

Atrial Fibrillation Ablation

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From Our Lady of the Lake Regional Medical Center in Baton Rouge, LA

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Good evening, everyone, and welcome to Our Lady of the Lake Regional Medical Center in Baton Rouge, Louisiana. I'm Margaret Lawhon, your moderator for this evening's webcast, along with a couple of experts in the field of cardiology, Dr. Kenneth Civello and Dr. Andrew Smith. They are both cardioelectrophysiologists with Our Lady of the Lake. Welcome, both of you gentlemen for being with us this evening.

Thank you.

As you know, tonight we're going to be looking at some video excerpts from surgery that you both participated in about a month ago, and this surgery is an atrial fibrillation ablation. Before we get to our discussion and to the video, we want to invite you, our online viewers, to participate this evening by sending us your e-mailed questions for these physicians. You can do so by clicking on the "Ask a question" button on your computer screen. Also, any point during this webcast, feel free to click on the "Request information" button in order to get more information about the afib ablation, to get a referral, or to make an appointment.

The Internet is a wonderful tool for disseminating information about the latest technologies in medical treatments that are available to patients, and we here at Our Lady of the Lake and "OR-live" are very happy to be a part of that process. Let's start, Dr. Civello, with an explanation of atrial fibrillation. Tell us what that is.

Sure. In order to understand what atrial fibrillation is, I think you first need to understand what a normal heartbeat is. And normally when the heartbeats, the top chamber beats and then the bottom chamber beats. The top chamber beats and then the bottom chamber beats. In atrial fibrillation, the top chamber fibrillates very, very rapidly, which causes, sometimes, the bottom chamber to beat rapidly, and this results in a lot of symptoms. We know that atrial fibrillation comes from a particular place in the heart called "pulmonary veins."

And you have a model here.

I do. I do.

You're going to show us the different component.

Yes. And you can see here inside the heart there are four pulmonary veins, and these two we're looking at here, we're looking at the left-sided pulmonary veins, and these veins have cells that are inside of these veins, which can fire very, very rapidly. And it's the firing of these cells that originate in these pulmonary veins which cause the heart to beat very fast and give you the symptoms that you experience with atrial fibrillation.

Electrical impulses.

Electrical impulses.

That are causing this.

Correct.

Dr. Smith, what are some of the symptoms that a patient might experience that would tell him or her that, "Hey, something is wrong. I have this arrhythmia, the atrial fibrillation."

Well, they can be very diverse, anything from somebody doesn't feel anything at all, they have no idea they're in, to fatigue, rapid heartbeat. Palpitations is another word for it dyspnoea or shortness of breath, even chest pain sometimes. Sometimes even passing out or feeling very lightheaded would be some of the main things you would experience.

Any time you feel those, I'm sure you would need to call your physician. Let's go ahead and take a look at the video, and we want to let you know that technology, as you will, plays a big part in all of this in terms of mapping what you're going to do in procedure, as well as actually guiding the catheters that we're going to see you both using here. Here we are, and this is really the beginning of the procedure. We see the patient here. Dr. Civello, why don't you start us off and kind of tell us what you're doing here.

Sure. What we're looking at here is the EP lab. And when we start the procedures, one of the first things that we do is apply a local anesthetic to the region where we're going to place our catheters. And what catheters are, are what you can think of them as large IVs that create entry points into one of the major veins this the body, and then veins then take our catheters up inside the heart. And so what you're seeing here is I'm obtaining access into what we call the "femoral vein." And I'm taking a small needle, placing it inside of that vein, and then from that point, placing a wire inside of the vein, which will then allow us to place some catheters inside there.

What kind of anesthesia was used on this patient, Dr. Smith?

We used contra sedation, so the patient's not fully asleep, but they're sedated and they're comfortable. We usually use Versed of Fentanyl, so medications that have amnesic effects, as well as pain-relieving effects.

It sounds very similar to heart catheterization, the way you handle that?

Exactly. Exactly. Usually there's no pain at all. We do use a little bit of a numbing medicine, Lidocaine, when we're starting out the procedure. But by that time, most people are a little bit sleepy. They generally do not recall feeling any discomfort.

Now we want to be very aware, as we are, of the confidentiality aspects of treatment, but what can you tell us, Dr. Civello, about this particular patient that made him or her a good candidate for atrial fibrillation?

Sure. This was a patient who had atrial fibrillation for several years. His episodes were what we call account "Paroxysmal " meaning that he did not have them all the time. He usually had about ten episodes a month. He had been tried on two different medications, both of which were ineffective in controlling his arrhythmia. So at that point, after medications failed, the next step is to go ahead and give this procedure to him.

How long does this procedure typically take. I know probably with each patient it's a little bit different, but how long does it usually take?

Yeah. I usually tell people it takes about four hours. For some people -- for the people who are in and out of atrial fibrillation, the procedure is a little bit shorter, and for people who are in atrial fibrillation all the time --

Persistent?

Persistent, uh-huh.. Those procedures take a little bit longer, and that's strictly because we're doing a more extensive ablation.

Now, Dr. Smith, I know in this particular procedure, you assisted Dr. Civello. You both do these procedures yourselves on a routine basis. How important is technology in helping you guide these catheters through those femoral arteries, getting them where they need to be to do the ablation.

Yeah. I mean the initial portion, this is pretty basic stuff just to get the procedure set up. And once we're in the heart is when we use the more advanced 3D mapping and more of the computer technology to guide our ablation actually. But getting access, this point is relatively straightforward, and we've been doing these technique for many, many years. So the one thing you'll see Dr. Civello do here pretty soon is he'll put up an intercardiac echocardiogram through one of the veins, and that allows us to look from inside the heart, use ultrasound technology to actually visualize the heart while it's undergoing the procedure, so it's a real-time image, and that's the main thing we use to get access to the left side of the heart. And you'll see it in a few minutes here, probably the --

In reviewing some of the video, which we're going to be looking at extensively this evening, it reminded me of the ultrasounds you see for pregnancies, because you can really see it just in much the same way.

Same technology.

Exactly.

It is the same technology. The only difference is for ultrasound, for pregnancies, as well as heart ultrasounds, they're coming from the outside of the body. And this particular ultrasound we're doing from inside the body.

Let's go ahead. We're getting lots of questions from our viewers via the Internet, and we love that. We appreciate you sending us these questions. First question, "Is this procedure more common among men or women? What is the average age? What conditions for do candidates for this procedure have to meet?"

Sure. I would say men and women are fairly equal in the percentage of patients who undergo the ablation. There really is no bias towards men or women receiving this procedure more than the other. I would say it's common -- the procedure was initially designed for people who were young. I would say less than age 65. But we've certainly -- you know, the oldest patient I've done has been 76. Obviously, you have to sort of take it on an individual basis. But I would say the average age is anywhere from 50 to 65 year old.

