



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

MITRA CLIP

A Guide for Patients and Families



**PLEASE BRING THIS BOOK WITH YOU
TO THE HEART INSTITUTE**

Name: _____

Name of Procedure: _____

Date of Procedure: _____

Cardiologist: _____

Cardiac Surgeon: _____

Advanced Practice Nurse: Phone: 613-798-5555 Ext: 14742

IMPORTANT

Nursing Coordinator: 613-761-4708

The Nursing Coordinator is available 24 hours a day
if you have any questions or concerns.

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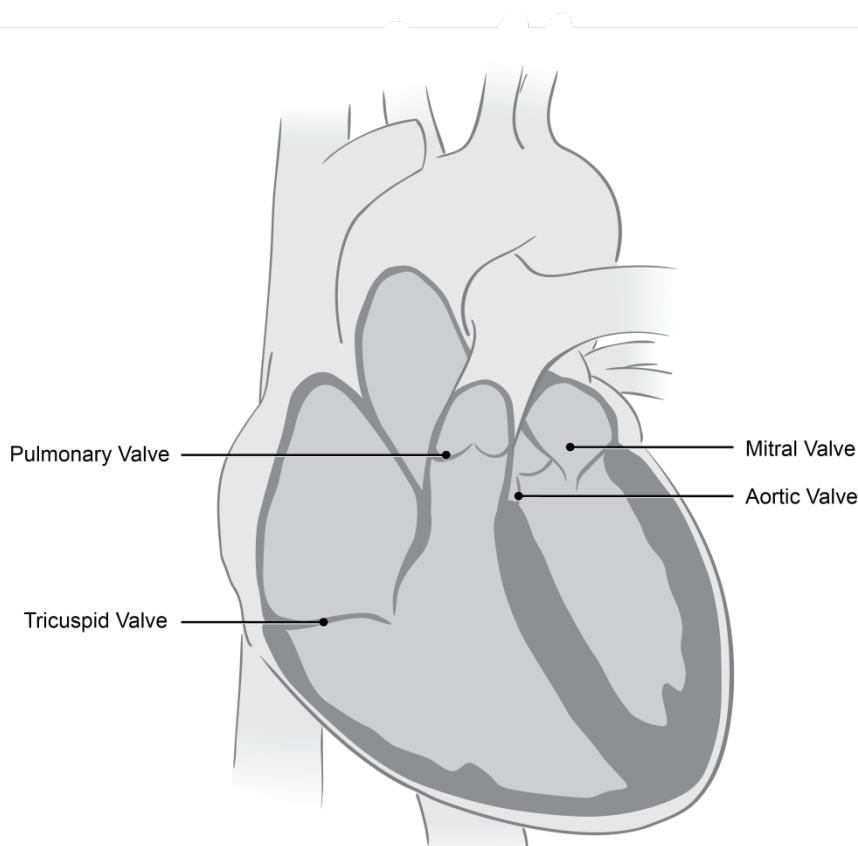
Referral for MitraClip Therapy

Your doctors have recommended a mitral valve repair using the MitraClip device to treat your mitral regurgitation. The purpose of this guide is to help you and your family prepare for your procedure at the University of Ottawa Heart Institute. Appendix 1 at the back of this booklet explains some of the terms you might not be familiar with.

