

Deep Brain Stimulation Series

A Conversation about Deep Brain Stimulation between a Boston Scientific Programmer and Person with Parkinson's

Davis Phinney Foundation

Note: This is not a flawless, word-for-word transcript, but it's close.

Melani Dizon (Director of Education and Content, Davis Phinney Foundation)

Hello and welcome everybody. My name is Melani Dizon. I'm the Director of Education and Content at the Davis Phinney Foundation, and today I am here with Steve and Monica, and we are going to talk about programming and DBS and in particular, programming a Boston Scientific device. Thank you, Monica and Steve, for being here.

Monica Volz (Nurse Practitioner, UCSF Health):

Thank you.

Steve Brandenburg (Person with Parkinson's):

Happy to be here. Thanks.

Monica Volz:

Me too. Thank you.

Melani Dizon:

So, Steve, let's start with you and I'm going to have you introduce yourself really quick. Tell us who you are maybe when you were diagnosed and when you got DBS, and then I'll switch it over to Monica and you can tell us who you are and then we'll go back to your story. Does that work, Steve?

Steve Brandenburg:

Sure.

Melani Dizon:

Okay, great.



Steve Brandenburg:

Yeah, my name is Steve Brandenburg. I've first noticed tremors in 2018. I was diagnosed in February of 2019. And I've had DBS system for about four years now.

Melani Dizon:

Okay, great. And Monica, what about you?

Monica Volz:

Hi, my name's Monica Volz. I'm a nurse practitioner at UCSF. I've been with the team here at UCSF for over 20 years, so I've done a lot of programming over the years.

Melani Dizon:

Yeah. Wow, that's very cool. That's a long time. That's a lot of experience. It's definitely what somebody with DBS wants, so that is excellent. So, Steve, can you tell us a little bit about it sounds like you had some tremor, but can you tell us a little bit about what led you to DBS when you started thinking about it, and then what, what prompted you to go for it?

Steve Brandenburg:

Sure. I went to my neurologist in 2018. At my doctor, they thought it was essential tremors to begin with, but because I have a lot of history of essential in my family, but this is definitely Parkinson's. So, I immediately went home and rushed to Dr. Google and tried to get as much information I could with all the meds. First of all, what the disease was and all the medications that were, were available to treat it. And at the bottom of the, of the webpage, it talked about DBS surgery, and I was interested in that from day one. And that's when I decided I was going to only get it done. I went to my neurologist we tried a myriad of meds that the only thing that the meds ever did for me was I seemed to get all the side effects. I never really got, you know, what, what they were supposed to do. So, he thought I was a perfect candidate for DBS surgery. And about 22 months later I hopped up to the Cleveland Clinic and had my first Boston Scientific system installed. That was when me see here December of 2019.

Melani Dizon:

Okay. So, did you what, what made you choose Boston Scientific? What was it about that device that worked for you?

Steve Brandenburg:

The greatest thing is, well, two things. Number one, the battery live. When I can get a battery, I think we even, they listed for 15 years, something like that in the United States, but it's the



same battery. It's listed for 20 years over there. It's just, I, that appealed to me because I don't want to come back in every six, eight years and have a, another battery popped in. So, I mean, it's simple yolk that you put around your shoulders, it charges your stimulator. I've charged while I've mowed the yard, I've charged in an airplane I've charged in Disney World. So, I'm a busy person and it doesn't hold me up. And I love that. The other thing that I like this, that the leads are able of outputting a signal at varying degrees, 360 degrees. So, it seemed to me like if you had that kind of ki that kind of capability, that maybe even some of the more challenging problems of controlling tremors would be easier to do. And I want everything behind me that I can put to use. And Boston Scientific seemed to be the one that had it.

Melani Dizon:

Well, that's great. So, Monica, you've been working in this field for a really long time. How did you get into programming?

