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Treating Atrial Fibrillation with Catheter Ablation

**Announcer:**
You're listening to *Advanced Treatments and Innovations* from Mayo Clinic on ReachMD. Here's your host, Dr. Jennifer Caudle.

**Dr. Caudle:**
Welcome to *Advanced Treatments and Innovations* from Mayo Clinic on ReachMD. I'm your host, Dr. Jennifer Caudle, and joining me to discuss catheter ablation for atrial fibrillation, which is commonly referred to as AFib, is Dr. Christopher DeSimone, who's a cardiac electrophysiologist in the department of Cardiovascular Medicine at Mayo Clinic in Rochester, Minnesota. Dr. DeSimone, thank you so much for being here today.

**Dr. DeSimone:**
Thank you for having me. It's a pleasure.

**Dr. Caudle:**
Well, it's a pleasure that you're here. So let's just dive right in. Can you tell us what an ablation is and how it's done?

**Dr. DeSimone:**
Right. Absolutely. So for atrial fibrillation, which is an irregular heart rhythm, where the heart's not beating like it does in normal rhythm, and the patients could feel symptoms, we have an approach called catheter ablation. What we do for that is we go in and target the tissue in the heart that's responsible for this abnormal rhythm. And we either burn or sometimes we even freeze it to destroy that tissue.

The way that's done is we bring a patient into our electrophysiology laboratory, they're under general anesthesia, and through the groin veins, we thread catheters up from the groins up into the heart. And we go to the top left chamber of the heart where the culprit for atrial fibrillation is, and we map out the area so that we know the structures responsible for this. And then we burn in order to short circuit, if you will, the electricity from coming in and outside of what we call, the pulmonary veins, the veins that are bringing oxygenated blood from the lungs to the heart and pumping out to the rest of the body. Those are the main triggers for atrial fibrillation. And when we do the atrial fibrillation ablation, we try to isolate, or again, electrically disconnect those veins so that the trigger can't get into the heart and set off atrial fibrillation.

The way I explain it to my patients is it's almost like having matchsticks in the heart, and you're throwing these into the top part of the heart, which is like a set of logs, and you set those set of logs on fire. Well, if we isolate those matchsticks so that they can't set those logs on fire, and they can't go in atrial fibrillation, that's the goal of catheter ablation. Painless procedure for the patient, they're asleep, and under general anesthesia for it. And it's a good alternative to drug therapy, or for those patients that can't tolerate drugs.

**Dr. Caudle:**
Okay, and are catheter ablations for AFib common?

**Dr. DeSimone:**
They're very common. And it's something that we've been getting better at, more experience at, and the technology is becoming even more better. So as that happens, it becomes a much more viable option for our patients, and much more commonplace. So we do this every day, multiple times a day in all of our labs. And it's an excellent therapy for patients who either don't like to be on drugs, cannot be on drugs because they're on other medicines that interact with these drugs, or despite being on drugs, they're still breaking through and having atrial fibrillation despite having anti-arrhythmic drugs on board. So it's a very common procedure.

And because our population is having more and more atrial fibrillation due to several comorbidities, such as elevated BMI and obesity, hypertension, heart failure, obstructive sleep apnea, and diabetes; all of these risk factors are making this AFib syndrome more and more prevalent. So we're seeing more and more patients that need their atrial fibrillation dealt with.

**Dr. Caudle:**
With that in mind, which of our patients with AFib might be good candidates for catheter ablation?

**Dr. DeSimone:**
Excellent question. So the best candidates are the ones that stand the most to benefit. So the key thing is, do we know that you have symptoms? Whether it's shortness of breath, lightheaded, dizziness, not able to walk up a flight of stairs, something that's limiting your quality of life to be excellent, or what it was before. Are you in atrial fibrillation at that time? So what we call it is rhythm-symptom correlation.

Now, how do we find out when this happens? Well, if you're feeling poorly, and maybe you have an Apple watch or a Fitbit, you came into the emergency department, or you had a routine ECG, if you're found to be in atrial fibrillation at that time or on any of these monitors, that means if we take care of the atrial fibrillation, we'll make you feel better. So number one, patients that have symptoms at the time they have atrial fibrillation.

Number two, if patients do not want to take a drug to control their atrial fibrillation or those that can't be on a drug, either because they can't tolerate it or because it interacts with other medicines that they take.

The third one is if patients have heart failure or a weakening of the heart that's due to the atrial fibrillation itself. These patients stand a lot to benefit because if we could keep them in sinus rhythm, and we know catheter ablation is more effective than drug therapy, those patients do much better and they have much better outcomes.

So those would be my three ideal candidates for someone to undergo catheter ablation.

**Dr. Caudle:**
Okay, and as a quick follow-up to that, Dr. DeSimone, is timing a factor you consider when selecting patients for ablation?

**Dr. DeSimone:**
Absolutely. So timing is a huge factor, one of the major factors. So when we consider a patient for ablation, not everyone's an excellent or perfect candidate. You really want to be choosy, as well as the patient, about what's their expectations, and from your experience as a cardiac electrophysiologist who stands to benefit from that catheter ablation?

Now, the reason timing is so important, amongst the other risk factors I discussed that should be controlled and treated, is that atrial fibrillation is different in everybody. So it's an atrial fibrillation syndrome. And timing is of the essence because atrial fibrillation is almost like cancer, if you find it early and you take care of it early, it's easier to treat than if it's widespread amongst the body.

Atrial fibrillation, termed paroxysmal, means you're at an early stage in the atrial fibrillation syndrome. So these are patients that go in and out of atrial fibrillation, maybe once every few months, and when they do, it lasts only a couple of hours. Well, those are more likely to involve the pulmonary veins. So a trigger-based ablation is good for them.