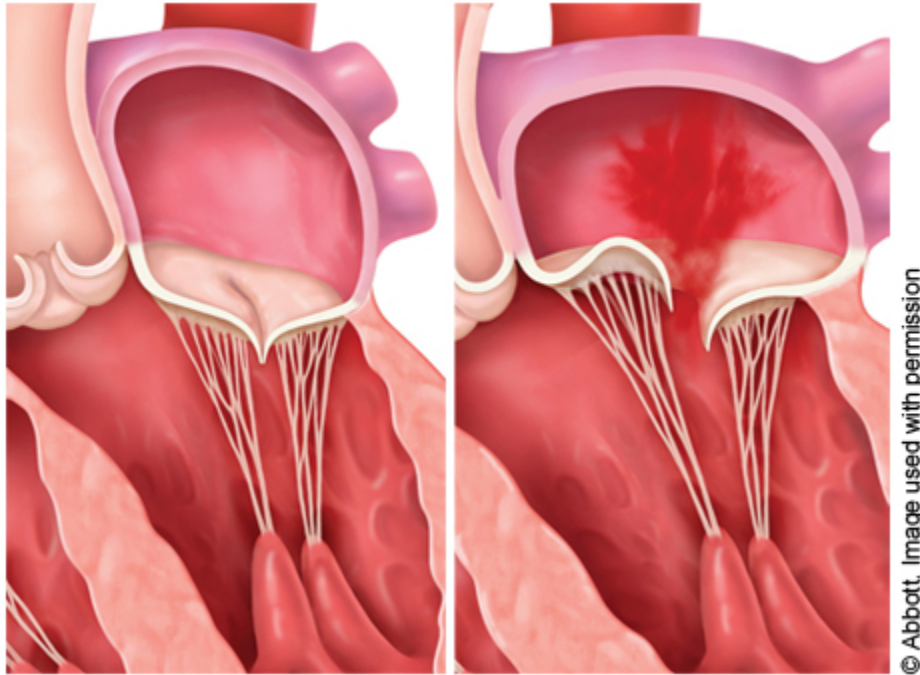
About Mitral Regurgitation

Mitral regurgitation (MR) is a condition in which the heart's mitral valve does not close tightly enough. This lets some of the blood in your heart "regurgitate," or flow backward, into your heart chambers.

Your heart contains four valves. They are key to the proper flow of blood through the heart. The mitral valve is on the left side of your heart and controls blood flow from the atrium to the ventricle. This valve has two leaflets that open and close to ensure blood travels in only one direction within the heart.



In people with MR, the mitral valve doesn't seal completely and blood leaks backward. As a result, the heart must work harder to push blood through the body. Common symptoms caused by this increased workload include fatigue, shortness of breath, coughing, an irregular heartbeat and worsening heart failure. MR is a progressive disease that can eventually impact your quality of life and make daily activities more difficult.



Left: Normal - Right: Degenerative MR - Prolapse

Selection Process for MitraClip Therapy

The goal of treatment is to decrease the mitral regurgitation and improve your quality of life. Medications may be prescribed to help reduce the symptoms you experience, but they cannot fix the valve itself.

The current gold standard for treating a severely leaking mitral valve is to perform open heart surgery. The purpose of surgery is to either replace the valve with an artificial one (mitral valve replacement) or repair the existing mitral valve.

In open heart surgery, a heart-lung machine is used to take over the role of your heart while it is being worked on. To repair or replace the mitral valve, the surgeon accesses it in one of two ways. One is through a large incision in the middle of the chest (sternotomy incision). The other is through a smaller incision in the chest (minimally invasive surgery). In both

cases, open heart mitral valve surgery is an effective and well-proven way to cure mitral regurgitation, but not all patients are candidates for open heart surgery.

If you are very ill or have many other medical problems, open heart surgery may be considered too high risk. If this is the case, you may be given a referral for a MitraClip procedure. Your eligibility for this procedure will be decided by a specialized team, including a cardiologist experienced in percutaneous (catheter-based) procedures, a cardiac surgeon experienced in valve repair, and a cardiac anesthesiologist experienced in the complex management of patients during these procedures.

Your cardiologist or internist diagnosed you with severe MR after seeing the results from a transthoracic echocardiogram (TTE). This test and your condition triggered a consultation with the MitraClip team. You will need to undergo another test, a transesophageal echocardiogram (TEE), at the Heart Institute to provide the team with the specific measurements of your mitral valve. With this information, the MitraClip team will discuss your case. The purpose of this discussion is to make sure you are getting the right procedure, at the right time, along with the best care before and after your procedure.

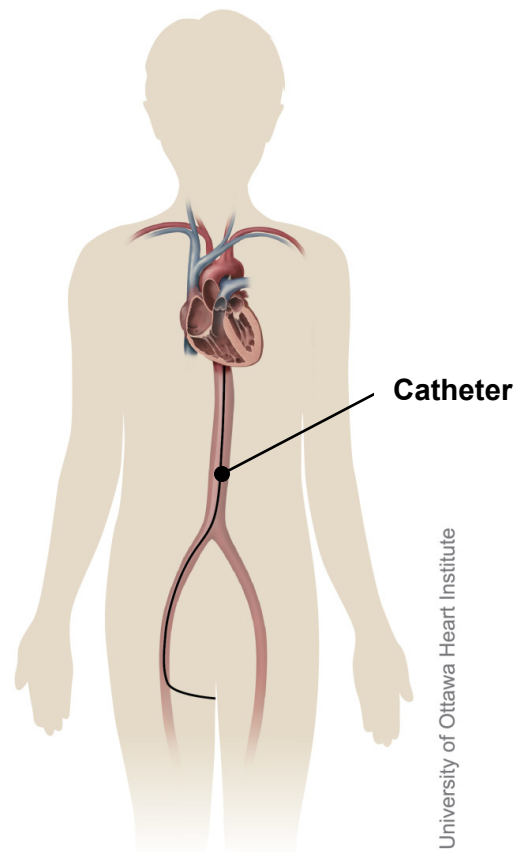
If you are not accepted for a MitraClip procedure, it means you would not benefit from it. You may be better served by open heart surgery or by having no procedure at all and continuing with your current medical therapy. The next step in your care will be explained to you by one of the physicians on the MitraClip team.

