

Direct Current Cardioversion for Atrial Fibrillation/ Flutter

An information guide



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What is atrial fibrillation?

Atrial fibrillation (AF) is a common rhythm disturbance of the heart (arrhythmia), which may cause a rapid heart rate, irregular palpitations, chest pain, breathlessness or fatigue. In some cases there are no symptoms at all. Atrial Flutter is a similar rhythm and is treated in much the same way as atrial fibrillation. There are two ways to treat atrial fibrillation. The first, is by rate control and the second is by rhythm control. Rate control allows atrial fibrillation to remain, controlling the heart rate to reduce or relieve symptoms. Rhythm control means converting the irregular rhythm to the normal rhythm and/or trying to prevent further episodes of atrial fibrillation.

What is direct current cardioversion (DCCV)?

This is a very simple and highly effective treatment. The procedure uses an electric shock to activate the whole heart at once, so that after the shock the normal heart beat will emerge. This treatment is usually the quickest and most effective treatment. It may be possible to convert the heart rhythm; if atrial fibrillation has been present for only a relatively short time (usually less than one year), if the heart has not been damaged by disease or by the atrial fibrillation itself, if the cause of atrial fibrillation has been treated, or is temporary or relatively mild.

Available tests

Electrocardiogram (ECG)

An electrocardiogram (ECG) is an electrical tracing of the heartbeat. It is often performed routinely or if you were to complain of symptoms such as chest pain, breathlessness or palpitations. It is done by connecting you to a machine which can

detect voltage differences on the surface of the body and then records the electrical activity of the heart. The test is painless and quick, lasting a few minutes at most.

Echocardiogram

An echocardiogram is an ultrasound image of the heart. A probe is carefully positioned on the surface of your chest and then ultrasound waves are generated. These waves (echoes) can be used to build a picture of the structure and movement of the heart. Almost everyone is familiar with the use of this type of test to see a baby in the womb. The test is painless. The results of this test tell the physician about heart muscle disease (thinning or thickening), the size of the main pumping chambers, and the state of the heart valves, any of which might have caused or aggravated the heart rhythm abnormality.

Blood tests

A variety of blood tests may be needed, depending on your history. If you are taking any other medicines, have underlying heart disease or have any other medical problems, suitable tests will be arranged.

Preparing for electrical cardioversion

Anticoagulation

Anticoagulation is a type of medicine used to thin the blood to reduce the risk of stroke particularly in patients with atrial fibrillation/flutter. Some patients with a very low risk of stroke will not require anticoagulation even if they remain in atrial fibrillation. However, all patients who have a cardioversion must be anticoagulated prior to procedure regardless of their stroke risk.

There are two main types of anticoagulation;

Warfarin - is an oral anticoagulation medicine which is taken daily (very rarely Sintrome is used instead). Regular blood tests must be carried out to ensure your blood is the correct thickness and your

dose may be adjusted. Your blood must remain at the correct thickness for at least three consecutive weeks before a cardioversion. This will require a blood test at your anticoagulation clinic every week and will be arranged for you. If your blood falls below the required level your procedure may be postponed.

Newer oral anticoagulation medication is more common now. These include; **Dabigatran, Apixaban, Rivaroxaban and Edoxaban**. This type of medication does not require repeated blood tests and the dose remains the same. You must be taking this type of medicine for at least three weeks before a cardioversion. It is important not to miss any doses during this period as this could lead to the procedure being postponed.

All anticoagulation should be continued for at least four weeks after a cardioversion and many people will need to stay on this long term.

Pre-Assessment clinic

Once you have been referred for cardioversion and your anticoagulation is stable, you will be sent a date for your cardioversion. One week before your cardioversion, you will be invited to the pre-cardioversion assessment clinic. Your heart rhythm will be checked using an ECG to confirm that AF (or flutter) is still present. Your anticoagulation status and any other outstanding blood test results will be reviewed. Finally, any anaesthetic risks will be identified so that the Anaesthetist can be alerted to any possible problems (such as diabetes, heart problems, high blood pressure, obesity, lung disease etc). At the pre-assessment appointment various factors may lead to a postponement or cancellation of the procedure.

