

'Coolsculpting' inventors develop new non-surgical method for targeting fat

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How cool is this: the Massachusetts General Hospital (MGH) laboratory that invented cryolipolysis or "Coolsculpting," a popular non-surgical method for reducing fat under the skin, is developing a new form of the

technology that can selectively reduce fat almost anywhere in the body using a safe, injectable ice solution or "slurry."

The technology, not yet approved for use in humans, is designed for removal of fat in the abdomen or other parts of the body—virtually anywhere that can be reached with a hypodermic needle. Fat is a normal part of our bodies, but in excess or with some diseases can be life-threatening.

The new technique is described in a paper published online ahead of print in the journal *Plastic and Reconstructive Surgery*. As one of the reviewers of the paper said, "this treatment has the potential to become one of the most performed cosmetic procedures in plastic surgery practice."

"The appeal of this technique is that it's easy and convenient to do," says lead author Lilit Garibyan, MD, Ph.D., investigator in the Wellman Center for Photomedicine at MGH and the Department of Dermatology at Harvard Medical School. "With Coolsculpting, which is a topical cooling technique, the patient has to sit there for almost an hour for enough heat to diffuse from the fat underneath the skin. With this new technique the doctor can do a simple injection that takes just less than a minute, the patient can go home, and then the fat gradually disappears."

Cryolipolysis is currently the leading non-invasive fat removal technology because of its minor side effects and non-invasive nature. The Coolsculpting method is limited, however, by the amount of fat that can be removed per treatment, and is not practical for reaching more deeply seated fat surrounding organs or other body structures.

The MGH team's innovative spin on the technique involves the use of an injectable ice "slurry," a sterile [solution](#) of normal saline and glycerol (a common food ingredient) containing approximately 20% to 40% small

ice particles, similar in texture to slush. The solution can be injected directly into fat deposits, causing the fat cells (adipocytes) to crystallize and die and fat deposits to shrink. The killed adipocytes are gradually eliminated by the body over a period of weeks. "One of the cool things about this is how the injected slurry causes selective effects on fat," said Rox Anderson, MD, a co-author and leader of the Wellman Center. "Even if the slurry is injected into other tissue such as muscle, there is no significant injury."

As the investigators report, injection of the ice solution into pigs resulted in a 55% reduction in fat thickness compared to that of pigs injected with the same but melted ice solution. There was no damage to skin or muscle at the injection site, and no systemic side effects or abnormalities seen.

Unlike topical cooling, slurry [injection](#) can target and remove fat tissue at essentially any depth and any site that can be accessed by a needle or catheter. Injection of physiological ice slurry could be a transformative method for nonsurgical [body](#) contouring.

More information: Lilit Garibyan et al, Subcutaneous Fat Reduction with Injected Ice Slurry, *Plastic and Reconstructive Surgery* (2020). [DOI: 10.1097/PRS.00000000000006658](https://doi.org/10.1097/PRS.00000000000006658)

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