About the MitraClip Procedure

Over the past few years, the MitraClip device has been used in many patients to correct blood flow through the mitral valve without open heart surgery. The MitraClip procedure is performed in a cardiac catheterization lab, not in the cardiac operating room. This procedure is done by use of a catheter that is inserted through a needle hole (percutaneously, or via the skin) in the groin. The catheter—a long, flexible tube—is inserted into a large vein in your groin (femoral vein) and guided to your heart. It is positioned using ultrasound and X-ray images.

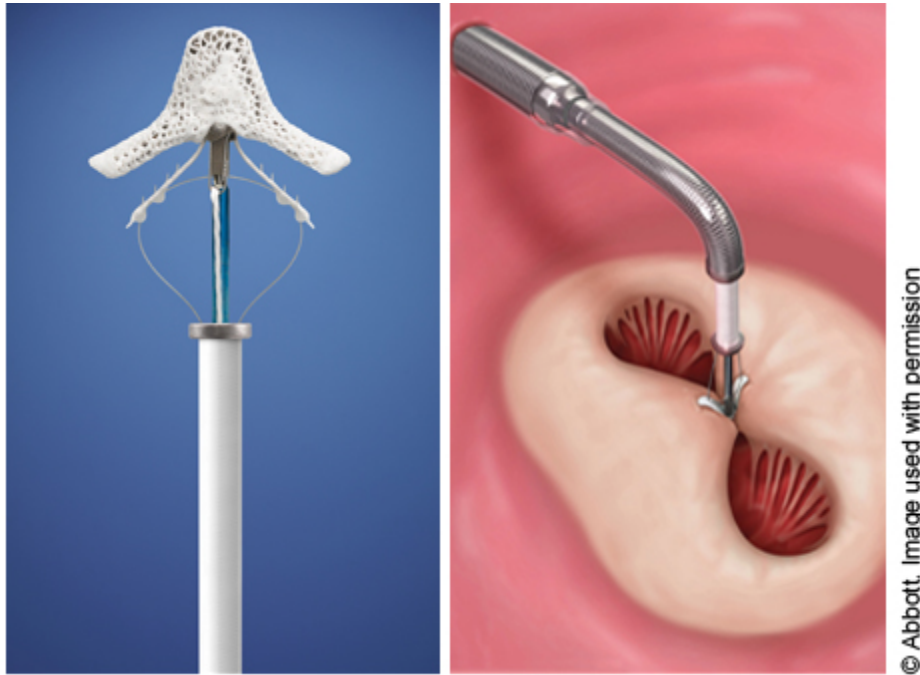
Once the tip of the catheter has reached your heart, your mitral valve is assessed using a transesophageal echocardiogram. The TEE also aids in the correct placement of the MitraClip. A tool on the tip of the catheter makes a tiny hole through the upper chambers (atria) of the heart so that the catheter can be inserted and guided to the left side, where the mitral valve is located.

Through the catheter, the MitraClip is then inserted and positioned by ultrasound to the leaking portions of the



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valve. The clip is attached to the mitral valve leaflets, fastening them firmly together and allowing the valve to close better. It is not uncommon for two MitraClips to be used to fix a severely leaky valve. You will be given general anesthetic so that you will be asleep during the entire procedure.



Left: MitraClip Device Attached To Catheter - Right: MitraClip Closing The Valve

The advantage of this procedure is that it is less invasive than open heart surgery and may reduce the amount of recovery time. The small puncture in your groin, where the catheter is inserted, heals quickly. This is a reasonable alternative to medical treatment (i.e., medications) for patients who are not candidates for open heart surgery (such as the very old and frail, patients with very weak hearts and those who have other non-cardiac conditions involving the lungs, kidneys or brain). Patients who have had previous open heart surgery are also considered for the MitraClip procedure because they may be at higher risk for a re-operation.