Monica Volz:

Well, I prior to working with the team I worked in the neuro ICA as a nurse in the neuro ICA at UCSF. And I was there for more than 10 years. And I didn't see a lot of Parkinson's patients. It, you know, the patient population was very different, but I was ready for a change. And this was a long time ago. And one of our neurosurgeons was looking for a research nurse to run a study. And it's a really pivotal study. It's called the co-op study. It was where we enrolled Parkinson's patients and randomized them to either best medical therapy group or to DBS surgery. And then once they had once, they were randomized to DBS, they, it was STN target versus a GP target.

Monica Volz:

So, all of that seemed very new and interesting, and I was ready for something different. And so, I decided to join the team, but I have to say the learning curve was quite steep. I had a lot to learn about research, but mainly about Parkinson's and DBS. And as I was starting to collect data on patients and seeing patients in clinic for their study visits, I began to realize that the study part, I don't, I didn't really enjoy too much. It was the programming. Mm-Hmm. It was seeing patients in clinic, programming their DBS, seeing the outcome the education, just developing these amazing relationships that I developed with patients and their caregivers. And so, from, from the, from that point on, I just started to really program patients almost every day and learn so much. And so really, that was my starting point.

Melani Dizon:

Good. Yeah. I would imagine that's probably one of the best things in the world to see somebody go from being very symptomatic to feeling like, oh my gosh. Right.



Monica Volz:

Oh, it's so rewarding and such an incredible experience for everyone in the room when we're doing that.

Melani Dizon:

Definitely. Right. Yeah. So, Steve, what was the time between your surgery and then when you went in for your first programming appointment? And let's, I want to make clear that Monica is not Steve's programmer, but this is going to be a really interesting conversation because you had a, you know, you had a different experience. Monica has different experience, and so I think it'll be fun to go back and forth and hear different perspectives. So how, what was your time lag, Steve?

Steve Brandenburg:

Well, short and simple, it was a longest 30 days. My you know, they talked, they talked a little bit about a honeymoon period where the process of them implanting the leads stimulates whatever it needs to stimulate enough to where you get, you know, a decent control of tremor. And that lasted for me two or three days. And

Melani Dizon:

That's a short honeymoon.

Steve Brandenburg:

Well, yeah. On about, about the end of the week, it, like, I just couldn't wait for the 30th day to get here. Yeah. But you keep telling yourself, you know, patience is, you know, it'll be here. Just, this is just temporary. And, but it was, yeah, it was kind of a challenge because I was actually shaking worse than, than where I, when I'd gone in before to have it corrected and that's pretty typical as I understand it, so, but, you know, once, once we've finally got to that day, it all became better.

Melani Dizon:

So, Monica, is that a typical length of time that people usually wait?

Monica Volz:

You know, every place is different. Every site is different. And we usually d don't wait that long. We usually do the initial programming maybe two to three weeks after surgery. And then when we do the initial programming, we tend to start at low amplitudes and just slowly increase the stimulation over time.



Melani Dizon:

So, yeah. Let's talk a little bit about that programming, that initial appointment. What's usually happening? I mean, you're, you're turning it on, obviously, they're feeling like, whoa, it's working. But what is that whole first appointment like?

Monica Volz:

I don't know, Steve, do you want to talk about your experience first and-

Steve Brandenburg:

Well, my wife and I must not have paid attention for the first class because we were both under the assumption, and I think it was me that propagated the rumor that we would just flip a switch and we would be happy, and we'd go home. Mm. And then I was made aware of to how detailed and all these things and how you have to, you know, trial and error and see what works. And after I get her my disappointment of not going home as early as I thought I would I got fascinated by the process. And once I learned about the power of this DBS system that Boston Scientific puts out, I was pretty excited about it. And I kind of dove into it. And then I became a better patient because I kind of understood what they were going for. And then I started making a list as, as two things that I wanted to accomplish on each session.

Melani Dizon:

Yeah. So, go ahead, Monica. I think, you know, a lot of people watching are going to be people that are thinking about it and really wanting to know what, what exactly is happening during this appointment.

