

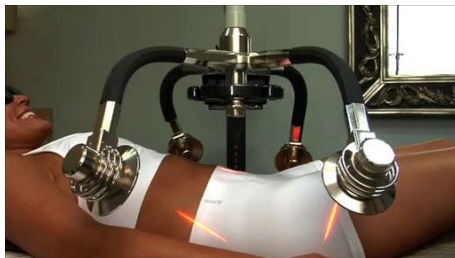
# Freeze! Zap! Bye-Bye, Fat



By MELINDA BECK

Fat cells, watch out.

Two new devices—one that deflates fat cells, one that destroys them—have just been cleared for "body contouring" in doctors' offices by the Food and Drug Administration.



The FDA has approved two new devices that will literally freeze and empty fat cells to reveal a thinner you with no incisions or needles.

Zeltiq grabs onto love handles and belly pouches and freezes the fat cells inside, causing them to self-destruct over several months. Zerona is a low-level laser that rotates around the waist, hips and thighs, forcing the fat cells to empty in a matter of weeks. In both cases, there are no incisions, no downtime and no need for anesthesia. The fat is reabsorbed by the body.

Several other devices that claim to painlessly blast away fat with ultrasound, radio waves or lasers are already on the market or hoping for FDA approval soon. These high-tech weapons in the battle of the bulge are less invasive than liposuction—which involves loosening fat internally and vacuuming it out with a tube, a procedure that nearly 200,000 Americans had last year.

Of course, there is still no magic wand for the 66% of us who are overweight or obese: Eliminating fat cells without also eating less or exercising more may make fat crop up elsewhere and ultimately do more harm than good.

That's because fat cells are not just passive storage depots for surplus calories. They are busy chemical factories that send signals all over the body, helping to regulate growth, puberty, healing, disease-fighting and aging. Among the 100 or more hormones that fat cells secrete are adiponectine, which helps manage metabolism, and leptin, which tells the brain to eat more or less (although the brain doesn't always listen).

## More

[How Fat-Blasting Devices Work](#)



Erchonia Medical

Much about fat cells remains mysterious. They're among the largest and longest-living cells in the body, capable of expanding at least 64 times their original size (the upper limit is unknown). A lean adult has about 40 billion fat cells; an obese adult can have 120 billion.

In general, it's healthier to have a larger number of small fat cells than fewer, fatter ones. Subcutaneous fat cells, under the skin in places like the hips, thighs and lower belly, may be unsightly, but they are relatively benign.

Their principal work is to pull excess fat out of the bloodstream, package it and store it in big droplets—one per fat cell—until the body needs it for energy.

Healthy fat cells are precisely attuned to the body's needs, says Michael D. Jensen, an endocrinologist at the Mayo Clinic in Rochester, Minn. "When you eat too much, the fat cells store it up, and when you miss a meal, they give it back to you."

But if fat cells aren't working properly, they don't store and release fat effectively. Harmful versions called visceral fat cells accumulate in and around organs like the heart and liver, and release fat into the bloodstream, raising the risk for heart disease, diabetes, stroke and Alzheimer's disease.

Why some fat cells stop working, and why some proliferate while others just balloon isn't understood.

Journal Community



Zeltiq CoolSculpting

Heredity clearly plays a role, as does taking in more calories than the body needs. But fat-cell function doesn't necessarily correlate with weight gain. Some people are able to carry 100 extra pounds and still have functioning fat cells; others run into metabolic trouble when they gain just a few pounds, according to Dr. Jensen.

Until recently, experts thought that all the body's fat cells were created by around age 20, and that they never died, just grew and shrunk as people gained or lost weight. But scientists at Sweden's Karolinska Institute recently discovered that even in lean people, about 10% of the body's fat cells die and are replaced each year.

"The fact that the number seems to remain constant over the years

indicates that something is very much regulating the number of fat cells. That's what I'm interested in right now," says neuroscientist Kirsty Spalding, the lead researcher.

The amount and distribution of fat also changes naturally with age. "People tend to gain subcutaneous fat through middle age, and then it starts to diminish, first on the back of the hands, then in the lower legs and elsewhere," says James L. Kirkland, a professor of aging at the Mayo Clinic. It piles up as visceral fat instead—and eventually appears in muscle, liver and even bone marrow, where the fat is a substitute for new bones. "Losing subcutaneous fat is not good, paradoxically," Dr. Kirkland says.



That's partly why some obesity experts are wary of the new fat-blasting techniques. The devices can't target visceral fat, only subcutaneous fat, and if patients continue to consume more calories than they burn, they may hasten that process of accumulating harmful fat instead.

Some experts also worry that forcing fat out of fat cells can increase the level in the bloodstream.

"Fat is very toxic," says Dr. Jensen. "It's not something you want in large amounts floating around free. You want it inside a cell, protected."

Another danger is that losing fat cells could will lower leptin levels, signaling to the brain to eat more.

"That's one of the reasons it's so, so hard to maintain weight loss—the body is trying to defend a weight it got used to," says Mitchell Lazar, director of the Institute for Diabetes, Obesity and Metabolism at the University of Pennsylvania.

Officials at Zeltiq, of Pleasanton, Calif., and Erchonia Corp., the McKinney, Texas, company that makes Zerona, say they had to demonstrate to the FDA that triglyceride levels in the body did not rise significantly after their procedures.

"It's the equivalent of eating three to five french fries per day," says Mitchell Levinson, Zeltiq's founder and chief scientific officer.

They also say the process is gradual and involves a small percentage of the body's overall fat.

Still, both companies stress that it's important for patients to change their eating and exercise lifestyle habits as well.

"This is for patients who have a discreet bulge they want to get rid of," says Mr. Levinson. "Your love handle will get smaller, but you won't lose any weight unless you change your behavior."