

Catheter-based Patent Foramen Ovale (PFO) Closure



Information for patients, families, and friends

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What is Patent foramen ovale?

The foramen ovale is a normal opening between the two upper chambers of an unborn baby's heart, the right and left atrium. It allows for blood to bypass baby's lungs which are not fully developed. This tissue flap opening usually closes 6 months to a year after the baby is born.

In about 1 in 4 people, the foramen ovale tissue flap does not close completely. When the foramen ovale remains open, it is called "**patent foramen ovale**" or PFO. The cause of a PFO is unknown. There are no known risk factors.

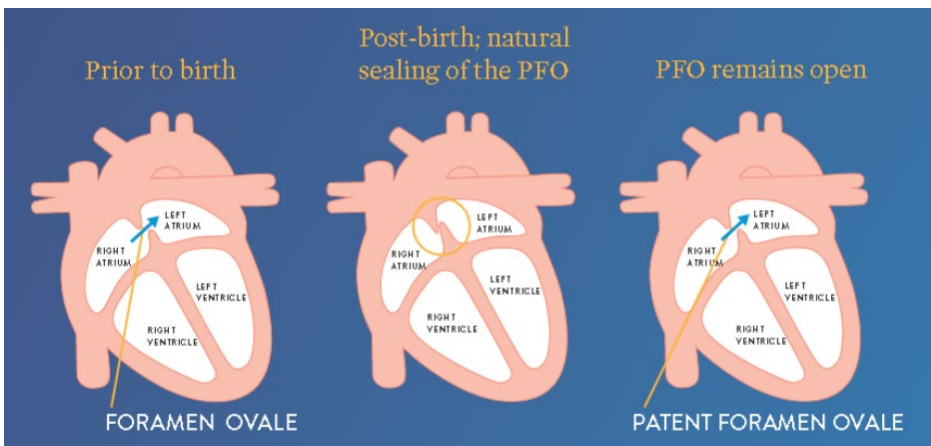


Figure 1 - PFO

A PFO can allow a small amount of blood to pass from right atria to left atria. This causes no medical problems in most people. However, in some individuals, a PFO may allow a blood clot to pass from right to left side of the heart. Then through circulation system the blood clot can enter the brain. This causes a Stroke or a Transient Ischemic Attack (TIA).

The device and its purpose

The Amplatzer PFO Occluder is a device that can be placed in your heart to close the PFO. This is done through minimally invasive, catheter-based technique. This procedure is available for people with history of a stroke or TIAs diagnosed by echocardiogram.



Figure 2 – Amplatzer PFO Occluder

The Amplatzer PFO Occluder is a device specifically designed to stop the flow of blood through the PFO.

It consists of two circular wire-mesh discs. The discs are covered in medical fabric that sandwich together to close PFO between the two upper chambers in your heart.

Once the device is placed in the PFO, it will remain permanently implanted in your heart. Over time, your body's natural healing process will cover the device with tissue. Until this process is completed, you will need to take anti-platelet medication to protect the device.

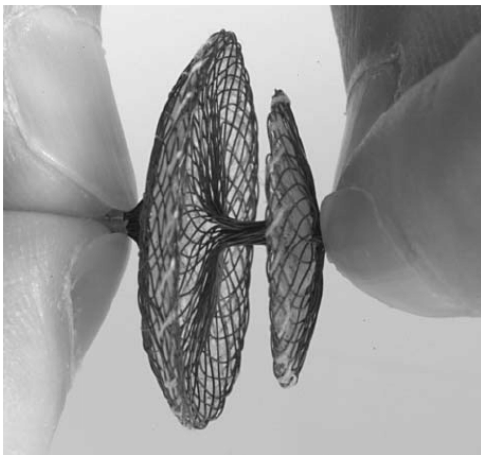


Figure 3 – Amplatzer PFO Occluder with larger right atrial and smaller left atrial discs

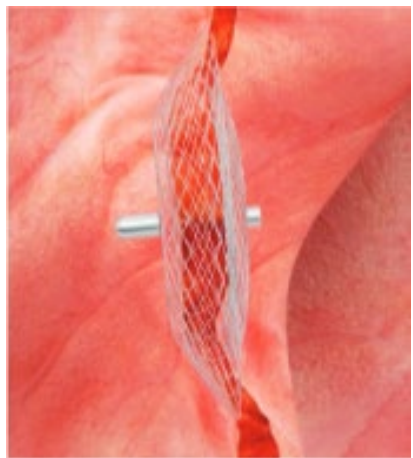


Figure 4 – Amplatzer PFO Occluder as it sits in your heart

How do I prepare for the procedure?

