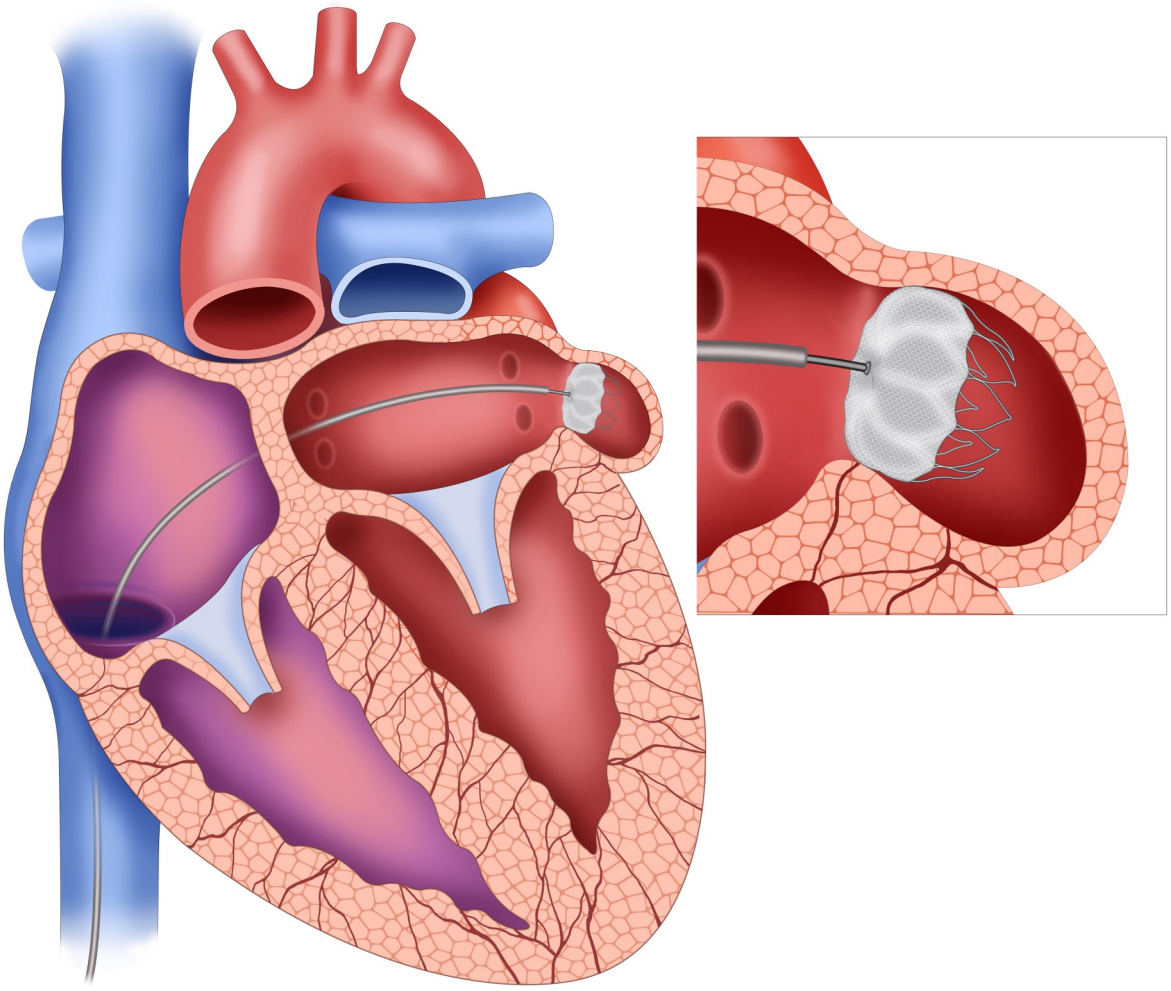

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Left Atrial Appendage (LAA) Closure

