



UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

COMPLEX ABLATION

A Guide for Patients and Families



PLEASE BRING THIS BOOK WITH YOU TO THE HEART INSTITUTE

Patient Name _____

Please complete the following information:

Contact Person
(relative, friend) Name _____

Phone Number (Home) _____

Phone Number (Cell) _____

Family Doctor Name _____

Phone Number _____

Pharmacy Name _____

Phone Number _____

**Cardiac
Electrophysiologist** Name _____

Phone Number _____

Cardiologist
(If you have one) Name _____

Phone Number _____

Other
(Specify) Name _____

Phone Number _____

IMPORTANT

If you are waiting for your cardiac electrophysiology procedure and you have questions about arrangements or preparations, please contact the Wait List Management Office at 613-761-4436.

If you have already had your procedure and are experiencing any symptoms or concerns, please call your cardiac electrophysiologist.

If you need to speak with someone during off-hours, the Nursing Coordinator can be reached at any time at 613-761-4708.

In case of an emergency, call **911**.

Table of Contents

Patient Responsibility Checklist	1
The Heart's Electrical System	3
Heart Arrhythmias	4
Supraventricular Arrhythmias.....	4
Types of Supraventricular Arrhythmias.....	4
Atrial Fibrillation	4
Atrial Flutter.....	4
Supraventricular Tachycardia	4
Ventricular Arrhythmias.....	5
Conditions Treated with Complex Ablation	5
Preparing for Complex Ablation.....	6
Diagnostic Imaging Tests.....	6
Medication Changes	6
Pre-Admission Unit (PAU).....	7
On the Day of Your Procedure	8
On Arrival	8
During Your Procedure	8
For the Contact Person	9
After Your Procedure	10
Discharge & Follow-Up Care After Your Complex Ablation.....	10
Caring for Your Puncture Site	12
Bleeding	12
What to Expect at Home	12
Activity.....	13
Returning to Work	13
Driving	13
Follow-Up After Your Atrial Fibrillation (AF) Ablation	14
Initial Follow-Up Appointment	14
Event Monitor	14
My Medication List	16
Informative Websites	17

© 2015 University of Ottawa Heart Institute

This Patient Guide and its contents are the property of the University of Ottawa Heart Institute (UOHI). They may not be modified, sectioned, copied, reproduced or republished without prior explicit permission from UOHI. The content has been prepared for general information purposes only and is not intended to provide specific medical or professional advice. The authors of this Guide do not assume any liability or loss in connection with the information provided herein.

The Heart Institute logo and swirl are trademarks of the University of Ottawa Heart Institute. All other trademarks and copyrighted materials are the property of their respective owners.

For more information about customizing this guide for the particular needs of your institution, please contact the Department of Communications at 613-798-5555 x19058 or communications@ottawaheart.ca.

Patient Responsibility Checklist

The following checklist will help you prepare for your admission.

Before Your Admission:

- Fill out the medication list included in this booklet. Bring this with you, plus all of your medications in their original pharmacy containers.

****Important Note****

Before your complex ablation procedure, your doctor may change the dose of your anticoagulation medication or may start you on a new or different anticoagulation medication.

Some of the heart medications you currently take may also be changed or discontinued.

Before switching any of your medications, make sure you fully understand which medications must be changed and on what specific dates any changes need to be made.

The Evening Before Your Booked Procedure:

- Between 4:00 and 8:00 p.m., expect a phone call from the Day Unit, telling you what time to come to the Heart Institute.
- If you are not contacted by 9:00 p.m., please call the Day Unit at 613-761-4770.

On the Day of Your Admission:

- Take your usual medications with a small amount of water—unless you have been informed otherwise.
- Do not eat or drink anything from midnight onward the night before your procedure, unless you have been told otherwise.**
- Remove all nail polish; do not wear any makeup.

Make Sure You Bring the Following Items with You to the Heart Institute:

- Your health card
- All your medications—in their original pharmacy containers
 - Make sure you tell us about any allergies you have
- The name and phone number of your emergency contact person
- This book. It will be used after your procedure for reviewing discharge information.

Leave These Items at Home:

- All of your valuables (including money, jewelry, tablets, laptop computers). The Heart Institute is not responsible for any loss or damage to your personal belongings.

