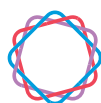




YOUR GUIDE TO

Atrial Septal Defect (ASD) / Patent Foramen Ovale (PFO) Closure



IntraCare

Interventional
Cardiology



IntraCare's angiography suite

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About this procedure

This guide provides information about an atrial septal defect (ASD) or patent foramen ovale (PFO) closure procedure. It includes information about what is involved, how to prepare and what to expect during and after this procedure. Please use this in addition to information provided by your doctor and nurse.

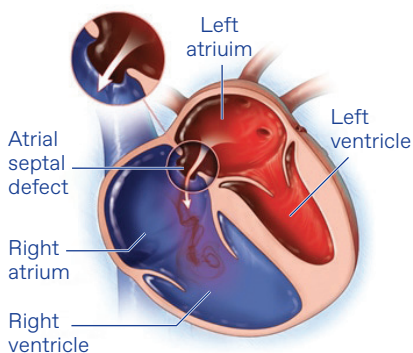
An ASD or PFO closure procedure is performed in the cardiac angiography suite at IntraCare in Epsom.

Both IntraCare and Allevia Hospital will be involved with your care for this procedure. Allevia Hospital is responsible for your admission, preparation and aftercare on the ward. You will be admitted in the cardiac investigation unit (CIU) within Allevia Hospital, then taken to IntraCare where your specialist and a team of IntraCare staff will perform your procedure. A PFO closure procedure is performed under local anaesthetic and is a day stay procedure. An ASD procedure is performed under general anaesthesia (GA) and you will be admitted overnight.

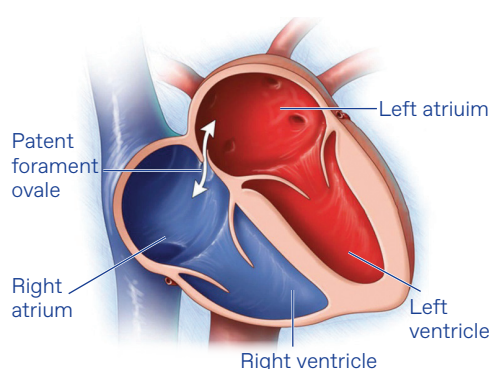
What is Atrial Septal Defect (ASD) or Patent Foramen Ovale (PFO)?

An atrial septal defect (ASD) is a 'hole' or deficiency in the heart's wall tissue that has failed to close. This is considered a congenital heart defect or something you are born with. It is located between the atria or upper chambers of the heart.

A patent foramen ovale (PFO) is a 'flap' also located between the atria of the heart but is not an abnormality as such. Normally this foramen ovale closes by itself 6 to 12 months after birth. When it does not close, it is known as a patent foramen ovale. It is present in 25% of adults but it is common in up to 50% of young people who have suffered a TIA or stroke.



Atrial Septal Defect



Patent Foramen Ovale

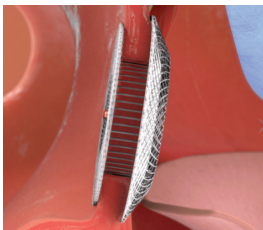
Unless a baby has other heart defects that cause symptoms, an ASD or PFO may not be diagnosed until adulthood. A large, long-term ASD that persists into adulthood can slowly damage the vessels and cause high blood pressure in the lungs and heart failure. Other problems that more commonly occur with a PFO may include abnormal heartbeat and an increased risk of a stroke or transient ischemic attack (TIA). If a blood clot blocks off the supplying blood flow in the vessel, this is called a cerebrovascular accident (CVA).

An ASD or PFO can be diagnosed by the occurrence of signs and symptoms, and may also be detected on tests such as a chest X-ray, echocardiogram, transoesophageal echocardiogram (TOE), or a right heart catheterisation study.

If you have an atrial septal defect or patent foramen ovale and are symptomatic, you will need to have the defect closed. The procedure is minimally invasive by inserting a small catheter via the vein in the groin to deliver the device. This does not require open-heart surgery and has an almost instant recovery, with a very low chance of complications.

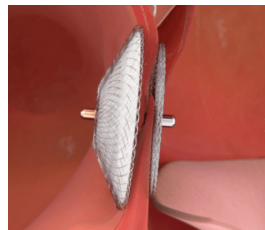
What is an ASD or PFO closure procedure?

The goal of this procedure is to close a hole or a flap in the wall of the heart with an occluder device (plug). It is done by an interventional cardiologist at IntraCare.



Amplatzer™ Septal Occluder

A percutaneous transcatheter device for patients requiring atrial septal defect (ASD) closure.



Amplatzer™ PFO Occluder

Designed for patent foramen ovale (PFO) closure, the Amplatzer™ PFO Occluder significantly lowers the risk of recurrent ischemic stroke.



