

Cardiac Surgery: Atrial Fibrillation Surgery

Your physician may have discussed the need for surgery to treat your atrial fibrillation (AF). This brochure will explain what AF is, and what to expect before, during and after surgery. To better understand AF surgery, it is helpful to know how the heart works.

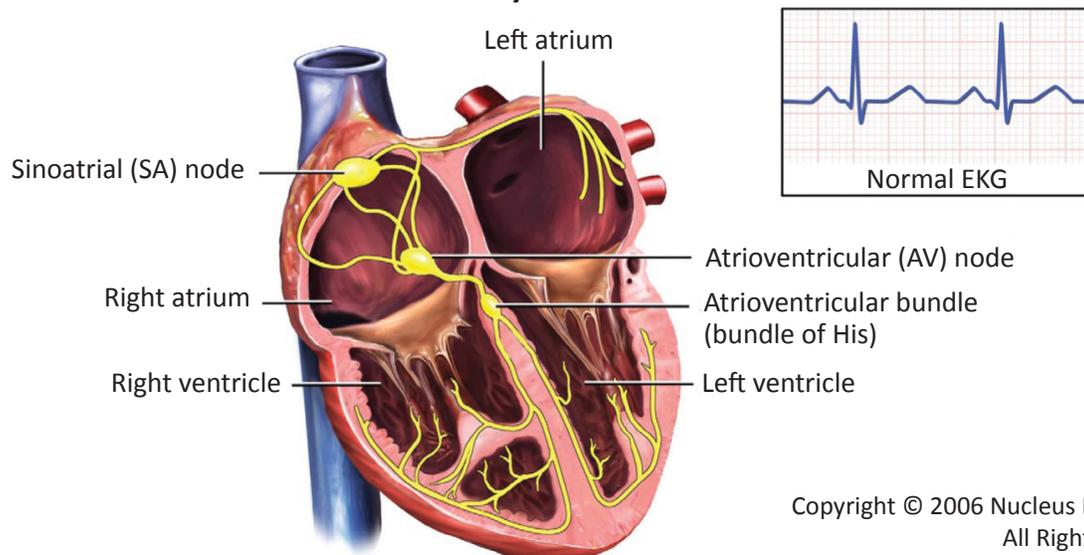
If you have any questions, ask your physician or nurse.

The heart

The heart is a muscular pump that delivers blood to the lungs and all body tissues. It has 4 chambers: 2 upper chambers (the right and the left atrium) and 2 lower chambers (the right and the left ventricle). The right atrium receives blood from the body and pumps it to the right ventricle. The right ventricle then pumps the blood to the lungs, where it receives oxygen. The left atrium receives the oxygen-rich blood from the lungs and sends it to the left ventricle. From the left ventricle, the blood is then returned to the body.

The heart also needs a “spark plug” or electrical signal to pump. This signal starts in the sinoatrial (SA) node in the right atrium. It travels through the upper chambers (atria) to the lower chambers (ventricles), creating an electrical circuit that makes the heart pump blood to all parts of the body (Figure 1). Normally, this cycle is repeated 60 to 100 times per minute in a regular rate and rhythm. It is the most efficient heart rhythm. An example of this is shown in the normal EKG seen in Figure 1.

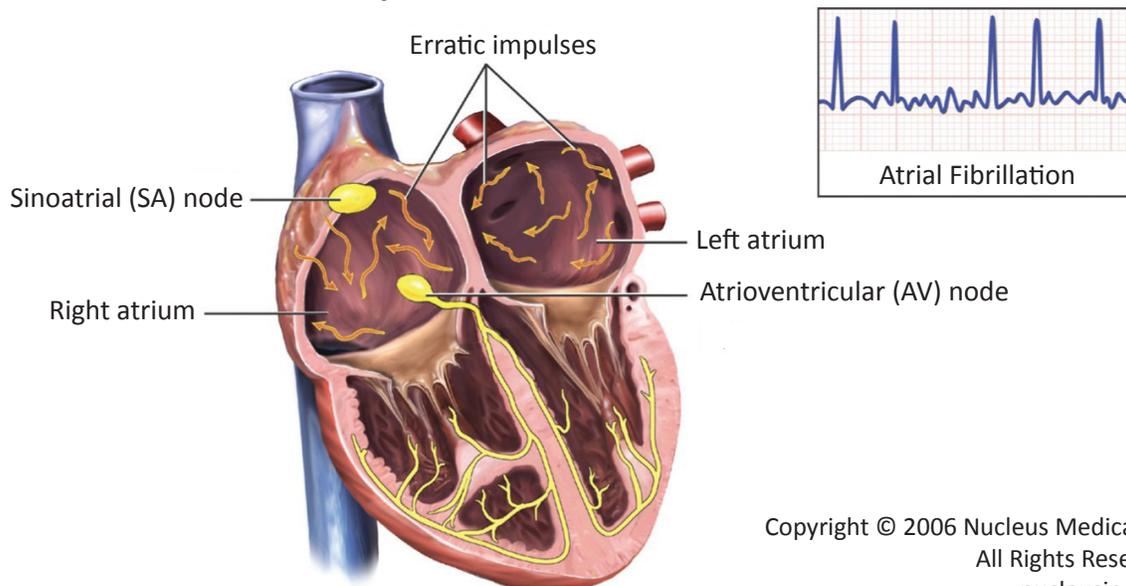
Figure 1. Normal Heart Electrical Pathway



Understanding AF

AF is a fast rhythm that begins in the upper chambers of the heart. The normal electrical signals become erratic (Figure 2).

