



Royal Papworth Hospital
NHS Foundation Trust

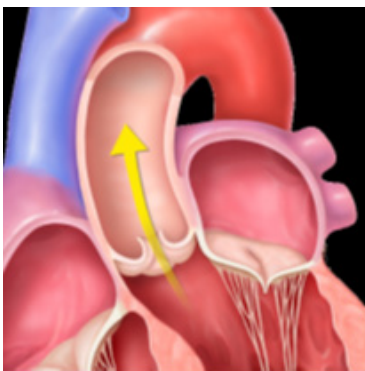
Percutaneous Mitral Valve Repair

Patient's guide and
consent form

How your heart works

Your heart beats thousands of times per day, pumping dozens of gallons of blood each hour. It pumps blood through your lungs to replenish it with oxygen, and then pumps the oxygen-rich blood back out to the rest of your body.

The heart has four chambers; the upper two chambers are called atria (each one is an atrium), and the lower two are called ventricles. There are four valves that function as the doorways between these chambers (see figure below). Each valve is made of thin but strong flaps of tissue called leaflets. The valves open in one direction to let blood pass from one chamber to the next, closing quickly between heartbeats so blood does not flow backward.



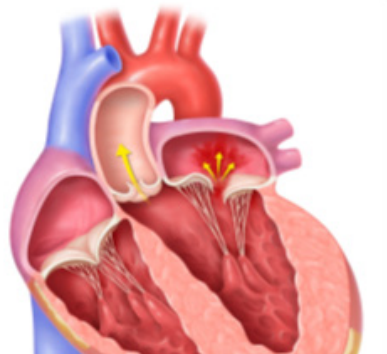
Normally functioning mitral valve

atrium) from the lower left heart chamber (left ventricle). The mitral valve has two flaps, called leaflets. The leaflets open to let blood flow into the left ventricle, and close to stop blood flowing backwards to the left atrium. Mitral regurgitation is a leaking mitral valve. The leaflets do not meet in the middle, so the heart pump (left ventricle) must work harder, and the chambers of the heart may enlarge.

Until recently, leaking mitral

The mitral valve and mitral regurgitation

The mitral valve is one of the four heart valves that control the flow of blood in and out of the heart. The mitral valve separates the upper left heart chamber (left



Improperly functioning mitral valve allowing blood to flow back into the left atrium (mitral regurgitation)

valves were repaired with open heart surgery. Open heart surgery involves a general anaesthetic and going through the breastbone (sternum) or between the ribs, diverting the flow of blood away from the heart, and then replacing/repairing the mitral valve.

What is a percutaneous mitral valve leaflet edge repair?

A mitral clip device (i.e. Clip) is a device that can be used to repair a leaking mitral valve and relieve symptoms of mitral regurgitation and heart failure. A Clip procedure is carried out under a general anaesthetic but is a less



Mitral clip device

invasive way to repair the mitral valve. This involves repairing the mitral valve through the skin via the groin, using a thin flexible tube, called a catheter. It does not involve open-heart surgery or cutting

the breastbone. The implanted Clip holds the leaflets together in a specific area of the valve, with holes (orifices) on either side for the blood to flow in.

Benefits of a Clip procedure

Even with the best medical treatment, mitral regurgitation usually gets worse over time, leading to signs and symptoms of heart failure such as breathlessness, fatigue and swollen ankles or legs (fluid overload). This procedure should reduce your mitral regurgitation, so improving the symptoms of heart failure and reducing shortness of breath.

Risks of a Clip procedure

As with any treatment, there are risks associated with Clip therapy. Your doctor will discuss how the risks of Clip therapy compare with other options that may be available.

The risks of a Percutaneous Mitral Valve leaflet edge repair (Clip) procedure include:

- Stroke- 1%
- Death - 1%. This can be due to your underlying heart problem or due to

complications of the procedure.