Plan for Your Discharge:

- Make transportation arrangements. You cannot drive yourself home.
- For your first night home from the hospital, arrange for someone to stay overnight with you.

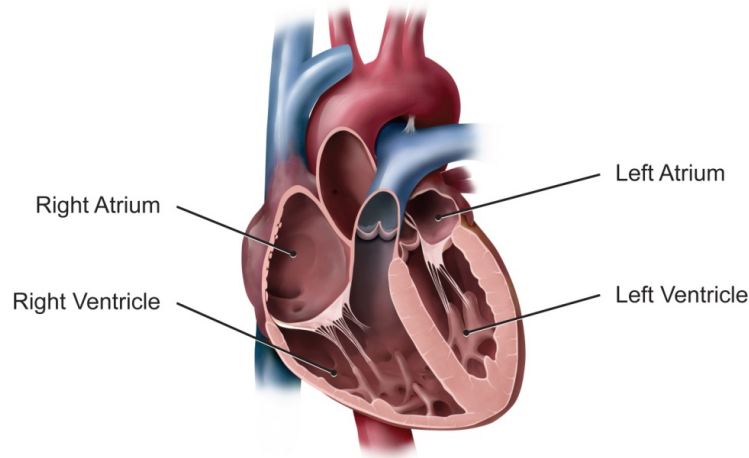
If you are unable to keep the scheduled date for your Ablation procedure, please notify the Wait List Management Office as soon as possible at 613-761-4436.

Sometimes there are sudden changes in scheduling that may result in your procedure being delayed. If this happens, we will let you know as soon as possible.

Electrophysiologist Contact Numbers			
Dr. David Birnie	613-761-4705	Dr. Martin Green	613-761-4820
Dr. Darryl Davis	613-761-3654	Dr. Girish Nair	613-761-4914
Dr. Robert Lemery	613-761-4978	Dr. Calum Redpath	613-761-3654
Dr. Pablo Nery	613-761-4914	Dr. Mouhannad Sadek	613-737-8135

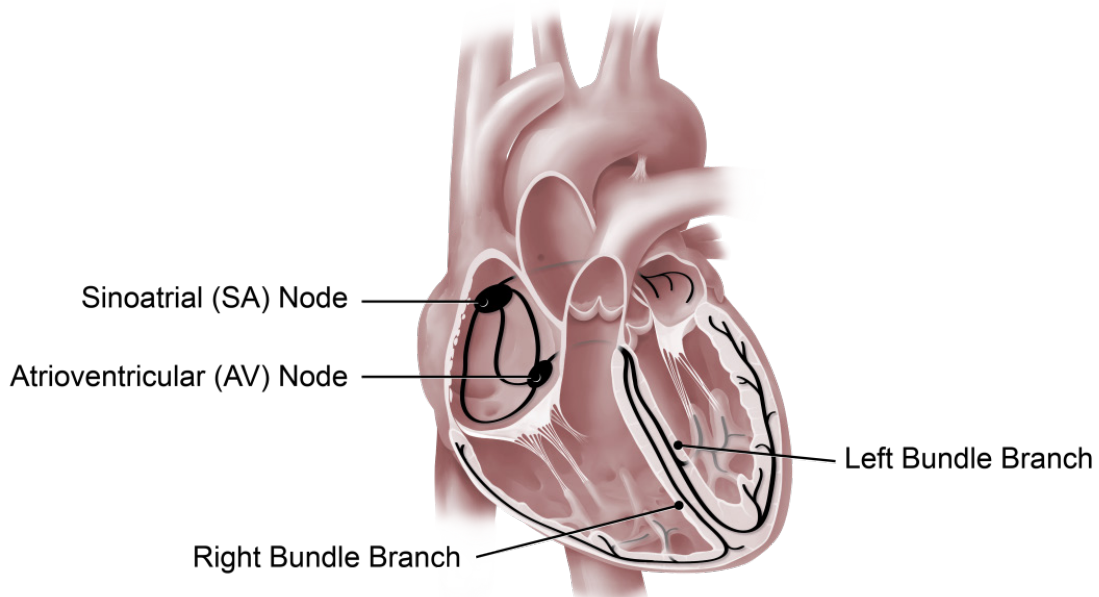
The Heart's Electrical System

Your heart is a muscle that works like a pump. The main job of your heart is to pump blood throughout your body. The heart is divided into a right and left side. Each side has an upper chamber (atrium), which collects blood returning to the heart, and a muscular lower chamber (ventricle), which pumps the blood away from the heart.



