

# Rapid Heartbeat

**BREAKTHROUGH!**

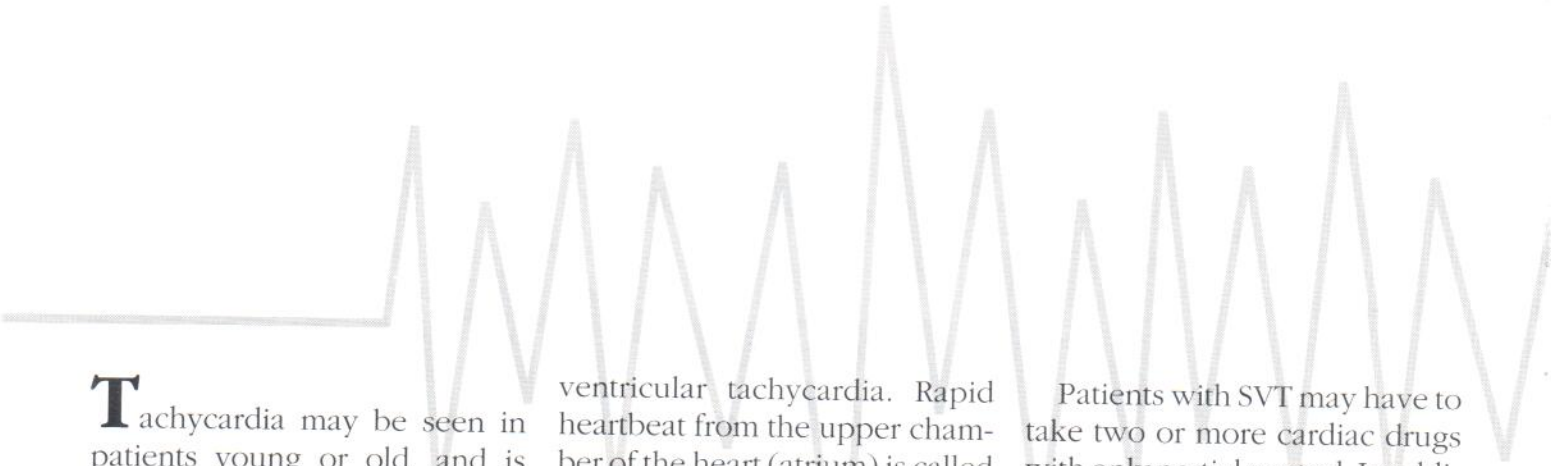


Rapid heartbeat (tachycardia) is a very common affliction, with millions of Americans suffering one or more episodes annually. Symptoms vary from palpitations, dizziness, and chest pain, to passing out and cardiac arrest...

*Radiofrequency  
Energy  
Catheter  
Ablation*

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**T**achycardia may be seen in patients young or old, and is divided into two major subgroups depending on the site of origin in the heart.

The normal heartbeat originates in the superior portion of the upper chamber of the heart (right atrium). This area is where the natural pacemaker (sinus node) is located. The sinus node sends an electrical signal to the upper chambers of the heart initiating a beat. Subsequently, the electrical signal passes through a “gate” known as the AV node. It then passes to the lower chambers of the heart known as the ventricles. These major pumping chambers will now beat. This is called “normal sinus rhythm.” This synchronized action allows the heart to receive blood from veins in the body and then return it to the arteries. The frequency of signals sent by the sinus node will vary depending on the individual’s activity level. Therefore, the more activity, the higher the heart rate.

During an abnormal heartbeat, a different area of the heart originates the electrical stimulus and perpetuates a rapid heart rate. This may prevent the heart to pump enough blood to the brain and other organs.

The tachycardia may originate in the lower major pumping chamber of the heart and is called

ventricular tachycardia. Rapid heartbeat from the upper chamber of the heart (atrium) is called supraventricular tachycardia.

Patients with ventricular tachycardia, in general, are prone to passing out and cardiac arrest. These patients may be treated with medications. Several medications are available for treatment of this type of arrhythmia, but must be chosen carefully based upon the individual patient. For those patients who are not controlled medically, the use of an automatic implantable cardioverter defibrillator may be appropriate. This implantable device senses the arrhythmia and shocks the patient’s heart if necessary.

Supraventricular tachycardia (SVT) in general is less dangerous; however, it can be very disabling for the individual who may have episodes several times a year or even daily. At times, the palpitations may last hours and be accompanied by dizziness and even fainting spells.

