

# Supraventricular Tachycardia (SVT) and Ablation

*Treating your abnormal heart rhythm*

*This handout describes a type of abnormal heart rhythm called supraventricular tachycardia. It explains how it is diagnosed and treated.*

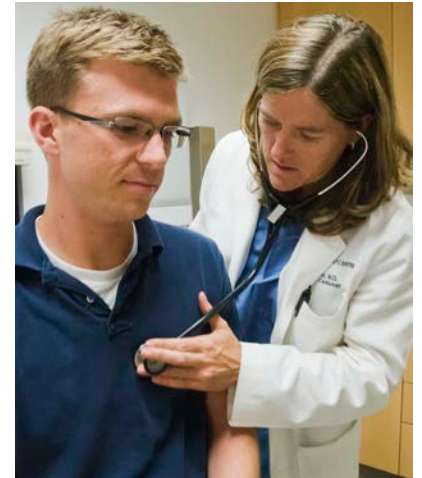
## What is supraventricular tachycardia?

*Supraventricular tachycardia (SVT) is abnormal heart rhythm, or arrhythmia. SVT includes arrhythmias that start in the atrium (the upper chamber of the heart) or in the atrioventricular (AV) node. (See the heart drawing on page 2.)*

## The AV Node and SA Node

The AV and the *sinoatrial* (SA) nodes are small groups of special heart cells in the heart. The AV and SA nodes control the electrical impulses in the heart.

The SA node is called the “pacemaker” of the heart. It receives signals from the brain and starts an electric impulse. The AV node receives this impulse and sends it to the *ventricles* (the lower chambers of the heart). Working together, the 2 nodes control the rhythm of the heartbeat.