A mechanical occluder device is placed to plug the hole or flap between the atria or upper chambers of the heart. X-ray is used to guide and confirm placement during the procedure. A small metal device called an occluder resembles two small umbrellas joined together. The discs have a polyester mesh inside to enhance elimination of flow, sealing the hole completely. The heart tissue will grow over the implant over time and becomes a part of the heart. To guide plug placement, a transoesophageal echo and general anaesthetic is required for an ASD closure, but not for a PFO closure.

Before your procedure

A nurse from IntraCare will call you 24–48 hours prior to your procedure to discuss the following information:

- Your admission time.
- When you should stop eating and drinking.
- Medication instructions.
- Allergies (including medications, contrast dye, dressings/plasters and food).
- Answer any further questions.

Anticoagulation (blood thinner)

- If you take Aspirin/Cartia and/or Clopidogrel you may continue to take these.
- Please inform the staff if you take any other blood thinners (e.g. Warfarin, Dabigatran/Pradaxa, Rivaroxaban, Apixaban). Your cardiologist will advise if you need to stop this medication temporarily for a few days before the procedure.

Warfarin

If you are currently taking Warfarin, please inform IntraCare via email or phone as soon as possible. Our nurses will review your INR levels and advise any medication changes if necessary.

Other regular medications

Please continue to take these unless advised otherwise by your cardiologist. If you are taking a diuretic or water pills (e.g. frusemide, spironolactone) please inform IntraCare staff as you may need to withhold this on the morning of the procedure.

Reminders for the day of your procedure

- If you are on regular medication, please bring this with you in its original packaging.
- Please leave all your jewellery and valuables at home. You are welcome to bring your mobile phone in with you.
- We recommend wearing loose-fitting clothing and shoes that are easy to slip on/off.
- You are encouraged to bring a friend or a family member as a support person before and after your procedure.
- The planned procedure time is an estimate only and may vary. We will keep you informed of any unexpected delays on the day.

Informed consent

As with any procedure, there are potential risks involved. Your cardiologist and anaesthetist will explain the procedure, discuss possible risks and answer any questions you may have. Your whānau or support person are welcome to be part of this discussion. You will then be asked to sign the consent form. This will occur either at an earlier appointment, or on the day of your procedure.

Your procedure

A PFO closure usually takes approximately 30 minutes. You will be sedated but awake, and local anaesthetic will be used at the access site (usually the groin).

An ASD procedure takes longer (usually around 60 minutes) as you will require a general anaesthetic, and a transoesophageal echocardiogram. You will be required to stay overnight.

Preparation

Once you are in the angiography suite, the staff will perform a safety check-in, where we will confirm your name, date of birth and the procedure you are having. A small intravenous (IV) line will be inserted into a vein in your arm for medication to be injected. We may need to remove hair with clippers at the access site for sterile preparation. Please avoid shaving the area yourself as this may cause minor abrasions to the skin, increasing the risk of infection.

Other devices for monitoring blood pressure, heart rate and oxygen levels will be fitted to ensure your safety during the procedure. If you are undergoing an ASD procedure, general anaesthesia will be given. We will carefully tuck your arms at your sides to ensure sterility and safety is maintained.

The procedure

The femoral veins in the groin area provide the easiest venous access into the heart. This area will be prepared with an antiseptic solution. For a PFO closure procedure you will be covered with a large sterile drape, and the area at the top of the leg will be completely numbed with local anaesthetic. This will sting for about thirty seconds. You may feel pressure, but you should not feel any pain for the duration of the procedure. If at any time you feel pain or are uncomfortable, please let your doctor know and more local anaesthetic or pain relief can be given.

A small hollow tube (sheath) will be inserted into the vein in the groin. This will serve as the access site for the occluder device or plug. A catheter (thin flexible long tube) will then be used to locate the hole/flap before the occluder device is deployed. An X-ray picture with contrast dye will then be taken to check for any leaks. Once the sheath is removed from the groin, slight manual pressure will be applied to the groin and a sterile dressing will cover the puncture site. For an ASD closure the same will occur but you will be asleep under a general anaesthetic.

After your procedure

You will be transferred from IntraCare to CIU, where the Allevia Hospital team will look after you during your recovery. It is important you remain lying flat on the bed for the next few hours. You will undergo an electrocardiogram (12-lead ECG) and echocardiogram before you go home to ensure the occluder device is in place and functioning well. If appropriate you will be discharged four hours after PFO closure, and the following morning after an ASD closure.