Information and Procedure Guide

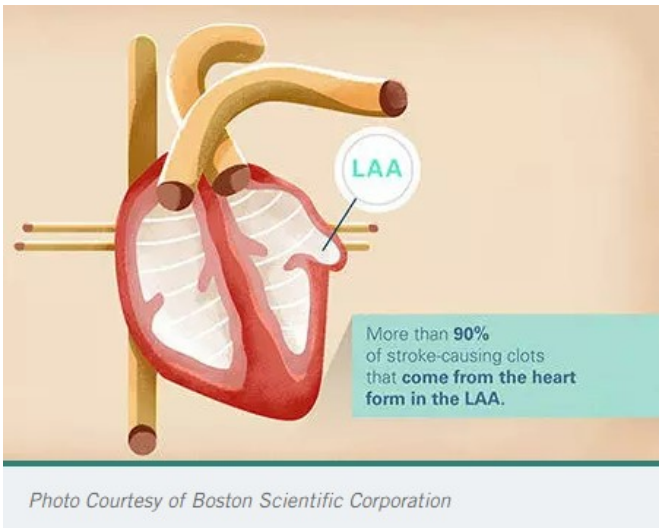
Saskatchewan Health Authority

CS-PIER-0099-REG
MARCH 2024
Area: Regina

The Heart and the Left Atrial Appendage

The heart has 4 chambers and 4 heart valves. The chambers squeeze and relax. The valves act as one-way gates allowing blood to move forward in one direction between the chambers. The top left chamber of the heart is called the left atrium.

The left atrial appendage (LAA) is a small sac of muscle wall located in your left atrium—the top left chamber of your heart. When the heart contracts with each heart beat, the blood from the left atrium and left atrial appendage is squeezed out of your left atrium into the left ventricle of your heart. From here, it moves through the aorta, giving blood and oxygen to the brain, organs, and all body tissues.



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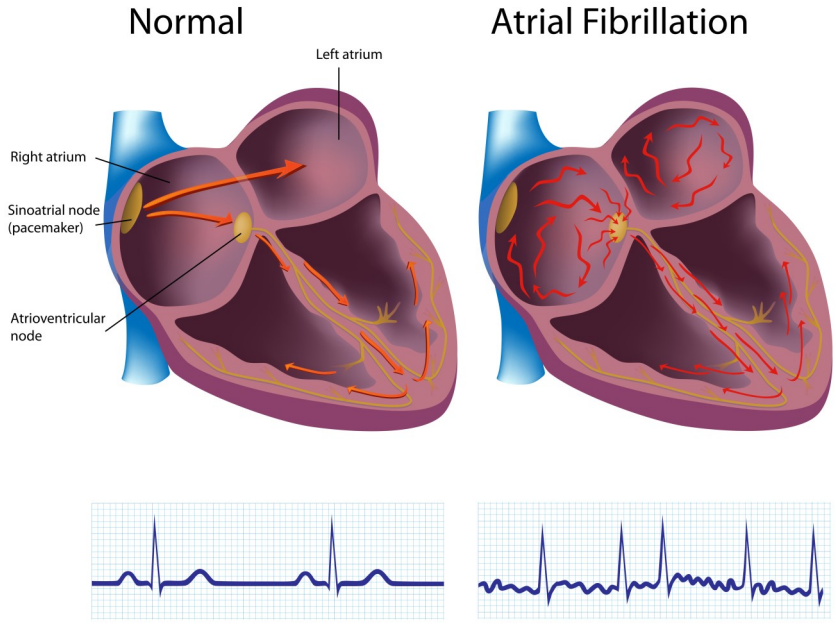
Normal Conduction of the Heart

The heart has an electrical system that controls the way the heart beats. Sinus rhythm is considered a normal heart rhythm. This means electrical impulses are being sent out properly from the heart. In normal sinus rhythm, the electrical impulses are determined by the sinus node. The sinus node (SA Node) creates an electrical pulse that travels through the heart muscle causing it to contract.



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Atrial Fibrillation

Atrial fibrillation, often called afib, is the most common cardiac arrhythmia (irregular heartbeat) affecting 1 to 2% of the general population. This heart rhythm happens when electrical signals start from several scattered areas in the upper chambers of the heart, also known as the atria. These scattered electrical signals cause the atria to beat irregularly and faster. This results in the heart not being able to pump blood properly and significantly increases the risk of having a stroke.

