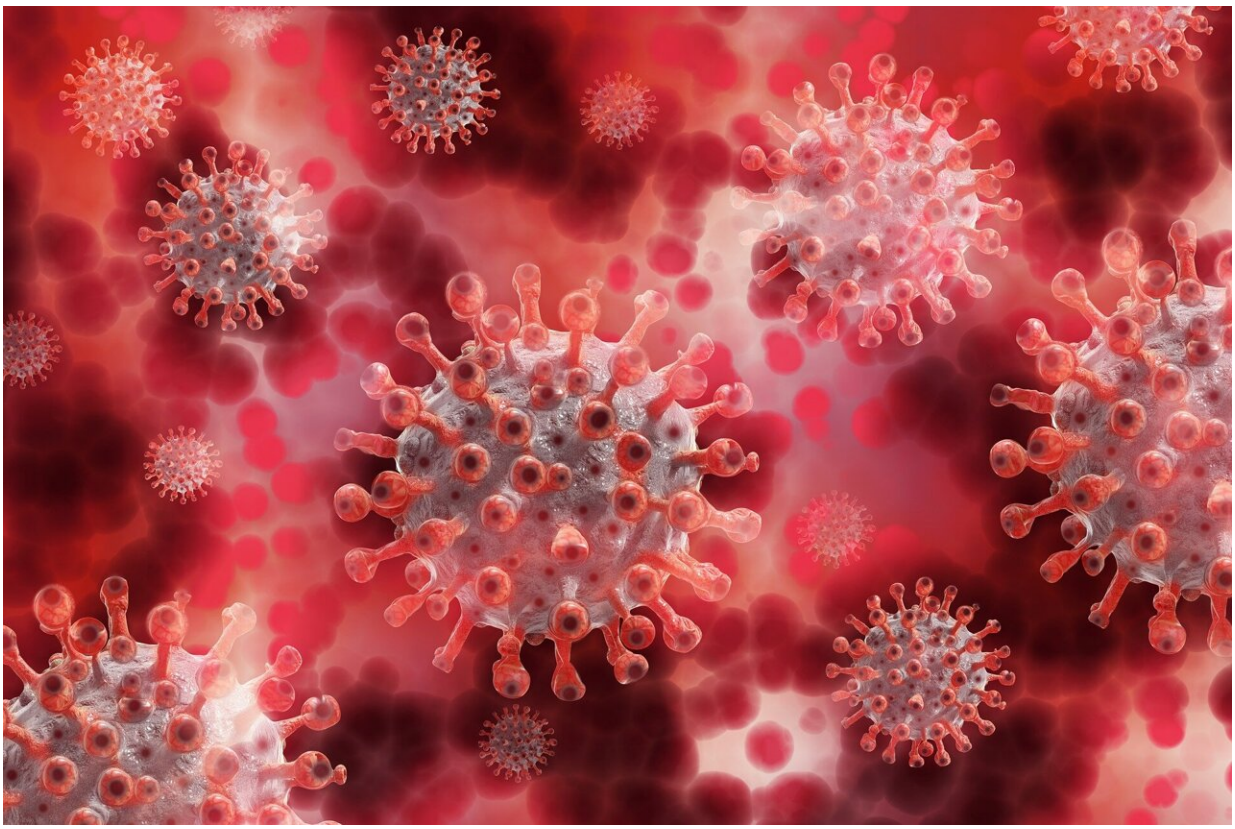
These doctors are treating COVID smell loss by sticking plasma-soaked sponges up people's noses

April 5 2022, by Tom Avril



Credit: Pixabay/CC0 Public Domain

Nancy Damato walked past a garbage can the other day and caught a whiff of decaying banana peel.

"That was really great," she said.

She was not being sarcastic. Damato is among millions who lost their sense of smell due to COVID-19, and more than a year later, it is still not back to normal.

But every so often, she notices a small improvement—a hint of banana peel here, a trace of chocolate there—and she thinks the reason may be an unusual treatment she's been undergoing at a Jefferson Health clinic in Philadelphia.

Once a month since October, a physician extracts platelet-rich plasma from her blood, soaks a few bits of sponge in the yellowish substance, then deftly inserts them high up in her nose.

Damato and several others in a pilot study of the treatment have reported improvement, though it's not yet certain if the plasma-soaked sponges deserve the credit. Plenty of COVID patients have regained their sense of smell without treatment—in some cases, even up to a year after infection.

It's also not clear why the plasma might be helping, though there are several plausible hypotheses. Plasma has long been used to aid in wound healing and recovery from orthopedic injury, as it promotes the growth of new blood vessels, and that may be what's happening in Damato's nose. But other factors are thought to be at work—though it's not even fully understood why COVID impairs the sense of smell to begin with.

Solving these riddles is the goal of otolaryngologist David Rosen, an associate professor at Thomas Jefferson University.

Flooded with pleas for help from across the country, he and colleagues are now embarking on a larger study with at least 100 patients.

Rosen realizes that on the list of long-term COVID complications, the loss of smell may seem less dire than some. But people whose sniff sense is fine often don't get it. Losing the ability to appreciate food, a cup of coffee, a breath of spring air, is truly disabling.

"They are miserable," he said.

Says Damato:

"It's like a part of you is missing."

As she waited for physician Glen D'Souza to draw her blood at her March appointment, Damato, 54, put her nose to the test.

Using her fingernail, she scratched a series of chemically treated squares in a little booklet, releasing odors that she attempted to identify. Each mystery odor was accompanied by four multiple-choice answers.

Lemon, chocolate, strawberry, and black pepper, said one.

"That, I got," she said. "Chocolate!"