Are there certain patients for whom this ablation procedure would not be recommended, maybe patients who had a particular heart condition, preexisting condition, or even a lung condition?

Yeah. I mean as Dr. Civello pointed out, sort of the average patient is in their 50 or 60, but as they get older, we're less likely to do it because the risk of complications goes up. So you have to look at all the comorbidities. So do they have lung disease? Do they have kidney disease? How bad is their heart function? Have they had previous myocardial infarctions or blockages in their arteries? And you have to take all of that into consideration to see if they're a good candidate for it or not. So certainly other illnesses play a part, and we have to make sure that they're a good candidate for it.

Exactly. What are we looking at right here? We just some fluoroscopy, and I know we'll get back to that in a little bit.

Sure.

Tell us what we're seeing here.

This is exactly what Dr. Smith was mentioning about the intercardiac echo. So this is actually an echo probe that's mounted onto a catheter, and we're advancing this catheter inside of the heart, and then you'll see that the images that we get are very, very high quality images and this allows us to be able to position our catheters in places in the heart that are critical to achieving a cure. And you can see here we're zoomed in.

What is this we're looking at exactly?

Yeah. Sure. We're looking -- on the top is what we call the "septum" of the heart. And this is the area where we're going from the right side of the heart to the left side of the bottom. And on the bottom here are the two pulmonary veins, both the left superior pulmonary vein and the left inferior pulmonary vein.

Which you showed us on the model just a few minutes ago.

Exactly. Exactly.

Lots of technology there. Lots of screens to keep up with. Are you monitoring the arrhythmia? Might there be an arrhythmia during this procedure?

Absolutely. The patient is monitored both internally and externally, so you can see here in this picture there is actually a catheter in the lower right-hand portion of the image, and that has ten different electrical poles on it, and we're able to record electrical activity inside of the heart with that. But also we're always monitoring the external rhythm as well. And any time you have catheters in the heart you can induce heart rhythm problems or a fast heart rate, so they have to be monitored at all times just to make sure that they're not at a rhythm that's dangerous.

Right. And the dark areas I'm sure we'll see again on the fluoroscopy, the dark squares, if you will, those were the areas that were regulating the impulses? There are a series of ten dark squares.

Yes. We'll see that again in just a minute.

All right. Dr. Civello, that is --

That is what we call a "Brock and Brown needle," and this needle is a very listening needle that's inserted through a long sheathe.

It sure is. Wow.

And this needle allows us to obtain access from the right side of the heart to the left side of the heart. There's a septum that separates the right side of the heart from the left side of the heart, and in order to get to where the pulmonary veins are located, which is on the left side of the heart, we have to puncture through that septum.

And I think you pointed out here on the screen, that's what we're doing right now.

So here we're advancing this long sheathe, what you see on your screen, and we're threading the needle through this. And in a moment you'll see an echo image, which we see here, which is actually the needle starting to be punctured through. There it goes right there. The needle went through that septum, and now that needle is the left side of the heart.

You notice those bubbles, that indicates we're on the left side of the heart.

Okay.

That large dark space there is the left atrium.

Will this patient experience any pain? I mean watching this, it looks a little scary, not that we anything about what you're doing, but would the patient experience any pain in the areas in which you placed the catheter? Might it just be the groin areas where you made the incisions? Afterwards?

You mean as far as discomfort?

Yes.

You know, normally, that's the only discomfort they have. And the majority of the time, they don't have any discomfort down there. Those access points are relatively small, and there's not very much discomfort associated with that. Sometimes after the procedure, they may have some chest discomfort and some palpitations because any time you ablate inside the heart, you do irritate the heart a little bit. Again, the majority of patients don't even experience a lot of that. So really, once the procedure is done there's very little discomfort.

That's amazing. I know we have an animation that we were going to show folks, something that you might show a potential patient, a potential candidate.

Sure. Sure. This basically just shows you -- we were mentioning that we use the needle and the catheter to get access from the right side of the heart to the left side of the heart, and this animation, if you can roll it, will show you exactly. We're dragging the catheter down, and there's the needle that's punctured out, and then we're able to pass our needle through to the left side of the septum and onto the left side of the heart. And this is a very crucial part of the procedure. For a very long time to be able to ablate arrhythmias from

the left side of the heart was very difficult, because we did not really have a safe way to get from the right side of the heart to left side of the heart.

That's an advancement then.

It's definitely an advancement. And what makes this procedure safe is the fact that we are using that echo that we mentioned.

Yeah.

The fact that we can actually see that we are in the right position in the heart, that when that needle comes out that needle is coming out where should come out and not coming out where obviously it shouldn't, which can result in a lot of complications. So it definitely makes the procedure a lot safer. Now I would say, still to this day, not everyone uses the intercardiac echo technology, but it is something that we both feel is crucial to the procedure.

Let's take another question from one of our Internet viewers. Sure. Is atrial fibrillation ablation the procedure that was used on me, as I was diagnose with Wolf Parkinson White syndrome approximately in 1992, and my condition was repaired with ablation.

Sure. There are several different types of arrhythmias that people have. Atrial fibrillation is one of those arrhythmias. People with Wolf Parkinson White can have atrial fibrillation, but they also have another rhythm, which we call "AV reentrant tachycardia." And so more than likely what she had was an ablation of an extra pathway in her heart, more so than an atrial fibrillation ablation. Patients with Wolf Parkinson White are at a higher probability of having atrial fibrillation. But once that ablation for their Parkinson white is performed, they're less likely to have atrial fibrillation.

Let's take another question before we go back to some more video. This from a parent who says, "My five-year-old son is experiencing very fast heartbeats occasionally, especially when running or playing. He just sits down, and I can even hear his heartbeat, it is so fast. It lasts up to five minutes and goes away." Might this be afib?"

In a five-year-old it's unlikely that it's atrial fibrillation, but certainly it could be a different type of arrhythmia like the patient we just discussed with Wolf Parkinson White. So you can have other rhythm problems that aren't atrial fibrillation. So certainly a five-year-old with those symptoms should see a cardiologist and be evaluated by a pediatric cardiologist.

Absolutely. Why don't we resume looking at our video of the surgery, and as we do, I'd like to just point out that one of the things that I've learned about the experience that you guys have here at the Lake is that you guys have extensive experience in doing the atrial fibrillation ablation that you're able to do maybe more extensive ablations, a higher success rate, a really good patient outcome.

Uh-huh. Uh-huh.

