

## **A VOICE CASE STUDY: WHEN THE DOCTORS SAID THERE WAS NOTHING MORE THEY COULD DO**

D.S. Davis  
The Davis Center, Succasunna, NJ. USA

### **Abstract:**

Client VS1 after a thyroidectomy lost her ability to speak well and articulate clearly. A vocal cord injury was reported secondary to the thyroidectomy. After numerous physicians and tests, she was told there was nothing more they could do. She reported that she had made little progress since her surgery. Dysarthria, inability to be heard, vocal fatigue, hoarseness, and poor articulation were described when she initially came for services. VS1 sought out The Davis Model of Sound Intervention in August 2007. As VS1 presented with yet untreated considerations with The Davis Model, a Case Study was undertaken to determine if positive change was possible with this unique approach. The Diagnostic Evaluation for Therapy Protocol (DETP®) was administered initially to determine the appropriate sound-based therapies needed to accomplish the possibility of positive change. The Davis Model of Sound Intervention was initiated and three sound-based therapies were administered: Auditory Integration Training, a Listening Training Program, and BioAcoustics. Continuation programs were administered when follow-up testing indicated the need. A videotape of VS1 before starting the sound-based therapy protocol was taken. Subsequent videotape footage was captured after two years of therapy. Voice recordings were taken pre, mid and post therapy intervention. After 2 years of following the suggested sound-based therapy protocol, defined by the Diagnostic Evaluation for Therapy Protocol (DETP®), VS1's speech is clearly articulated and understood, hoarseness has disappeared, and vocal fatigue is gone. A breathy quality has remained. The Davis Model of Sound Intervention is a possible viable approach to support positive change for vocal cord injuries, vocal fatigue, articulation issues, and hoarseness. Additional case studies can be initiated in order to determine if a larger study should be conducted.

### **Client History**

VS1 was 49 years old when she first came to The Davis Center for services. She was referred by her violin instructor, who had researched the concepts of The Davis Model of Sound Intervention. At age 48, she was diagnosed with bilateral thyroid nodules which were growing rapidly with the left greater than the right. Her vocal cords were both mobile. A total thyroidectomy was done. She had a history of chronic sinusitis.

A vocal cord injury secondary to the thyroid surgery was noted. The tumors had to be pulled off of two nerves during surgery. The surgeon indicated that the right nerve was not severed during surgery. The left vocal cord was clear and mobile. The right cord was mobile but not moving as well. Trauma to the recurrent laryngeal nerve was reported. On her one month post surgery visit, a right paralytic cord was reported. Four months after surgery, the right cord was moving very well with no paralysis. Her voice was fatiguing easily; her voice would get soft after talking for awhile. She was hoarse and her voice was 'off'.

Six months after surgery, she saw an ENT physician. His report suggests that she was complaining of dysarthria and the inability to be heard and understood. She had a

halting speech pattern, and although her voice got better, the articulation did not. Her voice was characterized by hoarseness, vocal fatigue, and volume disturbances.

His report suggests that there is reduced diadochokinesis and loss of articulation of plosives and consonants. Her transition from consonants to sustained vowel is poor and lacking precision. There was no obvious tongue motion abnormality, however evidence of tongue fasciculation was present. Laryngeal examination showed good vocal fold motion with only a slight, subtle right paresis. There was reduced diadochokinesis to the right and left vocal folds as well. In the physician's impressions, he suggested that VS1 appeared to have suffered dysarthria and dysphonia. Additionally, there were subtle findings of palatal incompetence as well as laryngeal tongue involvement. There is evidence of tongue fasciculations. As a result, the evidence pointed to a central neurological disorder and not a peripheral laryngeal nerve disorder. Subsequent MRI testing evidenced normal functioning.

#### Initial Intake Information

VS1 contacted The Davis Center seven months after surgery as she reported that no change was significantly made within the 7 months. She was told by 3 different physicians that there was nothing else that could be done for her. All clients utilizing The Davis Model of Sound Intervention must initially receive The Diagnostic Evaluation for Therapy Protocol (DETP®), a diagnostic evaluation that determines if, when, how long, and in what order any or all of the many different sound-based therapies can be appropriately applied<sup>1</sup>. A sound-based therapy uses the vibrational energy of sound with special equipment, specific programs, modified music and/or specific tones/beats, the need for which is identified with appropriate testing.<sup>2</sup> VS1 received the DETP on 8/20/07.

Initial Intake information also revealed that VS1 had always been affected by allergies, and had been prone to sinus infections. She had four surgeries over time to remove nasal polyps. She was prone to migraine headaches often triggered by light flashes. She was more sensitive on the right side. Prior to her surgery, she was sensitive to loud sound and thought movie theaters were too loud to attend. She also reported both mental and physical abuse by her mother. Her mother would hit her a lot on her face, often more on the right side than left, until age 30. She also yelled and screamed at her a lot. She had not spoken with her mother in over ten years and her sister for longer than that. She had been married for 9 ½ years on the initial testing date.

Her voice quality was so soft that it was difficult to hear her speak. She used many w/r substitutions and sounded like a child learning to use speech sounds. Her speech patterns were not always rhythmical.

#### Background on The Davis Model of Sound Intervention

The Davis Model of Sound Intervention is a unique approach blending 3 tenets<sup>3</sup>:

1. There is a connection between the voice, the ear, and the brain. Five laws support this connection. Three were identified by Dr. Alfred Tomatis and were presented to the French Academie of Science in 1957. They became known as The Tomatis Effect and in summary suggest that the voice produces what the ear hears and when the correcting sound is reintroduced to the ear, the voice regains coherence. The remaining two laws were identified by D. Davis and presented to the Acoustical Society of America in 2004. They became known as The Davis Addendum to the Tomatis Effect and in summary suggest that the ear also emits

- the same stressed frequencies as the voice and when the correcting frequency is introduced to the body, the voice regains coherence.
2. Every cell in the body is a resonating entity, both emitting and receiving sound frequencies. As such, every part of the body responds to its correlating sound frequency. By reintroducing the correcting/balancing frequency, the body regains stability.
  3. The ear is our body's global sensory processor, not just a hearing mechanism. Because of the way the body responds to sound wave vibrations, all of the sensory information of the body can be stimulated through the ear.

