FLORIDA HEART & LUNG INSTITUTE

NORTH FLORIDA REGIONAL HEALTHCARE

Surgical Aortic Valve Replacement

Aortic valve replacement is an open-heart surgery. It is done to replace a failing aortic valve with a new one. Aortic valve surgery is performed by heart surgeons to treat most commonly bicuspid valves, other congenital aortic valve disease, aortic valve stenosis and aortic valve regurgitation.

There are four valves in your heart including the mitral, tricuspid, aortic and pulmonic valves. The aortic valve is located between the left ventricle (lower heart pumping chamber) and the aorta, which is the largest artery in the body.

The aortic valve is located between the pumping chamber on the left side of the heart and the aorta, which is a major artery. The aorta carries oxygen-rich blood from the heart to the rest of the body. The valve should be closed while the heart is filling with blood. When the heart chamber squeezes to push blood into the aorta, the valve should open fully to allow blood flow.

What is aortic valve disease?

Aortic valve disease occurs when the aortic valve does not work correctly. This can be caused by:

Aortic valve stenosis: These stiff, fused, thickened, inflexible valve leaflets lead to the narrowing of the aortic valve, that limits the blood flow. Aortic valve stenosis progresses when calcium is deposited on the valve leaflets, further limiting their mobility. Stenosis can occur in patients with either a tricuspid (3 leaflets) or a bicuspid (2 leaflets) aortic valve.

Aortic valve regurgitation (also called valvular insufficiency, incompetence or "leaky valve"): These valve leaflets do not close completely. Regurgitation causes the blood that is ejected by the heart to immediately flow back into the heart once the heart stops squeezing and relaxes. Regurgitation may occur because of floppy leaflets (prolapse), abnormal congenitally deformed valves (bicuspid or unicuspid), infection of the valve (endocarditis), inability of the leaflets to close tightly due to dilatation of the aorta (aneurysm), holes in the leaflets, or rheumatic valve disease.

What causes aortic valve disease?

The aortic valve may be abnormal at birth (typically a bicuspid congenital aortic valve) or become diseased over time, usually seen in older patients (acquired valve disease).

Congenital aortic valve disease

- Patients with bicuspid aortic valves are born with them and are present in about 1 - 2 percent of the population. Instead of the normal three leaflets or cusps, the bicuspid aortic valve has only two. Without the third leaflet, the valve opening may not close completely and leak (regurgitant) or not open completely and become narrowed (stenotic) or leak. In many cases, bicuspid aortic valves may function normally for several years without requiring treatment. About 25 percent of patients with bicuspid aortic valves may have some enlargement of the aorta above the valve. If it is greatly dilated, the aorta is known as being aneurismal.

Acquired aortic valve disease

With acquired aortic valve conditions, changes occur in the structure of the valve. Acquired aortic valve conditions include:

- Infective endocarditis is a bacterial infection of the valve, which is caused when bacteria enter your blood stream from the site of a remote infection and attach to the surface of your heart valves. Dental cleaning or even minor infection, such as a tooth abscess, can cause severe bacterial endocarditis of the aortic valve.
- Rheumatic fever is usually caused by a bacterial throat infection, such as strep throat. The valve itself is not infected in rheumatic fever, but antibodies developed by the body to fight infection react with the heart valves, causing stiffening and fusion of the leaflets of the aortic valve.
- Aortic valve degeneration from wear and tear is another cause of acquired aortic valve disease. In many patients, the aortic valve leaflets degenerate and become calcified with time. This most frequently causes aortic stenosis, but may also cause aortic regurgitation. This is the most common cause of aortic stenosis in people over the age of 65.
- Other causes of aortic valve disease include: rheumatoid arthritis, chronic inflammatory diseases, lupus, syphilis, hypertension, aortic aneurysms, connective tissue diseases, and less commonly, tumors, some types of drugs and radiation for cancers or lymphoma.

Aortic Valve Surgery

Aortic valve surgery can be performed using traditional heart valve surgery or minimally invasive approaches. Your doctor will develop an individualized care plan that is best for you.

Traditional Aortic Valve Surgery

During traditional aortic valve surgery, a surgeon makes a 6- to 8-inch incision down the center of your sternum, and part or all of the sternum (breastbone) is divided to provide direct access to your heart. The surgeon then repairs or replaces your abnormal heart valve or valves.