Yeah, certainly these procedures are operator dependent. There's a lot of technology, as you see. There's a lot of experience with that technology that doing the more procedures that you do, your overall better chances of success.

Let's take a look here, again, the fluoroscopy.

Yeah.

What are you doing there?

So what we're seeing there is we're advancing our sheathe into the left atrium, and what we're about to introduce is what's called a "circular mapping catheter," otherwise known as a "lasso catheter." And what this catheter has is it has ten electrodes around it, and these electrodes measure the potentials inside of those pulmonary veins we were speaking about. So we're going to this catheter, advance it through a long sheathe.

It claps to be able to fit through the sheathe?

It collapses.

Wow.

And you'll see once it comes out, you'll see it will actually pop out and then look like a lasso, certainly just like a lasso you would use to lasso a cow.

Yeah. Doctor, what is this in the lower right-hand quadrant of the screen? It looks like a stethoscope there. That is an electrode that is on the outside of the body, which is used to monitor the patient's heart rate during the procedure.

We should point out there, the other electrodes there are pace-making wires that the patient already had in him. So the patient does have a pacemaker?

A permanent pacemaker.

A permanent pacemaker.

What are we looking at here?

So what we're looking at here is actually the intercardiac echo images of the heart. And what our nurse is drawing is the left inferior pulmonary vein. And what she's creating is a three-dimensional map from a two-dimension image. So both fluoroscopy and echocardiography are both two dimensions, but by taking different planes in the heart, we're able to reconstruct a three-dimensional image.

Which is what she's doing during this procedure.

Which is what she's doing during this procedure. So what you see in gray is the three-dimensional image that we made using the intercardiac echo. We then take that image, and what she's doing right now, is we take a Cat scan image that had been performed several days prior to the procedure, and we merge those two images together, which then gives us a real live version of what the heart looks like inside. And it allows us to actually act as if we're inside of the heart looking at these pulmonary veins, so it certainly helps with knowing where you are inside the heart.

What are the blue areas that we're looking at right there?

The blue areas are actually the CAT scan that had been performed several days before.

There it is again, yes.

There it is again.

Okay.

And so that's what that image is there.

We're just trying to merge the technology.

Sure.

So by merging them, we get a much better and more accurate view of what the left atrium looks like. So it allows us to navigate around the left atrium with much greater ease.

How many people are in the OR, or in the lab for this procedure?

Depends on the case. Sometimes Dr. Civello and I will both be in there. And then there will be two nurses usually and then a monitor. And there's also a technician from the company that runs the 3D-mapping technology who helps us create the map. So usually five to six people.

Yeah, definitely a team. Let's take another question from a viewer. What percent of patient are in normal rhythm one year after the procedure, after five years?

Yeah. So that number depends on whether or not you have paroxysmal atrial fibrillation like we spoke of; that you're in or out of atrial fibrillation, or you have persistent fibrillation. So it's hard to say in that viewer's instance what the success rate should be. But for paroxysmal atrial fibrillation, most studies say it's about 75 percent. For persistent, you're looking more at 60 percent. There was a recent study that was published, looking at paroxysmal atrial fibrillation, which actually showed a 62 percent success rate. So --

Let me interrupt you, doctor.

Yes.

Tell me what you're doing right here.

Yeah. So this is the ablation catheter. This is actually the catheter that we use that delivers radio frequency energy.

Was that water, just water?

It was saline.

Uh-huh.

And what that is, as you might imagine, we're converting electrical energy into heat. Right. And so that catheter is heating up a lot of tissue inside of the heart, which is our purpose. But what we would want to do is focus that energy in one particular spot. So what we do is we have a saline-irrigated catheter, which cools all the tissue surrounding the ablation catheter and allows us to deliver a pinpoint ablation lesion, which is a lot deeper lesion than we would normally see.

Again, not everyone, historically, has used what we call "irrigated-tip catheters," but the move is definitely across the country that these catheters are definitely more effective than traditional catheters. So I would say it's almost becoming the standard of care to use irrigated-tip catheters.

It's a safety issue, I would agree too. There's less risk of thromboembolic or char forming on the catheter, which can cause strokes, so that's another issue.

Speaking of complications, we have a question -- or potential complications, I should say. We have a question from someone saying, "I understand that there is a potential complication that can involve the esophagus. What is it, and what do you do to minimize this risk?"

Sure. Sure. And actually, later in the talk I have some slides. I have some slides to actually particularly address this issue. But what I can say for now is what we do is we use an esophageal temperature probe, which is a temperature probe that's past through the esophagus, and we monitor esophageal temperature. So if we see any heating of the esophagus, we generally move our ablation away from that point. If we are on top of the esophagus, we turn down the power on our ablation. We don't use as much power. So we do several things in order not to injure the esophagus. But I'll address that specific point a little bit later.

Great. And we do have some slides, and we'd like to go ahead and take those slides now, and you can tell us a little bit about what we're looking at with that. One of the things I wanted to ask you too, someone writes, "When my afib kicks in, it runs at 250 beats per minute. How long can I stay in this state and still be safe?"

Well, 250 beats a minute, that's fast. And the likelihood is you're going to feel really poorly and may even pass out, depending on age and what your heart function is.

Sure.

So certainly if it's 250, you should seek medical attention pretty quickly.

Great. Most definitely. It sounds like a lot of these folks with a variety of questions should pose these questions to their own physicians.

Absolutely.

It may not be afib, but it might be something else we're looking at. It could be something else. And it's not always atrial fibrillation when you feel palpitations or rapid heart rate.

Sure. All right. Can we take a look at those slides and let Dr. Civello tell us a little bit about what we're looking at.

Sure. This first slide we're looking at is actually an image of the circular mapping catheter inside of the right inferior pulmonary vein. So you can see that this catheter has ten electrodes, and each one of these electrodes actually monitors the electrical potentials that are emitted from both the left atrium, as well as the pulmonary vein. And what you can see next to it is the ablation catheter, and that catheter is then positioned in front of the lasso catheter, and then moved around in a circumferential fashion to isolate that vein from the rest of the heart.

That's fascinating. I'm sure this is a good educational tool to talk to patients ahead of time and say, "This is what we're going to do."

Sure. A lot of these things are, you know, when you talk about ablations sometimes it's hard for a patient to actually understand what we're speaking of. So using visual tools definitely does help.

Tell us about this.

This is actually, what I spoke of when we use the CT scan; we use it to show exactly what the pulmonary veins look like. And in this view, this view is as if you're sitting inside of the left atrium and you're looking down each one of the pulmonary veins. So on top is the right superior pulmonary vein.

In the circle.

The blue circle.

Okay.