Figure 2. Erratic Heart Pathway in AF



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These impulses start in different parts of the heart and move along different paths. This changes the way the heart pumps. The result is that there is less blood pumped out from the heart to the body.

When the heart does not pump well, blood clots may form inside the heart. Often, these occur in the left atrial appendage, a small pocket of tissue. If the blood clot breaks free, it can travel to the brain and cause a stroke.

AF is common and may cause:

- An increased risk of stroke and heart failure.
- A need to take blood thinning medications.
- A rapid, irregular heartbeat (sometimes over 200 times per minute).

Symptoms of AF

AF may lead to:

- Palpitations (racing heart)
- Shortness of breath
- Tiring easily with activity
- Swelling in the ankles and feet
- Feeling dizzy or faint

Sometimes there are no symptoms at all.

Causes of AF

AF may be caused by many things, including:

- Unhealthy lifestyle (alcohol use, obesity)
- Lung disease
- Recent heart surgery
- High blood pressure (hypertension)
- Slow heartbeat due to SA node problems
- Heart problems, such as valve disease or coronary artery disease
- Sleep apnea
- Other diseases, such as thyroid problems
- Family history of AF

Pre-surgery testing

Before surgery, your physician will perform a physical exam and review your health history. Based on this, you may need to have tests that include:

- **Electrocardiogram (ECG).** This records your heart rate and rhythm. It detects abnormal changes.
- **Holter monitor.** This records your heart rate and rhythm over 24 to 48 hours. You will wear a portable monitor and be asked to keep a diary of your activities and how you are feeling.
- **Echocardiogram.** This uses high-frequency sound waves (ultrasound) to look at how the various parts of the heart work. The resulting images show the size, shape and movement of the heart chambers and valves.

Additional tests may be done to look at the blood flow to the heart and brain. Your physician or nurse can give you more details about these tests.

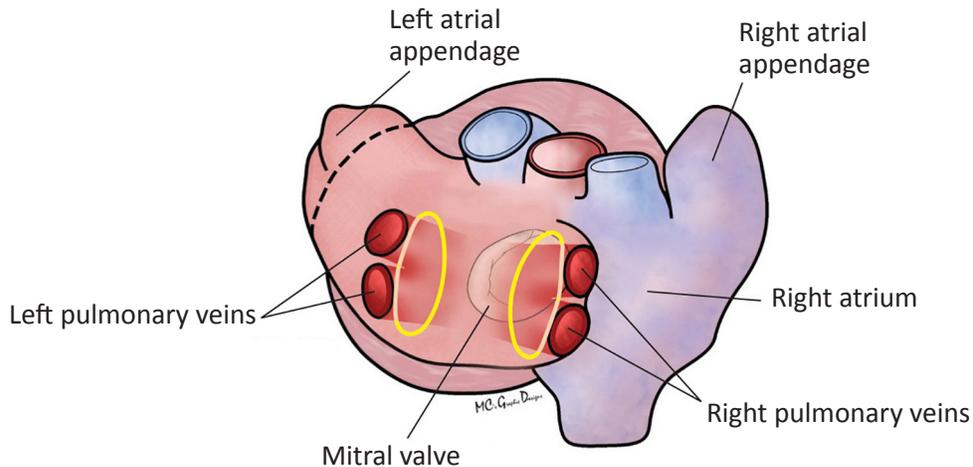
Surgery for AF

Surgical treatment is recommended when other treatments have not been effective, when symptoms are severe, or when other heart surgery is needed. Your surgeon will discuss the type of surgery that best meets your needs.

The most common approach to the heart is for the surgeon to make an incision in the middle of the chest. Once inside the heart, the surgeon creates a line of scar tissue using cooling and heating energy sources, small incisions or a combination of these methods. The scar tissue blocks the abnormal electrical signals that cause AF. This helps direct the signals to travel along a normal path. This may restore the heart rhythm so the heart can pump efficiently.

Another important part of AF surgery is treating the atrial appendage to help lower the risk of stroke. This can be done in several ways. Your surgeon will determine if it is possible to treat the appendage and which method is best for you. The dotted lines in Figure 3 below show where an appendage in the left atrium might be removed or sewn shut. The yellow circles show one example of where scar tissue may be created to help restore the heart's normal rhythm.