On the other hand, the MitraClip procedure is still being studied and evaluated for its long-term effectiveness. Not everyone is a candidate for the MitraClip device. It is used only in a limited group of patients with a certain anatomy and type of leakage. The majority of patients with leaky mitral valves should be treated with traditional surgical methods.

Preparing for Your MitraClip Procedure

Pre-Admission Assessment

Before you are admitted to the Heart Institute for your MitraClip procedure, the MitraClip Clinical Nursing Coordinator will call you to complete a pre-admission assessment. The nurse will ask questions about your medications, overall health, current living arrangements and plans for when you are discharged. The main purpose of this phone call is to help us plan for your admission and discharge from the Heart Institute. We want to ensure that all of your questions and your family's questions about the procedure are answered.

Please do not hesitate to call the MitraClip Clinical Nursing Coordinator with any questions or concerns prior to the procedure at 613-761-4742.

Preparing for Your Stay at the Heart Institute

Expect to stay at the Heart Institute for about one to seven days after your procedure. The majority of patients are ready to go home in two days.

You are generally admitted two days prior to the procedure to allow for all members of the MitraClip team to meet with you. A few pre-procedure tests can be completed at this time, and you will be seen by an anesthesiologist.

When you are admitted, you may bring some personal belongings with you onto the nursing ward. However, while you are recovering on the Cardiac Care Unit (CCU), your family or a close friend will have to take your belongings home. Once you return to the nursing ward, your belongings can be brought back for the remainder of your stay.

Do not, at any time, bring valuables with you. Leave at home all your valuables (including, cash in excess of \$20, jewelry, your mobile phone and other personal electronic devices). The Heart Institute is not responsible for any loss or damage to your personal belongings.

Please pack lightly and bring only the essentials, such as a hairbrush, a toothbrush and toothpaste, glasses, dentures, slippers and reading material. There is limited storage space at the hospital.

Contact Person

Please identify a contact person (family member or close friend). We have a system for keeping your contact person informed about your progress.

If You Are Being Admitted Before Your Procedure

Call the Admitting Department at 613-761-4364 between 9:00 and 9:30 a.m. on the morning of your admission to learn when your bed will be available.

Your bed cannot be booked until your admitting day and may not be ready until after lunch. You will be asked to come to the Admitting Department once your bed is available. Please stay at home until you are directed to come in.

Be sure to tell us about any allergies you have. And make sure you bring the following items with you to the Heart Institute:

- Your health card
- All of your current medications, in their original pharmacy containers or blister packs

What to Expect During Your Stay

Before Your Procedure

The evening before the procedure, you will need to take a shower using antiseptic soap (the soap will be provided for you). From midnight on, you must not eat or drink anything.

The doctor will decide what medications you may take the morning of your procedure.

The nurse will shave a small area on both of your groins, and you will take another shower using the special soap.

Before you are taken to the cardiac catheterization laboratory, the nurse may give you some medication with a sip of water as ordered by the doctor. The medication may relax you and make you sleepy.

During the MitraClip Procedure

Your procedure will take about three hours (sometimes a little longer). You will receive general anesthetic so that you will sleep during the procedure and feel no pain.

After you are asleep, the anesthesia doctor will put a breathing tube in your mouth. The tube is connected to a breathing machine. Usually the breathing tube is removed before you are fully awake. If you still need some support with your breathing, then the breathing tube will not be removed until after you arrive on the Cardiac Care Unit.

All other equipment, such as intravenous lines, a heart monitor and a tube to drain your bladder, will be put in after you are asleep.

Once your MitraClip procedure is completed, you will be transferred to the CCU. The doctor will want to contact your family to let them know your status.

The doctor can either talk to your family in person or call a designated family member or friend on the telephone.

If your family members want to speak to the doctor in person, they will be referred to the lobby volunteer desk, where they can register with the volunteers and wait in the Family Lounge.

If you want the doctor to call a specific family member, the staff will ask you for the name and phone number where your family member can be reached.

The staff will ensure those arrangements are made with you and your family before your procedure starts.