These include;

- Blood thinning results are not satisfactory
- Atrial fibrillation is not controlled e.g. an over-active thyroid gland or chest infection

- Other illness is present e.g. flu or tummy upset

If no complications are present, then the procedure will be explained to you and instructions will be given to you. You will be required to complete a consent form at this time.

On the day

Before you arrive on the Day Surgical Unit a further ECG will be done to confirm your heart rhythm, sometimes it is necessary to do further blood tests at this point. Once on the Day Case Unit you will be introduced to the staff and some more details will be taken. The Specialist Nurse will check your ECG and any blood tests that have been done and confirm your consent. You will also be seen by the Anaesthetist at this point who will explain the anaesthetic procedure to you.

The procedure

Once all relevant tests have been completed you will then be ready for theatre. You will be attached to a heart monitor and your blood pressure will be recorded. A small needle will be inserted into the back of your hand in order to administer the anaesthetic. You will also be attached to the defibrillator via two sticky patches on your chest. Once the Anaesthetist has put you to sleep the cardioversion will take place. The cardioverter/defibrillator is charged and set to deliver a shock simultaneously with the next heartbeat. Often the first shock is successful but sometimes several shocks at increasing energy levels or with different electrode patch positions are needed to convert the rhythm. A maximum of four shocks will be used. The normal rhythm is restored in about 90% of patients, but a small proportion immediately return to atrial fibrillation.

What happens after cardioversion?

Once back on the Day Surgical Unit a further ECG will be recorded to confirm the heart rhythm after the cardioversion. These results will be discussed with you by the Specialist Nurse. You will be offered something to eat and drink then allowed to get dressed. An hour or two after a routine cardioversion, you will be allowed home, after appropriate assessment.

Any changes in medication will be discussed with you and an appointment will be made for you to attend the post-cardioversion clinic in six weeks time. A friend or partner should come to hospital to accompany you home. Someone should also remain with you overnight. You should **not** drive or operate machinery for 24/48 hours after the anaesthetic. In some cases it will be necessary to keep you in hospital overnight following a cardioversion, this will be arranged at assessment clinic.

Risks of cardioversion

Slow heart rhythm (bradycardia) - usually only temporary, and at most needing treatment with an intravenous medicine (atropine) or a short period of pacing (electrical stimulation of the heart to start heart beats).

Fast heart rhythm (such as ventricular tachycardia) - which may need a follow-up shock whilst still under anaesthetic

Stroke - which is very unusual, if you have been fully anticoagulated before the procedure, the duration of the atrial fibrillation is short, or if a transoesophageal (TOE) has not demonstrated a clot in the heart.

Skin burns or irritation from the electrodes (patches) – this is fairly common but will last only a day or so, usually no treatment is necessary.

Early reversion of the normal rhythm back to atrial fibrillation - this may require further shocks (often when still under anaesthetic/sedation).

General anaesthetic risks – obesity, sleep apnoea, chest disease and epilepsy are some of the things that can increase the risk of anaesthetic. The Anaesthetist will discuss this with you on the day.

In the longer term

Anticoagulation treatment should be continued for at least four weeks in all cases. You should then be assessed, in order to calculate the risk of developing blood clots in the atrium. Some patients, such as those with artificial heart valves and previous rheumatic fever, will definitely need anticoagulation. Other patients are evaluated using a stroke risk calculator to determine whether anticoagulation is needed long term.

Contact details

Arrhythmia Specialist Nurse Tel: 0161 918 8587

Cardiac Services Secretary

(Fairfield) Tel: 0161 778 2450

Ward 12 (Day Case Unit)

Fairfield General Hospital Tel: 0161 778 2503

Further information

For further information on atrial fibrillation, please contact the Atrial Fibrillation Association.

Helpline : +44 (0) 1789 451837

Email: Info@atrial-fibrillation.org.uk

Website: www.atrialfibrillation.org.uk

If English is not your first language and you need help, please contact the Interpretation and Translation Service

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