Monica Volz:

Well, I just want to make one a point that it's definitely not a switch. Steve is right. Wright, I wish it was a switch that you could just turn on and everything's better, but it's, it's definitely a process. And so, I do have a case study that I'd like to show, if possible. Great. I'll, I'll go ahead and share the screen. And it's a case study of using image guided programming, which is really unique for the Boston Scientific system. So, I will turn on the slideshow and this kind of highlights or really shows how the initial programming is done or how I usually do the initial programming. So, I'll start out with the patient. She was a 52-year-old woman with Parkinson's disease. She noticed that she was having some right-hand tremor around 2013, but then later she said, you know, I was feeling kind of stiff, and I had some problems walking even before 2013.

Monica Volz:



So, she had had Parkinson's for a while. Her most bothersome symptoms before DBS were dyskinesia of her face-drawn tongues. So, she had a lot of facial movements that were kind of embarrassing for her too, especially when she would go out, she had painful off dystonia. So, when her medication would wear off, her right foot would turn in and she would have this right toe curling that was very painful. And then her right arm would pull as well. She had right-hand tremors and mild right foot-tremors. And because she had these problems with her leg, and her feet, she definitely had some gait problems. At our site at UCSF, we have patients undergo an off-on evaluation. And so, we have them hold their medication. We want to see how well they're still responding to their medication, especially their levodopa because that's a pretty good predictor of how DBS, how the benefit that they'll get from DBS.

Monica Volz:

So, we have our patients usually hold their Parkinson's medication for 12 hours, sometimes a little longer, especially if it's a long-acting medication. And we have the patients undergo this rating scale, it's called the United Parkinson's Disease Rating Scale. And we want to really evaluate and rate there, their motor symptoms. So, we have, we score movements like tapping of the fingers and opening closing hands and for each side. And then we add up those numbers and we have the patient then take their medication, wait until their medication kicks in, and then we want to see how well or how little fewer symptoms hopefully with medication. And what we really look for is a 30% improvement in symptoms on medication. Well, this patient had an 81% improvement on medication, so that was really significant. She was still responding to medication. Her tremor went away, her gait improved. But unfortunately, the benefit did not last. So, she was having to take her RYTARY medication, 195 milligrams, two capsules four times a day, and Rytary 95 milligrams, one capsule of four times a day. So that's a lot of medication, a lot of levodopa. And then she was also taking kind of the Carbidopa Levodopa one tablet, usually in between her RYTARY doses because the, it wasn't lasting. She was wearing off in between doses. So, she was really on a lot of medication before her surgery.

Monica Volz:

So, she was a great candidate for D dbs. She underwent bilateral STN DBS surgery, and she had the asleep surgery. We, at our site, we offer awake surgery. It's a stereotactic surgery where the patient has a frame attached and they're awaken part of their surgery or the asleep surgery were, or they're under general anesthesia. And it all takes place in the M R I scanner. And when she met with her neurosurgeon, she said, you know, before she ever had surgery, I have a lot of anxiety. And the thought of just being awake during any part of my brain surgery, just the thought of that gives me anxiety. So, she was a great candidate for, this is sleeping surgery. So, she had that done July of 2022, and then she had to come back a week or so later to have her generate her battery pack implanted.

Monica Volz:



And that was done separately in an outpatient surgery center at UCSF. And that was in August. And she, when she came in for her initial programming, she reported to that she had a good post-op recovery. She didn't have a lot of pain or incisional pain. She was only a; she was only taking Tylenol for pain. And then she also had a good honeymoon effect after surgery. And one good thing was that she did not have any dystonia since her first surgery when her electrodes were implanted. So she was, she was delighted about that because that was the, you know, very disabling dystonia. So, she came in a couple of weeks after her battery was implanted on August 18th to have her initial programming done. And we've wanted our patients usually to come in off medication because we like to, we want to know what their symptoms are and what the stimulation is doing in regard to their, the suppression of the symptoms.