After the MitraClip Procedure

In the Coronary Care Unit (CCU)

CCU Visiting Hours

Visits to the CCU are arranged through the volunteer desk on the main floor of the Heart Institute. Your family and friends can wait in the Family Lounge on the main floor while the volunteers arrange for visitation.

While You Are in the CCU

Most patients arrive in the CCU breathing on their own. If a breathing tube is still needed, it will be taken out as soon as you are awake and able to follow directions. There will be a nurse with you at all times until you are awake and breathing on your own.

For the first two to four hours after your procedure, expect the nurse to be constantly reminding you to keep both legs straight. This is very important to prevent bleeding from the insertion sites in your groin, where there may still be some intravenous lines.

You will stay in the CCU overnight or longer, if necessary. Your nurse will check with you regularly to make sure you are comfortable. Let the nurse know if you have any pain.

Depending on your progress, you will gradually start to increase your activity, beginning with sitting up in bed, then sitting in a chair, and then getting up and walking as tolerated with assistance.

Overnight, you will be allowed clear fluids, as tolerated. You should be able to resume your normal diet the next day.

Most of the specialized monitoring equipment will be removed by the morning after the procedure. When you are in stable condition, you will be ready to leave the CCU. You will be transferred to the nursing units on the fourth or fifth floor. In most cases, this is the day after the procedure.

The day after the procedure, you will undergo a repeat transthoracic echocardiogram to assess the function of the MitraClip device. You will also have blood tests, a chest X-ray and an electrocardiogram (ECG).

A nurse will check your insertion site to monitor for any problems and teach you what to look for as you heal. In the morning, a stitch will be removed from the insertion sites in your groin. A small bruise or a small, soft lump where the line was placed for the procedure is normal. It is also normal to experience bruising at the site, which sometimes spreads down your leg.

Notify your nurse or doctor if you have any of the following problems with the insertion site:

- An expanding lump or a persistent area of redness and warmth
- Yellow drainage from the insertion site
- Worsening numbness in your leg
- Severe discomfort at the insertion site

Going Home

Managing at Home

You and your family must start planning for your return home before your admission to the hospital. For most people who undergo this procedure, it takes up to a week to recover. Most patients return home after two days in the hospital.

Physical Activity

You should not lift, push or pull anything that weighs more than 10 pounds for the first five days after discharge. Even though you may feel ready to resume your normal activity, we recommend you take it easy for at least one month after discharge. If you need to climb stairs, try to limit this to a couple of trips a day for the first week. When you are stronger, you may go up and down stairs as desired.

Continue with any physical activity plan you may have started in the hospital.

Why Your Physical Activity Plan Is So Important

After your MitraClip procedure, your physical activity program is designed to help you recover and get your energy back.

Exercise helps you:

- Feel less tired
- Feel less short of breath
- Sleep better
- Gain more energy to do what you love
- Improve your mood
- Have less difficulty with daily activities
- Feel more confident and in control

Learn to Balance Your Activity with Rest

Give yourself time to get back to normal. Most patients say it takes about a month to feel fully recovered. Use the tips below to save your energy and help your recovery:

- **Prioritize:** Decide which tasks you really need to do yourself and which tasks you can ask someone else to do.
- **Plan:** Do the things that use up your energy when you are feeling your best. Make sure you build in rest or relaxation periods during the day.
- **Pace:** Break down hard jobs into smaller tasks and take regular breaks before you become tired.

- **Position:** If you sit to perform a task, you will use 25 per cent less energy than standing. Avoid unnecessary bending or overhead reaching.

Practical Tips:

- Organize your time so that you take fewer trips up and down stairs.
- Double the recipe when you cook, and freeze some for another day.
- Use lightweight pots and pans for cooking.
- Consider equipment such as a shower chair, long-handled reacher or grabber, and long-handled shoe horn.
- Get extra rest the day before a celebration.
- Get extra rest during times of emotional stress or illness.
- Use a weekly schedule.

Your Walking Program

Exercise should be fun, easy to do and part of your everyday life. Walking is one of the best exercises for improving your health after a MitraClip procedure.

Plan to walk every day. Have someone walk with you for the first couple of weeks. You should be able to carry on light conversation while you walk. If you are too short of breath, slow your pace or take a brief rest.

Begin with short periods at a slow pace, such as two to five minutes, once a day. Continue for about two weeks, and if it feels comfortable, gradually increase the length of time you walk for another two weeks. Continue until you reach your goal.