*Ask your doctor if you have more questions about SVT.*

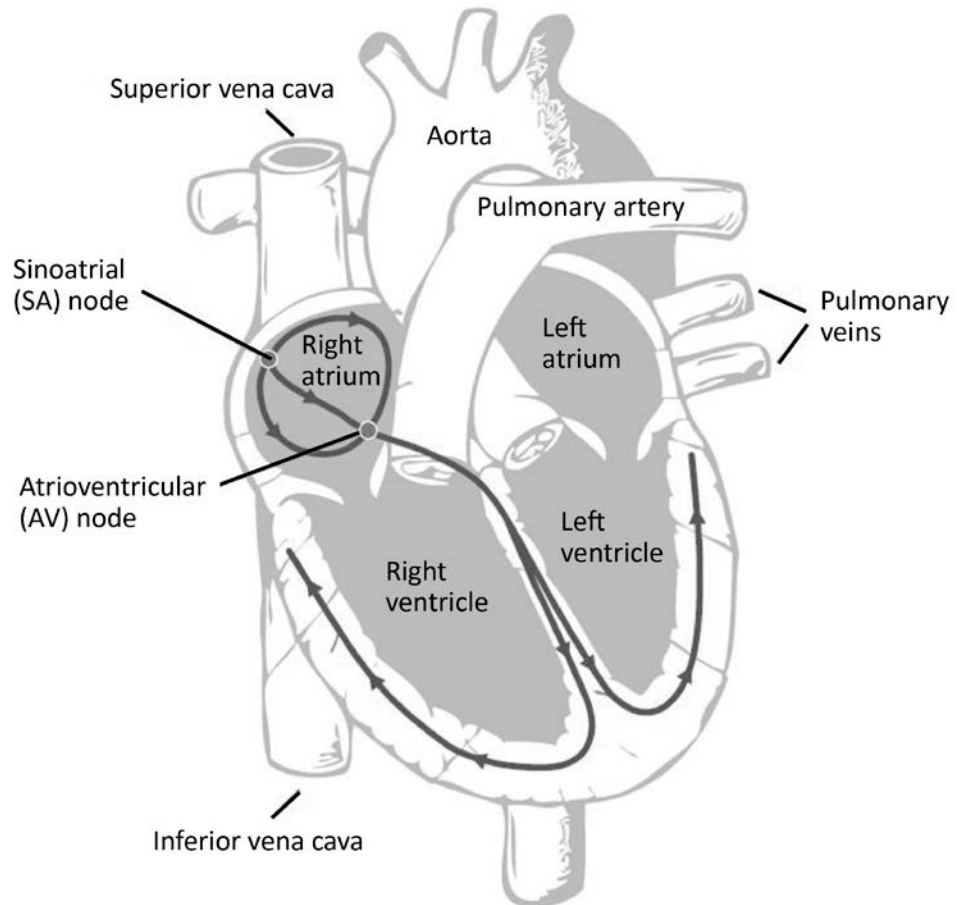
## SVT and Your Heart

If you have SVT, your heart’s electrical system does not work right. This makes your heart beat very fast at times. Most people with SVT have *SVT episodes* (events) when their heart rate is between 160 and 220 beats a minute. It may even beat up to 300 times a minute.

SVT episodes begin and end suddenly. They can last just a few seconds or many hours. SVT is usually not life-threatening, but feeling your heart race may be very uncomfortable.

People with SVT may have many different symptoms. Some of these are:

- Rapid heart rate
- Pounding in the chest
- Being short of breath
- Chest pain or pressure
- Being very tired
- Dizziness, feeling lightheaded, or even passing out



***The anatomy and rhythm of a healthy heart:*** The electrical signal starts in the sinoatrial (SA) node, follows the dark lines and arrows to the left and right atria, and then moves to the atrioventricular (AV) node. It then follows the dark lines to the ventricles.

## What are the main types of SVT?

There are different types of SVT. The most common are *atrioventricular nodal reentrant tachycardia (AVNRT)*, *atrioventricular reentrant tachycardia (AVRT)*, and *atrial tachycardia*.

- **AVNRT** is when there are 2 electrical circuits in the AV node, one that moves impulses slowly and one that moves impulses quickly. The electrical signal moves down one of the pathways in the AV node and up the other pathway. This makes the heartbeat race.
- **AVRT** occurs if you are born with an extra electrical connection, or *bypass pathway*, between the atria and the ventricles (the heart's upper and lower chambers). Sometimes this extra pathway can be seen on a test called an *electrocardiogram* (ECG). If this pathway can be seen on an ECG, then it is called Wolff-Parkinson-White syndrome, or WPW.

In AVRT, the electrical signal travels down the normal electrical pathway through the AV node, and then back up the bypass pathway. It can keep spinning around. It can also travel down the bypass pathway and up through the AV node.

- **Atrial tachycardia** occurs when there are cells inside one of the atria that fire faster than the normal pulse. There are no extra pathways like there are in AVNRT and AVRT.

## Is SVT life-threatening?

SVT is not usually life-threatening. But, it can cause symptoms that affect your well-being. Rarely, someone with SVT could pass out, which could lead to an injury. Very rarely, SVT can turn into a *cardiac arrest* (heart attack), which can be serious.

Most times, people with SVT do not have other heart conditions. Sometimes, SVT occurs in people who have:

- *Congenital* heart defects (heart conditions you are born with)
- Abnormal heart valves, or certain diseases of the heart valves
- *Cardiomyopathy* (an enlarged, weakened heart)
- *Congestive heart failure* (when the heart cannot pump away the blood returning to it fast enough, causing congestion in the lungs)
- Heart attacks
- Heart surgery in the past

## How is SVT diagnosed?

To assess you for SVT, your doctor will ask you questions about your health history, do a physical exam, and schedule some tests. The main ways to check for SVT are:

- **Electrocardiogram (ECG or EKG).** In this test, *electrodes* (small stickers with wires) are attached to your skin to record your heart's electrical activity. An ECG shows your heart's rhythm and the strength and timing of electrical currents through your heart muscle. It is done at your bedside and usually only takes a few minutes. You do not need to prepare for this test.
- **Home ECG monitor.** This small device records your heart rate for 1 to 28 days. It is called a *Holter monitor* or an *event monitor*.
- **Implantable loop recorder.** This is a small device, about the size of 2 matchsticks. It is implanted under the skin in your chest. It records your heart rhythm and rate and shows if it goes too fast or too slow. The battery last up to 3 years.