- Bleeding - 5%. Bleeding from the puncture site/s after the procedure. This is managed with manual pressure and/or a pressure device. Bleeding usually resolves within a few hours.
- Collection of blood around the heart requiring drainage - 1%. The blood may need draining using a small tube inserted below the breastbone, or with an operation.
- Abnormal heart rhythm - 5%. This is treated with drugs or sometimes with an electric shock to the heart.
- Damage to the blood vessel requiring surgical repair - 1%. A damage to the blood vessel that is used to insert the catheter that requires repair through surgery.
- Kidney injury - after the procedure, there is a risk of damage to the kidneys, due to the changes in blood pressure and the drugs given to you. The kidneys may recover in a few days, but you may need to have your kidney function monitored for an extended period of time.
- Damage to teeth, throat or oesophagus - during the procedure, the doctor will put a flexible tube (a probe) down your throat into your swallowing tube (oesophagus). This is a transoesophageal echo (TOE), which enables the doctor to obtain the required visual guidance to perform the procedure. Around 0.01% have complications from TOE, such as damage to teeth, throat or oesophagus.

Before a decision can be made regarding your suitability for a Clip procedure, you will need some, or all, the following tests:

- Physical examination
- Blood tests - we will need some up-to-date blood test results.
- Electrocardiogram (ECG) - this enables us to look at your heart rate and rhythm.
- Echocardiogram (echo) - an echocardiogram uses sound waves (ultrasound) to build up a moving picture of your heart and shows the structure

and function of your heart valves and heart chambers. An echocardiogram takes around 20 minutes.

- Transoesophageal echo (TOE) - a TOE is another way of carrying out an echo and allows your doctor to look more closely at your heart. A flexible tube (probe) is passed down your throat, to send sound waves to your heart, and collect echoes that bounce back. A TOE takes approximately 20–30 minutes.
- Coronary angiogram - a coronary angiogram uses a series of X-rays to allow doctors to look at the coronary arteries. The coronary arteries are the main arteries that supply your heart muscle. A thin plastic tube (catheter) is guided through an artery in your wrist or groin, to your heart. Then a special dye is injected through the catheter, so your arteries clearly show. A coronary angiogram takes about 30 minutes.
- Computed tomography (CT) scans - a CT scan is an X-ray that produces three-dimensional images of your body. A radiographer will give you an injection containing a special dye so that your blood vessels and heart show clearly on the scan. A CT scan can also be used to look at the arteries that supply your heart muscle (coronary arteries) – a test called a CT coronary angiogram. A CT scan can also be used to look at the blood vessels in your legs that will be used for the Clip procedure.

If a Clip procedure is right for you, a letter will be sent to you telling you when your procedure will be, and which ward you will stay on. About one to two weeks before the date of your hospital admission, you will have a pre-admission appointment. This is carried out by coming to the hospital or by telephone. A nurse will call you to discuss your medical history and to find out what medication you are taking. You will be advised which medications you need to stop, and when, before your procedure. Oral anticoagulation will be discontinued two to five days prior to the procedure. Where indicated bridging with low molecular weight heparin will be commenced upon caseation

of oral anticoagulation.

You will be able to ask any questions about the procedure during this call. You will come into hospital on the day before your procedure.

If you feel unwell before your Clip procedure, telephone the heart valve specialist nurse on 01223 638411.

What to bring to hospital?

Please bring with you:

- All your current medications
- Your completed hospital forms
- A dressing gown
- Comfortable clothes, such as shirts that button up, loose blouses or tops, tracksuit bottoms, trousers or skirts, and well-fitting slippers, trainers or shoes
- A bag with your toiletries

Before your Clip procedure - hygiene

Hygiene is very important both before and after your procedure. Have a shower the night before your admission and the morning of your Clip procedure. We will send you an antiseptic body wash to use the night before admission and you will be given some on the ward for your shower in the morning.

Pay special attention to washing under skin folds such as under the breasts, the groin and genital area. Do not shave or remove hair from your chest, arms, legs or groin before your Clip procedure. If needed, shaving will be done in hospital just before your procedure.

Food and drink

Do not eat anything after midnight on the day of your Clip procedure.

Continue to take your medicines as usual, unless your specialist valve nurse or cardiologist has asked you not to do so.

In hospital - before the Clip procedure

When you arrive at Royal Papworth Hospital, go to the main reception where the receptionist will direct you to your ward.

When you get to the ward, a nurse will show you your bed. Male and female patients may

share the same ward but have individual bedrooms with en-suite.

On the ward, you will see an anaesthetist. Anaesthetists are doctors who specialise in pain relief and care of patients who have operations and procedures. Your anaesthetist will ask about your general health and medications you are taking, and any allergies and previous anaesthetics. Please tell your anaesthetist/doctor/nurse if you are taking:

- anticoagulants (medicines to prevent blood clots)
- diabetes medication
- antidepressants.