Your goal is to work up to 20 to 30 minutes of walking every day.

If you can't walk five minutes without stopping, try interval training:

- Walk for two to five minutes and then rest for two to five minutes.
- Repeat as many times as you are able.
- Gradually decrease the resting time between intervals.

Exercises

While you are exercising:

- You should be able to carry on light conversation.
- Start with a warm-up and end with a cool-down (e.g., slower walking, seated or standing exercises).
- Walk on flat ground (avoid hills).
- Wait at least one hour after a meal before exercising.
- Exercise at a time of day when you feel rested—generally the morning rather than afternoon.
- Avoid extreme heat or cold. You might consider walking indoors at a mall, using a treadmill (with no incline) or a stationary bicycle (with little or no tension).
- Avoid heavy lifting or pushing.
- Avoid activities that involve lifting weight above your head.
- Avoid exercises that make you strain, grunt or hold your breath.
- You should be breathing like you normally do in your resting state within 10 minutes of completing your exercise. If not, reduce the length or intensity of exercise next time.

When to Stop an Activity

Always listen to your body. Stop the activity if you:

- Cannot carry on a conversation without being short of breath
- Feel weak or dizzy
- Feel sick to your stomach (nauseated)
- Feel your heart is pounding or racing
- Have any discomfort

Stop and rest. Sit in a comfortable chair.

If these symptoms persist, call 9-1-1.

Warm-Up: Sitting Exercises

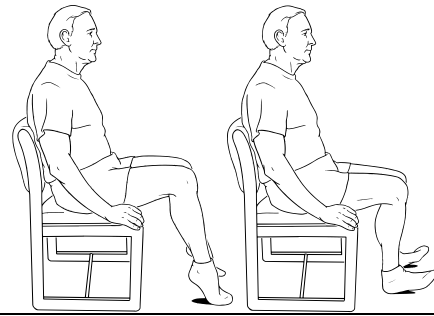
Deep Treathing

Place hands on stomach and take a deep breath. Feel hands move out. Exhale fully and feel hands move in. Repeat ___ times.



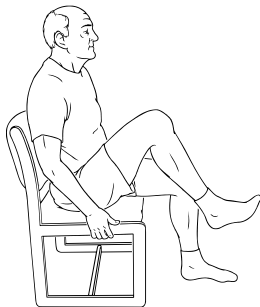
Ankle Pumps

Push down on your toes as you lift your heels off the floor as far as you can. Then return your feet to starting position and lift your toes off the floor. Repeat ___ times.



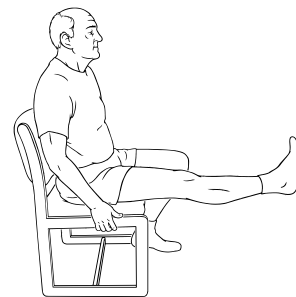
Knee Raises

Raise one knee up toward your chest and then lower it to the starting position. Repeat with other knee. Keep alternating right and left. Repeat ___ times.



Knee Extension

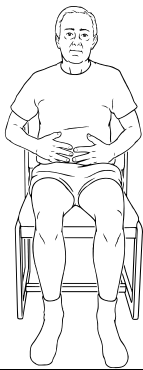
Sit with your back straight and hands in your lap or at your sides. Slowly straighten one knee. Hold for three seconds and then lower it to the starting position. Repeat ___ times with each leg.



Cool-Down: Sitting Exercises

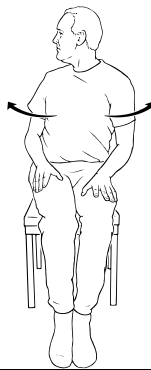
Deep Breathing

Place hands on stomach and take a deep breath. Feel hands move out. Exhale fully and feel hands move in. Repeat ____ times.



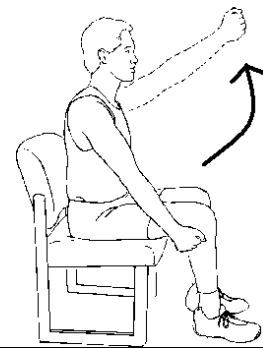
Trunk Rotations

With feet flat, turn upper body as far as possible toward one side. Hold for three seconds. Return to starting position. Repeat ____ times each side.



Shoulder Flexion

Lift one arm straight up and over your head as far as possible while you inhale. Return arm to your side as you exhale. Repeat ____ times each arm.