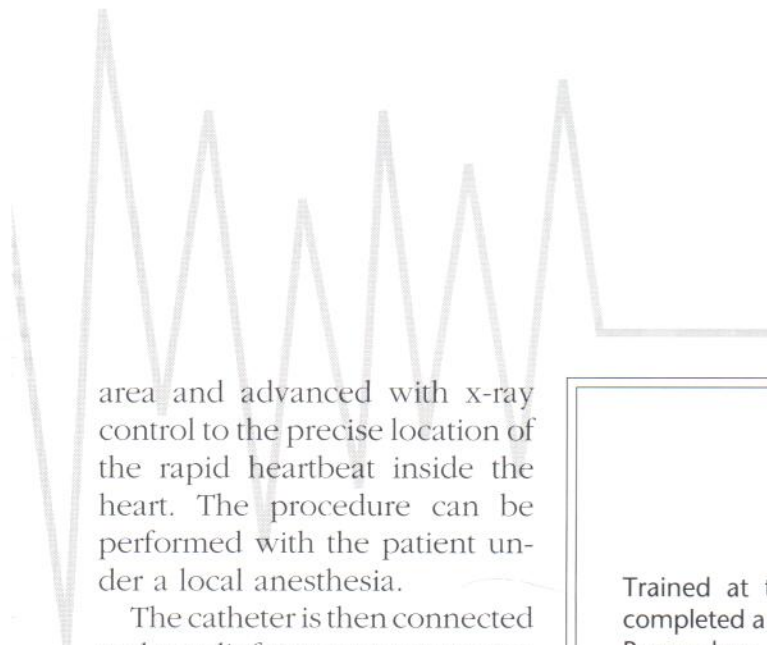
**S**everal medications are used, alone or in combination, to treat SVT. They include: beta blockers ((Inderal, Lopressor, Tenormin), calcium blockers (Verapamil, Cardizem), digoxin, quinidine, and procan. In certain cases, stronger medications are used, including Rhythmol, Tambocor and Cordarone.

Patients with SVT may have to take two or more cardiac drugs with only partial control. In addition, they may develop a variety of side effects, which could limit their ability to perform daily functions. In the past, some patients were forced to have open heart surgery to “cut” the focus of the SVT.

During the past ten years a new technique has been developed to treat patients with SVT (and rarely VT). Initially, catheter ablation utilized electrical energy (AC current) delivered via a catheter (long wire) to burn the inside portion of the heart responsible for the rapid heartbeat. However, this form of energy sometimes proved to be dangerous and ineffective. In the past two to three years a new form of energy called radiofrequency wave has been found to be a safer and more effective form of accurately delivering energy inside the heart. Radiofrequency has been used for decades in the field of brain surgery to precisely eliminate small lesions in the brain.

**R**adiofrequency Energy (RF) Catheter Ablation utilizes energy generated from an electrosurgical unit at 750 Kilohertz. This is done during a heart catheterization, without the need for heart surgery. A catheter is inserted into the vein in the groin





area and advanced with x-ray control to the precise location of the rapid heartbeat inside the heart. The procedure can be performed with the patient under a local anesthesia.

The catheter is then connected to the radiofrequency generator. The energy is transmitted to the tip of the catheter which is in contact with the heart muscle. This will result in a small lesion in the area where the "electrical short circuit" is present. Therefore, the source of the rapid heartbeat is eliminated.

**D**ifferent types of SVT can be treated with RF Catheter ablation. They include WPW, resistant atrial fibrillation/flutter, AV nodal reentry tachycardia.

The results of this procedure have been excellent. Eighty to ninety percent of patients who have undergone this procedure for treatment of supraventricular tachycardia have been totally cured. These patients, many of them young, no longer have to take heart medications for the rest of their lives, or undergo open heart surgery.

Radiofrequency catheter ablation is a safe and effective treatment with a low complication rate. It is believed that this form of therapy will soon become the treatment of choice in patients with symptomatic supraventricular tachycardia. Δ



Trained at the Cleveland Clinic Foundation, Dr. Daniel Cooper completed a post fellowship training in Electrophysiology and Cardiac Pacemakers. He underwent a Cardiology fellowship at the Cleveland Clinic Foundation. Dr. Cooper attended the State University of New York at Buffalo completing an internship and residency in medicine. In addition, Dr. Cooper has published articles in over thirty medical journals and book chapters and has lectured in national and international meetings. Dr. Cooper is the director of the Electrophysiology Catheterization Laboratory and the Automatic Implantable Defibrillator Program at Sarasota Memorial Hospital. Dr. Cooper is a Fellow of the American College of Cardiology, The North American Society of Pacing and Electrophysiology, The Florida Medical Association and the Sarasota County Medical Society.