The anaesthetist will plan your pain relief, and your care and recovery immediately after your Clip procedure. If you have any questions, ask the anaesthetist, or a nurse on the ward.

Informed consent for the procedure will be taken by the consultant responsible for the procedure on the ward. Dry clip of the groins will occur, and the patient will shower. Please ensure dentures, jewellery is removed. After showering you will need to change into hospital gown and disposable pants. Ward nurse/healthcare assistant will apply VTE stockings.

Clip procedure

You will have your Clip procedure in the cardiac catheterisation laboratory (cath lab). Before you are taken to the cath lab, you will be asked to change into a hospital gown and will have a cannula (a small plastic tube) inserted into a vein in one of your arms so we can give medication to you. When you arrive the cath lab, staff will check your identification and which procedure you are having. The anaesthetist will then put you to sleep. A ventilator (artificial breathing machine) will help you breathe during the procedure. Machines will also be used to monitor your heart rate, blood pressure and oxygen levels.

Inserting the Clip

The doctor will give you an injection of local anaesthetic (a type of medication) which will numb the area around your groin and will

then make a small (1cm) cut, to insert a tube (catheter) into a vein (Fig.1). The tube allows doctor to reach your heart and insert the Clip (Fig.2). The tube is also a safe way for doctors to give you drugs during your procedure. The doctor guides the tube through the vein to your mitral valve (Fig.3). The doctor then guides the clip through the tube to the valve (Fig.4). Once in place, the clip is opened and closed until it is in the best position.

Having a Clip procedure X-rays or fluoroscopy (similar to a small X-ray film of your heart) will be used to fit the clip onto the valve correctly. The Clip procedure usually takes between two and three hours.

Following your procedure

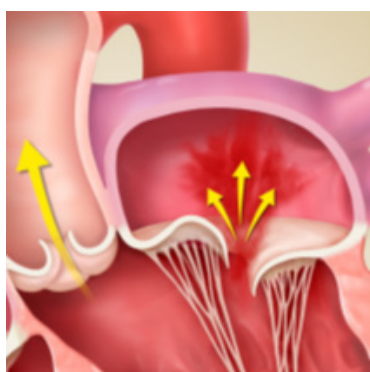
You will go from the X-ray department to the recovery area for up to a couple of hours where you will be extubated and closely monitored. Following this you will return either to the ward or the high dependency unit. A heart monitor will continue to measure your heart rate and rhythm, and you may have some intravenous fluids (directly into a vein in your hand) to keep you hydrated. You may also need intravenous drugs to support your heart for a short time

after the procedure. Your doctor will explain if you need drugs and how they work. On the ward a bedside swallow evaluation will be performed by an appropriately trained nurse and the patient will be allowed to commence oral intake when safe to do so. Anticoagulation (if discontinued) will be resumed when safe to do so and at the instructions of the responsible consultant/ operators. Routine medications will be resumed. You may feel tired from the anaesthetic, but early ambulation will be encouraged, ideally within six to 12 hours of the procedure.

The valve team will confirm discharge planning with you and your family so that post-discharge care plans are in place. The anticipated date of discharge will be one to two days post-procedure if clinically appropriate.

Recovery at home

The following are only general guidelines as everyone's recovery is slightly different. It is advisable that you have someone to care for you for the first week after discharge. Please speak to your nurse or doctor as soon as possible if you think this will be a problem.