The pumping of your heart is regulated by an electrical current or impulse, much like a spark plug in a car. The electrical impulse starts in the sinoatrial (SA) node, often called the body's natural pacemaker, and then spreads throughout both atria, like ripples in a pond. This causes both atria to contract, which squeezes blood into the ventricles.

The impulse then travels down to the atrioventricular (AV) node, which is like a wire that connects it to the ventricles. The AV node splits into two branches, allowing the electrical signal to spread evenly to both ventricles at the same time. This is what causes your heart to beat effectively.



Heart Arrhythmias

Any disruption in the usual electrical pathways in your heart can cause an abnormality in your heart rhythm. This is called an arrhythmia.

Supraventricular Arrhythmias

Abnormal heart rhythms that begin in the upper chambers of the heart are usually rapid. People who experience supraventricular arrhythmias may feel dizzy or light-headed, or have chest tightness or palpitations. Some people do not have any symptoms at all.

Supraventricular arrhythmias can last for only a few seconds or for prolonged periods of time. In general, they are usually not life threatening. However, they can disrupt the regular flow of blood throughout your body and cause you to feel unwell or have other, more serious, symptoms.

Types of Supraventricular Arrhythmias

Atrial Fibrillation

Atrial fibrillation is an irregular heart rhythm that occurs when the SA node does not generate normal electrical impulses. Instead, the atria start to trigger rapid and disorganized electrical signals, causing the atria to quiver rather than contract normally. These abnormal impulses randomly pass through to the ventricles, resulting in an irregular and inefficient heartbeat.

Atrial Flutter

Atrial flutter is similar to atrial fibrillation but less common. In atrial flutter, the electrical impulse that starts in your atria gets disrupted, interrupting its normal flow to the AV node. This creates a circular feedback loop and sets off a series of rapid-fire impulses, causing your heart to beat quite fast for periods of time. Patients with atrial flutter often also have atrial fibrillation.

Supraventricular Tachycardia

Tachycardia is a rapid heart rhythm that occurs when there is a disruption in the normal electrical pathways. There are various types of supraventricular tachycardias.

- **Atrial Tachycardia**

With atrial tachycardia, the electrical impulse starts somewhere in the atria other than the SA node. This causes an abnormally rapid heart rate.

- **AV Node Re-entrant Tachycardia**
AV node re-entrant tachycardia occurs when the electrical impulse gets caught up in extra fibers around the AV node and starts to rapidly circle the AV node. This causes a rapid heart rate.
- **AV Re-entrant Tachycardia (AVRT)/Wolff-Parkinson-White (WPW) Syndrome**
People with AVRT/WPW syndrome were born with an extra electrical pathway in their heart that connects the atria and the ventricles, but completely bypasses the normal AV node pathway. When the electrical impulse goes through the extra pathway, it can cause periods of very rapid heartbeats.

Ventricular Arrhythmias

Ventricular arrhythmias occur in the lower part of the heart and can be a bit more dangerous. During ventricular tachycardia, the heart beats so fast that it cannot properly pump blood to the rest of the body. This can cause extreme dizziness, fainting or sometimes a complete collapse.

Ablation for Complex Heart Arrhythmias

A computer mapping system is used to enable your doctor to accurately pinpoint the areas in your heart that are generating abnormal electrical signals and treat them directly without harming the normal areas of the heart. This procedure takes place in the specialized Electrophysiology (EP) Lab at the Heart Institute.

Conditions Treated with Complex Ablation

- Atrial fibrillation (AF ablation)
- Atypical atrial flutter
- Atrial tachycardia
- Ventricular tachycardia

Preparing for Complex Ablation

Diagnostic Imaging Tests

To help plan for your complex ablation procedure, you will be scheduled for specific imaging tests.

Below is a list of the diagnostic imaging tests your doctor could order.