In the middle is the right middle pulmonary vein, and on the bottom is the right inferior pulmonary vein. Initially, when we first started to do these ablations, we ablated in the blue area, in the blue dots you see there. And what we found was that by ablating so far inside of the vein, we actually caused something called pulmonary vein stenosis, which meant that the vein would get smaller from so much scar tissue. So the method that we use now is we do more of a pulmonary vein antral isolation, meaning we pull back and we ablate more inside of the left atrium and actually close to the pulmonary vein. And we do that to prevent comply cases.

And it's just as effective?

It's just as effective, probably more effective, actually.

Okay. Wow. What is the recovery period like after this procedure? Your patient, one month out Dr. Civello?

Really the next day they're up walking around and back to their normal activities. We ask them not to drive for a few days. But really, you know, and no heavy lifting for a few days, but really they're back to normal. They're going to feel some palpitations, some of the patients. But, really, in a month, they should be very much back to normal if it's a successful case.

What about exercise routines, other lifestyle changes, dietary changes? I mean are these all part of the package.

All hand-in-hand, yeah. I mean they should all follow the heart-healthy lifestyle. Reduce sodium intake. Watch their fat intake. Alcohol certainly plays a role in atrial fibrillation, so I tell people to abstain from alcohol, reduce caffeine intake. So really exercise and weight loss, they all go together.

For all of us.

That's right.

Yeah. I think it's important to remember that, you know, we're trying to cure the atrial fibrillation that the person is having now. But, you know, potentially if you continue, your blood pressure continues to be high, you continue to gain weight, you're going to set up problems in the future, which certainly may predispose you to have more arrhythmias in the future.

Let's continue looking at our video and the surgery and let you guys tell us a little bit about what we're looking at as we continue to get lots of questions. And we thank you for sending us your e-mailed questions. All right. Where are we right now, Doctor?

You can see there, as we mentioned before, there's a lot of information that we're looking at. Here we have, you know, six different screens that we're looking at. And we use each one of these screens in order to tell us where we're located. We use fluoroscopy, which you can see. The fluoroscopy is the image -- is the tube that's actually moving right now. And what that is is basically X-ray machine, which is taking pictures of the patient's heart in real time. Also you can see here the team that's involved.

Yeah.

This is not certainly a one-doctor thing. We have a lot of support staff, as Dr. Smith mentioned. We usually have two nurses and someone else who helps with us, as well as someone helping with the mapping.

How much setup time is involved before you bring the patient into the operating room or into the Cath Lab or the specific lab for this? It seems like there might be a good deal --

It takes a while.

-- of technological work involved.

Usually we try to start around 7:00 o'clock in the morning, and so the patient usually arrives around 5:00, 5:30. They get IVs, make sure their laboratory work is in order, make sure all the medications are in order. And once they're brought back into the room where we perform the procedure, they have the areas where gain access to the body prepped and, you know, made sure they're sterile for the procedure, and then catheters placed for the nares and the esophageal probe, for the temperature probe. So it take around 30 to 45 minutes to actually get them ready for the surgery, and then the surgery is another four hours or so.

It's kind of lengthy, but it's amazing to watch and see everything that's involved with it.

And if you can imagine, when this surgery was first started, it was taking probably 12 hours to do.

Oh, my goodness, what an improvement.

Yeah. So to get down to four hours, and in some cases it's even less than that, it's all really credited to, you know, a lot of people out there are really helping with the technology to make this a safer and more effective procedure.

Tell us what we're watching here, lots of color. Is this, again, the merging of the different images together?

Yeah. So what you're actually looking at here is we've highlighted each of the four different pulmonary veins, the right superior pulmonary vein is in blue. The right inferior pulmonary vein is in purple. The left superior pulmonary vein is purple on the left-hand side of the image, and in green is the left inferior pulmonary vein. And what we have done on the image on the right side of the screen is actually cut away the heart, and we're looking as if we're looking down into the left superior pulmonary vein, as well as the left inferior pulmonary vein.

Is that actual size what you're looking at there?

Yeah, it's actual size. And again, this is just another modality. But by looking at this echo image, I'm able to tell that my circular mapping catheter is right outside of the pulmonary vein.

And how long does the actual ablation part of this procedure take?

It depends.

Does that depend on how much is going on?

It's the majority of the procedure. Usually it takes us 30 minutes to an hour to get set up. And then once we're over there in the left atrium, it takes probably two or three hours of ablation, of moving the catheter around point-by-point and cauterizing different areas or ablating those areas of the heart.

Wow. Let's take another question here. Do you have to make the heart go into afib as part of your procedure in order to find and repair the problem?

Yeah, that's a good question. No, you do not. This is anatomical ablation, meaning that we know in the majority of people the triggers from atrial fibrillation come from the pulmonary veins. So we do with the procedure is we go in and isolate those pulmonary veins from the rest of the heart. Now once that's done, then we attempt to put people into atrial fibrillation. So we may stimulate their heart very, very rapidly. We also used a drug called "Isoproterenol," which is almost an adrenaline drug. We use that.

During the procedure?

During the procedure we use that at very, very high doses. And what we're doing is we're trying to put the heart into atrial fibrillation. So after the pulmonary isolation, not everyone are we able to put into atrial fibrillation, but some patients we are.

But that's a good thing. Is it a good thing if you can?

Well, if you can. Yeah, if you can or you can't, that's a good thing. If you can, that means there's likely more ablation that needs to be done. And like I mentioned, not all atrial fibrillation comes from the pulmonary veins. There are some other areas in the heart where this atrial fibrillation comes from. And so once we've put a patient into atrial fibrillation, after we have isolated the veins, we then go look for these non-traditional areas where the atrial fibrillation can be coming from, and we ablate these areas.

Wow. Amazing. I understand you have another slide, maybe more than one.

Yeah.

But I understand you want to show us, in terms of the slides as opposed to the video.

Sure. Sure.

So we'll get back to the video in a minute.

This is basically an image of what the circular mapping catheter looks as we're roaming it around the heart. And you could see here that to the right of your screen is the left superior and the left inferior pulmonary vein, and to the left of your screen is the right superior and right inferior pulmonary vein. And you could see, as I mentioned before, we don't actually go into the vein, we stay on the outside of the vein, and we move the catheter around. And we actually don't ablate inside of the vein but more in what we call "antrum." So this is just an illustration of the extensive amount of ablation that we do perform here in order to cure this.

Well let's take one more question before we go to our next piece of video. This person writes, "I have had a fib -- afib, rather, for four months and have just failed a cardio version after using Sotalol." Am I saying that right?

Uh-huh.

"Is ablation the next best step, or are there other medications I can use prior to trying ablation??"

