TREATING ATRIAL FIBRILLATION WITH CATHETER ABLATION

Atrial fibrillation is an irregular heartbeat resulting from rapid electrical activity in the upper chambers of the heart (atria) with irregular and often rapid conduction to the lower chambers of the heart (ventricles). Atrial fibrillation is the most common type of heart rhythm disturbance.

A range of treatments can help with atrial fibrillation. In some cases, lifestyle changes such as healthy eating and exercise can reduce arrhythmic events as well as benefit overall health. Medication can be effective in correcting irregular heartbeats, although sometimes it is used in concert with another treatment or simply to guard against complications. When medicines do not control the symptoms of atrial fibrillation, catheter ablation may be considered.

THE ROLE OF CATHETER ABLATION

Ablation is known by several names, including cardiac ablation, catheter ablation, radiofrequency ablation, and cardiac catheter ablation. Ablation for atrial fibrillation, the most common type of arrhythmia, is usually reserved for patients with symptoms that have not responded to medication. Ablation is typically most successful in those who continue to have paroxysmal (comes on suddenly) atrial fibrillation that ends on its own.

In atrial fibrillation, the heartbeat is irregular and rapid, sometimes beating as often as 300 times a minute in the upper chambers (atria) and 100-150 times a minute in the lower chambers (ventricles), about four times faster than normal. Blood does not move through the heart in a normal way, which may increase the risk of clots and stroke. Sometimes, atrial fibrillation needs to be treated to reduce symptoms and complications. If medication doesn’t work, catheter ablation may be an option.
WHAT IS ABLATION?

An ablation is a procedure designed to use energy to disrupt or eliminate the faulty electrical pathways that cause abnormal heart rhythms.

Like many cardiac procedures, ablation no longer requires open heart surgery. Rather, it can be done through catheters placed into the heart through the blood vessels. Catheters (narrow, flexible wires) are inserted into a blood vessel, often through a site in the groin or neck. They are then guided via x-ray through the blood vessels and directed to the heart muscle.

Once the catheters are in place in the heart, heat or another form of energy is directed to areas of the heart that are sending out the abnormal electrical signals that cause atrial fibrillation. Then, a burst of energy destroys the specific problematic tissue and creates an area of tissue that will not conduct electrical activity. Most healthy tissue is left unharmed. In ablation, energy either destroys the troublesome areas that trigger abnormal electrical signals or creates a roadblock that stops such signals from traveling through the heart.

TYPES OF ABLATION

Depending upon each patient’s specific case, doctors may choose from a range of ablation techniques:

**Catheter Ablation of Atrial Fibrillation**—
Atrial fibrillation often originates from the four pulmonary veins that carry blood from the lungs to the left atrium. Atrial fibrillation can be cured in some patients with a technique called catheter ablation of atrial fibrillation.

With this procedure, catheters are placed in the heart and are guided to the left atrium, where energy is delivered to destroy or isolate the areas that trigger the atrial fibrillation. The procedure is generally reserved for patients who have significant symptoms from the atrial fibrillation and have failed medication. In some patients, a second procedure may be needed if the atrial fibrillation is not cured by the initial ablation. Currently, about two thirds of patients are cured with the initial catheter ablation procedure. With a second procedure, up to 75% of patients can be cured. The techniques of atrial fibrillation ablation continue to improve and should result in safer, more effective procedures in the future.

There are some risks associated with catheter ablation of atrial fibrillation. You should discuss whether you are a candidate for catheter ablation and the risks and benefits with your cardiologist and heart rhythm specialist.

**AV Node Ablation**—The AV node is where the atrial and ventricular electrical systems meet. Catheters deliver energy to ablate the node. This procedure slows and regularizes the heart rhythm and requires placement of a permanent pacemaker. While symptoms improve, atrial fibrillation remains and blood-thinners are required to reduce the risk of stroke.

**AV Node Modification**—This procedure is similar to AV node ablation, except that the node is damaged, not destroyed. This may slow the heart rate somewhat. The major advantage of this procedure is that it can generally be done without the need for a pacemaker. This procedure is not used very frequently. The heart rate tends to increase with time after this procedure, and the benefits of the procedure diminish accordingly. AV node ablation and placement of a permanent pacemaker is typically preferred to AV node modification.
Complications in catheter ablation are uncommon, although risks do exist and should be discussed and understood before the procedure.

Risks include:
- Bruising
- Bleeding
- Puncture of the heart
- Damage to the heart’s conduction system
- Blood clot formation, which could lead to stroke or other damage
- Rarely, the veins that carry blood from the lungs to the heart may narrow (stenosis)

THE PROCEDURE

- Before an ablation, the doctor will review how to prepare for the procedure. Normal medication schedules may change. Eating and drinking may be limited for some hours before the procedure.

- Catheter ablations are performed in a hospital while the patient is sedated and puncture sites are numbed.

- During the procedure, a patient will have an IV and will be connected to a number of monitors. Depending upon the specific technique, the procedure usually takes between three and six hours.

- Patients rarely report pain during the procedure, more often describing what they feel as discomfort. All patients have sedation for the procedure to help them relax and many sleep through the entire procedure. Other patients may be awake for parts of the procedure. Typically, patients have very little or no recall of the procedure and experience very little or no discomfort.

- After the procedure, the doctor removes the catheters. Pressure is applied to the puncture points to ensure that the entry point begins to heal properly. The patient must lie fairly flat for 4-6 hours.

- Patients usually recover quickly. They may feel stiff and achy from lying still for hours. Some patients go home the same day, while others are monitored in the hospital overnight or for several days.

- Before going home, a patient reviews with the doctor and nurse how to care for the puncture sites, what symptoms to expect, what activities are appropriate, and when to follow up with the doctor. It is common to use medication for thinning the blood (Coumadin®) and additional medication to prevent the atrial fibrillation from recurring for several months after the ablation.
Typically patients are seen by the cardiologist performing the procedure within a month or two following the procedure for an examination and an electrocardiogram. Usually after a period of about three months, decisions are made about continuation or discontinuation of any medication. After that, the follow-up evaluations may be as infrequent as once every 6 to 12 months.