

Atrial Tachycardia



What is Atrial Tachycardia?

Atrial tachycardia (AT) is a rapid heart rhythm of the atrium (upper chambers of the heart). An episode of AT can be as brief as a few seconds or may last for minutes. If it lasts more than a few minutes it can require medical treatment to return it to normal. It usually occurs in patients with a structurally normal heart and also in conjunction with specific heart disease, such as patients with valvular or congenital heart disease.

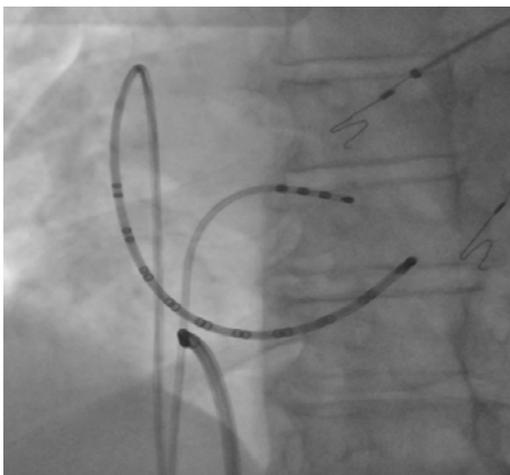
An episode of AT is often not high risk and may be associated with mild symptoms such as palpitations, shortness of breath, and fatigue. More severe symptoms of dizziness, chest pressure, or even momentary loss of consciousness (fainting) can occur. In some cases the AT causes no obvious symptoms while the tachycardia remains incessant for several months. In this situation cardiomyopathy (weakening of heart muscle) along with symptoms of congestive heart failure, such as shortness of breath and fluid retention can develop. With proper treatment of restoring to normal heart rhythm or normal heart rate range, the damage to the heart muscle typically returns to normal.

MEDICAL TREATMENT OF ATRIAL TACHYCARDIA

First line medications to treat AT are beta-blockers and calcium-channel blockers. More potent anti-arrhythmic medications such as Flecainide or Amiodarone can be used if standard medications are not successful. In some acute situations an electrical shock treatment with external paddles is applied to the heart to convert the AT back to a normal heart rhythm.

CATHETER ABLATION

If the AT condition does not respond to medical therapy, a procedure called catheter ablation locates the precise heart tissue site causing the arrhythmia. An electrode at the tip of the ablation catheter is positioned at the site of AT, and radiofrequency energy is delivered to destroy the culprit tissue. Ablation of AT is an outpatient procedure lasting 2-4 hours, followed by 4-6 hours of bed rest. The patient is sedated, so no driving is allowed for 24 hours after the procedure. Recovery is primarily needed for the groin vein entry sites, so patients are to avoid lifting over 10 pounds and limit normal activities for 5 days.



ELECTRODES IN THE HEART ATRIUM:

Electrode catheters reach the heart's right atrium through a vein in the groin. The ablation catheter is placed at the site of AT focus and radiofrequency energy destroys the tissue causing AT.



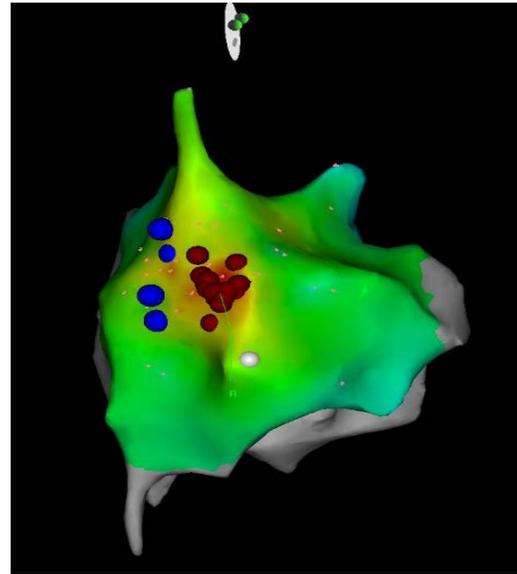
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During the procedure, electrode catheters are inserted from the groin vein and positioned inside different heart chambers guided by X-ray (fluoroscopic) imaging. In rare cases, the procedure may require the use of the neck vein (jugular). The intention of the ablation is to only target the abnormal site causing abnormal fast heart rhythm and does not affect the basic normal function of the heart.

The heart tissue causing the AT may be in the heart's right or left atrium. If access to the left atrium is needed, a trans-septal needle is inserted through the tissue (septum) separating the two atria. The AT must first be induced and then mapped using standard electrical mapping catheters that can both electrically stimulate the heart muscle and record electrical potentials at points of contact with the heart tissue. When the ablation catheter has been successfully positioned to the target based on the mapping study, a curative ablation can then be attempted at that target site. After the ablation, adrenaline medication is infused through the intravenous catheter to confirm that the AT has been successfully ablated. Rarely, if the tachycardia site is difficult to find because of unusual, or multiple locations, the physician may choose a second procedure using more sophisticated mapping techniques to maximize the chance of successful ablation. Finally, on rare occasions, the AT cannot be reproduced at the time of the procedure. In this case, the tachycardia cannot be mapped or ablated, so further medical therapy may be the remaining option.

RISK FOR COMPLICATIONS

With any invasive procedures, potential complications can occur. For AT ablation, it is about 1-2%. These can include stroke, heart attack, cardiac perforation requiring emergency surgery, heart valve damage, injury to a large vein or artery, blood clots, infection, heart block requiring implantation of a permanent pacemaker, phrenic nerve damage, and death. The success rate varies upon the location of the arrhythmia, with the typical success rate of over 90%. Some patients may require repeat procedures for rare recurrence of arrhythmia.



3-D CARTO mapping of AT focus in the right atrium: The red area represents the AT focus and red dots are where the radiofrequency energy is delivered to destroy the tissue causing AT. If the focus of AT is near the phrenic nerve (blue dots), the ablation must be done safely to not damage the phrenic nerve. This nerve contracts the diaphragm under the lungs, allowing the lungs to expand, when breathing. Phrenic nerve damage can result in difficulty breathing.