In addition to the 3 tenets, all sound-based therapies are not the same. The Tree of Sound Enhancement Therapy®<sup>4</sup> was created to provide a developmental flow chart for the correct administration of any sound-based therapy. The DETP is based upon this flow chart, and offers an assessment testing one's sense of hearing, sound processing skills, auditory processing skills, otoacoustic emissions, and a measurement of the person's vocal frequencies. The interpretation of the results formatted the protocol for change.

#### Sound Protocol for VS1

The results of VS1's DETP identified many issues associated with the connection between the voice, the ear, and the brain. She demonstrated hypersensitivities to sound in three different ways. She demonstrated sound processing issues within vestibular, language, and attention/focus skills, as well as processing sound patterns more quickly through bone conduction vibration. She had difficulty identifying differences between pitches. Her voiceprint demonstrated many irregular patterns. These results demonstrated that sound-based therapies could make foundational change for her.

The protocol established followed in this order:

1. The first therapy suggested was Auditory Integration Training, which repatterns the acoustic reflex muscle in the middle ear cavity. There are 3 possible therapies at this level. VS1 used Berard Auditory Integration Training. This therapy is associated with the "Root System" of The Tree of Sound Enhancement Therapy.
2. In order to address VS1's specific wellness challenges brought about not only from the surgery, but overall wellness, BioAcoustics™ was suggested to be implemented at the same time as Auditory Integration Training.
3. Once Auditory Integration Training was finished, a Listening Training Program was suggested, which represents the "Trunk" of The Tree analogy. This program is modeled after the work of Dr. Alfred Tomatis and while there are a few programs to choose from, the Tomatis® Method was used with VS1. This program supports how the body processes sound through the reception of sound by the air within the external canal of the ear and the bone response of the entire body. Then the work is supported by introducing the listener to their own voice so that they can self-modulate their vocalizations.

After the therapies, VS1 reported the following changes:

1. After Auditory Integration Training:
  - a. The quality of her voice improved a lot
  - b. Speech became easier to produce
  - c. She could converse more easily without tiring
  - d. She felt others could understand her speech more easily

- e. Her articulation improved
  - f. She became less shy
  - g. She had fewer allergic reactions.
  - h. She was able to listen to music at a higher volume and no longer wore ear plugs.
2. After BioAcoustics (This science uses the Frequency Equivalents™ of body irregularities and by reintroducing the irregular frequencies to the ear, the body works towards stability.):
- a. The muscles of the tongue and its supporting nutrients were stimulated, and enhanced and as a result, articulation was clearer.
  - b. The orbicularis oris muscle of the mouth provided better support for articulation.
  - c. The leukotrienes associated with her allergies decreased and her allergic responses were fewer.
3. After the Tomatis Method:
- a. She could hear her own voice better
  - b. Others said that her voice was stronger.
  - c. She felt she had fewer problems communicating her thoughts.
  - d. New concepts came more quickly to her.
  - e. She was better able to memorize music
  - f. Her vocal range improved.
  - g. Her articulation was much clearer.

Over time, her friends and family all report that they can finally understand her again. The initial changes occurred within 3 months. Her therapy now comes in maintenance sessions only to help her maintain and support her progress. On her last visit, all articulation was clear and precise. Her voice was only slightly breathy. She reports that she is a happier person, can do more for herself and is looking ahead to her 50's being the best decade of her life. She restarted playing the violin, began painting more, and reports 'feeling free'.

#### Summary

VS1 was helped with The Davis Model of Sound Intervention to regain her use of her voice after a thyroidectomy, which appears to have affected initially her vocal cords and other nerve/muscle innervations needed to speak. Three specific therapies based upon The Tree of Sound Enhancement Therapy were used: Berard Auditory Integration Training, the Tomatis Method, and BioAcoustics. VS1 improved her voice quality, articulation, vocal range, and strength of her voice, in addition to supporting her tongue and mouth muscles and nerves, her musical skills, and her communication skills. The combination of the therapies defined by the DETP provided the correct foundational sequence for the changes to occur.

Dorinne Davis can be contacted at [ddavis@thedaviscenter.com](mailto:ddavis@thedaviscenter.com)  
 Or c/o The Davis Center, 19 State Rt 10 E., Ste 25, Succasunna, NJ 07876

Trademarks

Tomatis® assigned to TOMATIS: N° 3291182

DETP®, The Tree of Sound Enhancement Therapy® assigned to The Davis Center.

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<sup>1</sup> [http://www.thedaviscenter.com/evaluation\\_DETP.html](http://www.thedaviscenter.com/evaluation_DETP.html) 4/03/10

<sup>2</sup> Davis D.S. *How sound-based therapy can help the Isodicentric 15 Individuals*. Schaumburg, IL: Isodicentric 15 and other Chromosomal Imbalances Conference. June 24, 2005.

<sup>3</sup> [http://www.thedaviscenter.com/davis\\_model.html](http://www.thedaviscenter.com/davis_model.html). 5/3/10.

<sup>4</sup> [http://www.thedaviscenter.com/Tree\\_of\\_Sound.html](http://www.thedaviscenter.com/Tree_of_Sound.html) 5/3/10