Monica Volz:

So, use though, prior to the patient, even seeing the patient, I met with the Boston Scientific rep, and we were able to get images MRI images, and using those images, we were able to look at her anatomy, which was really, it's, it's really cool. I'm sorry, I didn't mean to, so what it helps me to plan ahead of time as far as where the electrode is located in the target. And she had STN, so this is the STN that is the electrode that's based on her scan. You're able to, with this software, you're able to move the electrode, the target around, see what the electro looks like in different positions. And what's really cool is that you're able to also include different other structures within the patient of the brain.

Monica Volz:

So, this is here, this little green area here is actually the STN. And this whole red area is something called the internal capsule. And some, and, you know, the internal capsule sometimes can help, you know, cause side effects. And by looking at this imaging ahead of time, it made me think, okay, we definitely don't want to go too high up on the electrode because we want, don't want this patient to have side effects. So, this is actually a video of the programming session. So, we have the electrode is here, and these are the areas on the electrode that we can use to program, so we can activate this area. These two middle areas on the electrode are segmented. As you can see. There's, there're actually three different segments. And the Steve said that allows us more programming options.

Monica Volz:

We can steer the current or directed, and then there's also this area on the electrode that we can activate as well. So, this little video is just, you'll see the little red ball start to increase. And that's actually the volume of the neuronal activity. That's the volume of stimulation that you see as we start to increase the stimulation. And here we we're actually using just these specific segments in order to steer the current away from the internal capsule, which might cause side effects. So, here's the video, and we'll start to increase the stimulation. So that's done over here on the right. And you'll see that area, that red area of activation starts to increase.



Monica Volz:

And it's really neat because you're, you're able to actually show the patients this also Yeah. Long here we have our laptop and the patient's able to see that. And this is a nice area of activation that you know, you can see and show the patient. I also have another video. So, this is the STN target and STN and GPI are different, especially in size. STN is much smaller than the GPI. So, this is a, just a, a, the slide with the GPI and once again, the electrode and the GPI, and this whole area here is called the GPE. So, GPI means internal globus pilus, and everyone has also an external globus pilus. So that's this area here. Sometimes if you're stimulating high on the electrode, you can actually induce dyskinesia if you stimulate into the GPE.

Monica Volz:

So having this imaging is very helpful knowing that, you know, and I've seen that where I, as I'm increasing stimulation in the more dorsal contact, the patient can get a little wiggly and it's like, okay, we're, we're in the GPE. So, this is just a video of stimulating doing the initial programming in the GPI. And again, if you look over here on the right, you'll see this increase in stimulation, and you'll see that that area starts to increase. And then you're, you can remove the structure and just look at the GPI and rotate it like that and gives you a good idea of what's happening when you're doing your programming. And that's really, really cool. And that's new. Yeah. In the 20 years of doing this is very exciting time.

Monica Volz:

So that was, that's really very helpful, very useful, having this image-guided programming now. Yeah. Beautiful. So this was the patient's final setting. So, she left the clinic we were using this area of the electrode, the left STN is for her right body, and the right STN is for the left body. She left at two milli amps, a little higher pulse width on the right side because their symptoms were worse. But she had the ability, so I said to increase the stimulation slowly at home. And she had, she got a remote and she learned how to do that. And we always set limits. So, she couldn't get beyond 3.5 milliamps.

Melani Dizon:

So, when she, when, when somebody has the opportunity to do it at home, is it only like in certain parts of the node, like the stimulation? Yes. Yeah. Okay.