Planning for the procedure

Before your PFO closure procedure, your doctor will assess and order tests that need to be considered before the procedure. These may include:

- Special echocardiogram called transesophageal echo (TEE)
- Electrocardiogram (ECG)
- Blood work
- Change to your medications
- Your overall medical status

Once the necessary test results are available, you will meet with the cardiologist (interventionalist). You will discuss the procedure, potential risk factors and any other treatments.

During this visit, you will have a chance to ask questions.

If you decide to go ahead with the PFO closure, you will receive the date for your procedure.

The night before your procedure

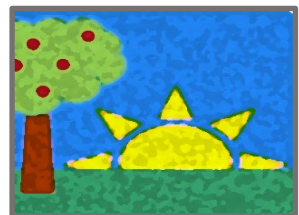


Take a shower or a bath the night before or morning of your procedure. Please refrain from using scented products.

Ensure you have a responsible adult to drive you home from the hospital. Have their contact number available for the recovery room nurses so your discharge timing can be arranged. This will usually be about 6 hours after your procedure is over.

If you go home the same day, a responsible adult should stay with you for the first night. This will not be necessary should you need to stay in the hospital overnight.

The day of your procedure



You may have light meal (e.g., juice, toast) up to 2 hours before your scheduled procedure.

Take your usual medications in the morning unless you were told otherwise.

Please bring all prescription medications in their original containers or blister pack(s) to the hospital.

For your comfort, wear loose clothing. DO NOT bring valuables (e.g., jewelry) to the hospital.

Please bring with you:

- Name and number of responsible adult who will drive you back home
- Your medications in original packaging
- A book or a magazine to read while you wait
- Your dentures
- Your glasses/contacts, as well as the case
- Your hearing aids
- Your Ontario Health Card

Please arrive at the hospital 2 hours before your booked procedure time. **Remember that your procedure time is approximate only.** Cardiac Catheterization Lab deals with many hospital emergencies. There may be unavoidable delays. Any delays will be communicated to you and your loved ones through our nursing staff.



What will happen at the hospital?

Once you arrive in the hospital, you will need to register at the first-floor registration area. It is located next to the gift shop.

Once you are registered, you will be asked to go to the Cardiac Catheterization Lab found on the second floor. If you are unsure of where to go, you can ask one of our volunteers for help.

On arrival in the Cath Lab, you will be assessed by the nurse. During assessment, information about your medications, medical history and allergies will be reviewed.

An intravenous (IV) will be started in your arm. This will be used to give you fluid and medications before, during and after the procedures.

The doctor performing the procedure will speak to you, review the procedure and answer questions.

You will be given an opportunity to go the bathroom before you are taken into the procedure room.

How is the procedure performed?

PFO procedure is performed in cardiac catheterization laboratory.

Once in the Lab, you will lie down on a narrow table under x-ray camera. This camera will move around your body during the procedure.



Figure 5 – St. Mary's Cath Lab

You will be given sedation to keep you comfortable and relaxed.

Your heart rhythm and vital signs will be monitored during the entire procedure. Your groin will be washed with a cold antiseptic solution and then you will be covered with sterile drapes. Do not touch the washed areas.

Your doctor will inject local anesthetic into your groin to 'freeze' the site.

A short tube called a 'sheath' will be inserted into a vein in your groin. It will help guide other equipment, like the PFO Occluder device, to your heart.

You may feel some pressure at the groin site. This is normal. If you have a lot of discomfort, please let our health care team know.