Recovery and discharge

- Following your procedure, it is important that you **do not drive for 48 hours**. Specialist assessment is required before you return to driving.
- Please ensure you have a family member or friend to drive you home from the hospital, as you may still be under the effects of anaesthesia or sedation.
- You will need to arrange for someone to be at home with you on the day of your discharge and overnight to support you in your recovery.
- Due to the sedation, you may feel lethargic afterwards with reduced concentration. For this reason, for 48 hours after your procedure:
 - Do not do any activity requiring strength, concentration, or full alertness.
 - Do not make any legal decisions or sign legal documents.

Resuming travel and activities

- You will be able to return to work within a week of having the procedure unless your job involves heavy lifting (>5kg).
- You can begin light exercise after 1 week.
- If you have had an ASD or PFO closure procedure, do not fly domestically for 48 hours, short international flights (e.g. Australia) for 2 weeks or long-haul international flights for 6 weeks.

Medication

Your cardiologist will discuss any medication changes with you, if necessary. If you have any questions regarding your medications after your procedure, please contact your cardiologist.

Follow up appointment

You will be seen in clinic at The Heart Group approximately 1–3 months following your PFO or ASD closure. If you have minor concerns prior to your follow up appointment, please arrange to see your general practitioner (GP) or contact IntraCare.

Femoral (groin) site care

It is normal to experience some bruising at the puncture site. During the first few days after your procedure:

- Do not do any heavy lifting (>5kg) or strenuous exercise.
- Try not to excessively cough, sneeze, or strain as this puts pressure on the puncture site which may cause it to bleed.
- Do not sit in a bath, hot tub or spa until the skin is healed.
- Do not cross your legs while sitting.
- You may resume walking if your puncture site is not painful.
- Remove the dressing on your groin once the skin has healed (approximately 3 days).

Haematoma

It is common for a haematoma to develop after this procedure. A haematoma is a collection of blood under the skin that is sometimes painful. A small hard lump (similar in size to a pea) may also be felt under the skin and remain for several weeks:

- If a large lump (haematoma) occurs, lie down, and get another person to press down firmly on the centre of the haematoma for approximately 10 minutes.
- If after releasing pressure, the haematoma reoccurs, keep applying the pressure and go to your local accident and emergency department.

Bleeding

- If it is only a small ooze, re-apply a sticking plaster and lightly press for a few minutes.
- If there is significant bleeding, you should lie flat, and another person will need to apply firm pressure for 10 minutes. If this does not stop the bleeding, you will need to call an ambulance.

Seek immediate medical attention (dial 111 for an ambulance) if there is excessive bleeding from the puncture site or if you are experiencing severe chest pain.

Please take this booklet and your discharge summary with you if visiting the GP, afterhours or hospital.

**If you have any concerns after your procedure, please contact IntraCare:
Monday to Friday: 09 630 1961 (between 6:30am and 6:00pm).
For after-hours, weekends, and public holidays, contact 027 482 0763.**

How to find us

IntraCare Epsom

Both IntraCare and Allevia Hospital will be involved with your care for this procedure.

When you arrive, please report to the Allevia Hospital reception desk (number 1 on the map).

First Floor, Allevia Hospital Reception
98 Mountain Rd, Epsom, Auckland 1023

P: +64 9 630 1961 (Monday to Friday 6:30am–6:00pm)

P: +64 27 482 0763 (after hours, weekends and public holidays)

E: admin@intracare.co.nz

W: intracare.co.nz

Where to park

A 10 minute patient 'drop off zone' is available on the level 1 carpark. Head up the ramp as you enter into the carpark from the Main Entrance on Mountain Road.

The first 30 minutes are free and apply only once the vehicle licence plate number has been entered into a payment terminal. Patient parking is available on all levels of the car park. Parking limits apply, and parking spaces are marked (P90, P180, and All Day Parking).

The Allevia Hospital parking is managed by a separate company, and a fine may be issued if your vehicle breaches any of the parking terms and conditions.

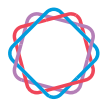
There is free 120 minute parking available nearby on Mountain Road, Gilgit Road and Almorah Road after 9am.



Main entrance to patient and visitor car park
 - 250 spaces

Walkway to main reception
 Pedestrian access to main reception from car park

- | | |
|--|--|
| 1 Allevia Hospital reception and Allevia Radiology 1 reception | 8 Allevia Radiology 2 (CT, ultrasound) |
| 2 Canopy Cancer Care | 9 The Heart Group |
| 3 ARO (Auckland Radiation Oncology) | 10 Allevia Radiology PET-CT Canopy Cancer Care |
| 4 Allevia Café and outdoor dining courtyard | 11 Allevia Specialist Centre |
| 5 Allevia Pharmacy | 12 Allevia Radiology 1 (MRI/X-ray) |
| 6 IntraCare | A B C D E Allevia Specialist Centre entrances |
| 7 Awanui Labs (blood tests) | |



IntraCare

Intra Limited

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