Monica Volz:

Yeah. Yeah. Absolutely. And here it's only these sections that are, that where you see the percentages Yes. And then, oops, I'm sorry. So, then she came back for a follow-up visit in December. She had, it was like night and day as far as her improvement in symptoms. Remarkable improvements, a significant reduction in her medication taking one Rytary 1 95, 4



times a day. Sometimes she forgets to take her medication, which is amazing for her significant reduction in her dystonia tremor and dyskinesia walking. She was up to walking up two miles a day by the time she came in in December. And all of this improvement in her symptoms, her mood was a significant improvement as well. So that's, that's all I have to say.

Melani Dizon:

That is, that's cool. I have never gotten to see that before. That is really cool to see the programming happening. Thank you.

Steve Brandenburg:

Yeah. As a patient, that's amazing. And that's really exciting to see.

Melani Dizon:

Yeah. So, going back to your experience, Steve, how many, you know, how many times and how frequently were you going back to get programmed in order to get to a place where it felt like it was, it was kind of like.

Steve Brandenburg:

For my left insert, which controlled my right-side body we were there probably three or four times about every two to three weeks initially. And then we started backing it off. And you know, I just went in there like the last time that I went in there. I wanted to be able to carry a coffee mug from my 11 o'clock to my two o'clock without spilling it. And he was able to do that, but I and I share a screen also.

Melani Dizon: Sure. Steve Brandenburg: I do. Yeah. Melani Dizon: Yep. We see it. Steve Brandenburg: Is it playing? Melani Dizon:



It's not playing.

Steve Brandenburg:

All, let me stop the start playing beforehand. No, hang on. This is obviously going to be one of the, oh, here, it's-

Melani Dizon:

There we go.

Steve Brandenburg:

So, the right side is what I came in with and the left side, after about a half hour of working on it, is I left with wow.

Melani Dizon:

Wow. Yes. That had to feel good.

Steve Brandenburg:

It felt really good. Then the next thing I took in was a bag of Costco shredded cheese. I'm going to stop this and redo it. And then I wanted to me wanted to be able to take a Costco bag of shredded cheese holding this hand, reach in with my left hand and pull enough cheese out so that this hand doesn't start shaking and knock all the cheese out of my hand. And that was another moral victory. So-

Melani Dizon:

Well, I have to say, I've talked to a lot of people with DBS, and this is the first time I have ever heard the cheese from the bag was the goal. Wow. And I love how specific it is. I mean, you're very clear, like, if I can do this right, it means that lots of things are working. I like Right.

Steve Brandenburg:

And it's so much easier for the patient because the first few times, you know, there was a very little talking between him and my programmer. But once I realized the capability of this Boston system, I came home, and I started making notes of what I wanted to do better. And I brought those notes in and that's how we, that's how we go forward at this point. Yeah.

Melani Dizon:

So-



Steve Brandenburg:

I'm very-

Melani Dizon:

Have you ever had somebody come in with a bag of cheese before?

Monica Volz:

No, not with a bag of cheese. But I have had people come in with like I had one lady, she liked to bake and being able to take like a teaspoon of bacon soda Oh yeah. And pouring it into it was very challenging. So, she brought her bacon soda, and she brought her teaspoon and we worked on it, and we were able to control the tremor and she was very, very happy. And she made me cookies afterward.

Melani Dizon:

Very good. So, you know, what are all the things that you do consider when you're programming somebody?

Monica Volz:

Oh, gosh. So, when I'm programming someone, first of all, the target STN versus GPI STN target, because it's a smaller target, and as I showed you, there's that internal capsule. Sometimes there, there could be more stimulation-induced side effects. But the nice thing about the Boston Scientific lead is that you can direct the current away from that area. So, the target, Steve, what, what Steve was talking about, what symptoms are the most bothersome for the patient? What is it that they want would like to have suppressed? What, what is, what are their expectations of DBS? That's a big part of it. Also, I take into consideration their medication because there are a lot of changes that happen after DBS is activated. So, I take that into consideration. I also, when I have patients come in for programming, especially for the initial programming, I want them to bring a caregiver with them so that they can also learn how to use the remote. Because it's a lot of information. I'm, I'm sure Steve remembered the first session and you learn how to use your device and it's like later you go home and what, how do you use it? So, it's always good to have someone else also learn how to use a device.