Yeah. There's a couple other ones that we might try if she has not tried any other rhythm medications besides Sotalol. One is Tikosyn and the other one is Amiodarone. So she does have other medication options. But if she does have a lot of symptoms and atrial fibrillation is something that is causing her problems, then ablation certainly is something that she could consider.

If you look at the indications for ablation, we actually have indications, and they basically say that you should have failed two antiarrhythmic drugs. Now one of those antiarrhythmic drugs is something called a "beta-blocker," which we really don't even consider to be an antiarrhythmic drug. But the second drug would be a drug called "Flecainide" or "Sotalol" or "Tikosyn" or "Amiodarone" or "Norpace."

Usually I tell patients if they're young and they're healthy, they don't have a lot of co-morbid conditions, they don't have a will the of lung disease, then the next step would be to go ahead and have an ablation. Usually for my older patients, I say, "Well, listen, you know, maybe we need to try a second drug, or I should even say, a third drug. Maybe we need to put you in the hospital and try you on Tikosyn and see if this works," and then only if works, then do I recommend the ablation.

So I think for me, I'm more sort of cater it to their age and their risk factors than someone - - there's no really cookbook way. But if she's young otherwise healthy, has failed Sotalol --

40, to 50s.

40, to 50s, yeah, then I would --

Good answer.

I would say she would be a candidate for an ablation at this point.

All right. Why don't we resume watching our video here and let you both tell us what we're looking at. I know we're getting far into the procedure, maybe not all the way to the end, but we're coming along with it.

Sure.

What are we looking at here?

Here, I think I pointed out electrograms, and these are actually some of these are -- all of these, essentially, are internal electrograms, and the ones on the bottom are from actually the pulmonary vein, the white ones. Right above that is that tin-pole catheter that I pointed out earlier in the coronary sinus, and the last three green ones are external.

But essentially it looks like Dr. Civello, at that point, had isolated that vein, because it looked like the electrograms were essentially gone in that vein, and that's what we want to see. Because that means we have had success in isolating, and the potential for that vein to cause atrial fibrillation should be negated at that point.

So that was with the left superior pulmonary vein, which we were showing the electrograms. And what we find is we want to show that there is no electrical activity in that vein.

Okay.

And so prior to starting the ablation, we placed that circular mapping catheter inside of the vein and we mentioned the electrical activity. After the ablation of that vein, the end point would be no electrical activity. So later on in the video I have some good illustrations of that.

Okay. Wonderful. We have several very good questions coming up right now. Does obesity play a role in this afib occurring, either one of you.

It does, absolutely. We see more people with obesity having atrial fibrillation. And I've had a couple patients lose weight, and they're incidents of atrial fibrillation has gone way down. So, yeah, a lot of stuff goes in with atrial fibrillation, obesity, you know, other kinds of heart disease, so absolutely plays a role.

And the other thing is a lot of people who are obese have something we call "obstructive sleep apnea."

Yeah.

And we certainly know that patients who have obstructive sleep apnea are more likely to have atrial fibrillation. There have been some studies looking at the success rate of afib ablations in patients who are obese. And actually the success rate is not as high. And that may be because their triggers come from different places in the heart than they do in normal people -- or I should say in thinner people.

Right. Is it possible to treat ventricular fibrillation with the same procedure?

Yes. Not exactly the same, but with ablation procedures you can treat. Ventricular fibrillation is less common than another similar arrhythmia called "ventricular tachycardia." But certainly ablation has been used for many years to treat that as well, with good success rates as well.

Okay. One of our Internet listeners has a question that I thought of, actually, earlier. "Is there a recommended maximum number of times someone should receive this procedure." I was sort of thinking of it, can a particular patient undergo this procedure more than once?

Yeah.

And if so, what kind of a time in between would be recommended?

Yes. Typically, the most I've ever seen at the training program I was at before I came here, the most I've every seen were three ablations for one particular problem. But I actually had a patient who came and saw me a couple days ago who I would be his fifth ablation.

Oh, my goodness.

Yeah. And, you know, so as we talked about the success rates, you know, we have come a long way with this procedure, and we're able to cure a lot of people, but we have a long way to go. And so not everyone can you go in and isolate the pulmonary veins and expect a cure. Not everyone can you go in and ablate in particular other areas of the heart and expect a cure. So sometimes it does take a second a ablation. I would say rarely do we third a ablation. But if people want to be cured and they realize that this is an option, sometimes they will continue to pursue it.

I think most people, what they do, is after their first ablation their incidents, the amount of atrial fibrillation they have, their atrial fibrillation burden decreases. It goes from --

They're more comfortable.

Yeah. It goes from happening all day every day to happening a couple times a month, and they say, "Well, I felt much better with that first ablation, but I want this all gone." And so they may, at that point, then, decide to pursue a second ablation. So, yes, you can have multiple ablations and that is not uncommon.

Most big trial, say 20 or 30 percent, would you say?

Yeah.

Would undergo a repeat ablation, so it's fairly common.

Yeah.

That patient, this is his fifth ablation?

Yeah.

Is that paroxysmal or is that -- I'm guessing it's chronic or persistent.

It's persistent.

Yeah.

Yeah. So he's never been able to get out of it.

Correct.

You mentioned your training, and one of the question we had was about the type of training the two of you have had individually in your careers, and we're just kind of wondering what it take to get you to a place where you are now to be these experts.

Sure. I'll start out. I did my internal medicine training at Vanderbilt in Nashville, Tennessee, and that's actually where Dr. Smith and I first crossed paths. That was a three-year training program. From that point, I went to the Cleveland Clinic and did an additional three years in cardiology, so I'm a board-certified cardiologist, and then following that, I did an additional two years in electrophysiology, which was also at the Cleveland Clinic, which is specializing in problems of the heart.

I did three year at Vanderbilt, three years of internal medicine, and I stayed at Vanderbilt and did three more years of general cardiology, and then one more year of electrophysiology, sort of a year-and-a-half combined, but, yeah, four more years of cardiology at Vanderbilt.

I would say it's about from the point you graduate college, it's about 12 years of training to get to the point where you're actually working. And you're working a lot, I know.

Yeah.

Let's go to another piece of video that we have, continuing to work at the surgery and the progression of how you treated this particular patient. As we do, I want to ask you this, "How long after the ablation do you have to wait to return to normal activity," a question from one of our Internet viewers. We talked a little bit about it a minute ago.