Other tests you might have are:

- **Blood tests**, including a *thyroid function* test.
- An **echocardiogram** to find out if there are any abnormalities in your heart. This test uses ultrasound (sound waves) to make images of your heart chambers and valves. It is done in the clinic and usually takes about 1 hour. You do not need to prepare for this test.
- A **chest X-ray**, which uses radiation to make images of the inside of your chest. A chest X-ray shows whether your “heart shadow” is normal (a heart shadow shows the shape and size of your heart). An X-ray will also show if you have fluid in your lungs. It is done in a radiology lab or at the bedside and usually takes only a few minutes. You do not need to prepare for this test.
- A **cardiac catheterization**, which uses X-ray to guide small flexible *catheter tubes* to your heart structures and coronary arteries. The test measures blood flow to your heart muscle and the rate of blood flow and pressures through your heart. It is done in a cardiac catheterization laboratory by a *cardiologist* (a doctor who specializes in heart health).
  - This test usually takes 1 hour. It may be done in a clinic, or you may need to stay overnight in the hospital.
  - You will receive *sedatives* (medicines to help you relax) during the test.
  - You will need to follow special instructions for eating, drinking, and taking medicines before this test.
  - Your healthcare provider will give you more information if you are having this test.

## Treatment Options for SVT

- One treatment option is to do nothing to prevent or cure the SVT. This is a good option for people who have:
  - Only rare or brief episodes that are linked with lower heart rates (usually less than 150 beats per minute)
  - Only minor symptoms
- Some people may choose to take medicine only after the SVT occurs. This is called a “pill in the pocket” approach. “Pill in the pocket” means taking a large single dose of a drug and then waiting for a few hours to see if the SVT goes away. This approach is only safe for people who handle their SVT well and have only minor symptoms.
- People who have SVT episodes often may choose to take medicine every day. This may also be the best option for people with severe symptoms.
- *SVT catheter ablation* is another treatment option. This may be considered instead of medicines, or if medicines are not helpful.

## What is catheter ablation?

Ablation comes from the word *ablate*, which means “to destroy.” *Ablation catheters* are long, thin, flexible wires. SVT catheter ablation uses these wires to destroy the area in your heart that causes SVT.

*Radiofrequency* catheter ablation destroys the portion of your heart responsible for your abnormal heart rhythm. It uses heat to “burn” the tissue that is causing problems. The burned tissue creates a scar and stops the abnormal rhythm from recurring.

## What happens during ablation?

- A special doctor called a *cardiac electrophysiologist* will do this procedure. The doctor will first place several small *sheaths* in a blood vessel in each side of your *groin* (the area where your inner thighs meet your main body). A sheath is a short, thin, flexible tube. The sheaths make it easier to insert the catheter wires.
- When the sheaths are in place, long catheter wires are then threaded through them and up to your heart. Different types of catheters are used to make sure the procedure is successful.
- Next, your doctor will start your abnormal heart rhythm.
  - This is usually done by stimulating (*pacing*) the heart with the catheter wires to make it beat faster or in an irregular pattern.

- Sometimes, a medicine called *isoproterenol* is used to help put you into your SVT. This medicine is given through an *intravenous* (IV) tube and lasts for only a few minutes.
- When you go into SVT, it should feel like your usual symptoms. The doctor will pace your heart a few times to figure out which type of SVT it is. The doctor will then stop the SVT with another pacing method.
- Once your doctor knows what type of SVT you have, an ablation can be done.
- The entire ablation procedure usually takes 2 to 4 hours.

## Will I have anesthesia during my procedure?

Having anesthesia depends on how severe your symptoms are and how anxious you may be about the procedure. The most important part of the procedure is when your doctor puts you into the SVT. If you are feeling some anxiety, it will be easier for your doctor to put you into SVT.

