



the Trumpeteer

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Improving Speech Perception

A patient's perspective on Phonak's new SoundRecover technology by J.P. Miller

In the July 2009 issue of the Trumpeteer (CCENT's online newsletter), I reviewed the benefits of a non-linear frequency compression algorithm called **SoundRecover**. This Phonak proprietary algorithm is designed to compress and shift high frequencies into an adjacent area of audible hearing. Frequencies below the kneepoint are not compressed or altered in any way. This unique approach enables high-frequency information to be compressed with minimal artifacts. High-pitched sounds like children's voices, birdsongs and alarm clocks become audible again and the understanding of speech is greatly improved. **SoundRecover** is of great benefit for wearers with all degrees of hearing loss.

Hearing loss often manifests in the high frequencies. Typically people have trouble hearing key high frequency speech sounds, such as the fricatives /f/, /s/, and /sh/. **SoundRecover** is a tool that improves the audibility of high frequency sounds where traditional amplification alone is not sufficient to increase audibility. For example, the voiceless /s/ is located between 4 - 6KHz for male speakers and between 6 -10Khz for female speakers. Often with conventional amplification, the female /s/ cannot be made sufficiently audible, especially

when the voice is soft or distant. **SoundRecover** can help overcome the current limitations of amplification.

Personally I have been very impressed with the **SoundRecover** feature available in all Phonak core hearing aid products. I have fitted many hearing instruments with this special high frequency processing algorithm. One recent patient's experiences come to mind because of his rather unique hearing needs. His story is featured in this issue of the Trumpeteer.



Patient Bill, in the hearing lab. Interviewed by J.P. Miller, Trumpeteer editor.

This patient whom we'll refer to as Bill, is 67 years old and still works part-time as a technical consultant/expert witness in patent litigation consulting for integrated circuit memory devices. He lost the hearing completely in his right ear more than 20 years ago. He has a mild to moderate sensorineural hearing loss in his left ear (see figure 1). In 2007, Bill received a bone anchored hearing aid (BAHA) from CCENT. The unit picks up sound directed toward the dead ear and transmits sound through bone con-

duction to the good ear. While the BAHA unit did help in some settings, it didn't improve the clarity of speech. My recent interview details his experiences with his Phonak Nios V digital processor equipped with the **SoundRecover** technology.

Mild to moderate high frequency hearing loss in the left ear. No hearing in the right ear.

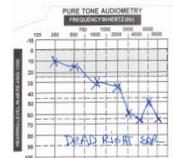


Figure #1

Q: What were the limitations of the BAHA?

A: The problem is that there is very little frequency compensation capability with the BAHA, so it didn't improve my speech perception. It did allow me to know that someone was speaking to me but it didn't help me to understand the words.

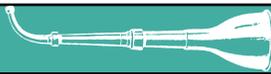
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Living with Vertigo

By: William C. LeLiever MD,FACS, FRCS (C)



This month's theme is important. Too often we are faced with patients with chronic vertigo conditions that have been diagnosed but the treatments are not curative. Vertigo – "movement of self or surroundings" is a daily constant feeling for these patients. In some, the condition is improved when motionless (either sitting or lying down). For others, the feelings are better when walking or moving in a car for example. There are a number of chronic vertigo conditions that fit these categories.

In **Meniere's disease** (MD), vertigo symptoms tend to be cyclical or recurrent over time. The active phase of the disease can be debilitating and interfere with daily activities and working. Fortunately, the active phase in most patients is brief – days or weeks before a period of remission is reached. In others, the active stage can be months in duration and calls for surgical or intratympanic drug therapy. Often, your physician will want to do imaging studies as well as determine your hearing levels and balance status of the inner ears. Treatment of the associated nausea is important in these patients as well as measures to help prevent recurrence.

Imagine having to deal with the movement you experience after going on a "merry go round that lasts all the time." This is what it is like for these patients. During the active stages of MD, patients do not want to move and lie down for relief. Some patients with severe MD continue to have daily attacks, despite aggressive medical and surgical management. This group of patients will require ongoing daily medications to control the whirling sensations, sedative medications and anti-inflammatory medications. The workplace environment needs to be assessed and job re-placement considered for a few patients. There is a significant risk for severe cases with MD working around and with dangerous machinery. Medical expectations and the length and severity of the disease need to be discussed with your doctor.