Transesophageal echocardiogram (TEE): A TEE is a type of echocardiogram that is used to check for the presence of blood clots inside your heart. A flexible ultrasound probe is inserted down the back of your throat and into your esophagus. Its tip is positioned behind your heart, where it uses sound waves to create moving pictures of specific areas inside the chambers of your heart.

You will be scheduled for a TEE one to seven days before your procedure. When you are scheduled, you will receive detailed instructions and information about the test.

Magnetic resonance imaging (MRI): An MRI is an imaging test that uses a large magnet, radio waves and a sophisticated computer system to generate highly detailed, cross-sectional pictures of your heart. The images from this test give your doctor a very clear picture of your heart muscle and its chambers.

Computerized tomography (CT) scan: A CT scan uses a type of X-ray device that rotates around your body, taking multiple images. These are then combined with specialized computer software to provide three-dimensional pictures of your heart and blood vessels.

The images from your CT scan will be used, along with the specialized mapping software, in the EP Lab to construct a precise and accurate picture of the electrical pathways in your heart.

Medication Changes

If you are having complex ablation for atrial fibrillation (AF ablation), or a type of atypical atrial flutter, you will be started on a medication called pantoprazole (Tecta[®], Pantoloc[®]) five days before your procedure and 30 days after. This drug is commonly used to treat acid reflux. The left atrium of your heart sits very close to your esophagus, the “swallowing tube” that carries food and liquids from your mouth to your stomach. During the ablation

Risks of Complex Ablation

Complex ablation procedures are considered to be very safe, but with any invasive procedure, there can be complications.

Rare complications include:

- Excessive bleeding where the catheters were put in
- Bruising or swelling

Very rare complications:

- The heart or lung can be punctured
- Disruption of the heart’s electrical system
- Blood clot inside the vein or lung
- Heart attack or stroke
- Fistula (opening) between the esophagus and the heart
- Death

During the procedure and throughout the recovery period, we will monitor you closely.

procedure, heat is generated that could travel to the esophagus and cause some injury. The purpose of the pantoprazole is to protect your esophagus and reduce the risk of injury or damage.

Before your ablation procedure, your doctor may change the dose of your anticoagulation medication, or start you on a new or different anticoagulation drug.

Some of the heart medications you currently take may also be changed or discontinued. Before changing any of your drugs, make sure you fully understand which ones must be changed and on what specific dates.

Pre-Admission Unit (PAU)

Most patients undergoing complex ablations will receive general anesthesia and be asleep for the entire procedure. As part of the preparation, you will be scheduled for an appointment with the Pre-Admission Unit. The purpose of this visit is to meet with the anesthetist and nursing staff to review the procedure and what to expect during your admission, and to have final blood or other tests completed, if necessary.

You may find it helpful to bring a family member or friend to the PAU appointment who can take notes or ask questions that you might not have thought about.

On the Day of Your Procedure

On Arrival

If you have your procedure as an outpatient, you will arrive at the Day Unit either from home or by ambulance from a referring hospital.

The Day Unit is located on the first floor. Take the elevators from the main lobby at the Heart Institute up to the first floor. Once there, follow the path of green hearts to the Day Unit.

You will be in the Day Unit until you are ready to go to the EP Lab. Before you go for the procedure, the doctor will come and meet with you in the Day Unit. This will be a good time to ask any final questions.

Only one relative or friend will be allowed to sit with you while you are waiting because space is limited. During your procedure, your relative or friend can wait in the lounge area. When your procedure is completed, the staff will notify your designated contact person. Visiting hours in the Day Unit are from 9:00 a.m. to 9:00 p.m.

Once you are in the Day Unit, the final preparations for your procedure will start. You will change into a hospital gown. Your groin area will be clipped of hair and cleaned. You will have an intravenous (IV) tube placed in your arm.

Make sure the nurse knows the name, phone number and location of your designated contact person.

During Your Procedure

Your procedure will take place in the EP Lab at the Heart Institute. You will be tended to by a team of doctors, nurses and lab technologists. All staff will be wearing gowns and special lead aprons. In most cases, you will receive general anesthetic, which will cause you to sleep throughout the entire procedure.

After you are asleep, you will be hooked up to a variety of monitors and equipment. You may have a tube inserted to drain the urine from your bladder.