Most patients receive *conscious sedation*. This medicine eases anxiety and pain, but you will be awake.

Some patients may need *general anesthesia* during their ablation. If you have general anesthesia, you will be fully asleep. You will not feel any pain during the procedure, and afterward, you may not recall much of what happened the day of your procedure. A doctor called an *anesthesiologist* will give you the anesthesia and will monitor you during your entire procedure.

## What are the risks of catheter ablation?

Catheter ablation is a low-risk procedure. But, there may be serious problems that occur.

Please talk with your electrophysiology doctor and others on your care team about your concerns. It is important that you fully understand the risks of catheter ablation. Compare them to the risks and benefits of other treatments to control SVT.

## Most Common Risk of Ablation

The most common risk of having catheter ablation is:

- **Bleeding and oozing** from your veins where the catheters are inserted. It is usually controlled by putting pressure on the sites where the catheters go into your veins. If needed, surgery can repair this problem.

## Less Common Risks of Ablation

These risks happen rarely:

- **Heart puncture and bleeding through your heart walls.** When catheter wires are moved in your heart during the ablation, there is a small risk of poking a hole in your heart. Blood may then leak out of your heart and fill the sac around your heart. If a lot of blood collects in the sac, the blood will need to be removed. Usually this can be done with a needle and catheter tube. Very rarely, surgery is needed to remove this blood.
- **Stroke** may occur if a blood clot forms during the procedure and moves to your brain. This only occurs if your SVT is coming from your left atrium, which means that catheters will be placed there. A clot may form simply from moving the catheters around the left atrium during the ablation. We keep this risk as low as possible by giving you *heparin* through an IV during your ablation procedure. This blood-thinning medicine helps lower the risk of a stroke.
- **Heart block** rarely occurs with ablation. In heart block, the electrical signals can no longer go from the atrium to the ventricles and the heart rate is very slow. A pacemaker must be implanted to fix this problem.
- **An allergic reaction to medicines** that are used for the ablation.
- Infection.
- **Heart attack** caused by the procedure itself.
- **Death.** There is a very small chance that an unexpected complication could cause death.

Our staff and doctors are trained to deal with emergencies and problems. We do everything possible to monitor you and lower your risk of problems. Even with careful monitoring, 1 to 2 people out of 100 (1% to 2%) who have the ablation will have a problem.

## Your Procedure and Recovery

If you decide to have an ablation procedure, you will receive detailed instructions about how to prepare for it and what to expect during your recovery. Here are answers to some questions you may have:

### How long will I be in the hospital?

Most people either go home the same day or stay in the hospital for 1 night after their ablation. How long you are in the hospital will depend on how complicated your procedure was.

## When can I stop taking medicines for SVT?

Most people can stop taking their SVT medicines right after the ablation. You may stay on some medicines if there are other reasons for you to take them, such as high blood pressure (*hypertension*). Some people may need to take a small dose of aspirin every day for 1 month after their ablation.

## Is catheter ablation right for me?

People who may be considered for catheter ablation:

- Have SVT symptoms that occur often or for long periods
- Have severe SVT symptoms such as dizziness or passing out
- Have SVT episodes even when taking their prescribed medicines
- Cannot handle their prescribed medicines for any reason or do not want to take them over a long time

## When is catheter ablation not a good choice?

Your doctor may **not** advise catheter ablation for you if you have:

- SVT very rarely
- SVT that is well controlled with medicines that you are OK taking

## Follow-up Visits and Care

If the ablation is successful, most people do not need follow-up visits with the doctor. But, you should keep seeing your primary health care provider or cardiologist. And, your doctor may advise you to have certain tests to monitor your progress after your procedure.

## What if I still have questions?

Please talk with your doctor, nurse, or other provider if you:

- Have questions about anything this handout did not explain, or do not understand something in this handout
- Want like to talk about the ablation, your SVT, or any other health concerns

Your doctor, nurse, or other provider will be happy to talk with you about any questions or concerns you may have.

### Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns.

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