With others, she was not so sure. COVID can reduce or eliminate a person's ability to perceive odors, and it also can cause certain things to smell like something else.

In addition to impairing quality of life, the condition can be dangerous. It is linked to depression and social anxiety, and it raises the risk of injury. What if you couldn't smell a gas leak or spoiled food?

In January, a Texas couple who'd lost their sense of smell due to COVID were unable to smell the smoke from a fire. They survived after their 2-year-old son roused them from sleep, crying "Mama, hot. Mama, hot,"

his mother told Good Morning America.

The other day, Damato was filling her car with gasoline, and she smelled what she knew had to be the petroleum fumes. But it didn't smell like gasoline at all.

"I couldn't even say, 'Oh it smelled like something else.' It just smelled really weird and different," she said. "Not at all what I remembered it smelled like."

At Damato's March 24 appointment at Jefferson, D'Souza drew blood from her right arm, placed it in a small receptacle, then spun it at high speed in a centrifuge. That caused the white blood cells and other heavier components of her blood to settle to the bottom, while her plasma, the lighter portion containing disc-shaped platelets, was diverted into a different chamber.

Other than the smell loss, Damato's illness was fairly mild. But as her olfactory symptoms dragged on, she looked everywhere for answers, and found an article about the pilot study on Jefferson's website. A resident of Cold Spring, N.Y., she takes the train from New York City to Philadelphia each month.

In between visits, she uses an app called AbScent: a smell-training regimen that involves the use of essential oils, in hopes that she can teach her brain to recover what she has lost. And she waits.

People can lose their sense of smell in several ways, among them traumatic injury, exposure to a toxic substance, and brain diseases such as Alzheimer's. Or, as in the case of COVID, from an infection.

But early in the pandemic, physicians realized that COVID smell loss was different from the impairment caused by other respiratory

infections. There was little to no swelling or visible inflammation in the nasal cavities, said Pam Dalton, an olfactory scientist at the Monell Chemical Senses Center in West Philadelphia.

"They felt like they could breathe very clearly," she said. "That was the surprising thing."

Contrary to what some had feared at first, the coronavirus does not infect the nerve cells that perceive odors. Instead, they infect nearby cells that play a supporting role, Dalton said. Ordinarily, these support cells produce beneficial enzymes to detoxify harmful odorants, and they fuel the nerve cells with glucose. If infected, they die, and those support functions are temporarily lost.

But a mystery remains. The support cells regenerate in a few weeks, yet the loss of smell can persist for months.

The emerging consensus is that some sort of chemical inflammation is at work, Dalton said. In an effort to fight infection, the support cells release chemical warning signals and other inflammatory agents that may linger in the nasal passages long afterward.

They could be interfering somehow with the nerve signals involved in perceiving odor, Dalton said, or they might be causing subtle physical changes that have yet to be identified.

The idea of treating smell loss with platelet-rich plasma predates the pandemic.

Some of the initial evidence supporting the idea comes from animal studies. In one, mice that underwent a nasal "lavage" of platelet-rich plasma were able to find their food faster than those that did not.

In a small pre-pandemic study in humans, Stanford University physicians administered plasma to patients via injection inside the nose. All reported some improvement, but it did not last—perhaps because they received just one injection. More study is underway, said lead author Carol Yan, who is now at the University of California, San Diego.

As in any rigorous, controlled study, the key will be comparing those who get the treatment with those who do not, she said. That's also the plan in the larger Jefferson study, on which Dalton is collaborating with Rosen, D'Souza and others.

Though it isn't clear why the plasma might be helping, Dalton says there are several possibilities.

Platelets release growth factors that promote the growth of new blood vessels. Improved circulation could help to clear residual inflammation, or it might aid healing in other ways, she said.

Yet another possibility: Though odors are commonly imagined as ethereal sensations, they are triggered by a physical event—an odor molecule latching onto a receptor in the nose. And once a receptor has passed along the resulting signal through nerve cells, that molecule must be cleared before the receptor can "smell" again.

Odor molecules can be cleared in several ways. They can be breathed out, trapped in mucus and swallowed, or taken up in the capillaries. So—long story short—it may be that in promoting the growth of new capillaries, the plasma treatment spurs the clearance of odor molecules so that new ones can latch on and be detected, Dalton said.

What's for sure is that the treatment is safe, said D'Souza, the Jefferson otolaryngologist. Patients are given an enriched concentration of something that was harvested from their own bodies.

"The idea," he said, "is to take advantage of whatever the body does to heal itself."

After extracting Damato's plasma, D'Souza sprayed a numbing agent into her nostrils.

Then Rosen inserted four pieces of plasma-soaked sponge deep in the nasal cavity—using tweezers in one hand while holding a scope in the other, allowing him to see the inside of her nose on a computer screen.

"You're trying to push it up as high as you can," he said.

It was over within a minute.

Rosen opted for the sponges instead of needles used in the California study, reasoning that they would be an easier sell for patients. And that option seemed more natural, as the nose is designed to absorb substances. The sponges are made of biodegradable foam, which dissolves within a week.

Early results from Damato and others were promising enough that earlier this year, the clinic started offering it to patients outside the study at $500 per treatment, advising them that while the "off-label" treatment was unproven, it might help. It wasn't a money-maker, as the fee barely covered the equipment and staff time, Rosen said. (Orthopedics practices commonly charge more than $1,000 for such treatments.)

But in late March, after receiving hundreds of inquiries, Rosen's team decided to discontinue the paid service for now, focusing instead on enrolling as many patients as possible in the larger trial.

There are few effective treatments for smell loss, other than smell training regimens like the one Damato uses—and those don't work for

many people. Perhaps the plasma will be the answer.

"If it works," he said, "it seems like it can be huge."