

# Electrodes aid swallowing

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A sensation grabbed Rafael Montalvo, like fingers encircling his throat.

The grip tightened, causing him to wince in discomfort, but working to heal his muscles. He played up his pain, just to let his therapist know what he was going through.

On his throat, four small electrodes delivered electrical stimulation from a device the size of a Walkman.

Later, Gabrielle Noe, a speech and language pathologist at HealthSouth Rehabilitation Hospital of York, asked Montalvo to open wide and say, "Ahhhhh!"

Montalvo did so with gusto.

"Do you want it louder?" he asked.

He loves to make noise and tease Noe during his therapy sessions — that is, whenever he can open his mouth to speak.

In between his antics during a September session, Noe orders him to swallow loudly.

Montalvo, 69, has had four strokes and a heart attack in three years. His most recent stroke disrupted his life this summer.

At first, the York man couldn't sit down without help. One side of his smile drooped. A river of saliva rolled down his chin because his throat muscles didn't work well enough to swallow, he said.

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Gabrielle Noe, a speech and language pathologist at HealthSouth Rehabilitation Hospital of York in West Manchester Township, asks Rafael Montalvo, 69, to look into a mirror so he can see how electrical stimulation therapy improved the muscles in his throat and face. Montalvo's muscles were weakened by four strokes, and he has been receiving therapy.

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Rafael Montalvo experiences discomfort when the therapist turns the electrode output up a little. The electrodes make the muscles in his face and throat contract.

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He hopes an electrical stimulation device, called VitalStim Therapy, can re-train his muscles to swallow. Montalvo receives therapy as an outpatient.

VitalStim Therapy is the only device for active treatment of swallowing disorders approved by the Food and Drug Administration.

HealthSouth employees began offering the therapy about four or five months ago. More than 2,000 people have been trained to use the therapy, and about 65 percent are actively doing so, Mark Howard said. Howard is a spokesman for VitalStim Therapy.

When electrodes are attached to patients' throat areas, they may feel crawling, tingling or warm, burning feelings, or as if someone is lightly grabbing their throats, Heather Barr said. Barr manages the speech and language department at HealthSouth Rehabilitation Hospital of York.

VitalStim Therapy's success rate is more than 80 percent, compared to 33 percent with thermal application, according to the FDA.

Different types of thermal stimulation exist, Barr said.

One example would be if a therapist used frozen cotton swabs to touch parts of the patients' throat muscles. HealthSouth uses both VitalStim Therapy and types of thermal application.

A therapist can tell by the expression on a patient's face if he is receiving enough stimulation from VitalStim, she said.

The device works by causing the person's "strap" throat muscles, the ones in the front portion of the throat, to contract. This is needed for a person to swallow properly, Howard said.

"The best exercise for swallowing is swallowing," Barr said.

For patients who have had a stroke or another condition that has made it difficult for them to swallow, the most dangerous items to consume are thin liquids, like water and juice.

"They can't always feel what is in their mouth, and they can't always react," Barr said.

Their muscles have been weakened, or the wiring in the brain may have been frayed, like electrical lines inside a broken computer, she said.

Through therapy, a person's brain might be able to reconnect its wiring or make new connections, she said.

Montalvo has been on a liquid diet, not exactly enjoyable dining.

A few days each week, a therapist at the rehabilitation hospital serves him breakfast and watches how well he pushes thick liquids down his throat.

He is hooked up for about an hour to the device while he practices eating.

Bill Knapp, another patient receiving the same therapy that morning, described the sensation simply: It feels like somebody choking you.

Both Knapp, who is 72 years old and lives in Dover Township, and Montalvo believe the technology is working.

Noe put electrodes on Montalvo and Knapp's necks. She placed graham crackers in front of Knapp and orange juice in front of Montalvo.

Montalvo had requested rum and Coke — his eyes revealed his joke — when he placed his order.

Instead, Noe scooped powder from a jar and plopped it into their drinks. Once stirred, the juice became the mushy consistency of apple sauce. She reminded them to use the powder.

“If all that liquid goes into your lungs, what do you get, gentlemen?” she asked. Then answered her own question. “Pneumonia.”

People who have trouble swallowing also are in danger of choking when they eat.

Noe tells her patients to swallow loudly. She listens to make sure when they say “Ahhh!” that there is no liquid in their voices.

The goal of therapy is to move patients onto a regular diet so they can eat what they choose. On average, patients will do between 12 and 14 one-hour therapy sessions.

At the end of the session, Noe uses thermal application. She sticks swabs that have been frozen into both Knapp’s and Montalvo’s mouths, eliciting a gagging sensation.

“Next time, you’ll touch my belly button,” Montalvo joked.

Then, he was off to another kind of therapy, laughing as the therapist pushed him in the wheelchair down the hall.

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