Steve Brandenburg:

It's pretty intuitive also. And it's easy to use. I mean, I use it, I don't use it often, but if I am going someplace and I'm meeting a bunch of people and I think when my, maybe my tremors may start coming in on my left side, which is my problem side, still a little bit. Then up the alia amp or two on that left side and that takes care of it, and then come back and go to bed before I go to bed, I take it back down, you know, to what works all the time. But since we've had the



right side done, I've only had to up that area of about two milliamps, and I'm still good. And I take no medications also. Wow.

Monica Volz:

Wow.

Melani Dizon:

Yeah. That's pretty great. Did was there any extra benefit that you've gotten from DBS that you weren't expecting? Or any surprises that have resulted from getting it?

Steve Brandenburg:

I expected to get good control and that's what I got. I expected to have what I consider to be the best system out there. And I think that that's what I got with the Boston Scientific system too. There are no surprises. And if, if something doesn't feel quite right, there's a reason for it.

Melani Dizon:

Yes.

Steve Brandenburg:

I, you know, it can be backed down. But I think honestly, if you could think of what needs to be done, this system can do it just because it's just so flexible.

Melani Dizon:

In terms of your sort of ongoing relationship with your programmer, how often are you in contact with the programmer?

Steve Brandenburg:

I'm in contact with him more than what I'm in there. But I think I go hearing about 30 days and we're, we're going to put another Hail Mary trial on my left side. And that's been, I mean, it's been over a year that we've tried to do it. However, we have made increases and we've made, you know, I mean we've made good headway, but it's just a very stubborn tremor. And I had to go in for an MRI and then I sing about the DB, the Boston Scientific system is also, it's DBS compliant or it's, it's MRI compliant, but during that, you have to do several steps and it has to be done in a hospital. So, they had, they strapped me down. They were running on; they were doing an area of my hip because I'd had an injury. And with the system off my left side is violent. I mean, it's just all over the place. And I remember the people saying, well, to their,



their leader in there, what do you want us to do? And she said, well go down to the storage room and see if there are any more straps.

Monica Volz:

Wow.

Steve Brandenburg:

So, I had straps and pillows and I mean, they, and it was all just to keep my left leg from shaking the rest of my whole body so they can go to a good image. But next time I think I'll take a Valium and maybe help that a little bit. But honestly, you get so used to it just handling things for you when it's turned off. And it was turned off for about 45 minutes, then I was almost in tears by the time I got the system turned back on because it just takes that much agony out of my day-to-day activities. And when you're used to it and you don't have it, you miss it. Yeah, definitely.

Monica Volz:

No, I have to say, Steve brings up a good point. Especially I, you know, I do a DBS prep class where we prep patients and it's like a three-hour course. And I think that the key takeaway from that class is after you have your DBS surgery, after your DBS has been activated, communicating with your team is very, very important. Because we turn on your DBS, you go home, and things change. You could have new symptoms, you can have side effects, you could have, you know, together with the medication, you could have changed. We don't know what's going on. So, and I tell patients, don't feel like you're alone out there dealing with that. We're, that's, that's what we do every single day. Call your team, send a MyChart message, communicate with your team, and it's really the first six months after surgery, it, that's a really critical time, because symptoms are fluctuating, and communicating with your DBS team, is very, very important.

Steve Brandenburg:

Yeah. Yeah. And you can't be moving it up and down a lot to try to get the goal that you're after because it doesn't work that way. You know, you need to let it set for a while and a little bit, I suppose, for lack of a better word, so that, you know,

Monica Volz:

We call it, we let it marinate, we call it.

Steve Brandenburg:

Yes, exactly.



Monica Volz:

Like simulation, marinate, you know? Yeah. You're right.

Steve Brandenburg:

Yes, because you don't know if you're correcting anything or

Monica Volz:

Not. Right.

