

Catheter Ablation for Atrial Fibrillation

Pulsed Field ablation (PFA) or radiofrequency (RF) ablation is a nonsurgical procedure. The physician uses an ablation catheter to find abnormal pathways in the heart that cause atrial fibrillation. They use high-frequency electrical energy to destroy the pathways.

If you have any questions or concerns, talk with your physician or nurse.

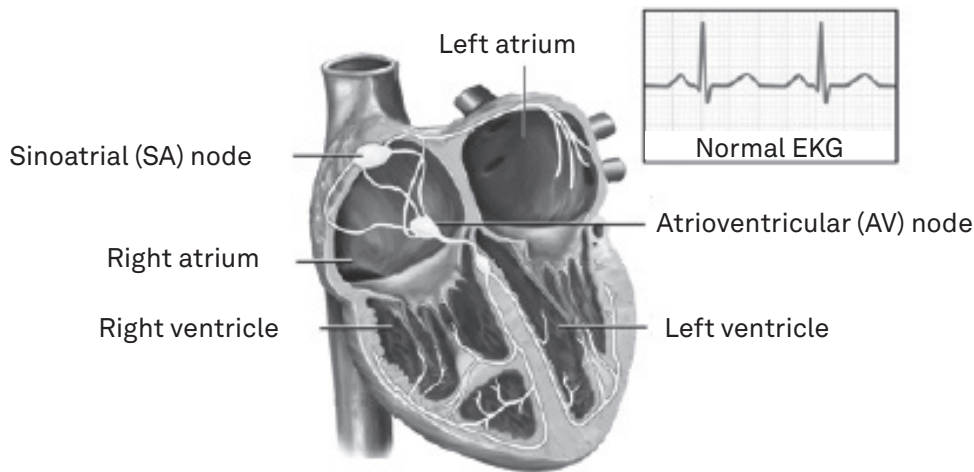
This handout will help you understand:

- › Conduction system of the heart
- › Atrial fibrillation
- › Radiofrequency ablation
- › What to expect before, during and after the procedure

The conduction system

With each heartbeat, the heart pumps oxygen-rich blood through the body. It needs a “spark plug” or electrical impulse to start a heartbeat. The heart gets this electrical signal from the sinus node in the upper chamber or right atrium (Figure 1). This signal or spark starts the electrical activity along its path or circuit. The signal then moves through the upper chambers (atria) along a path to the lower chambers or ventricles. This electrical circuit makes the heart contract and pump blood throughout the body. “Normal sinus rhythm” is when the circuit follows this normal path.

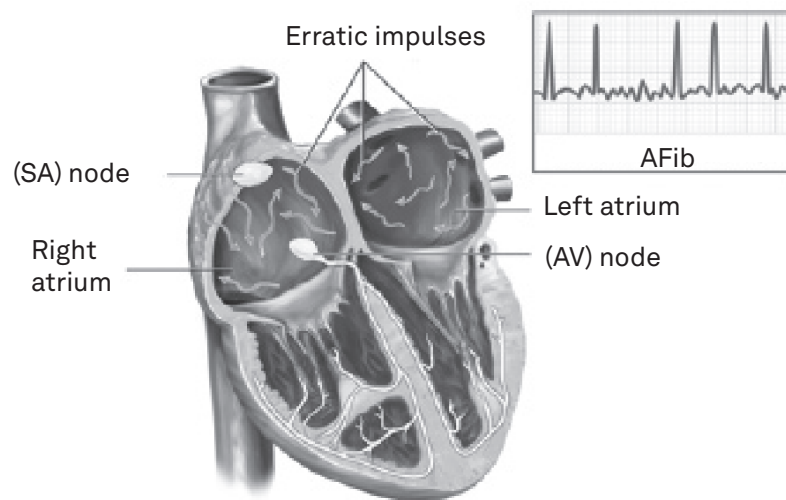
Figure 1. Heart conduction system



Atrial fibrillation

In atrial fibrillation (AFib), the sinoatrial (SA) node is no longer the pacemaker for the heart. Instead, quick extra impulses in the left atrium make the atria quiver (Figure 2). This also causes the ventricles to contract in an irregular way. This affects the way the heart pumps blood to the body.

Figure 2. AFib



When the body does not get the blood it needs, the heart works harder. Over time, a fast heart rate can weaken the heart's ventricles. This can cause more health problems. Blood clots can form in the heart and can lead to stroke.