**TABLE 1: SUMMARY OF SIDE EFFECTS OF ANTIARRHYTHMIC MEDICATIONS**

<b>BETA BLOCKERS:</b>	Fatigue, Depression, Impotence (Inderal, Lopressor, etc.), Exacerbation of Asthma, etc.
<b>CALCIUM BLOCKERS:</b>	Fatigue, Constipation, Rash (Verapamil, Cardizem, etc.), Impotence, Nausea, etc.
<b>DIGOXIN:</b>	Nausea, Blurred vision (To be used with caution in patients with kidney failure), etc.
<b>QUINIDINE:</b>	Diarrhea, Nausea, Blood allergy, Worsening of rapid heartbeat, etc.
<b>PROCAN:</b>	Nausea, Lupus, Worsening of rapid heartbeat, etc.
<b>NORPACE:</b>	Congestive heart failure, Dry mouth, Nausea, Urinary Retention, Worsening of rapid heartbeat, etc.
<b>RYTHMOL:</b>	Metallic taste, Gastrointestinal symptoms, Lupus, Worsening of rapid heartbeat, etc.
<b>TAMBOCOR:</b>	Rash, Gastrointestinal symptoms, Worsening of rapid heartbeat, etc.
<b>CORDARONE:</b>	Tremor, Gastrointestinal symptoms, Thyroid imbalance, Hepatitis, Lung fibrosis, etc.

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# SPOTLIGHT

## DR. DANIEL COOPER

A pioneer in the field of electrophysiology in Sarasota, Dr. Daniel Cooper came to this area in 1987. He was attracted to the natural beauty and warm climate of Sarasota, similar to his native Rio de Janeiro. "I was excited about the opportunity of developing a new cardiology subspecialty, Electrophysiology, in the gulf coast area."

Dr. Cooper was born and raised in Rio de Janeiro, Brazil. "My father came from New York and after meeting my mother who was studying at Juilliard School of Music, they married and moved to Rio." He and his family enjoyed this beautiful city while returning frequently to New York.

Dr. Cooper first became involved with medical research at the University of Rio. In the 70's, he developed techniques to evaluate the blood flow within the heart using Doppler Ultrasound. This non-invasive technique is now widely used to evaluate heart valves and congenital heart defects. "My interest in clinical research grew as my desire to solve medical problems evolved and I became actively involved not only with Ultrasound but also with Artificial Heart Valves, Pacemakers, and Automatic Implantable Defibrillators."

Trained at the Cleveland Clinic Foundation, Dr. Cooper completed a fellowship training in Electrophysiology and Cardiac Pacemakers. He attended the State University of New York at Buffalo completing an internship and residency in cardiology, medicine, and cardiac pacing. In addition, Dr. Cooper

has published articles in over thirty medical journals and book chapters and has lectured in national and international meetings. He has also received the Young Investigator Award by the North American Society of placing and Electrophysiology.

Dr. Cooper is the director of the Electrophysiology Catheterization Laboratory and the Automatic Implantable Defibrillator Program at Sarasota Memorial Hospital. He developed the Electrophysiology Program at Doctors Hospital and Sarasota Memorial Hospital. Electrophysiology deals with the diagnosis and treatment of arrhythmias (irregular heart beats) and the prevention and treatment of sudden cardiac death.

The field of Electrophysiology has rapidly advanced in the past decade. "We have a number of newer and effective options to help patients with rapid heart beat

including implantable defibrillators, electrical heart surgery, pacemakers, and medications. It is very rewarding to be able to give hope to patients who are at risk or have suffered an episode of cardiac arrest," Dr. Cooper said.

Dr. Cooper enjoys spending his spare time with his family. He and his wife, Lisa, a registered nurse, enjoy a shared interest in sports including tennis and skiing. They have a son, David, who is a very active one and one-half year old.

Dr. Cooper is a Fellow of the American College of Cardiology, The North American Society of Pacing and Electrophysiology, The Florida Medical Association and the Sarasota County Medical Society.



*Dr. Cooper is the director of the Electrophysiology Catheterization Laboratory and the Automatic Implantable Defibrillator Program at Sarasota Memorial Hospital. He developed the Electrophysiology Program at Doctors Hospital and Sarasota Memorial Hospital.*