The procedure
You will be taken to the Electrophysiology Laboratory (EP Lab). Generally patients are admitted to the hospital on the morning of the procedure. Generally medications to control your heart rhythm should be stopped 2-4 days prior to the procedure. Since X-ray is required for the procedure you must alert your doctor if you think you may be pregnant.

In the EP Lab you will be given Intravenous sedation and kept comfortable. In some individuals, if markedly anxious, a general anaesthetic can be used. Local anaesthetic is placed in the skin using a small needle. Catheters may be placed in the right and/or left groin and sometimes in the vein on the side of the neck. Other than a slight sting from the anaesthetic needle there is very little discomfort.

After the local anaesthetic has taken effect intravenous sheaths or tubes are placed in the veins in the groin and/or neck. Because the veins (rather than the artery) are used bleeding or bruising at the site of the catheter insertion is usually minor. Through these sheaths and under X-ray guidance the flexible EP catheters are advanced up the veins to the heart. There is very little sensation associated with the placement of these catheters. During the delivery of the RF energy there may be mild chest discomfort.

Occasionally multiple applications of electrical current may be required to destroy the abnormal fibre. If at any stage you are experiencing pain during the procedure you should alert the doctor or nurse caring for you immediately.

At the end of the procedure all of the catheters and sheaths will be removed. You will stay in bed for 3 to 5 hours to prevent bleeding at sites where the catheters were inserted. Discharge is usually arranged later the same day (although you may be asked to stay in hospital overnight). You may be instructed to take aspirin 1 tablet a day for a month after the procedure.

Risks
The amount of tissue damaged in a typical ablation procedure is insignificant for overall heart pumping function. The scar tissue seems to remain stable over time and not cause problems even years later. Nonetheless things can go awry during the procedure and occasionally complications can occur. The possible complications are listed below:

- The application of the radiofrequency current close to the normal conduction system of the heart could produce heart block and necessitate implantation of a permanent pacemaker (<1% risk). This risk only applies if the abnormal pathway is close to your normal electrical conduction system (i.e., within a centimetre or less).
- A blood clot may form on the catheter that carries the radiofrequency current to the heart. This clot may become dislodged and obstruct a blood vessel causing a stroke, heart attack or injury of another organ (approx. 1 in 1000 to 1 in 5000 risk). This is only a risk if ablation is being performed on the left (arterial) side of the heart.
- The catheter could damage the heart valves or a coronary artery. The risk is very rare.
- Other rare complications (reported in the literature) include: cardiac perforation (producing a hole in the heart wall), haemo or pneumothorax (blood or air in the chest wall requiring tube drainage), damage to the femoral artery (1 in 10000) and damage to the phrenic nerve (the nerve supplying the diaphragm).

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Several different types of pathways exist and the electrocardiogram (ECG) obtained at a time when your heart is racing, as well as the ECG obtained at normal times, may give a hint as to the type of abnormal electrical pathways you have. Most individuals who have these abnormal electrical pathways within their hearts have otherwise normal hearts and do not have problems with the valves or coronary arteries.

The most common types of abnormal electrical pathways leading to these electrical circuits and tachycardia include:

- **AV node re-entry.** An extra pathway exists in close proximity to the normal electrical pathway (the AV node) such that an electrical circuit may race around between the normal pathway and the extra fibre. It is quite common.
- **Wolff-Parkinson-White syndrome.** An extra electrical pathway bridges the upper (atria) and the lower (ventricle) chamber of the heart. This can occur either on the left or right side of the heart. It is uncommon.

**Why Catheter Ablation**

Catheter ablation for both WPW and AV node re-entry tachycardia is being used as the treatment of choice in individuals with frequent arrhythmias, particularly for those in whom drugs do not work or are poorly tolerated. The advent of catheter ablation as treatment for arrhythmias is of importance for two reasons. First, the procedure has a very high cure rate (approximately 95%) with a low risk of complications. Second, many individuals with supraventricular tachycardia require “lifelong” drug therapy to control the attacks. It is not clear to us whether the long-term use of medications to treat these arrhythmias is completely safe.

**Catheter Ablation**

In order to cure the arrhythmias special catheters (small, flexible wires with metal tips) are used. These catheters are placed into the heart under X-ray guidance. These catheters are used to stimulate the heart and record the electrical activity from within the heart.

In most cases it is necessary to trigger an episode of tachycardia to determine what type it is and where it is coming from. If the area of the heart responsible for the tachycardia can be identified one of the catheters can be manipulated so its tip electrode is in contact with the abnormal tissue. The locating of the ablation target is determined by a process known as mapping.

During mapping the ablation catheter is moved from spot to spot until the appropriate area is found. Mapping may take only minutes but on occasions can take several hours. Once the catheter is considered to be in the appropriate spot radiofrequency energy (modified surgical cautery) is delivered via the mapping electrode. This heats and damages the tissue surrounding the catheter and if the location was correct the tachycardia is cured. Frequently more than one spot needs to be cauterised to successfully eliminate the tachycardia. Following each RF delivery retesting is performed to detect whether or not the tachycardia has been completely eliminated.

In experienced hands 90 to 95% of cases of SVT can be cured with the procedure lasting an hour or two. In a small proportion of cases (approximately 5%) the cauterised area can recover and a second ablation procedure may be required. In another small proportion of people the area to be cauterised cannot be identified or is not accessible to the mapping catheter.