Symptoms of AFib

Sometimes there are no symptoms of AFib. Other times symptoms may come and go. Common signs of AFib include:

- › Palpitations (feeling that the heart is fluttering)
- › Tiring easily with activity
- › Swelling in the ankles and feet
- › Anxiety
- › Shortness of breath
- › Feeling dizzy or faint

PFA or RF catheter ablation

The physician may perform a PFA or RF ablation if other treatments for AFib did not work. It is a non-surgical procedure. It takes place in the Electrophysiology Laboratory (EP Lab). The procedure is about 2 to 4 hours followed by a possible overnight hospital stay in the Cardiac Recovery Observation Unit.


In this procedure, the physician inserts several small tubes called catheters through a vein or artery and into the heart. The physician uses special equipment to watch the catheters and find the abnormal pathway. Once found, they destroy the pathways with PFA or RF energy. This burning, or ablating, prevents the pathway from conducting electricity that causes the fast heart rate.

Before the procedure

Before the catheter ablation, you may need several tests. These tests give basic information about your heart function. Your nurse can tell you more about these if you need them. Some of these tests may include:

- › Blood tests
- › Electrocardiogram (ECG)
- › Transesophageal echocardiogram (TEE)
- › 24-hour Holter monitor
- › Magnetic resonance imaging (MRI)

Your nurse can tell you more about these tests.



Your physician will discuss the benefit and risks of the procedure in detail. Risks include:

- › Bleeding
- › Blood clots or stroke
- › Damage to the blood vessels or heart

Your physician will decide if you should stop taking any of your medications and will tell you before your procedure.

The night before the procedure

Do not eat or drink anything after midnight. You may take medications ordered by your physician with small sips of water.

Day of the procedure

On the day of the procedure, you will come to the EP Lab on the 8th floor of Galter Pavilion at 201 East Huron Street. You can park in the garage at 222 East Huron Street, across from Feinberg and Galter pavilions. For a discounted rate, bring your parking ticket with you. You can validate your ticket at the Customer Service Desks on the 1st and 2nd floor of Feinberg and Galter pavilions.

The staff will take you to the Cardiac Recovery Observation Unit to check in. Your family and friends may wait in the 8th floor visitors' waiting room. We will let them know when you return to your room.

We will ask you to empty your bladder right before the test. You will change into a hospital gown and remove your underwear and pajama bottoms. You may wear your glasses, dentures and hearing aids, if you have them, during the procedure. Please do not bring any valuables with you to the lab. Either leave valuables at home or with a trusted family member or friend.

A physician from the EP Department will explain the catheter ablation and its benefits and risks. After the physician has answered your questions, they will ask you to sign a written consent form. The physician will also talk to you about the method they will use to relax you and control discomfort during the ablation. For most patients, they will use IV (into the vein) medication. In some cases, they will use general anesthesia and you will be completely asleep for the procedure.

During the procedure

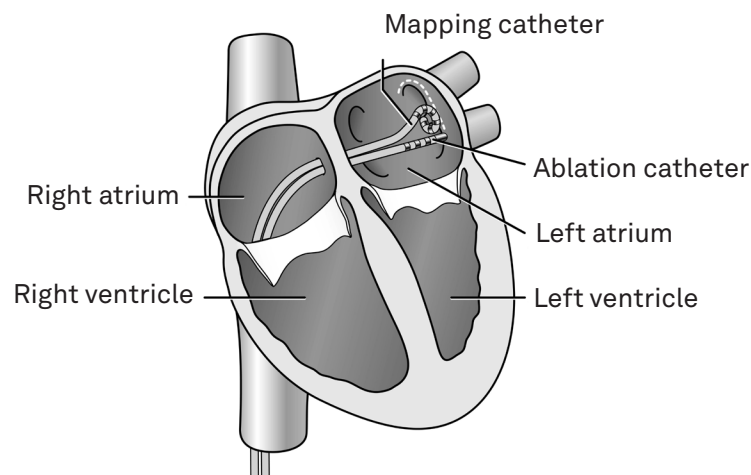
The ablation room has many heart monitors and machines. A specially trained team of physicians and nurses will be with you during the entire procedure. The EP nurses will connect you to several heart monitors. They will put an IV line in your arm if you do not already have one. The care team will use the IV to give you any medication you need during the procedure. They will also use it to give you medication to keep you relaxed and comfortable during the procedure.

The staff will monitor you during the procedure. If you are feeling any pain, please tell the staff and they can give you more medication to make you comfortable.

The physician will insert long thin tubes with wires (called mapping catheters) into a vein in the groin. They will pass them to the left atrium of heart (Figure 3).

The mapping catheters help the physician find the exact spot of the abnormal electrical impulses. Once the physician finds the right spot, they will place the ablation catheter very close to the abnormal tissue. High-frequency electrical or pulsed field energy will go through the catheter to destroy (ablate) this tissue and the abnormal pathway. The physician will use ablation energy in a few areas along the pathway to destroy the AFib circuit. The ablated areas will link together to break the AFib electrical circuit. You may feel a slight burning sensation in your chest when the physician uses the RF energy.