I tell people about a week, about a week. What we're looking at here, and this points to the question an earlier viewer had about the esophageal injury. And what I was just showing at that point was the esophageal temperature. And so we do know that there are rare cases of esophageal injury that happen because -- if we can cut to the model I can show you that the esophagus actually courses on the backside of the heart. And this is the left atrium, and then this is the area we're ablating, and this is the location of the esophagus. So you can see they're in very close proximity to each other. So what I was showing there was the temperature probe that we use in order to determine we're not having esophageal heating.

Right. Right. One more thing that you monitor as you go through it.

Sure. Sure.

You might want to return to the video and let you continue.

Sure. At this point, this is just basically showing the manipulation of the catheters. We have four catheters inside the heart. All these catheters are then placed at about the knee level of the patient. And by using either clockwise to work, or counterclockwise to work, we're able to manipulate these catheters.

And as we mentioned before, these images that we're looking at is a fluoroscopy image, and it's in two dimensions, so there's no real way for me to tell whether or not that catheter is in front of the other catheter or behind the other catheter. And so we use the three-dimensional technology in order to give us sort of an X, Y, and Z access to know exactly where we are.

And here we're going back, we're showing the electrograms from the pulmonary veins, and you could see in the electrograms I'm pointing to, there are some potentials, what we call "pulmonary vein potentials" still there, where the ones on the bottom don't quite have as much activity.

Yeah.

So what I'm going to do at this point is I'm going to go back to that area where I'm pointing to now on the pulmonary vein and ablate that area.

Let's take another question as we look at this. "Is your ablation a Box Mini-Maze technique, and are you using J & J thermo-cooled catheter? This sounds like someone in the medical profession, doesn't it?"

Yeah.

We are using the thermo-cool catheter. It is not the Box Mini-Maze technique. I believe that's more of a surgical technique for cardiovascular surgeons.

Like an open surgery?

Correct. That's done when they do mitral valve repairs or even bypass surgery, they can go in and do a Maze procedure. This is a pulmonary vein isolation. There's lot of different names for it, but it's essential a pulmonary vein isolation for atrial fibrillation.

Yeah. And the ThermoCool, that was the irrigated tip catheter that I showed with that spray.

Yes. Yes. Exactly.

That catheter, as I said, has almost become standard of care in the treatment of atrial fibrillations.

Are you wearing lead, doctor?

I am wearing lead, yeah. And we do use -- we do use x-ray thoroscopy, and so if you're a patient who is there for a couple of cases there's no harm, but as a physician who is standing in front of that x-ray, we need to make sure, yeah.

You need extra protection.

Sure. Exactly.

Here's another question that is interesting to me. "How long do the holes that you make through the septum stay open, and are there any problems associated with those?"

Yeah. We've actually looked at this and studied and we've done follow-up echoes to look to see whether these holes we create go away, and in most cases, they do seal up on their own. As a matter of fact, there's oftentimes that if we have to go back and do a second ablation, that hole is often closed. A lot of times we wish it was open, but it's usually not. It's usually scarred down. And we see no long-term problems with the holes that are created.

Okay. Let's talk a little bit about the risk involved just during this procedure, the risk of blood clot, the risk of stroke.

That's really the main one that people have to know about, is stroke risk, and it's around a one-percent risk. The other main ones that we talked about -- esophageal perforation -- that has gone down as a risk just because we're monitoring a lot more carefully. Five years ago we didn't know as much, didn't monitor as much. It was a little higher. The other risks are bleeding from the access points. You can, actually, by ablating you can irritate the heart and you can get an effusion, which is a fluid around the heart. That's another complication. Those are really the main ones that we talk about with patients, and the patients need to know before they undergo this procedure.

Blood thinners during this procedure?

Absolutely, yeah. We thin patients both with heparin. Before the procedure they're always on Coumadin. A lot of times we we'll do a procedure called a "transesophageal echocardiogram" that looks and makes sure there's no blood clots in the heart the day of the procedure. So there's a lot of safety precautions that go into any of these procedures.

Will they continue on heparin or Coumadin after for a certain amount of time, after the surgery?

Yes. Yes. After the procedure, we use both aspirin, as well as Coumadin for our patients. You know, the big complication, as Dr. Smith mentioned, is stroke. And you know, it's close to one percent. If you look in published trials, it's .8 percent. Now most of those events are transient events, meaning that following the event, the patient does not have long-term problems. But there are certainly percentage, a small percentage of those people, of that one percent, that do have long-term problems; meaning, can't walk or can't talk. And so that's important to know, and if you're a patient undergoing this procedure, that's obviously your biggest and our biggest fear.

Absolutely. Let's talk a little bit about what we're seeing here on the surgery again. The imagery, which is just amazing to me, the 3D manipulation is just --

Right. Right.

Here we're just -- Dr. Civello's ablation catheter here is the red moving target there. And he's manipulating inside the heart and using that 3D map to guide himself in placing this catheter around those pulmonary veins. And then here we're back to a fluoroscopic image, or the moving picture of an X-ray, and he's -- we just use these in -- we trained from each one and use fluoroscopy, then we'll go back and use the 3D mapping, and we use them in conjunction to guide us where we are.

And what you can see here is, if you would vision that, we're looking at the right inferior pulmonary vein, this is the eco image of the right inferior pulmonary vein, so I have my lasso catheter positioned there so I know I'm ablating on the outside of that vein. And then

once I know that, I'm going to back to either my three-dimensional image that we saw early or the fluoroscopy image, and what we're going to do is we're create a circular lesion around this lasso catheter. So now you can see now my ablation catheter is at 3:00 o'clock.

Yes.

And then we'll usually burn for around 20 seconds. This film is sort of sped up a little bit, so it will look like I'm moving quicker. But every 20 seconds, I will then drop my catheter down, and now I'm sort of ablating around 4:00 o'clock. And then we'll slowly -- usually my lesion will be 5:00 or 6:00 o'clock on that clock face. And then what that does is create that circular area of scar tissue around the pulmonary vein.

Wow. Let's take a question while we're looking at the fluoroscopy. "How does the tricuspid valve work properly during atrial fibrillation?"

Well, tricuspid valve is on the right side of the heart. The mitral valve is on the left side of the heart. So what we deal with here, and we try to stay out of the way of is the mitral valve. But the valves still work despite the atrial fibrillation. They close and open properly. And symptoms are really generated by that abnormal irregular response that that ventricle has, and the ventricle is the pumping chamber of the heart, and not necessary by any valve dysfunction. So the valves don't play as much of a role in atrial fibrillation.

Another person writes, "What kind of energy is used to ablate? Do you prefer one kind over another?"

Yeah. There are several different types of energies that people use. I would say the most common we use is something called "radio frequency energy," and that's what we're using in this case, and that's, again, electrical energy that's turned into heat and we heat up the tissue. There's another type of energy called "cryo" or cooling, freezing. That's another type of energy that we don't use quite as much anymore for atrial fibrillation. We were using it more for atrial flutter.