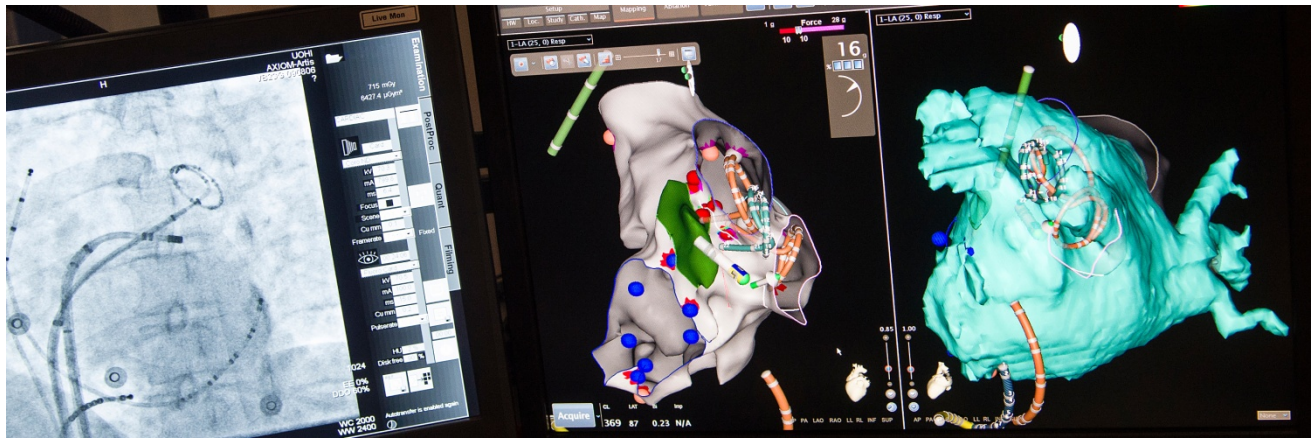
Once all the monitors are in place, the doctor will insert anywhere from three to five soft catheters through the large blood vessels in your groin or, possibly, your neck. These

catheters will be guided to the inner chambers of your heart. A small amount of X-ray imaging will be used to help with the proper placement of the catheters.

Each catheter has an electrode at its tip that allows the electrophysiologist to map out the electrical activity in your heart. Once the catheters are properly positioned, the areas inside your heart that are generating abnormal signals will be located.

Each spot receives one or more applications of radio-frequency electrical current to burn out the tiny abnormal area. There are usually multiple areas of abnormal activity that need to be carefully identified and targeted, which is why it is often a long procedure.

Once the ablation is completed, there is further observation and testing to ensure that the arrhythmia is no longer present. Sometimes the ablation needs to be repeated. When the team is satisfied with the results, the catheters are removed. Once you are ready, you will be taken back to the Day Unit to recover.



Computer generated images of electrical activity in the heart.

For the Contact Person

A complex ablation procedure may take up to several hours or all day. It is not easy to predict how long you will be in the EP Lab. Instead of having your family member or friend sitting in the lounge for several hours, it may be easier to designate a contact person who can be called once your procedure is done.

After Your Procedure

After your procedure, you will be taken back to the unit where you will remain overnight. You will be on bed rest for the next four to six hours. You will need to lie on your back with your head on a pillow and your affected leg straight. You will be reminded to do these things to reduce the risk of bleeding at the puncture site. After two hours, you will be permitted to turn on your side with help from the nurse. If you are having any discomfort in your back or elsewhere, let the nurse know. If you are feeling nauseated or that you might throw up, let the nurse know. If you feel chilled, the nurse will provide you with warmed blankets.

You might be wearing an oxygen mask when you wake up. This will be removed once you are fully awake and breathing well. Also, there might be a tube in your bladder to drain the urine. Once you are off bed rest and able to sit up, the tube will be removed. You will have an IV line; this will remain in place until the next morning.

You may feel some numbness or tingling in your affected leg. This is normal and should disappear by the time you are ready to be discharged.

A certain amount of bruising, discolouration, stiffness or soreness in your affected limb is expected. A small bruise or lump is normal and will go away on its own. You are more likely to experience bruising if you were on a blood thinner before your procedure. However, if you notice any swelling or bleeding at the puncture site, it is important that you call the nurse.