In **Benign Positional Vertigo** (BPPV), similar statements can be made regarding the severity and treatment options. This inner ear condition is due to small particles that have broken free from the otoconia of the saccule and utricle (linear receptors of the inner ear). These particles float free in one of the inner ear fluid chambers. A change in head position causes these particles to move and rest on another inner ear receptor. The severe vertigo attack follows. There are several causative reasons for BPPV to occur: trauma, medications, anesthesia, ear surgery, Meniere's disease, idiopathic (or unknown) etc. Many attacks occur during

the waking hours with changes in head orientation or looking up. We know that particles can affect any one of the three semicircular canals in the inner ear. Surgery of the posterior canal for this condition is curative in patients with longstanding disease. Physiotherapy of the offending semicircular canal otoconia is also curative. These patients have often been misdiagnosed and placed on anti-vertiginous medications for years without regard for the genesis of the condition. Daily exercise programs have been used with success.

Mal de Debarquement syndrome (MdDs) is another entity that we see several times each year and fits in the category of chronic vertigo. This entity's causation is unknown but the features of the disease are well described. Patients with MdDs have an ongoing and daily "too and fro" rocking sensation that is better with any movement. Other symptoms include fatigue, difficulty maintaining balance and concentration. At rest, the symptoms appear and are particularly distressing without any nausea or other associated features. Some of these patients have developed symptoms after riding in a ship or boat for some time. Others have symptoms appearing after shingles, Meniere's like disease, viral illnesses, trauma, and unknown or idiopathic reasons. The feelings are constant. Workup and inner ear studies have shown a variety of underlying disorders. Some patients have documented weakness in one of the lateral semicircular canal inputs on balance testing; most have normal hearing and normal brain stem testing. All patients studied have had normal imaging including CT and MRI studies. Clinically, some of these patients have poor proprioceptive mechanisms and balance abnormalities. Many of these patients are older (over 65 years of age) with onset of symptoms. Treatments to date have included sedative medications, sleep aides, anti-vertiginous medications and exercise programs. None of these measures have been curative. However, success is seen in some with exercise and stimulation exercises.

Currently, studies are underway examining the possible pathways involved and associated connections to the ear and vestibular neuronal brain stem/cerebellar input. Other studies are examining the possibility of stimulating the proprioceptive inputs to simulate movement and cancel out the constant movement. Other possibilities lie in the stimulation of the vestibular system.





interview from pg. 1



Fitted in left ear with a Phonak Nios V mini BTE and custom slim tube earmold

Q: What have been your experiences with your new Phonak Nios V micro behind the ear hearing instrument in your good ear?

A: Well as soon as you gave me the hearing instrument and I put it in, it was night and day. I could hear the high frequencies. I found later that I could understand speech much better than I had previously....in terms of perception, it made a world of difference.

I noticed specifically when I would go to plays, I could un-

derstand the dialogue. When I went to concerts, I could hear the high frequencies from the orchestra.

Q: On a scale of 1 to 10 with 10 being the best, how would you rate your experiences with the new hearing instrument equipped with the **SoundRecover** technology?

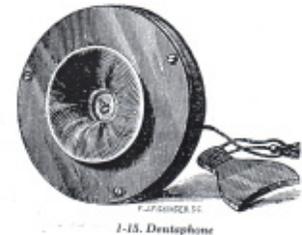
A: I always hesitate to give anything a 10, because there may be something better. But I would have to give this a 10 Jonathan. It is just amazing the sounds I can hear that I had forgotten about.



History of Hearing Aids The Dentaphone

BY: J.P. Miller, Editor, the Trumpeteer

There are two paths for sound to reach our inner ear, air conduction and bone conduction. In the late 1870's, the Dentaphone was invented. It consisted of a flat round case with a thin diaphragm in the shape of a flat cone at the front center of the case.



