already developed when IHVI's Schaufeld Family Heart Center was remodeled in 2018. The EP lab was part of an expansion of the catheterization and interventional radiology program. The EP lab is 850 square feet and has a single image intensifier, complete recording and programmed stimulation systems, and a mapping system that was previously used for ablation of supraventricular tachycardia.

How many AF ablations were previously being performed per week?

Brett Atwater, MD: All AF ablations were previously performed at the IHVI – Inova Fairfax Medical Campus in Falls Church. We perform an average of 16 AF ablations per week in the 4 EP labs at IHVI's Fairfax location.

When were first cases performed in the new space? How will the new program affect patient volume?

Reich: The first case was performed in July 2021. Since the inception of the AF ablation program at IHVI's Schaufeld Family Heart Center, we have performed 1-2 cases per week on average, with the plan to expand this further in the future. We suspect the growth and success of the program will directly correlate to increased patient volume in the future.

Tell us about the electrophysiologists and number of EP staff involved in the new program. How does an AF team approach improve care?

Reich: Currently, we have 5 EP physicians performing cases at Inova Loudoun Hospital: Drs. Jeff Lee, Chirag Sandesara, Vineet Kumar, Zack Hollis, and Brett Atwater. All of our EPs are trained in complex ablation for both atrial and ventricular arrhythmias. The EP lab is staffed with 3 specialists and an anesthesiologist/CRNA. Our primary EP lab nurses and techs have a combined 45 years of experience. A critical aspect in the development of the AF ablation program was to ensure we incorporated a team-based model of care, including nurses, techs, and our critical care colleagues. They were educated on the rationale for AF ablation and the risks and benefits to our patients in the community. The care of AF ablation patients in the perioperative period was essential to identifying any areas of concern. Ensuring groin access complications could be quickly identified and managed, along with other concerns such as chest pain, respiratory distress, hematoma, and hypotension, is critical to our patients' safety. We spent a considerable amount of time developing this program with our team to better understand workflow limitations and areas where we could improve. We have emphasized the need for constant feedback so we can continue to modify the program and make changes as necessary, and provide a platform that improves the safety of our patients.

What special considerations were needed for initiation of the program (eg, staff training, implementing new protocols/pathways, etc.)?

Reich: Dr. Atwater came to IHVI as the Director of Electrophysiology in December 2020 after working as the Director of the Electrophysiology Labs at the Duke University Medical Center. While at Duke, Dr. Atwater helped expand AF ablation from the main Duke University Medical Center to Duke Raleigh Hospital, and brought his vision for expanding AF ablation from the IHVI – Inova Fairfax Medical Campus to Inova Loudoun Hospital. To prepare, we had the EP lab and prep and recovery team members go to IHVI's Fairfax location for AF ablation training to be sure they were facile in all aspects of the case, including the transseptal technique. We were fortunate to utilize transseptal simulators so that staff could better understand the nuances of wire and sheath exchanges in the left atrium while assisting the EP.

Planning for the treatment of life-threatening procedure-related complications at Inova Loudoun Hospital, where no on-site cardiac surgery exists, was critically important. We carefully started to lay the groundwork for this plan via close collaboration with our partners in cardiac surgery, critical care, nursing, and ground and air emergency transport. Utilizing a system-based approach to patient care was critical to establish the foundation for the AF ablation program at Inova Loudoun Hospital. The



Figure 1. EP MDs (from left to right): Vineet Kumar, MD, FFRS; Chirag Sandesara, MD, FACC, FFRS; Jeff Lee, MD; Brett Atwater, MD.



Figure 2. Front row (left to right): Gabrielle Leger, PA, Electrophysiology; Zach Hollis, MD, Electrophysiology; Evangeline Nicosia, RCIS; Maricel Villanueva, RN; Sherron Gipson, RCIS. Second row: Chirag Sandesara, MD, Electrophysiology; Paula Johnson, RCIS; Doug Stevenson, RT(R)-CV; Karen Spencer, RCIS; Shondra Jones, RCIS, RCES, Clinical Manager. Third row: Tammy Oliver, RCIS; Dani Lepire, RCIS; Cecil Huang, MD, Anesthesiology. Fourth row: Stephanie Cushman, RN, RCIS; Bonnie Rollins, RN; David Reich, MHA, RCIS, Director.