Atrial fibrillation becomes more common as people age and is more likely to occur in people with other conditions, such as high blood pressure, heart failure, diabetes, coronary artery disease and some types of heart valve disease.

Symptoms: Fatigue (tiredness), shortness of breath, chest pain, palpitations (fluttering sensation in chest) and/or dizziness.

Treatment: Includes medication to prevent the heart rate from becoming too fast or irregular, blood thinners, and sometimes special procedures, such as cardioversion and /or ablation, to attempt to put the heart back into the normal rhythm.

Stroke and Atrial Fibrillation

A stroke happens when the blood supply to brain tissue is cut off . There are two types of strokes:

- Ischemic stroke– a clot in a brain blood vessel blocks off blood supply to surrounding brain tissue.
- Hemorrhagic stroke– a sudden rupture of a brain blood vessel reduces blood supply to surrounding brain tissue.

A stroke can happen suddenly causing immediate debilitating effects such as; loss of body function, weakness, changes in vision, difficulty using or understanding speech or even death. Immediate medical treatment is required to minimize complications after a stroke.

The average person with atrial fibrillation is **5 times more likely to suffer a stroke** than someone with a regular heartbeat. When the atria of the heart aren't squeezing normally, blood can pool or become more static in these chambers: the ideal environment for blood clots to form.

When atrial fibrillation is not caused by valve disease, these clots most commonly form in the left atrial appendage (LAA). Most strokes from atrial fibrillation are caused when a clot comes loose from this appendage in the heart. The clot travels through the aortic system and lodges in a small brain artery.

Atrial Fibrillation and Anticoagulants

Current treatment for atrial fibrillation includes medications called anticoagulants, also known as blood thinners. Anticoagulants are effective for preventing strokes in patients with atrial fibrillation by preventing clots from forming in the heart.

A major side effect of anticoagulants is they increase your risk of bleeding. Usually these bleeding events are minor, but sometimes they result in major bleeding that requires hospitalization, blood transfusions and can be life threatening or fatal.

Prior to being prescribed an anticoagulant, your doctor will assess your risk of having a stroke versus your risk of having a major bleeding event. Studies amongst individuals with atrial fibrillation show that the benefit of using anticoagulants for stroke prevention is greater than the risk of bleeding from the medication.

There are some individuals who have a very high risk of bleeding while on anticoagulants or may have suffered a serious bleeding event while on anticoagulants making it unsafe to take them.

Left Atrial Appendage (LAA) Closure

A minimally invasive procedure called a percutaneous left atrial appendage closure may be an option for individuals that cannot safely take anticoagulants. A LAA closure does not eliminate atrial fibrillation, but it does effectively reduce the chance of having a stroke.

The LAA closure device blocks off the opening to your left atrial appendage and acts as a barrier, preventing blood clots from traveling out of the appendage and into the blood stream. The device is placed into your heart through a large vein in your upper leg (groin).

LAA Closure Workup

LAA closure procedure is not for everyone and requires an assessment by a cardiologist that specializes in the procedure. A number of tests may be required, including:

- Structural Clinic Assessment: You meet with the structural clinic nurse and cardiologist, have a routine physical exam— including ECG and assessment of your risk of bleeding and stroke, and assessment of your overall health and everyday function. Risks and benefits of the procedure are discussed.
- Echocardiogram—ultrasound of the heart
- Cardiac CT Scan— get a detailed look at your left atrial appendage.
- Transesophageal echocardiogram—ultrasound probe down your throat to view your heart structures and function
- Holter monitor—24 hour external heart rhythm monitor

* The structural heart nurse coordinator ensures you are informed of all tests and dates. If you have any questions do not hesitate to call the structural heart clinic.

These tests will help your LAA cardiologist decide if percutaneous LAA closure is for you. Your results are then reviewed by the Structural Heart Team. If you are approved for the LAA closure procedure, you are notified and placed on the waitlist.