Once you are awake, you will be able to have a light snack and something to drink. It is important to drink fluids as soon as you are able. After a long procedure and a long time being on bed rest, you may feel dizzy or faint when you stand up and start walking around. Drinking fluids and having a small snack will reduce the risk of this happening.

Throughout the night, the nurse will continue to monitor your condition and assist you as needed. The next morning, after some follow-up testing, you will probably be discharged.

Discharge & Follow-Up Care After Your Complex Ablation

You must not drive yourself home. Make sure you arrange to be driven home by a relative or friend. If this is not possible, taking a taxi may be OK if approved by your doctor.

Before you are discharged, your doctor and nurse will go over the procedure and next steps with you. If you had AF ablation, you will be given a small card (pictured below) and instructed to show it to any doctors you see in the first few months following your procedure.

The nurse will tell you how to take care of your puncture site and discuss any changes in your medications. This will also be a good time to talk about returning to work and when you can drive again.

Before you leave, you will need your IV line removed and you may require a prescription to take to your pharmacist.

Discharge Checklist

Before you leave, make sure you have received information about:

- Medication changes
- Symptoms to report
- Activity guidelines
- Driving restrictions
- Returning to work

Wallet Card

Expect to receive a card to carry with you for the next couple of months (example below).

Be sure the correct contact information is written in.

If you run into any problems and have to see a doctor or other health care practitioner, make sure you present this card.

PATIENT SIDE



UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

Ablation for Atrial Fibrillation

Date of procedure: _____

What to expect after your procedure:

Mild chest pain (usually worse when lying down or breathing in) is normal following your procedure and will subside within a couple of weeks. However, if you develop a **fever with a temperature higher than 38°C, severe chest pain, weakness or numbness of a limb, difficulty speaking, difficult and/or painful swallowing, vomiting or passing blood**, immediately contact Dr. _____ at _____. If the office is closed, immediately go to your local ER for assessment (present this card).

DOCTOR SIDE

Patient Name: _____

This patient had ablation for atrial fibrillation by Dr. _____ at the Ottawa Heart Institute on _____.

A rare but serious complication of this procedure is the development of an atrial esophageal fistula, which can occur quite insidiously between two and six weeks post-procedure. Clinical features may include any or all of the following: **fever (T > 38°C), stroke symptoms, embolic events, decreased level of consciousness, chest pain, upper abdominal pain, difficult and/or painful swallowing, vomiting or passing blood.**

If you are concerned about this patient, please immediately contact _____ at _____ or speak with the EP Team on call at 613-761-4708.

Under no circumstances should the patient's esophagus be instrumented (no upper GI endoscopy, TEE, etc.). The test of choice for diagnosing this problem is a CT chest with IV and PO gastrograffin done in an experienced centre.

What to Expect at Home

Caring for Your Puncture Site

Keep the area around the puncture site dry for 48 hours after your procedure, and wear loose-fitting clothing for a few days.

Avoid taking a shower or any activity that might get the puncture site wet. If the bandage gets wet, replace it with a fresh, dry one.

The bandage can be completely removed 72 hours (three days) after your procedure.

Bleeding

If there is a small amount of bleeding, lie down and apply pressure for several minutes to the area where the bleeding is coming from.

If the bleeding stops, remain quiet and keep the leg straight and still for two hours. If you are not sure about what you should do, call the Heart Institute Nursing Coordinator at 613-761-4708.

If there is a large amount of bleeding, or if the bleeding does not stop, call **911** immediately. Do not drive yourself to the hospital; do not have a family member drive you to the hospital. Lie down and continue to apply pressure to the puncture site until the ambulance arrives.

Mild pain around the puncture site will gradually go away after a few days. If your puncture site becomes more painful or starts to swell or become warm to the touch, call your doctor. If the doctor's office is closed, call the Heart Institute Nursing Coordinator at 613-761-4708.