first and most important task was to create a simple yet highly efficient method whereby we could transfer a patient to our main hospital for cardiac surgery if a serious complication would arise during AF ablation. A perforation in the left or right atrium during AF ablation would require immediate pericardiocentesis while we would communicate directly with our surgical partners over the phone. We would concurrently call air care or ground transport as well. If the decision is made to transfer to the IHVI – Inova Fairfax Medical Campus, the EP would have the chance to also accompany and manage the patient en route until the patient was brought directly to the operating room for definitive treatment. The final steps in preparation occurred just prior to our first case, when we had a mock emergency drill that included transferring a mock patient from the Inova Loudoun EP lab table to a waiting helicopter and flying them to IHVI's Fairfax location, then transferring them to a waiting operating room. Through process optimization, we reduced the transfer time from our Inova Loudoun EP lab to the IHVI – Inova Fairfax Medical Campus operating room to less than 30 minutes. This provided reassurance that emergent complications could be handled in a manner consistent with most other ablation programs.

What technology/equipment updates were made?

Sandesara: We upgraded our mapping system prior to the start of the AF ablation program. This has allowed for improved visualization and the ability to create more effective first-pass lesion sets around the pulmonary veins. Also, the lab purchased new intracardiac echo catheters for direct visualization of the atrial septum and pulmonary veins. These combined technologies allow us to perform our AF ablation cases with low or no fluoroscopy.

Tell us about optimal candidate selection and AF ablation strategies in your program.

Sandesara: We carefully select candidates for AF ablation at our Inova Loudoun site. To reduce the risk of complications requiring surgery, we created a checklist criteria system to ensure the safety of our patients as much as possible. For example, the ideal patient for AF ablation at Inova Loudoun Hospital has an ejection fraction (EF) >50%, no previous AF ablation (including prior surgical AF ablation), no prosthetic valve, no prior ablation complications, no history of sternotomy, no significant structural heart disease such as severe valve disease or class III or greater congestive heart failure, body mass index (BMI) <35, no severe pulmonary arterial hypertension, no prior atrial septal defect closure, and no known congenital anomaly.

How is patient education managed?

Sandesara: We see all patients in the outpatient setting and spend a considerable amount of time on education, so they are prepared with all the information needed prior to undergoing ablation. We review the rationale for the procedure, go over risks and benefits, and engage in shared decision-making regarding their AF ablation at Inova Loudoun Hospital. We also give our patients printed information on AF ablation if needed.

How was buy-in achieved from key stakeholders for the AF ablation program?

Reich: A considerable amount of time was spent meeting with hospital and service line administration, as well as other clinical stakeholders such as anesthesia, nursing, and our hospitalist group. It was apparent this program was needed when our internal data showed a lower frequency of ablation among patients receiving

care for AF at Inova Loudoun Hospital compared to our hospitals located closer to the main IHVI – Inova Fairfax Medical Campus. The growth and value of the program became clear, and we received support from our community members as well.

Can you briefly share a recent AF ablation case from the new program?

Sandesara: Our most recent case was a middle-aged gentleman who had obstructive sleep apnea with recurrent AF despite medication use. He developed AF likely due to sleep apnea, and given his relatively younger age, he wanted to avoid long-term antiarrhythmic medications. He started continuous positive airway pressure (CPAP), but continued to have symptomatic AF events. He had no other significant comorbidities. Thus, we discussed AF ablation as a reasonable next step in his management. We identified all four veins with pulmonary vein potentials. He had a successful catheter ablation with elimination of pulmonary vein potentials, and was very thankful to have it performed very close to home. We recently saw him in the office and he was doing very well — he was able to stop some of his medications related to AF.

What effect does a dedicated AF ablation program have on patient outcomes and complication rates?

Reich: The AF ablation program was created via a team approach to instill patient safety as the centerpiece of the program. Every aspect of the program was built with our patients in mind. We strongly felt that having a dedicated nursing team, who are most often seeing the patient postoperatively, was critical. We are fortunate to have outstanding nurses along with our EP lab specialists, who together provide comprehensive patient care before, during, and after the procedure.

What are your tips for creating a well-structured AF ablation program?

Reich: A commitment to being inclusive and bringing all stakeholders to the same table is critical. That means our nurses, EP lab team, EMTs, ECG techs, administration, and EPs share the same platform and had a unified voice when creating this program. Anyone with concerns, comments, or suggestions had equal weight in the planning process. Constant feedback to and from our team is also essential.

Is there anything else you'd like to add?

Atwater: Starting the AF ablation program at IHVI's Schaufeld Family Heart Center was the successful result of a collaborative process. Our primary goal is to bring the care that our patients need to their community, where they are more likely to use it. Patient safety and experience were our top priorities while making decisions about care processes. Our processes allowed us to create a culture of continuous quality improvement, which we hope will ensure long-term program success. ■

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