Cardiac Rehabilitation programs provide more specific exercise and lifestyle guidelines. There is no cost for participation and options include on-site or home-based programs. To get started, call 613-761-4572.

Tips to Stay Active

- Include a variety of activities that you enjoy.
- Any amount of activity is better than none at all.
- Stick with it until it becomes a habit.
- Wear comfortable clothing and shoes.
- Invite a friend to join you for a walk.
- Schedule exercise into your day.

- Set reasonable goals for yourself.
- Keep an exercise journal to track your progress.

What to Watch for

Examine the insertion site in your groin every day. It is normal for it to feel like a small dime or pea-sized lump that may be slightly red and tender and, occasionally, to have some clear drainage.

Call your doctor or the Nursing Coordinator immediately if you notice:

- A lump that is getting bigger
- Any area of redness or warmth
- Any kind of yellow or pink drainage or poorly healing incision
- Unusual pain in the groin region and/or radiating down the leg or felt in your lower back

Pain/Discomfort: Expect the discomfort in your groin to gradually decrease as you continue to heal. If you begin to have more pain or any chest pain or breathlessness, contact your doctor or the Nursing Coordinator.

Other Symptoms: Call your doctor or the Nursing Coordinator if you develop a fever or flu-like symptoms, such as feeling unusually tired.

Call 911 or go to the nearest emergency department if you experience:

- Increasing shortness of breath
- Irregular heart rate
- Numbness or weakness in your arms or legs
- Blurred vision

Home Monitoring

If you need close follow-up after discharge, you may be referred to the Telehome Monitoring Program. If you are referred, the nurse from Telehome Monitoring will meet with you in the hospital and show you how to use the special equipment before you go home.

Daily Weight Checks

While you are recovering in the hospital, your weight will be checked daily. A sudden weight gain might be an early sign that you are retaining extra fluid. When you go home, you need to continue to weigh yourself daily for the first month to make sure you are not building up extra fluid.

Before you are discharged, you will be given a daily weight-tracker form for recording your weight. The nurse will review with you how to weigh yourself every day and when you need to call us.

Medications

When you are discharged from the Heart Institute, expect to have new prescriptions written for you. Some of the medications will be the same as what you were taking before and some will be different.

Before you go home, it is important that you and your family understand your prescriptions and how to take each medication. If you have any questions, make sure you ask your nurse before you leave the hospital. Please contact your doctor or the Nursing Coordinator if you have questions when you return home.

You may need to take anti-platelet medication. These medications make your blood less sticky and help prevent clots forming on your new device. If you have a history of an irregular heartbeat (atrial fibrillation), your medication may be changed to a different type of blood thinner that is more effective for patients with a valve device.

Name of Anti-platelet Medication	How Medication Works	Potential Side Effects
ASA (Aspirin [®] , ECASA) Clopidogrel (Plavix [®]) Warfarin (Coumadin [®])	<ul style="list-style-type: none"> • Helps prevent blood clots on MitraClip device • Decreases risk of future heart attacks • Helps prevent stroke in patients with an irregular heartbeat 	<ul style="list-style-type: none"> • Increased risk of bleeding & bruising • Stomach upset (nausea, diarrhea, heartburn)

Living with Your MitraClip Device

Maintaining a Heart Healthy, Low-Salt Diet

Too much salt in your diet can cause fluid to build up, forcing your heart to work harder.

Following a low-salt diet will help your heart work more efficiently and place less stress on your heart valve. It may even keep you out of the hospital.

The following tips can help you lower your salt intake and keep your diet heart healthy:

- Read food labels: Choose any food in which the sodium (salt) content is 8 per cent or less per serving.

Reduce salt in cooking and avoid adding salt at the table:

- Replace salt with fresh or dried herbs, lemon juice, flavored vinegars and unsalted spices (try Mrs. Dash® or McCormick's® salt-free spice blends)
- Rinse canned vegetables before using them in cooking

Prepare meals using fresh ingredients:

- Use fresh or frozen foods whenever possible
- Aim for a variety of foods from each food group every day
- Use canola or olive oils instead of hydrogenated or trans fats
- Get plenty of fibre, with whole grains and unsalted nuts and seeds

For more information about how to manage salt and fluid, ask for a copy of the *Heart Failure Guide*.

Preventing Other Infections

Your skin is a barrier against infection. Protect your skin by avoiding any new body piercing or tattooing. Pay careful attention to any breaks or cuts in your skin.