What to Watch for at Home:

Call the office of the doctor who did your procedure **right away** if you:

- Develop a fever or if your temperature goes higher than 38°C (100.4°F)
- The puncture site starts to drain pus

Call **911** if you have:

- Sudden, severe chest pain
- Weakness or numbness in any of your arms or legs
- Difficulty speaking and/or difficult or painful swallowing
- Vomiting, coughing or passing of blood
- A sudden increase in swelling or bruising around the puncture site
- Any sudden shortness of breath
- Strong feeling of cold or change of colour in your hand or foot
- Bleeding that does not slow down even after you press firmly on the site for several minutes

If you have to go to the emergency department, it is very important that you tell the emergency doctor or nurse that you recently had an ablation procedure. If you were given a wallet card, make sure they see it.

The full success of your procedure may not be seen for days, weeks or even months.

In the first few weeks after your procedure, you may have episodes of mild chest pain that worsen when you lie down or breathe in. These episodes will subside within a couple of weeks.

It is also common to continue to have episodes of arrhythmia for a few weeks, particularly after AF ablation. In some cases, the arrhythmia may, in fact, get a bit worse before it gets better.

This does not mean the treatment has failed. It takes the heart two to three months to fully heal from this procedure. It is only then that the full success will be known.

During this time, if you have an episode of atrial fibrillation that causes severe symptoms, call 911 and let your electrophysiologist know.

Activity

If you have any questions about specific activities, make sure you ask your doctor.

If the puncture site is in your groin, try to limit the amount of stair climbing for a couple of days after your procedure—this will help with healing.

For 48 hours after the procedure, avoid lifting anything that weighs more than 10 pounds. If you have to sneeze or cough, try to apply pressure to the puncture site at the same time—this will reduce the risk of bleeding. The easiest way to apply pressure is to make a fist and place it firmly over the area.

If there has been no bleeding or other worrisome signs at the puncture site, you can return to your usual activities after a week. If you are not sure, contact the office of the doctor who performed your procedure.

Returning to Work

Before discharge, talk to your doctor about returning to work. If you have a job that involves mostly sitting, you will probably be able to go back to work within a few days. If your work is more active or involves heavy lifting, you may have to stay home a bit longer.

Driving

Do not drive or operate a motorized vehicle for at least two days following your procedure. Before discharge, be sure to talk to your doctor about when you can start driving again.

Follow-Up After Your Atrial Fibrillation (AF) Ablation

Initial Follow-Up Appointment

Expect to be contacted by your electrophysiologist's office to schedule a follow-up appointment. If you have not been contacted within a week, call the office.

You will be seen by your electrophysiologist at regular intervals. During these appointments, your doctor will check on your symptoms, ask you about any changes in your condition and review the results from the event monitor.

Event Monitor

An event monitor is a portable device you carry with you in a pouch or on a shoulder strap. After your ablation procedure, you will wear this device for two-week periods at three, six and 12 months. You press the record button whenever you experience anything you think is abnormal, such as rapid heartbeats, dizziness or chest pain. The monitor also detects and records episodes automatically.

The results from the event monitor will help both you and your doctor have a better understanding of the success of your procedure.

For your follow-up appointment, make sure you bring:

- Your medication list and your medications in their original packaging
- A list of any questions or problems you want to discuss

What Is a Successful AF Ablation?

AF ablation is not a cure for atrial fibrillation. The main purpose is to significantly reduce the number of episodes of atrial fibrillation and the severity of the symptoms.

For some people, there will be no episodes of atrial fibrillation for many years, but it may come back.

Some patients may be able to stop taking some of the anti-arrhythmia medications.

Important Note: Even if your AF ablation procedure is successful, you will likely still need to take anticoagulant medications to reduce the risk of having a stroke.

AF ablation is not always successful the first time.

The reasons for this are not fully understood. The current thinking is that:

- The ablated areas may recover and start generating abnormal signals again.
- Some of the areas generating the abnormal impulses remain hidden during the procedure.
- New abnormal areas may develop after ablation.

Depending on the type of atrial fibrillation, the possibility of success after the first procedure is shown here:

Type of AF	Success Rates After the First Procedure
Paroxysmal AF	60 to 80%
Persistent AF	40 to 60%

If your first ablation procedure is not successful, your electrophysiologist will usually recommend a second ablation. Occasionally, a third ablation may need to be considered.

If AF ablation is not successful after three procedures, then your electrophysiologist will usually discuss different options with you.

Notes