What's the difference? Excuse me.

Yeah. Atrial flutter is a heart rhythm that generally comes from the right side of the heart, from the right atrium, as opposed to the atrial fibrillation, which comes from the left atrium. This patient actually had both atrial fibrillation and atrial flutter. And following the atrial fibrillation ablation, I then moved my catheters to the right side of the heart and did an atrial flutter ablation, so he got both types.

And you're looking here, again, at the rhythm of the heart.

Yeah. And actually at this point in the procedure where --

What is that, doctor?

That's the heart rate, so the patient's heart rate was going 120 beats a minute, and it's doing that because we have him on an adrenaline-like drug.

Yes.

And so this patient, this patient in particular, when he did activity, he would have atrial fibrillation. So we really want to test that hypothesis, and so obviously since we can't have

the patient get up and exercise, we give them a stimulant to increase their heart rate to see if the ablation that we did just perform works.

Actually works.

Yeah. This is a good question for this particular patient. "Is this procedure more or less complicated if the patient has a pacemaker," which this one did have a pacemaker; right? You know, it doesn't make a whole lot of different, I would say, but there is some -- a little more difficulty in getting transeptal access, so getting our catheters to cross over the septum, because we have to stay out of the way of the previous pace-making -- of the pace-making wires themselves. But as far as -- it is kind of nice to actually have a pacemaker because they don't get a slow heart rate during the procedure, which can be a problem sometimes.

So the pacemaker is still functioning?

Yeah.

Potentially functioning?

Yeah. We do change some settings on the pacemaker during the procedure. And as Dr. Smith mentioned, when we're doing the transeptal portion of it, we have to take sort of great care not to dislodge that pacemaker that's in there. But it doesn't -- I wouldn't say it's a contradiction at all in order to have this procedure. And following the procedures since pacemakers actually monitor your heart rate, you're then able to look at the pacemaker, interrogate the pacemaker, and then determine whether or not the patient is having episodes of atrial fibrillation. They may not have felt their episodes, but we can monitor.

You can tell.

Yeah. Exactly.

Doctor, think you have some more slides that you might want to share with us as we continue our discussion and taking questions. One question maybe Dr. Smith you could address, either one of you. "Can afib be controlled with proper diet and exercise?" I think this is someone who really wants to not have any intervention other than lifestyle change.

Yeah.

"And would proper cardiovascular training prevent the problem?" It can help it, but I don't know that it would completely eliminate it. But certainly, as we spoke with about before, controlling your diet, watching your salt intake, caffeine intake, alcohol intake, all of those things go into helping control atrial fibrillation. But would changing your diet and exercising, all those things completely eliminate it? Probably not.

All right. Let's take a look at the slides.

Yes. What we're looking at, the viewer earlier had a question about the esophagus. And what we're looking at here on the left is a CT scan of the heart, and if we can just pan out for a second so I can show the viewers, this is the left atrium we're looking at here. In this area here is the esophagus. It also runs all the way down here. And so you can see the esophagus is in very close proximity to the left atrium.

Yes.

We're aware of that, and we do everything we can to protect that from injury.

Wow.

And here is actually -- this is actually an EGD or an upper endoscopy that was performed while someone was ablating. So on the left you can see that this is what the esophagus normally looks like, and on the right you can see the external pressure from the radio frequency ablation catheter is actually compressing the esophagus. So, again, it's important that you know this. That complication that we have seen, specifically it's called an "atrial esophageal fistula." It can happen, but the incidents is very, very low, very, very low.

And just for my own edification, this patient is breathing on his own during this procedure.

That is correct. No oxygen, no anything else?

Well, we usually do have some supplemental oxygen. But there is no breathing tube.

Right.

That is down. The patient is breathing on their own. We call it "conscious sedation."

Another question for us. "Is there a significant risk to the patient due to radiation from the fluoroscopy?" We talked about that a little bit when we mentioned that you were both wearing lead.

Yeah. There have been reports. People have had radiation injury, but I think those are things of the past. I radiation equipment is better and the time of the procedure is better. So now that modern-day electrophysiologic procedures, there's really not a risk of radiation injury.

As I mentioned before, when these procedures were first started, they would sometimes go 12 hours. So not that the patient is experiencing 12 hours of X-rays, but there is a certain percentage time that X-ray is on.

Yes.

And now that we're been able to decrease the time to four hour, I would say that the average amount of X-ray time that a patient experiences is probably about 30 minutes. It sometimes can be less, sometimes can be more.

Much less than the original.

Right.

We rely on the 3D-mapping technology, the computer technology. Sometimes we don't even use fluoro; we can just use the 3D-mapping technology. And that wasn't around ten years ago. I mean we didn't use it as much as ten year ago.

And how long have you been doing this procedure here in Baton Rouge at Our Lady of the Lake?

Since '07.

Yeah.

A couple years?

Two years.

Coming on two years.

Okay. This person writes "I have sustained Afib persistent," -- I guess that would mean.

Yeah.

"Electrocardioversion" did not want. My doctor has recommended a Betapace as the chemical conversion. "

Yeah.

"If this drug does not work, should another drug be tried before an ablation?"

I think that's a similar question to the other patient who was on Sotalol, because Betapace and Sotalol are the same things.

Okay.

So I think that is a reasonable choice as a next drug for that patient, depending, as we talked about, other comorbidities; the patients age. And whether or not you try another drug, again, certainly depends on a number of other factors. But it's certainly reasonable to try another different drug. It's also reasonable, if they're a good candidate, to go and think about doing an atrial fibrillation ablation.

Okay. Okay. Let's talk a little bit about post-op visits to the doctor. We talked about lifestyle changes, the importance of that. How often do you want to see a patient and actually when is the first post-op visit?

Sure. For me personally we see the pay she wants the next day. We do keep our patients overnight and we observe them for any complications overnight. In the morning they leave, and we ask that they -- no heavy lifting for a week, and then I have my patients come back at four weeks. At this point, we just sort of go over everything, make sure they're on the right medications, make sure that they understand what the next step is going to be. And for me personally, my next step is I stop antiarrhythmic medication at eight weeks. So we do continue them on their antiarrhythmic medications for eight weeks, and then I'll see them back at three months. So usually for me standard is one month and then three months.

All right. This person writes, "If the heart rate is 147, is that a dangerous rate, or would I need to consider ablation? Do I need to wait?" A lot of these are very personal.

They are.

They're putting you on the spot.

