

## Transcatheter Closure of the Left Atrial Appendage

### Atrial Fibrillation and stroke risk

Atrial Fibrillation (AF) is one of the most common heart conditions. During AF, the heart's two upper chambers do not function in a coordinated way. This results in an irregular heart beat that can cause the blood to pool in the left atrial appendage (see image to the right) and this may cause a blood clot to form. This blood clot can then be carried to the small blood vessels in the brain where it blocks the flow of blood and could lead to a stroke.

Some patients may find that AF causes uncomfortable symptoms such as palpitations or shortness of breath, but some patients have no symptoms at all. The main problem associated with AF is the increased risk of stroke.

### Treatments to assist in the prevention of blood clots / Stroke

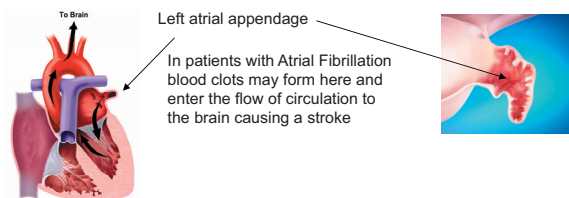
The risk of stroke in AF patients depends on a number of other factors, including age, a history of high blood pressure, heart failure, diabetes, and previous stroke or "mini-stroke". On the basis of these factors, your doctor will be able to assess your individual risk of stroke, and recommend either aspirin or an anticoagulant (blood thinner) such as Warfarin, to prevent blood clots forming. Unfortunately, some patients at high risk of stroke are unable to take anticoagulants because of other risks or side-effects.

An alternative to medication for some patients with AF is to block off the appendage with a medical closure device. The devices are designed to plug the left atrial appendage in patients, so preventing harmful blood clots forming within the appendage.

### The Left Atrial Appendage

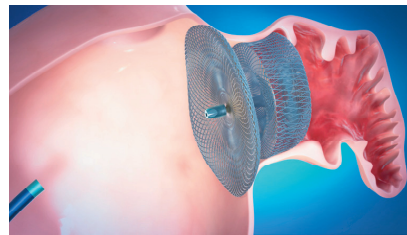
The left atrial appendage is a muscular pouch connected to the left atrium of the heart. A review of studies has shown that in the majority of patients with Atrial Fibrillation that

almost all clots form within the appendage. The left atrial appendage may be a "leftover" from the development of the heart. It contributes to the heart's pumping action during the normal rhythm and produces a hormone that helps control the fluid content of the blood, but it loses at these functions during Atrial Fibrillation. Atrial appendages have been removed during heart surgery without causing any problems.



### The procedure

Takes place in a cardiac catheterisation room and takes about 1-2 hours. You will usually have a general anaesthetic, however the procedure can be done under sedation depending on the type of imaging system used for visualising the heart. A guide sheath (flexible tube) is inserted into a large vein in the groin and threaded up to the right atrium of your heart. It is then passed through a hole into the left atrium. In some patients this hole exists naturally; if not the doctor will make a small needle-hole and stretch it to allow the sheath through (as with the needlehole in the groin, this heals over naturally after the procedure). The doctor then positions the guidesheath in the mouth of your left atrial appendage, and uses it to pass the occlusion device inside. This procedure is guided by X-ray and echo (ultrasound) imaging. When the doctor is satisfied with the position of the occlusion device, it is released, plugging the appendage, and the sheath is then removed.



### After the procedure

Recovery following the procedure will take about 24 hours. After recovery from anaesthesia and with adequate bed rest you should be able to sit up and walk around. Before you leave the hospital, an echocardiogram (ultrasound of the heart) will be performed to make sure the device is still positioned correctly. As the procedure is minimally-invasive, your recovery process is likely to be quick and easy. You may have an adhesive plaster in the groin where the sheath was inserted. You may also have a sore throat if an imaging probe (trans-oesophageal echo) was used.

Before you leave hospital, your doctor will provide advice on medications. You may be required to take Warfarin for a period of time before and after the procedure. Once Warfarin is discontinued you will be required to take Clopidogrel or an equivalent antiplatelet medicine as well as aspirin. The decision of how long you should take this medication is at the discretion of your doctor. You may need to return to your doctor for periodic follow-up visits over the next year. The doctor will also advise you on when you can resume normal daily activities. Typically all strenuous activity should be avoided for one month following the procedure. If you experience shortness of breath or chest pain, seek medical help immediately.

### Patients not suitable for closure of the left atrial appendage

- If you have blood clots in your heart (intracardiac thrombus).
- If you have an active infection producing bacteria in the blood. You may receive the device only after the the infection is gone.
- If placement of the device would interfere with any structures in your heart or cardiac vasculature.

### Potential risks associated with the procedure

There are certain potential risks associated with cardiac catheterisation procedures as well as the closure device. Potential risks will be discussed with the doctor and include, but are not limited to:

- Anaesthesia reaction
- Arrhythmia – loss of regular heart rhythm
- Bleeding around the incision site (usually the groin)
- Bruising around the incision site (usually the groin)
- Cardiac arrest
- Cardiac tamponade (accumulation of blood around the heart)
- Dislodgement of the device
- Embolic event – an air bubble or clot that blocks the flow of blood in a vessel
- Hypertension or hypotension – too high or too low blood pressure
- Infection
- Stroke or TIA (mini-stroke)
- In extreme cases, multi-organ failure or death (related to device or procedure)

Most of these complications are rare but some are serious. Because of the potential complications the indication for the use of this device is mostly limited to those patients who cannot tolerate or would prefer not to take modern anticoagulation therapy (see AFA leaflets; 'Anticoagulation' and 'Dabigatran').

NB. The devices may not be available in all countries.

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