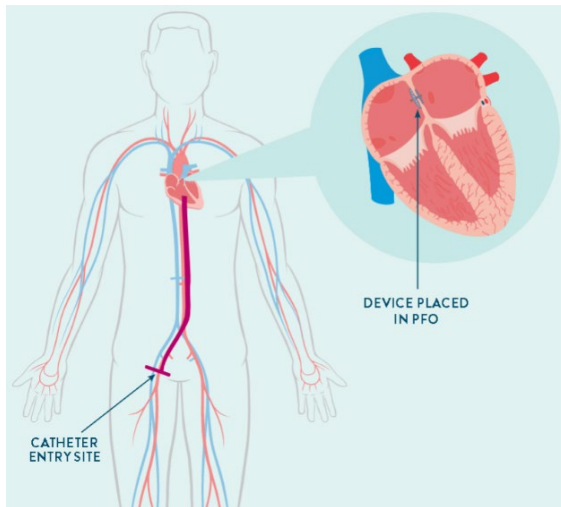


Figure 6 – Amplatzer PFO Occluder as it sits in your heart

The doctor will also use long, thin tubes called 'catheters' to inject colourless dye into your heart. This dye can be easily seen on x-ray.

The procedure usually takes about 1-2 hours.

Radiation facts

Having PFO closure procedure exposes you to radiation.

The benefits of this small radiation exposure outweigh the risk.

Our MRT (Medical Radiation Technologists) will monitor the radiation dose you receive during the PFO closure procedure.

Speak with your doctor if you have any questions.



What happens after my procedure?

Once the procedure is finished, your doctor will remove the 'sheath' from your groin. Few minutes of manual pressure might be needed to minimize any bleeding at the puncture site.

You will then be transferred to our Pre/Post Heart Investigation Unit (PHIU). It is located on the second floor and across from the Cath Lab.



Figure 7 - PHIU

Our PHIU nurses will provide all the nursing care you will require. They will monitor your vital signs, your groin access

site, and pulses in your leg. They will also check your neurovitals.

You will need to remain in bed with your legs straight for about 2 hours. For your comfort, the head of your bed can be raised slightly.



Do Not:

- Bend the leg used for the procedure as this may cause bleeding
- Cross your legs as this may block circulation to your feet

Your PHIU nurses will let you know when you can safely get up. They will assist you with slowly standing up.

You will be given a light snack and a drink. It is important to drink fluids to help remove the contrast dye from your body.



The presence of visitors after your initial recovery, will be assessed on individual basis, as well as hospital policies at the time of your procedure.

Please expect to stay in PHIU at least 6 hours after your PFO closure procedure and possibly overnight.

Going home

Discharge home education and care instructions will be provided by PHIU nurses before you leave.



Go to Emergency Department or call 911, if:

- You have changes in your sight or speech
- You have severe pain, numbness, coolness, or weakness in your leg
- You have sudden uncontrolled bleeding, swelling or severe pain at the puncture site
- You start feeling racing heart (palpitations)
- You start experiencing shortness of breath
- You get discomfort when breathing while lying flat



Call your family doctor right away if:

- You develop a fever of 38.0°C or higher
- You develop a rash

- Your puncture site becomes swollen, red, warm to touch, more tender; or if it begins draining pus (yellow-green discharge)
- You have exacerbation of migraine headaches, if previously present

Access site and self-care

Have a responsible adult with you for 24 hours.

Remove your groin dressing 48 hours after your procedure. Keep area dry and clean.

Shower do not soak the area for 3 days.

Support your groin by applying pressure to it for 24 hours. Your nurse will show you how.

Do not strain when having a bowel movement.

Avoid strenuous walking for 24 hours

No lifting anything over 10 pounds for 7 days.

No driving for 24 hours.

If you work at a job where you usually sit, you can go back to work in 3 days. If you do physical labour, you need to stay off work for 1 week.

For 6 months you will need to take antibiotics before any dental cleaning or procedures. This is to prevent infection on the new device.

References:

Figure 1 – PFO <https://dan.org/wp-content/uploads/2020/07/PFO-diagram-DAN-256x239-1.jpg>

Figure 2 – Amplatzer PFO Occluder <https://www.cardiovascular.abbott/content/dam/bss/divisionalsites/cv/images/us/products/amplatzer-pfo-occluder-2.jpg>

Figure 3 – Amplatzer PFO Occluder with larger right atrial and smaller left atrial discs <https://www.researchgate.net/profile/Bernhard-Meier-2/publication/8433413/figure/fig1/AS:280019118116889@1443773168823/Amplatzer-PFO-occluder-with-larger-right-atrial-than-left-atrial-disc-consisting-of-a.png>

Figure 4 – Amplatzer PFO Occluder as it sits in your heart <https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcTq5kvdN67PIFf8ubYCNyFRsmXiCyKwGUmZkw&usqp=CAU>

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