The hearing impaired user held the case in his hand, and placed a small wooden piece in his mouth. Sound picked up in the diaphragm passed to the mouthpiece via a piece of silk covered wire. The sound vibrations were then passed to the user's teeth and on into the inner ear via bone conduction.

Berger, Kenneth W. (1974). The Hearing Aid, it's operation and development. Livonia, Mi: National Hearing Aid Society.

Dysport™ the BOTOX® Alternative is here!

Source: www.dysport.com

Discover The Dysport™ Difference

Dysport is very similar to Botox® Cosmetic. They are both from the same drug family, Abobotulinum Toxin A. However, there are some differences. Dysport™ can be more cost effective as the cost per unit is less; though, Dysport requires more units per treatment. Clinical studies have also shown visible results within 24-48 hours. There is also evidence that Dysport™ injections may be more effective with large muscle groups.

What exactly is Dysport™?

Dysport™ is a protein extracted from the bacterium Clostridium botulinum. The protein was initially used for the treatment of motor disorders and various kinds of involuntary muscular spasms, including cerebral palsy. It was further developed to treat a wide variety of neuromuscular disorders, for which it is licensed in over 60 countries.

What can Dysport™ do for you?

Whenever you laugh, frown, concentrate or squint into the sun, your facial muscles contract and your skin creases. As you get older your skin loses its elasticity and those creases deepen into lines that become permanently etched on your face. Frown lines between your eyes can become particularly noticeable at a



Dysport™, continued on pg. 4



Dysport™ from pg.3

relatively young age, making you look angry or worried even when you're not.

By temporarily immobilising the muscles you use to frown, Dysport™ can smooth out those lines, restoring a more youthful, less stressed expression to your face. Because you will be physically unable to frown after treatment, you may even lose the urge to frown. The lasting effect of treatment with Dysport can differ between individuals after which further courses of treatment may be necessary. Speak with your specialist about the results you can expect with Dysport™.



Many people find after several treatments that they don't need another one for longer, because they have "unlearned" the habit of frowning or squinting that originally led to the development of these lines.

How is Dysport™ used?

Tiny amounts of Dysport™ are injected directly into the facial muscles underlying the frown lines. It usually takes three to five small, almost painless injections between the eyebrows for an effective treatment. No local anaesthetic is usually required but if you are concerned your doctor can numb the skin over the area before injecting. You can expect treatment to take around 10-20 minutes.

Over the next few days, the muscles gradually relax. You probably won't notice it happening - you'll just become aware that you can't contract your frown muscles. But because you can still blink normally and raise your eyebrows, you will not look unnatural. Rather, you can enjoy a more youthful appearance while maintaining a natural expression.

Who can benefit from Dysport™?

Deeply etched frown lines affect not just your appearance, but also your self-esteem and even your choice of career. Dysport™ can help you look younger, more relaxed and in control - for around the same price per month as a cut and colour by your hairdresser.

Many people with frown lines can benefit from Dysport™ - and it can work as well for men as it does for women. In fact many men are already experiencing the benefits of a younger, more relaxed looking appearance that Dysport™ can provide. Discuss with your specialist about the benefits of Dysport™ for you.

Are there any side effects and risks with Dysport™?

Along with its desired effects, treatments can cause unwanted effects. This does not happen very often. The most common side effects are temporary soreness or mild bruising around the injection site. Some people may experience a slight headache that lasts for several hours after treatment; it is safe to take a mild pain killer to relieve this.

In a very small percentage of cases there can be a complication called "ptosis" (a drooping eyelid) which may last a few days or up to 4 weeks. Rarely, an allergic reaction can cause a skin rash or "flu like" symptoms. Tell your doctor if you experience any troublesome side effects.

You should not have Dysport™ treatment while you are pregnant or breastfeeding, or at all if you have a neuromuscular disease.

Who can provide treatment with Dysport™?

Dysport is a prescription medicine containing 500 units of Clostridium botulinum type A toxin-haemagglutinin complex. It should be administered only by medical professionals, who have an excellent understanding of the muscles and expressions of the face and the skill to retain your natural expression while removing the signs of aging.

Tell your doctor what you expect to achieve in advance, be guided by their advice and ensure you are being treated by a specialist who has been properly trained in the use of Dysport.