At 148 we might change the answer to that. I mean, yeah, is 147 dangerous? Not necessarily. It depends a lot on symptoms, the age, what other issues they may have. They really ought to just see how they're feeling. If they really feel poorly at 147, then they should go either to the emergency room or go see their physician. Most people at 147, though, can wait, but call their doctor the next day.

Yeah. It's safe to say that that is abnormal heart rhythm, and something should be done to lower that heart rate.

Okay. This person is addressing the whole issue of the sleep apnea. "I have severe sleep apnea. If I sleep with my CPAP, the machine that helps control that, will it help correct the atrial fibrillation? "

It has certainly been to show the incidents, whether or not it will actually completely eliminate it, usually not.

Okay.

So you're going to usually depend on the same things we've been talking about with antiarrhythmic medication or even possibly an ablation at some point.

I must tell you that we have hit on a very popular topic this evening, because I think I have gotten more questions handed to me than ever before on one of our webcasts.

Well it's a very common problem, you know, and two percent of the population have it; five percent of the population over the age of 65, and ten percent of the population over 75. So this is something that's very common, and so, yeah, that does make sense.

When we were chatting before the web cast began, we were talking about the whole question of more men than women affected by this, and as you mention, women are living longer.

Yeah.

And women are going to start living longer.

Yeah. We do see more women as they age, but that's strictly a fact that there's more women who are alive at that age.

Right. So one day I may be calling on you. Here's another question for you. "Do you use this procedure for SVT, supraventricular tachycardia, or what meds do you use?"

SVT encompasses a lot of different arrhythmias but certainly can be treated with an ablation. SVT is different than atrial fibrillation in the fact that usually it's one discrete area that we're able to ablate. So in general, it can be a shorter ablation, and it's a much more discrete area that we're going after, but similar technology, similar approach.

Okay. Now forgive me if I mispronounce this medication. I use Mitropolol daily to contain my afib, extra when I exercise. I expect that over time I will need more. What are good guidelines to determine when to consider an afib ablation? I've already had two SVT atrial flutter ablations, and only afib remains, according to my doctor."

Yeah. So this is very common. You know, patients usually start out and are diagnosed with atrial flutter. Probably at least 50 percent of the people who experience atrial flutter will later on in their life develop atrial fibrillation. So she has read the book. Yeah.

Mitropolol, which is a beta blocker, is usually the first-line treatment that we use for atrial fibrillation. After Mitropolol fails, we usually start an antiarrhythmic medication, which she should either consult her cardiologist or an electrophysiologist if there is an electrophysiologist in her area in order to get further treatment. But what I tell patients about an ablation is if there's a drug that does not have a lot of side effects that works for them, then they should continue on that drug. But the moment that the drug becomes ineffective or the moment that their frequency of atrial fibrillation increases, then that's the moment we need to pull the trigger and do the ablation.

You know we've talked about it. There's complications that can occur with this procedure, so it's not something that we want to do for everyone, but we do want to do it in the people who need it, and I would say those people would be people who have failed at least one drug or have side effects from that medication.

How would blockage in the carotid artery affect whether or not a person was a good candidate for an ablation?

Yeah. Usually you're going to have that sort of risk corrected before you'll undergo an afib ablation.

That would be first.

Correct. Right. Because that's life threatening. You could have stroke complications, so we want to correct that first. Afib, even though very symptomatic, is not a life-threatening condition. So definitely the carotids would need to be taken care of.

Taken care of first. This person touches on something that we've talked about before, but one thing that came to mind for me, "Please talk about how you measure or determine success or freedom from AF. Is long-term monitoring warranted? If so, how do you cope with patient compliance?" And I guess I would add to that, do you rely on a patient coming back to you and saying, "I'm experiencing this again."

Yeah.

I mean there's a lot of communication from the patient.

Well, it's interesting. We know one thing that atrial fibrillations ablations do is it decreases the symptoms that you have for atrial fibrillation, so there are some patients who had atrial fibrillation and were very symptomatic, then have an ablation and then no longer feel their atrial fibrillation as much, although they may still have it.

May still have it.

So that was a very intelligent question that that person asked, and that was the question of monitoring. And so in certain patients who we're concerned that they're not feeling their atrial fibrillation, we then use monitors. We typically use a 21-day monitor, where we will monitor you continuously for 21 days.

You wear something?

You wear something, yeah. Okay. It's a little bit cumbersome, but the information that you get from that monitoring is important for us?

Uh-huh. And so in those patients we will use long-term monitoring, yeah. I would recommend that.

Okay. "Now do you approach the access via any other route femoral groin region to ablate?" I think we did touch on that a little bit or I maybe I remember reading something in the literature that there might be another route.

Not for the majority. You can place some through the right internal jugular, so that would be through the neck. But that would be one catheter, and we need multiple catheters for an ablation with atrial fibrillation. So it's going to be the right femoral and left femoral vein. There are some, what we call, "epicardial ablations," which are ablations that can be performed from small incisions in the ribs and then going from the outside of the heart as opposed to the inside of the heart. Those, although they're called minimally invasive, are still more invasive than what we do from the leg.

Okay. Okay. Just a couple more questions here for you. "How far in advance are patients taken off of their medications" -- and I'm assuming this person means medication for afib -- "prior to the procedure?"

Yeah. It depends on the half-life of their medication they're on. So the electrophysiologist who is performing the ablation can then look at the medication. Drugs such as Amiodarone have very long half lives, so I don't even like those drugs to be on anywhere near the ablation, where other drugs have shorter half-lives, where we can pull them off a week before.

All right. Doctors, this has been fascinating, and I know I've learned a lot, and I can tell by all of our good questions and the intelligent level that people have approached this by that people are really interested in learning about something important. Again, we want to mention that our Lady of the Lake is unique in this region of the country in what we offer in terms of the afib ablation.

Right.

Yeah, that's correct. That's correct.

We're so happy to have had you, Dr. Kenneth Civello and Dr. Andrew Smith. We appreciate your time. And when you see your patient, please thank him for allowing us to have those cameras in there. He was a big part of this. And give him all of our best as well.

Thank you.

Thank you so much.

Excellent.

And we want to thank all of you for participating this evening by sending us your e-mailed questions. Remember, if you would like to review a part of this, if you've missed something, or you'd like to look at the whole thing all over again, you can certainly do so. This webcast will be archived a little bit later this evening. You can look at it again and for a

long time to come by simply clicking on the "OR-Live" website, that's OR-LIVE.COM. Also on the website for our Lady of the Lake Regional Medical, OLOLRMC.COM.

For all of us here at Our Lady Of Lake Regional Medical Center and the "OR-Live" staff, I'm Margaret Lawhon. Good night from Baton Rouge.

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