

## Paralysis Procedure Explained

Dr. Stork: What are we looking at here?

Dr. Brown: So this part of the procedure was with Dr. Weissbrod, who's our otolaryngologist, and the problem with the paralyzed vocal cords is the cords need to come together to create phonation or for them to create a voice. With the paralyzed vocal folds, you have it way off to the side here so they can't meet in the middle. And that's why they get a breathy voice. So the injection that you saw as he inserted the needle here, injected this filler then gives it enough bulk that we're able to bring the vocal fold back to the middle and this opposite one can just work against it and create the voice.

Dr. Stork: So it can close like you're seeing here.

Dr. Brown: That's right.

Dr. Stork: Okay, so that is why the vocal procedure had almost immediate results?

Dr. Brown: That's right.

Dr. Stork: I mean, Mitch is speaking now much more clearly than before.

Dr. Brown: And immediately upon waking up. So here is what happened to Mitch. He actually was operated at this disc level and this disc level which you would think would affect c6 and c7.

Dr. Stork: So these are nerve roots in the lower part of Mitch's neck?

Dr. Brown: Mid part of the neck. This in fact were perfectly fine. This guy right here c5, was paralyzed.

Dr. Stork: And that is why he could not really move his shoulder?

Dr. Brown: That's right. So what we wanted to find in Mitch is a nerve that we could steal from and he wouldn't actually lose any function. So the chest muscle is something that receives innervation from many different levels. A lot of it's in the c7 nerve in here and so we can actually take a healthy nerve like this and we can open it up like string cheese. I can separate it into separate nerve pieces, and I was able to peel one off that was primarily chest muscle. Then we detached this one that we need to get back and tie those ends together and now we have the c7 nerve running shoulder function.

Dr. Stork: So the nerve as it actually goes to the shoulder, this part, the peripheral part was okay.

Dr. Brown: That's right.

Dr. Stork: It just wasn't getting the signal from the spinal cord.

Dr. Brown: That's right.

Dr. Stork: So you literally took this nerve, reattached it to a nerve that normally would tell your chest muscle to move.

Dr. Brown: That's right. There's a second part of this procedure also which we did right after that and that is, we still needed the deltoid muscle to come back so we stole nerve off of the radial there, the triceps branch, and we put that up here into the axillary nerve that comes around the side here. We brought that up into there, so now triceps is going to help bring the arm initially and chest is going to help turn it out, and so he'll have a period of time where he's going to work with therapy to learn these tricks. The brain rewires. The brain does a wonderful job rewiring these things with time.

Dr. Stork: So will Mitch think now, when he's moving his shoulder, does he have to rework his brain so that he's thinking okay, I'm going to move my chest a little bit, but actually it's going to move his shoulder?

Dr. Brown: It probably will be that way. Every once in a while, I have a patient who comes back and they don't even realize they had to learn the trick. They come back and you know, doing biceps from nerves that do the hand. They come back and they're flexing and they said, my biceps is working. But there are others that have to go through this retraining period of how do I make that muscle work? And we teach them how to contract the chest muscle and suddenly the shoulder jumps and they begin to get it.

Dr. Stork: We have some footage of another patient who underwent a similar procedure, Mitch to give you an idea of where you can go. So before there was no movement of – is that the biceps he's trying there?

Dr. Brown: So he has – bicep is out. Radial nerve is out so his wrist is down and his fingers don't come up. He has the suprascapular nerve but he has no deltoid. So he had no ability to flex the elbow. We did this rewiring and he, at three months, was able to beat gravity and that he had a year, he has pretty much complete movement of that arm. The biceps goes, the triceps goes, the wrist comes up and the shoulder filled in.

Dr. Ordon: A millimeter a day, right?

Dr. Brown: A millimeter a day.

Dr. Ordon: It's slow but at least people know what to expect.

Dr. Stork: So we're going to check back in with you Mitch, down the road, okay? Best of luck in your recovery.

Mitch: You're best, Dr. Brown.

Dr. Brown: Thank you.