Waiting for LAA Closure

* Book and appointment with your dentist if you have your own teeth and have not seen a dentist within the past year. If you require fillings, extractions or treatment of infection, this should be done before your LAA closure to reduce the risk of infection (endocarditis) on your new device.
* You have received a wallet card that indicated your are waiting for an LAA closure. If you go to the hospital or to any medical appointments, show this card to doctor/nurse so they can forward information about your visit to the structural heart program. **If you are admitted to the hospital, please call and let us know once you are discharged.**

LAA Closure Procedure—What to expect

Before Procedure

- You are given 1 to 2 weeks notice of your upcoming procedure date via phone. You are mailed instructions about how to prepare, and given a date for a pre-assessment clinic appointment.
- **Pre-assessment clinic (PAC) appointment**: Booked within a week of your procedure date—the clinic team review the procedure details with you, complete all paperwork required for your hospital admission, perform bloodwork and a chest x-ray . You are given a time to arrive at the hospital on your procedure date.
- No solid food after midnight, but you can continue to drink clear fluids like apple juice or water until 2 to 3 hours before your procedure.
- You are notified if there are any medications you need to stop taking before the procedure.

Morning of Procedure

- Take your medications as directed before arriving to the hospital.
- Do not stop in admitting— use the map given to you during your PAC appointment and go directly to PCI unit (3rd floor– RGH).
- Bring all your medications in their original containers. Bring any medical devices you will need (i.e. CPAP, cane, etc.). You will be spending the night in hospital. Do not bring any valuables.
- Bring this booklet.
- The nurses take your vital signs, do an assessment and an intravenous line is inserted.

LAA Closure Device partially in sheath

LAA Closure Device fully expanded.

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LAA Closure Procedure—Day of Procedure

For the Procedure

- You are taken to the cardiac catheterization laboratory.
- An anesthetist provides medications to help you relax and put you to sleep (general anesthetic). A breathing tube is inserted for the duration of procedure.
- The doctor makes a small puncture in the groin and inserts a hollow tube called a catheter into the right femoral (groin) vein.
- The LAA closure device is compressed inside the catheter to allow it to fit into the groin vein.
- The doctor guides the closure device all the way into your heart, where it is carefully opened up in the left atrial appendage. Ultrasound guidance through the esophagus (TEE– transesophageal echo) is used to make sure the device is properly placed.
- The procedure takes 1.5 to 2 hours.

After the Procedure:

- You are transferred back to PCI. After your recovery, you will stay overnight in the CSU unit (3rd floor RGH).
- You are on bedrest for 4 hours. Once it is safe to do so, you are helped to the bathroom and given something to eat and drink. You are able to start to walk later that evening.
- The next morning, a chest x-ray and echocardiogram (heart ultrasound over the chest) are done to reassess the function and position of your new LAA closure device. The team will review your lab work, ECG, chest x-Ray, ECHO, and examine your groin incisions to make sure there are no concerns.

After the Procedure

Going Home

- Most patients go home the day after the procedure.
- You are able to resume gentle activities, like walking, before you go home. Gently increase your activity over the next 1 to 2 weeks. It is important not to push, pull, or lift anything over 5 kilograms (10 pounds) for the first 7 days to let the small incisions in your groin heal.
- Exercise is important to help you recover and get back to your normal routine. Try to increase slowly back to your normal activity over 1 to 2 weeks.
- You are told what medications to continue after the procedure. Generally, patients go home on all their previous medications.
- If you were on a blood thinner prior to your LAA closure, your structural heart doctor may decide to continue this for 6 weeks following procedure.
- You may go home on a low dose acetylsalicylic acid (ASA) (example: EC ASA 81mg; Aspirin®) for life. ASA prevents blood clots from forming on the device.
- Follow up is usually in 2 to 3 months with your structural heart physician. You are notified via mail.
- **Your structural heart physician will decide what follow up and medications are required for you once your procedure is complete.**
- To prevent or lower your risk of endocarditis , you need to take antibiotics with any dental work that results in gum manipulation and bleeding such as routine cleanings, root canals, etc. for 6 months after LAA closure procedure.
- Endocarditis happens when bacteria (germs) gets into your blood, travels to your heart and causes an infection. For the 6 months post procedure you will be required to take a single dose antibiotic 30 minutes before dental procedures. Your family doctor or dentist can prescribe this when needed.
- A temporary procedure card is given to you upon discharge from hospital. A permanent card is sent to you in the next several months. This card holds information about your device and should be shared with your healthcare providers, including your dentist. It is important to share that you had a procedure before any invasive medical or dental procedures, including magnetic resonance imaging (MRIs).