Contact your doctor immediately if you develop:

- A fever
- An abscess or boil
- A cut that has become swollen or tender or drains pus
- Any other suspected infections, including urinary tract infections

Notify your doctor if you experience increased shortness of breath or swelling of your ankles or feet.

Follow-Up Appointments

You will be given an appointment to see either your cardiologist or your cardiac surgeon about one month after your MitraClip procedure. You will have another echocardiogram on the day of this appointment.

We will arrange another echocardiogram at six months and one year post-procedure. You may be seen in clinic at this time as well. Every yearly anniversary of your procedure date, we will conduct follow-up evaluations of your MitraClip device with further echocardiogram screenings. These will be done at the University of Ottawa Heart Institute.

Keep Your Health Care Team Informed

Inform any health care professional involved in your care that you have had a MitraClip implanted (transcatheter mitral valve repair). This includes your family doctor, any other doctors that you see, your pharmacist, your physiotherapist, your home nurse or anyone else who helps you stay healthy.

If you have any questions, please feel free to call:

Cindy Cross

MitraClip Clinical Nursing Coordinator

Phone: 613-761-4742

If you need help outside of normal business hours, call:

Nursing Coordinator

Phone: 613-761-4708

Appendix 1: Where to Find More Information

The University of Ottawa Heart Institute website can provide you with information concerning all aspects of heart disease. Please visit the website at www.ottawaheart.ca.

Diagnostic Tests

Test	Brief Description
Echocardiogram	<p>This test uses ultrasound (high-frequency sound waves) to look at your heart and how the different parts of your heart are working—for example, the different chambers, or your heart valves.</p> <p>An echocardiogram is performed by placing a hand-held ultrasound wand on your chest. By positioning the wand, the sonographer can evaluate the functioning of your heart.</p>
Transesophageal Echocardiogram (TEE) www.ottawaheart.ca/patients_family/transesophageal.htm	<p>This is a specialized type of echocardiogram test. It uses a special thin, flexible tube that is inserted down through your throat through to your stomach.</p> <p>The reason for having a TEE is that your doctor is able to get a very good look at your heart without interference from your ribs and lungs.</p>
Cardiac Catheterization www.ottawaheart.ca/patients_family/cardiac-catheterization.htm	<p>Cardiac catheterization is a procedure used to detect and treat some types of heart problems. A thin flexible tube called a catheter is inserted into an artery and/or vein located in the groin area (or the arm) and guided to the heart. Cardiac catheterization is used to:</p> <ul style="list-style-type: none">▪ Evaluate or confirm the presence of coronary artery disease, valve disease or disease of the aorta▪ Determine the need for further treatment (such as an interventional procedure or coronary artery bypass graft, or CABG, surgery)
ECG (Electrocardiogram) www.ottawaheart.ca/patients_family/electrocardiogram.htm	<p>An electrocardiogram (ECG) is a test that measures and records the electrical activity of your heart.</p>

Test	Brief Description
<p>Chest X-ray</p> <p>www.ottawaheart.ca/patients_family/chest-xray.htm</p>	<p>A chest X-ray lets doctors take pictures of the structures inside your chest, including your heart, lungs, blood vessels, and bones. X-ray pictures of the chest can show how large your heart is and whether there is too much fluid in your lungs (pulmonary edema) caused by heart failure.</p>
<p>CT Scan</p> <p>www.ottawaheart.ca/patients_family/computed-tomography-scan.htm</p>	<p>A computed tomography (CT) scan is a type of X-ray test that lets doctors take three-dimensional (3-D) pictures of your heart and blood vessels. The CT scanner combines the specialized X-rays with a high-powered computer that reconstructs the information into 3-D views.</p>

Heart Healthy and Low Salt Diets

For more information about a low salt diet, check our website at:

www.ottawaheart.ca/content_documents/5.6_HF_Booklet_-_ENG.pdf

Appendix 2: Talking to Your Doctor

Risks and Complications

Your cardiologist and cardiac surgeon will fully discuss the risks of this procedure with you and your family. When talking to your doctor, the following is a list of questions that may help you to decide whether this procedure is right for you.

How would this procedure benefit me?

What are the risks of this procedure for me?

How painful is the procedure?

How long is the waiting list for this procedure?

How long will this valve last?

How will I be followed up?

Will long-term medication or medication changes be required after the procedure?