Before procedure

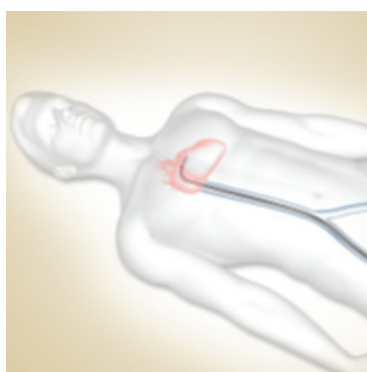


Fig. 1

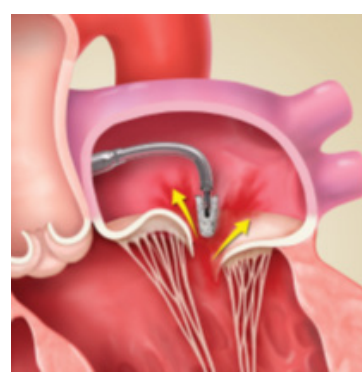


Fig. 2

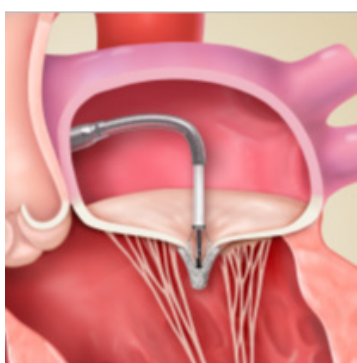


Fig. 3

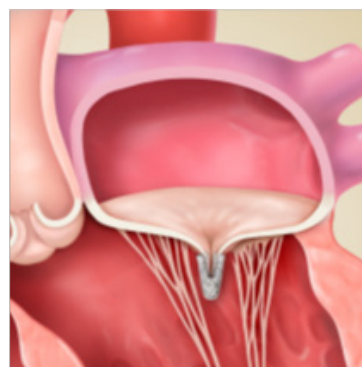


Fig. 4

Activity

You should avoid strenuous activity for a few weeks. This includes heavy lifting (eg shopping, suitcases) or pushing and pulling (eg cutting grass, vacuum cleaning). You may feel a little 'washed out' and tired and need to rest in the afternoon. However, it is important for your recovery to have a short walk every day. This can be gradually increased. You do not have to avoid climbing stairs or walking up inclines, you may have to start off at a slower pace. You may feel slightly out of breath on walking, which should improve as your fitness level increases. There can be some fluid retention as a result of the surgery; you may notice some swelling of your ankles. If this swelling travel further than your ankles, please get reviewed by your GP.

Your wounds should be healing by the time you leave hospital, if they still require a dressing, we will organise a district or practice nurse to continue this. If your wound becomes red or inflamed, please get your GP or practice nurse to check it. You may have bruising to your groin(s) which is not uncommon and may take several weeks to resolve. You may have a hard lump under the skin due to a collection of blood (haematoma). Please consult your GP if this becomes painful or grows bigger.

Driving

You are not allowed by DVLA to drive for four weeks after your procedure. If you have a LGV or PCV licence you will need to undergo an exercise test before getting your licence back.

Work

If you were working before your procedure there is no reason why you cannot return to this after a period of recovery up to two weeks.

Cardiac rehabilitation

You will be invited to attend cardiac rehabilitation about six weeks after your procedure. This is a programme of graduated exercise and general health discussions. If you live outside the area you may be referred to your local hospital. Patients who attend generally feel more confident about coping

with everyday life. It will also help to increase your fitness level.

Follow-up care

On discharge you will be given a letter for your GP explaining what you have had done and a list of your medications. The valve nurse specialist will phone you a week after discharge to check on your progress. If you have any concerns you can call on the cardiac support nurse line 01223 638100 (Monday to Friday 08.30 - 18.00). We would like to hear sooner rather than later about any potential problems. You will be invited to attend an outpatient follow up appointment with the nurse specialist approximately six weeks after your procedure. During this visit you will have an ECG, a clinical assessment. Patients will be reviewed in the Structural Heart Disease/Specialist Valve Clinic by a consultant cardiologist in the structural heart disease team at six months post-procedure. This appointment will include a clinical assessment, a 12-lead ECG, transthoracic echocardiography.

Patients will then return to routine annual follow-up at their referring cardiology centre or at Royal Papworth Hospital (where appropriate).

How to contact us If you need further information please contact the heart valve specialist nurse on 01223638411.

Resources

1. Patient leaflet - Transcatheter Mitral Valve Repair With MitraClip® Therapy What You and Your Family Should Know About This Minimally Invasive Procedure. Abbott. 2014.
2. Having a mitraclip procedure. Royal Brompton and Harefield NHS Foundation Trust. October 2019.
3. Percutaneous mitral valve leaflet repair for mitral regurgitation. Interventional procedures guidance [IPG649] Published date: 29 May 2019.
4. Royal Papworth Hospital NHS Foundation Trust. Integrated Care Pathway for Percutaneous Mitral Valve Repair.

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