Minimally Invasive Aortic Valve Surgery

Minimally invasive aortic valve surgery is a type of aortic valve repair surgery performed through smaller, 2- to 4-inch incisions without opening your whole chest. This is typically done with a "J" incision and leaves your chest stable. Minimally invasive surgery reduces blood loss, trauma, length of hospital stay and may accelerate recovery.

Most patients who require isolated aortic valve surgery are candidates for minimally invasive aortic valve surgery, but your surgeon will review your diagnostic tests and determine if you are a candidate for this type of surgery.

Valve Options

The two most common types of valves for replacement are:

Mechanical—It is made entirely out of artificial materials. Requires Coumadin therapy.

Bioprosthetic—This valve is made out of a combination of artificial materials and tissues from a pig, cow, or other animal. Requires aspirin therapy.

Your doctor will recommend the appropriate valve for you.

Preparing for surgery

- Tell your doctors ALL the medicines, vitamins, supplements, and herbal remedies you take. Some of these can increase the risk of bleeding or interact with anesthesia.

- If you take blood thinners, such as warfarin (Coumadin), clopidogrel (Plavix), or aspirin, be sure to talk to your doctor. He or she will tell you if you should stop taking these medicines before your surgery. Make sure that you understand exactly what your doctor wants you to do.

- Your doctor will tell you which medicines to take or stop before your surgery. You may need to stop taking certain medicines a week or more before surgery. So talk to your doctor as soon as you can.

- If you have an advance directive, let your doctor know. It may include a living will and a durable power of attorney for health care. Bring a copy to the hospital. If you don't have one, you may want to prepare one. It lets your doctor and loved ones know your health care wishes. Doctors advise that everyone prepare these papers before any type of surgery or procedure.

- Do not smoke.

- Follow the instructions exactly about when to stop eating and drinking. If you don't, your surgery may be canceled. If your doctor told you to take your medicines on the day of surgery, take them with only a sip of water.

- Take a bath or shower before you come in for your surgery. Do not apply lotions, perfumes, deodorants, or nail polish.

- Do not shave the surgical site yourself.

- Take off all jewelry and piercings. And take out contact lenses, if you wear them.

- Someone from our office will call you the evening before your surgery to let you know what time to arrive at the hospital in the morning. We often do not know the final operating room schedule until the evening before. Please be advised that your surgery may be postponed if an emergent patient needs to go first.

Day of Surgery

- Bring a picture ID.

- Parking-For your convenience and safety, parking is available in the garage located on the west side of the hospital across from the Emergency Department. Additional parking is available in the garage located next to the Women's Center on the east side of the hospital. The garages are open 24 hours a day at no cost. The most convenient option for parking is in the Visitor Garage across from the Emergency Department.

- Report to the Reception Desk. On the day of surgery please arrive at the main entrance of the hospital and take the elevators on your right to the third floor lobby and check in at the Registration desk. Please check in 2 hours prior to your scheduled surgery time.

- You will be kept comfortable and safe by your anesthesia provider. You will be asleep during the surgery.

- The surgery will take about 3 to 5 hours.

- You will go to the cardiac intensive care (CVICU) on the 5th floor right after surgery. Average length of stay is 3-5 days.

- You will have a breathing tube down your throat. This is usually removed within 4 hours after surgery. You will not be able to talk or drink liquids while the tube is in your throat. After the tube is removed, your throat will feel dry and scratchy. Your nurse will tell you when it is safe to drink liquids again

- You will have chest tubes to drain fluid and blood after surgery. The fluid and extra blood are normal and usually last only a few days. The chest tubes are usually removed in 1 or 2 days.

- You will have several thin wires coming out of your chest near your incision. These wires can help keep your heartbeat steady after surgery. They will be removed before you go home.

Recovery

You will stay in the hospital for at least 3 to 5 days after the surgery. You will feel tired and sore for the first few weeks. Your chest, shoulders, and upper back may ache. These symptoms usually get better in 4 to 6 weeks. It may take 1 to 2 months before your energy level is back to normal.