Melani Dizon:

So, Monica, what are some of the things that maybe make it difficult to cha-to-cha program or, you know, why some people might, it just might take them longer to get to a good spot with it?

Monica Volz:

Well, you know, I know that the differences between the target, the STN, and GPI. GPI takes longer to respond to stimulation. So, I have had patients come in for their initial program, STN patients, and they have tremors, and you would turn on their D V S and the tremor goes away in the clinic, and they leave happy. That's not always the case with the GPI. It just takes longer. And I reassure, I tell patients, you know, don't, you'll get there. It's just going to take a little longer. And even I've even had patients call and say, you know, you turned on the DBS and it's two weeks later and I still feel the same. And I tell them, hang in there. You'll definitely get to that point, but your brain is just adjusting. Yeah. But I think that having realistic expectations also of what DBS can help with and, you know, symptoms that it, most likely, will not help with. And that goes with a lot of the non-motor symptoms of Parkinson's disease.

Melani Dizon:

Yeah. How long so Steve, you know, is relatively early on in this DBS, what are some of the things that change over time in terms of your helping them in, you know, five, 10 years as the, as they have to continue to get programmed? What are some things that people should be aware of?

Monica Volz:

Well, you know, it's a pr progressive disease. It progresses. DBS is very effective at suppressing motor symptoms over a long period of time. So, motor symptoms meaning tremors, stiffness, rigidity, and dystonia the symptoms that usually what medication helps with over time. And I have patients who are now 20 years out, I don't see them as much. Sometimes they'll come in, I like to see them at least every six months. We, they may have a little more rigidity. I may tweak



their stimulation a little bit, but they're, they're also, you know, often I have to help manage non-motor symptoms too, because they become more, you know, as the disease progressive progresses, they a little more challenging over time. Things like labile blood pressure and some of there's a long list of non-motor symptoms that tend to not respond as well to stimulation. And their response to medication seems to decrease over time. So that's, that becomes a big part of it later on in the, in the programming process.

Melani Dizon:

Great. So, Steve, what do you, is there anything you wish you had known about this before you went into it? And is there anything you'd like to share with people who are watching, who are considering it, and just kind of keep going back and forth? Should I, do it? Should I not do it? What do you want to like them to know?

Steve Brandenburg:

It wasn't much of a thought process for me because I wanted to get control and I hated meds. So, I guess that I would just, I want people to know that Boston Scientific, there are, there are a lot of smart people working for that company and they've got a good system and it works. I tried all the medications and none of them helped me. But you know, you can see that, you know, you can see the control immediately that you're getting. And I think that's important. I mean, this is the little remote control that they give us to upper amperage or reducer amperage, but there's also a little red button in here that turns it off. Would you like to see what kind of control I'm getting?

Melani Dizon:

That is a definite thing for only you to decide I wouldn't want anybody to feel bad. So, I would say.

Steve Brandenburg:

This is a deeply personal thing for me, but in the interest of letting other people know what they can expect if they do this. That's why I do it. So, I'm going to turn the system off and I just turn it off.

Melani Dizon:

Wow. Yeah. That is a true miracle.

Steve Brandenburg:

And I know we only have so much time, so I'm working on hitting that red button again right now.



Melani Dizon:

That's incredible.

Steve Brandenburg:

Walla this system has changed my life. And the people at Boston Scientific are all behind that. But it's a game changer. Yeah. For me.

Melani Dizon:

Well, I feel like that is a pretty powerful place to end. Thank you. That was, thank you for everything. Thank you for talking about your story, Steve. Thank you, Monica, for that great, great presentation that is just like, woo, finally got to see it all. I really loved it. And just really appreciate Boston Scientific's work and just the amazing things that they're able to do and help people with Parkinson's. So, thank you so much for doing this with me.

Monica Volz:

Thank you. Happy to do it. Thank you for inviting me,

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