

AV Node Ablation

Atrial fibrillation (or AF) is the most common electrical disorder of the heart. It causes the heart to beat fast and irregular. It can result in symptoms such as palpitations, shortness of breath and lethargy. It predisposes to stroke and, in some cases, may seriously affect the heart function.

A well-established treatment for the palpitations and occasionally the suppressed heart function associated with AF (and other fast rhythms originating from the atria or small chambers of the heart) is a strategy known as “pace and ablate”. In this strategy, a pacemaker is first implanted (if one is not already in place - see section on pacemaker implantation).

Generally, following 4-6 weeks after implantation, the normal electrical connection between the atria and the ventricles (called the AV node) is ablated (or rendered non-conducting) by the delivery of heat energy known as radio-frequency energy. This means that the ventricular heart rate can no longer become fast or irregular due to the AF in the small chambers, and will be controlled by the pacemaker.

Why is it done?

An AV node ablation is a permanent fix for the palpitations and rapid heart rates associated with AF. The added benefit is that medications aimed at slowing the heart rate down, known as rate-controlling medications (such as beta blockers, digoxin, amiodarone etc.), can be ceased after an AVN ablation. Importantly, blood thinners are not ceased following an AVN ablation, as the small chambers will still continue to have AF. It's just that the AF will no longer cause the heart to go fast.

The combination of these factors usually alleviates many of the symptoms and burden of the AF. It does however make your heart rhythm dependent upon the pacemaker following the procedure. This is usually not a problem for the vast majority of patients and usually does not cause any symptoms in and of itself. Nonetheless, because of this, AVN ablation is usually reserved for those patients who have tried and failed other strategies to control the AF (such as medications or catheter ablation), or those who are otherwise unsuitable for other treatments. Your doctor will discuss with you if this is an appropriate treatment option for you.

Risks

It is not uncommon to experience some minor bruising from the access site in the leg. This is anticipated especially as blood thinners are usually continued.

Serious risks associated with AVN ablation are very rare. However, they are not zero and some can be serious. These can include:

1. Injury to the groin blood vessel (1:200-400)
2. Complication requiring emergency surgery (1:500-1000)
3. Damage to the existing pacemaker requiring intervention (1:500-1000)

How you prepare

Almost all AV node ablations are elective or scheduled in advance, giving you time to prepare. AV node ablations are performed in the cardiac catheterization (cath) lab of a hospital. Your health care team will give you specific instructions and talk to you about any medications you take. General guidelines include:

- Don't eat or drink anything after midnight before your procedure.
- Take all your medications to the hospital with you in their original bottles. Ask your doctor about whether or not to take your usual morning medications.
- If you have diabetes, ask your doctor if you should take insulin or other oral medications before your procedure.
- Blood-thinning medication usually need to be continued. Your doctor will advise if these need to be withheld prior.

What you can expect?**Before the Procedure**

Before your procedure starts, your health care team will review your medical history, including allergies and medications you take. You'll also empty your bladder and change into a hospital gown. You may have to remove contact lenses, eyeglasses, jewellery and hairpins.

During the Procedure

For the procedure, you lie flat on your back on an X-ray table. X-ray cameras may move over and around your head and chest during the procedure. AVN ablation procedures are generally performed under local anaesthetic with some sedation and analgesia through the drip. The pacemaker will be checked to ensure it is working appropriately.

Electrodes on your chest monitor your heart throughout the procedure. An EPS usually involves a number of additional stickers and patches placed on over the chest. A blood pressure cuff tracks your blood pressure and another device, a pulse oximeter, measures the amount of oxygen in your blood. A small amount of hair may be shaved from your groin where a flexible tube (catheter) will be inserted, and on your chest where electrode sticker must attach. The area is washed and disinfected and then numbed with an injection of local anaesthetic.

A small incision is made at the entry site, and 1 or 2 short plastic tubes (sheath) are inserted into your groin vein under ultrasound guidance. Catheters is inserted through the sheath into your blood vessel and carefully threaded to your heart. These are used to perform the ablation to the AVN node. This process usually takes between 15-30 minutes.

After the Procedure

When the procedure is over, the catheters and plastic tubes are removed from your arm or groin and the incision is closed with manual pressure or occasionally a temporary stitch or an air-cushion clamp.

You'll be taken to a recovery area for observation and monitoring. When your condition is stable, you return to your own room, where you're monitored regularly.

You'll need to lie flat for a few hours to avoid bleeding. During this time, pressure may be applied to the incision to prevent bleeding and promote healing. You will usually have to remain in the hospital overnight. If you're feeling up to it, have something to eat.

Some medications may be ceased following the procedure (rate controlling medications). The pacemaker settings may be altered slightly following the procedure to ensure its function is optimised.

Avoid strenuous activities and heavy lifting for several days. This is mostly to avoid bleeding from the vascular access site. It is important to continue your blood thinner (anticoagulation) medication and this should not be stopped unless directed to do so by your specialist doctor. Your puncture site is likely to remain tender for a while. It may be slightly bruised and have a small bump.

Call your doctor's office if:

- You notice bleeding, new bruising or swelling at the catheter site
- You develop increasing pain or discomfort at the catheter site
- Weakness or numbness in the leg or arm where the catheter was inserted
- If you develop dizziness, light headedness or collapse
- If you have recurrence of sustained palpitations
- Any other symptom of concern to you

If the catheter site is actively bleeding and doesn't stop after you've applied pressure to the site, contact 000 or emergency medical services. If the catheter site suddenly begins to swell, contact 000 or emergency medical services.

It is important to continue to have the pacemaker functions monitored regularly after the procedure as advised by your doctor. Often the pacemaker rate may be set to a faster rate for the first month following the ablation and then gradually reduced to baseline over several months. Following this routine pacemaker checks are usually performed 6-12 monthly.

Outcomes

AV node ablation effectively eliminates fast heart rates caused by the AF and so is essentially 100% effective in treating palpitations associated with AF after a single procedure. This usually eliminates the need for any further ablation procedures and the need for ongoing rate controlling medications. It does not allow for the cessation of anticoagulation.