Activity

- Sternal precautions for 8 weeks – no lifting, pushing or pulling > 10 lbs
- No driving for 4 weeks
- No sex for 4 weeks
- Rest when you feel tired. Getting enough sleep will help you recover. Try to sleep on your back for 4 to 6 weeks while your breastbone (sternum) heals. This usually takes about 4 to 6 weeks.
- Try to walk each day. Start by walking a little more than you did the day before. Bit by bit, increase the amount you walk. Walking boosts blood flow and helps prevent pneumonia and constipation.
- Avoid strenuous activities, such as bicycle riding, jogging, weight lifting, or heavy aerobic exercise, until your doctor says it is okay.
- For 3 months, avoid activities that strain your chest or upper arm muscles. This includes pushing a lawn mower or vacuum, mopping floors, or swinging a golf club or tennis racquet.
- Hold a pillow firmly over your chest incision when you cough or take deep breaths. This will support your chest and reduce your pain.
- Do breathing exercises at home as instructed by your doctor. This will help prevent pneumonia.
- You may shower as usual. Pat the incision dry. Do not take a bath until the glue falls off and there are no open areas along incision.

Diet

- Eat a heart-healthy diet. If you have not been eating this way, talk to your doctor. You also may want to talk to a dietitian. A dietitian can help you learn about healthy foods.
- Drink plenty of fluids (unless your doctor tells you not to).
- You may notice that your bowel movements are not regular right after your surgery. This is common. Try to avoid constipation and straining with bowel movements. You may want to take a fiber supplement every day. If you have not had a bowel movement after a couple of days, you may take a mild laxative over the counter.

Medicines

- Your doctor will tell you if and when you can restart your medicines. A list of new medicines, medicines to stop and medications to continue will be given to you at time of discharge.
- Your doctor may give you medicines to prevent blood clots, keep your heartbeat steady, and lower your blood pressure and cholesterol. Take your medicines exactly as prescribed. Call the office if you think you are having a problem with your medicine.
- Be safe with medicines. Take pain medicines exactly as directed.
    - If the doctor gave you a prescription medicine for pain, take it as prescribed.
    - If you are not taking a prescription pain medicine, ask your doctor if you can take an over-the-counter medicine.
    - If you are able to take ibuprofen and Tylenol you may alternate every three hours. Sample Schedule – Motrin 600 mg by mouth at 6 a.m., Tylenol 500 mg by mouth 9 a.m., Motrin 600 mg by mouth at noon, Tylenol 500 mg by mouth at 3 p.m., etc.
    - Do not exceed 4 grams total of Tylenol in a 24 hour period
- If you think your pain medicine is making you sick to your stomach:
    - Take your medicine after meals
- If your doctor prescribed antibiotics, take them as directed.

Incision care

- Wash the area daily with warm, soapy water, and pat it dry. Don't use hydrogen peroxide or alcohol, which can slow healing. You may cover the area with a gauze bandage if it weeps. Change the bandage every day.
- Keep the area clean and dry. Stitches will be removed at postoperative visit. You do not need to cover any area with bandage.

Follow Up

Follow-up care is a key part of your treatment and safety. Be sure to make and go to all appointments, and call the office if you are having problems. It's also a good idea to know your test results and keep a list of the medicines you take.

When should you call for help?

Call 911 anytime you think you may need emergency care. For example, call if:

- You passed out (lost consciousness).
- You have severe trouble breathing.
- You have sudden chest pain and shortness of breath, or you cough up blood.
- You have severe pain in your chest.
- You have symptoms of a heart attack. These may include:
    - Chest pain or pressure, or a strange feeling in the chest.
    - Sweating.
    - Shortness of breath.
    - Nausea or vomiting.
    - Pain, pressure, or a strange feeling in the back, neck, jaw, or upper belly or in one or both shoulders or arms.
    - Lightheadedness or sudden weakness.
    - A fast or irregular heartbeat.

Call the office (352-333-5610) for any questions or concerns:

- You have pain that does not get better after you take pain medicine.
- You have a fever over 100°F.
- You have loose stitches, or your incision comes open.
- Bright red blood has soaked through the bandage over your incision.
- You have signs of infection, such as:
    - Increased pain, swelling, warmth, or redness.
    - Red streaks leading from the incision.
    - Pus draining from the incision.
    - A fever.
- Your heartbeat feels very fast or slow, skips beats, or flutters.

- You are dizzy or lightheaded, or you feel like you may faint.
- You have new or increased shortness of breath.
- You have increased swelling in your legs, ankles, or feet.
- You have any concerns about your incision.
- You have questions about diet, exercise, quitting smoking, or stress reduction after surgery.

Florida Heart & Lung Institute
6440 W Newberry Road, Suite 102
Gainesville, FL 32605
352.333.5610 Phone
352.333.5611 Fax