Figure 3. Atrial Appendage



Patients scheduled for other types of open heart surgery may also have AF treated at the same time.

Risks

Every surgery carries some risk. Risk depends on factors such as age and overall health. In some cases, a pacemaker or other procedures may be needed before you go home. Your surgeon will discuss your individual risks with you.

After surgery

Your heart rate and rhythm will be monitored while you are in the hospital. It is common to still have AF in the first few months after surgery. If needed, AF may be treated further with cardioversion before you go home. This nonsurgical procedure uses small amounts of electrical current, given through paddles or patches placed on the chest, to restore your heart to a normal rhythm. If you have a slow heart rate, a pacemaker may be needed. Your physician or nurse will provide more information about these procedures.

Medications

The AF surgery causes swelling in the heart that will go away as your body recovers. Until then it is important to take certain medications such as antiarrhythmic drugs to treat AF, diuretics to reduce extra fluid and blood thinners to prevent blood clots. Over time, your physician may decide if you no longer need some of these medications. Always follow your physician's guidelines regarding medications.

If you are taking blood thinners such as warfarin (Coumadin®), you will need to have weekly blood tests done after you go home. This needs to continue until you are on a stable dose of medication. Please refer to the warfarin booklet, which provides information about foods to avoid, medicine that cannot be taken and when to call your physician.

Follow-up

After you go home, it is important that your cardiologist continues to monitor your heart rhythm. This helps determine when medications can be changed or discontinued. **Please share the guidelines in Appendix A with your cardiologist.** If you have a pacemaker or defibrillator, your cardiologist should check to make sure it is set to detect AF. If AF is detected, your cardiologist should try to restore it to a normal rhythm within 6 to 8 weeks after surgery. Our AF nurses will also call you periodically to review your medications and treatments. **If you feel you have symptoms of AF any time after you go home, call your cardiologist immediately.**

Please be sure to read ***Heart Surgery: Care After Leaving the Hospital***. This gives detailed information about your recovery after you go home. It also provides detailed instructions for long-term follow-up care. Ask your nurse practitioner for a copy if you do not have one or if you have questions about the instructions.

Northwestern Medicine – Health Information Resources

For more information, contact Northwestern Memorial Hospital's Alberto Culver Health Learning Center (HLC) at hlc@nm.org, or by calling 312.926.5465. Health information professionals can help you find the information you need and provide you with personal support at no charge.

For more information about Northwestern Medicine, please visit our website at nm.org.

Para asistencia en español, por favor llamar al Departamento de Representantes para Pacientes al 312.926.3112.

The entities that come together as Northwestern Medicine are committed to representing the communities we serve, fostering a culture of inclusion, delivering culturally competent care, providing access to treatment and programs in a nondiscriminatory manner and eliminating healthcare disparities. For questions, please call either Northwestern Memorial Hospital's Patient Representatives Department at 312.926.3112, TDD/TTY 312.926.6363 or the Northwestern Medical Group Patient Representatives Department at 312.695.1100, TDD/TTY 312.926.6363.

Developed by: Bluhm Cardiovascular Institute

Appendix A: Follow-Up Care After Surgery for Atrial Fibrillation (AF)

If you had surgery to treat AF, this information will help you understand what to expect. Please follow the guidelines shown below. They are an important part of your follow-up care and help ensure the best possible outcome.

Phase I: first 3 months

Medicine is often given to prevent blood clots and control heart rate and rhythm (anti-arrhythmics). Yet it is still common to have some AF or atrial flutter over the first several weeks. This does not affect long-term success. As your heart heals, this happens less often and often stops. If it persists, your physician may recommend other treatment such as cardioversion.

Phase II: 3 to 6 months

During this time, you will need to have a physical exam and ECG. If there is no sign of AF, your physician may choose to stop your anti-arrhythmic medicine. In this case, you will need to wear a portable heart monitor for at least 21 days. This monitor should be able to detect AF or flutter. If no AF or flutter occurs, AND if the risk of stroke is low, your physician may stop your anticoagulation medicine. Aspirin is usually prescribed if it is safe for you to take. If AF or flutter occurs during or after this time, your physician will prescribe further treatment.

Phase III: 6 months to 2 years

Every 6 months for 2 years, you should:

- Have an ECG
- Wear a portable monitor (Holter) for at least 48 hours.

These tests will help confirm that your heart rhythm is normal and regular.

Irregular heart rhythms

If you have palpitations or other symptoms of an irregular heart rhythm, please tell your physician. You should expect to wear a patient-activated heart event monitor. This is a recording device that will correlate your symptoms with your heart rhythm. This helps your physician diagnose and treat your condition.

Implantable cardiac device

If you have an implanted defibrillator, pacemaker or heart monitor, a device interrogation is done. This periodic check takes the place of wearing a portable monitor.

The AF nurses are here to help and answer any questions. Contact us at:

Phone: 312.695.4665 or 312.695.2832 Fax: 312.695.1903