**A better mousetrap**

Vertigo Patients Flip over Somersault Maneuver

*By Todd Neff*

Carol Foster, MD, is often her own research subject. The otolaryngologist at University of Colorado Hospital has Meniere’s disease in her left ear, a problem of still-mysterious origins that can bring about temporary hearing loss and vertigo. At the onset of an attack, she’s been known to hop in her car and drive to 10,000 feet just to see what happens. Don’t try that one at home.

So when she woke up one day six years ago with a serious case of vertigo, Foster settled into her familiar dual role of research subject and medical researcher. The self-study, in this case, was of benign paroxysmal positional vertigo, or BPPV, which accounts for about a quarter of all vertigo cases and affects more than 7 million people in the United States, Foster included.

What came out of her experience that morning looks like a new way to treat the sensation of moving in space that torments vertigo sufferers. It’s called the half-somersault maneuver, and if you have vertigo, you should indeed try this one at home. It’s actually important that you do, because ear specialists can’t possibly keep up with the number of vertigo cases out there, Foster said.

**Tiny particles.** Vertigo happens when otherwise helpful microscopic calcium carbonate particles squirrel their way into one or more of the three fingertip-sized half-loops—called semicircular canals—the body uses to interpret orientation. The rogue particles trigger a sense of spinning and eye movements akin to what someone might experience watching a high-end table tennis match with his head on the net post.

The eyes’ and the ears’ position-sensing circuitry are tightly linked, said Foster, and provide the fastest reflexes in the entire body. Why? Like expensive camera lenses, we all come equipped with vibration reduction technology. When we move, our eyes and ears collaborate to instruct our eyes to move in the opposite direction. Without this system’s quiet vigilance, our worlds would shake like an episode of “The Office.”

The system, Foster said, “is amazing and very highly tuned, so when it goes wrong, you have big problems.”

Like vertigo. If wayward particles in semicircular canals are the issue, the solution is to evict them. Doctors have understood this since the late 1970s, when researchers finally fingered the calcium culprits. In addition to Cawthorne-Cooksey exercises that date back a half century (its progenitors found the motions helped some vertigo patients, though they didn’t understand why), the prevailing...
Epley and Semont maneuvers developed in the 1980s and early 1990s aim to do just that.

But there have been problems with the standard of care. Epley, dominant in the United States, involves lying on one’s back and sitting up quickly, the idea being to shake calcium out of the half loops as if clearing sand from a child’s shoe. But the maneuver is complicated enough – particularly for someone experiencing vertigo – that the patient usually needs help to execute it.

Epley can also drive particles deeper into the loops, and sometimes push them into the horizontal loop, which causes “spectacular” reactions, as Foster put it – in particular, one loses one’s lunch almost immediately.

Foster’s weekly vertigo clinic at UCH sees some 200 patients a year. Many come back again and again despite knowing the Epley maneuver. For many, Epley induces such dizziness and/or queasiness that they can’t bring themselves to keep doing it, and they return to the clinic hoping for another option.

The half somersault. That option is now available, thanks to Foster. During her fateful vertigo episode in 2006, Foster sat still on her bed to settle her eyes and inner ears (with vertigo, the world only spins if you move, she said). She made loops with her fingers and held them to the side of her head, thinking through the physics of head action and microscopic-particle reaction. Inspiration struck: what if, rather than lying on her back and sitting up, as Epley would dictate, she tried clearing the particles from her ear’s loop by curling into a position not unlike someone about to go into a somersault?

It worked. Foster tried it on a few patients for whom Epley was no help. The patients never came back. She decided to do a formal study. It involved 68 UCH patients, randomly assigned to either Epley or half-somersault groups, who were tested over six months.

About half the subjects in the Epley group and 37 percent of the subjects in the half-somersault group had vertigo recurrences, though the difference wasn’t statistically significant, according to the study. However, none of the half-somersault group returned to the clinic with vertigo symptoms, while five of the Epley group did, Foster and colleagues found.

An index of the improvement of vertigo symptoms found that while Epley quelled the problem faster, it also brought more dizziness and discomfort along the way. Foster said patients preferred the half somersault, even if they had to do it more often to get the same results.

The work, published on April 24 and available in the journal Audiology & Neurotology, seems to be going viral, thanks in part to a recent News4 piece. The maneuver’s renown won’t be putting Foster’s name in lights, though. She said she never considered calling her discovery the “Foster Maneuver.” For one thing, she said, the name “Foster” is no Epley, Alzheimer or Creutzfeldt.

“The only people who get eponyms are people who have weird names,” she quipped, adding that it’s also gone out of fashion. These days, she said, descriptive names – be it “half somersault” or “acquired immune deficiency syndrome” – are the way to go.

More important is that the half somersault helps people with vertigo help themselves, and by extension stay out of busy clinics and lower our societal health care bill, she said.

Meanwhile, she maintains her attack on spinning sensations. Foster’s current research efforts include investigations into the roots of Meniere’s disease, the relationship between migraine and dizziness, and the link between sleep apnea and dizziness. The common thread is hard to miss.

“The ultimate goal is that I want to get rid of all dizziness on earth,” she said, and she was only half joking.