Figure 3. Catheters in the heart chambers



After the procedure

When the procedure is over, the physician will remove the catheters and tubes. They will hold pressure at the site to prevent bleeding.

After the procedure, the care team will take you back to your room. They will check your heart rhythm, blood pressure and pulse often. You will stay in bed for 4 to 6 hours. It is important to keep your leg straight and not move it. This will prevent bleeding. You will be able to eat regular meals and raise the head of the bed 30 degrees. Tell your nurse right away if you have these symptoms:

- › Numbness or tingling in your leg
- › Bleeding from the groin site
- › Groin pain or pain at the catheter insertion site

As the numbing medication wears off, you may feel minor discomfort at the tube sites. If this happens, tell the nurse. They can give you pain medication. When you can get up, your nurse will help you out of bed. They will help you walk in the hallway.

To prevent blood clots, you may begin taking anticoagulant (blood thinner) medications after the procedure. These may include 1 or 2 of these medications:

- › Apixaban (Eliquis®)
- › Dabigatran (Pradaxa®)
- › Dalteparin (Fragmin®)
- › Enoxaparin sodium (Lovenox®)
- › Rivaroxaban (Xarelto®)
- › Warfarin (Coumadin®)

At home

After your procedure, these instructions will help your recovery.

Diet

You may resume your regular diet at discharge. Do not drink alcoholic beverages for 24 hours.

Activity

It can take up to 14 days for the artery to heal completely. During this time, bleeding or swelling can happen if you strain your abdominal or groin muscles.

- › On the day of discharge, limit your activities and get plenty of rest.
- › Do not drive for 24 hours.
- › You may go back to your usual daily activities the day after discharge. This includes normal social activities.
- › Do not do physical exercise or heavy lifting (more than 10 pounds) for 1 week. Talk with your physician or the EP Lab physician before you do heavy physical activity or your regular exercise program.
- › Limit muscle strain with sexual activity

Wound healing

The healing puncture site should stay soft and dry. You may see a small bruise or tiny bump. This is normal.

Call your physician or the EP Lab physician if you have any of these symptoms:

- › Bruising that spreads to your thigh, over your buttock and/or groin
- › Pain at the groin site that is getting worse
- › A temperature more than 101.4 degrees F for more than 1 day
- › Drainage from the site
- › Redness or red streaks on your skin around the wound
- › Numbness or tingling in your foot, thigh or leg
- › Swelling of your ankle and/or foot
- › Color change and/or coolness of your leg or foot
- › Calf tenderness or pain

When to call the physician

Please call your physician **right away** if you have:

- › Chest discomfort or pain that spreads to your neck, jaw or arm
- › Severe nausea that does not go away, vomiting or heavy sweating
- › Shortness of breath

- › An irregular heartbeat
- › Lightheadedness or dizziness that makes you lie down
- › Fainting

If you cannot reach your physician, call 911 or go to the nearest emergency department.

Bleeding

If you see a small amount of bleeding or oozing from the puncture site, do this:

1. Lie flat right away.
2. Put firm pressure just above the puncture site for 15 minutes. You may use a clean cloth or tissue to apply pressure. If possible, have another person apply pressure.
3. After 15 minutes, remove pressure. The wound should be dry and flat without bleeding. Cover the wound with a bandage.
4. Call your physician right away.

If the bleeding does not stop, go to the nearest emergency department or call 911.

Arterial bleeding

Although rare, arterial bleeding is an emergency and needs medical attention right away. The following signs could mean that the puncture in the artery has reopened and that there is bleeding.

- › Quickly increasing swelling of the area around the wound which may be pulsating
- › Continuous blood streaming from the wound
- › A jet of blood pumping from the puncture wound

If you notice these symptoms, lie flat right away, apply hard pressure above the puncture site and call 911.

Contact information

If you have questions or concerns, call the EP care team:

- › During the week, call **312.695.4965 (TTY: 711)** during business hours, 8 am to 4 pm, Monday to Friday.
- › On nights and weekends, call 312.695.4965 and ask the operator to page the EP Lab fellow on-call.
- › You may also call Northwestern Memorial Hospital at 312.926.6999 and ask the operator to page the EP Lab fellow on-call.

Follow-up care

It is important to keep all your follow-up appointments. You will need to make an appointment for a visit with the EP physician or advanced practice provider for 2 to 3 months after the procedure.

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Developed by: Northwestern Memorial Hospital Electrophysiology Nursing Staff with Interventional Radiology

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900938 (8/25) Catheter Ablation for Atrial Fibrillation