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Hello, I'm Dr. Bryan Cannon, a pediatric cardiologist who specializes in rhythm disturbances at the Mayo Clinic.

CANNON:

I'm here today to talk to you about supraventricular tachycardia. Supraventricular tachycardia is a condition that we see in young people who experience heart rates that are very fast. Sometimes these heart beats are even as fast as 300 beats per minute.

Although not very common, we do see this quite a bit in the pediatric population, and it happens in about 1 in 1,000 patients. Although this condition is not typically dangerous or life threatening, it's certainly something that people can cause to have symptoms and also can severely affect their lifestyle. So what I want to do today is talk to you about what supraventricular tachycardia is and then the potential options or treatments.

Basically, if you take a look at this diagram, in the heart there's two top collecting chambers as well as two bottom pumping chambers. Typically there's only a single normal fiber that connects the top part and the bottom part of the heart. However, in some people there's an extra connection between the top part and the bottom part of the heart, in something called an accessory pathway.

So normally when the heart beats, the impulse starts in the sinus node. This then sends off a signal through the top part of the heart, similar when you throw a pebble into a pond of water and you see the ripples going out, that causes the top part to squeeze. Normally there's only a single connecting fiber between the top part and the bottom part of the heart, something called the atrioventricular, or AV, node.

In patients who have an extra connection or an accessory pathway, sometimes there's a heart beat that can go down the AV node, through the left ventricle, up the accessory pathway, and set up a circuit of tachycardia. When this happens, very frequently patients will have very fast heartbeats and can experience symptoms such as palpitations or passing out. This can be very concerning to both children, parents, and health care providers.

Fortunately, this condition is not typically dangerous or life threatening. In general if your child has supraventricular tachycardia, you want to make sure that you get them evaluated. And potentially, if they have these episodes of tachycardia, they may need to go to the emergency room to get it treated. Fortunately, we have good both short-term and long-term solutions for this.

For patients that have very brief episodes that don't occur frequently, sometimes we don't need to do any type of therapy. However, if a child is symptomatic or has longer episodes, it's frequently necessary to intervene. To intervene we have two basic options. The first option is to potentially start a medication that may decrease the chances of having the supraventricular tachycardia.

The medications that we use have been used in children for around 20 to 30 years, and we know that they're typically safe and effective. However, the medication route only provides a band-aid or only provides a temporary fix, as the majority of patients who have supraventricular tachycardia don't resolve spontaneously. The other option that we potentially have is doing a procedure that can be potentially completely curative of the tachycardia.

This is something called an electrophysiology study and ablation. In this procedure, we go through the blood vessels in the legs and put specialized catheters in the heart that measure the electrical signals of the heart. In this manner, we're able to figure out the specific reason or cause for your child's tachycardia.

Then what we're able to do is take another specialized catheter that can deliver either hot or cold energy and find out what the source of the tachycardia is and potentially completely eliminate it. What we found from studies is that the risks of this procedure are not increased once you're over age five, which means once you're older than age five there's no advantage as far as safety or efficacy of waiting to do the procedure.

However, in children less than age five the risks may be higher. So we reserve the ablation procedure for those children who are very sick or potentially have a problem with the way that their heart squeezes. In the current era, we can do this procedure with around a 95% to 98% success rate and a less than 1% incidence of complications.

In addition, in the long-term studies there have been no data to suggest that there's an increased incidence of long-term effects seen following the ablation procedure. The nice thing about this procedure is, if it's successful, then it's a permanent cure, which means your child won't have to worry about their fast heartbeats, symptoms, or other things that can occur. With today's technology we can do this very safely, and we have specific techniques to improve the safety and efficacy.

At the Mayo Clinic, we have the potential of doing this procedure without any radiation exposure. There are some cases that we can do where we can do this completely without exposing your child to any radiation. We can still do this safely and effectively, and we have all the tools and equipment necessary to perform this procedure safely. I've done about 1,000 of these procedures and feel very confident in the safety and efficacy and potential long-term cure for this.

So, in summary, supraventricular tachycardia is seen in the young patient population. But fortunately, we have the tools and equipment to either treat or permanently cure it. If you'd like more information or would like to speak to me, please visit our website site at MayoClinic.org. Thank you very much for your time and attention.