After Procedural Care

Personal Care:

- Remove the bandage on your groin 24 hours after your procedure. You may leave the site uncovered or apply a new bandage for comfort.
- Do not soak in a bathtub, hot tub or swim for 7 days following the procedure.
- You may shower as usual 24 hours after the procedure. Cleanse the site gently with mild soap and water. Do not scrub. Pat dry. Keeping the site dry will improve healing.
- It is normal to have a small lump, bruise, or tenderness at the puncture site. Sometimes the bruise will get bigger before it starts to go away. Bruising, lumps and tenderness should gradually improve over the next 2 to 4 weeks

Notify your healthcare provider if you notice any of the following:

- Redness, swelling, drainage (pus) or warmth at the incision site.
- Increased in pain around the puncture site.
- The lump at your puncture/incision site is growing in size, is firm, or is pulsating under your skin.
- You develop a chill and have a fever of greater than 38.5°C.

Go to Emergency Department or call 911 if you have:

- Persistent or significant bleeding from puncture site.
- Severe pain, numbness, loss of colour, and/or significant swelling in limb of puncture site.
- Chest pain or sudden shortness of breath.
- Symptoms of a Stroke:
    - One sided arm or leg weakness or facial drooping.
    - Slurred speech, difficulty speaking or understanding speech.
    - Changes in vision in one or both eyes.

If your puncture/incision site begins to bleed follow these steps:

- Lie down on a firm surface.
- Apply pressure yourself, or have someone help you. Press firmly with 2 to 3 fingers above the bleeding site for 15 minutes straight.
- If it continues to bleed, **call 911** or have someone drive you to the closest **Emergency Department**. Do not drive yourself.

After Procedural Care—Continued

Physical Activity

- You can go back to your normal activities gradually over 1 to 2 weeks. Try to do a bit more each day.
- Avoid strenuous activities like jogging, running, or lifting anything greater than 5 kilograms (10 pounds) for the next 7 days.

Driving and Travelling

- You are not be allowed to drive for 48 hours after your procedure.
- If you are driving a long distance, stop, get out of the car and walk around every 1 to 2 hours .
- If you drive a commercial vehicle, speak to your doctor about driving.
- If you are travelling by airplane, most people are able to fly on the second day after the procedure.
- If you are travelling out of the county, speak to your doctor. You may not be covered by travel insurance immediately after the procedure. Contact your insurance company for their policy.

Returning to work

- If you do office work where you are sitting most of the time, you can return to work 48 to 72 hours (2 to 3 days) after your procedure.
- If your work involves heavy lifting (more than 5 kilograms or 10 pounds), you can return to work after 7 days.
- If you have concerns about going back to work, speak to your family doctor.

Appointments after LAA Closure

- **Family Doctor or Nurse Practitioner:** 10 to 14 days after your procedure. You, or your family, need to make this appointment.
- **Structural Heart Doctor:** Generally 2 to 3 months post procedure. You are notified via mail.

NOTES:

SASKATCHEWAN TAVI/ STRUCTURAL HEART PROGRAM

REGINA

Phone: 306-766-3766 Fax: 306-766-4183

Regina General Hospital—Medical Office Wing

1440-14th Ave, Regina SK, S4P 0W5

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Healthy People, Healthy Saskatchewan

The Saskatchewan Health Authority works in the spirit of truth and reconciliation, acknowledging Saskatchewan as the traditional territory of First Nations and Métis People.

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