As patients go in atrial fibrillation, and they're in it for a long period of time, it progresses to a more aggressive form of atrial fibrillation, which we call persistent atrial fibrillation. So they're not coming out of it. Maybe they stay in it for months, weeks, or they have really long episodes, and they need to be shocked, cardioverted, to get out of this rhythm, or they need a drug to get out of this rhythm. Those are more aggressive forms of atrial fibrillation. And when you're in that, it causes remodeling of your heart. So when you're in atrial fibrillation, the heart likes to think it should stay in atrial fibrillation. And why does it do that? You're in atrial fibrillation, the pressures are off in the heart. So the chambers of the heart get larger. A larger, stretched chamber of the heart is more likely to go into atrial fibrillation. And then if you're more likely to stay in atrial fibrillation, there's more scarring that happens. And it's a vicious cycle. So the substrate in the atrium, outside of the pulmonary veins, becomes an issue when you're in persistent. And the pulmonary veins and the left atrium itself become larger. So what happens is that catheter ablation in those patients aren't as effective. We still offer this, but it's much more difficult to treat someone that's been in atrial fibrillation for years and years and has all those issues than it is to treat somebody that's had atrial fibrillation early on.

**Dr. Caudle:**
For those of you who are just tuning in, you're listening to *Advanced Treatments and Innovations from Mayo Clinic* on ReachMD. I'm your host, Dr. Jennifer Caudle, and I'm speaking with Dr. Christopher DeSimone about catheter ablation for atrial fibrillation.

So Dr. DeSimone, what are some reasons patients are delayed in getting back to normal rhythm and out of AFib?

**Dr. DeSimone:**
It's an excellent question. And it's one I hope that our listeners out there take very seriously and get themselves into a cardiologist, or even more importantly, a cardiac electrophysiologist. Someone that deals with atrial fibrillation day in and day out. The big lag here is maybe 10, 20 years ago, and it's still kind of pervasive in medicine is that if you're not having symptoms, or if your symptoms are reasonably controlled by taking a rate-controlling approach, meaning we keep your heart rate slow, but you still stay in atrial fibrillation, there is no mortality benefit in past trials, compared to keeping you in a rhythm-controlling approach, meaning we keep you in normal sinus rhythm. So that said, patients that don't always see cardiac electrophysiology or cardiology soon enough may be in atrial fibrillation for a long time, like months or years before it gets addressed. It gets addressed, meaning we shock or cardiovert a patient back into normal rhythm, we put them on a drug to try to keep them in sinus rhythm, or we do a catheter ablation and keep them in sinus rhythm.

So that delay is not getting to a specialist soon enough. There's more updated data from more recent studies that show being in sinus rhythm sooner and longer is much better than being in atrial fibrillation and letting someone progress because there's remodeling of the heart that goes on.

**Dr. Caudle:**
We've certainly covered a lot of ground today, Dr. DeSimone. But before we close, what are some key lessons you'd like our audience to take with them?

**Dr. DeSimone:**
Absolutely. So I think the key lessons about atrial fibrillation number one, the biggest thing is, it's not life-threatening to you. So it's a quality-of-life threatening, is how I describe it to my patients. But that's extremely important and much of what we do in medicine is to improve your quality of life. So we want to treat your symptoms. Patients get really scared, understandably, because their heart's racing, they feel a certain way, and they don't know if they're having a heart attack or not. So reassurance that atrial fibrillation is not going to be life-threatening to you, but it will potentially give you symptoms and be quality-of-life threatening.

Number two, I would say the most important thing for atrial fibrillation is to reduce someone's risk of having a stroke. So when the heart is in atrial fibrillation, it's kind of jiggling around like a bag of worms, it's not filling and contracting appropriately. And because of that jiggling, the blood's not squeezing and getting around enough, and that can lead to clots in the heart. And clots in the heart can lead to clots leaving the heart, going to the brain, and having a stroke. So the most important thing when we find out someone has atrial fibrillation is do they need to be on a blood thinner? And if so, they may always need to be on a blood thinner. And we determine that when we see and talk to a patient and there's a risk score that we stratify a patient. After they cross a certain number of points on the scale, what we call a CHADS VASc Risk Score, they should or don't need to be on anticoagulation based on that.

The third thing is, regardless of what we do, it's very critical we treat the other risk factors for atrial fibrillation. So regardless of putting you on a blood thinner, doing a catheter ablation, and using drugs, we need to always treat risk factors. Key things include high blood pressure, we need to get that under control. High blood pressure causes the left atrium to get larger, stretched, and those pressures could trigger atrial fibrillation. Same thing can be said about obstructive sleep apnea. That needs to be treated, otherwise, you could have fluctuations throughout the night, where your left atrium is seeing higher pressures than normal, and eventually, this can trigger atrial fibrillation. Obesity and elevated BMI, we try to have our patients as much as possible lose weight and exercise and live a healthy lifestyle. That will reduce and be effective at keeping you out of atrial fibrillation. And also, I would say, treating other diseases such as diabetes or congestive heart failure. All of these things could have adverse effects on the heart, on the nerves that talk to the heart, as well as the pressures the heart is seeing.

**Dr. Caudle:**
Excellent. Thanks for providing those key takeaway points, Dr. DeSimone. And as that brings us to the end of today's program, I'd like to thank my guest, Dr. Christopher DeSimone, for joining me to discuss catheter ablation for atrial fibrillation. Dr. DeSimone, it was great having you on the program.

**Dr. DeSimone:**
Thank you very much. And thank you so much for doing this for our viewers.

**Announcer:**
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