

Jiffy Boobs

Can you really get your breasts enlarged in your lunch hour? Here's the real story behind those reports--and a look at the research that could make fat your friend.

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The headlines were irresistible: "Lunch Break Boob Jobs Headed to Europe." According to some news outlets that carried the story, doctors would be using women's own belly fat for a one-hour breast-augmentation procedure that could be available as early as next year. But if you think getting a flatter stomach and bigger cup size in the time it takes to eat a sandwich sounds too good to be true, you're right. So let us set the record straight: there's no such thing as the one-hour boob job--unless you count some of the architectural wonders now being sold at Victoria's Secret.

So how did the news-that's-not get such, um, pick up? Well, there is a globule of truth in that a small San Diego-based biotech company called Cytori Therapeutics has developed a system that uses the stem cells in fat to make fat grafts more viable. That's important if you're going to have surgery involving relocation of fat cells. (Left to its own devices, transplanted fat often dies or gets re-absorbed. If used to boost breasts, it can calcify in a way that can make cancer detection more difficult.) But not only is the Cytori technique still in clinical trials, the procedure will not take place at drive-by speed.

"No one is going to leave for lunch, have the procedure and go back to work like it's no problem," says Marc Hedrick, president of Cytori Therapeutics and former director of the Laboratory of Regenerative Bioengineering and Repair for the Department of Surgery at UCLA. Hedrick expects the procedure to take two or more hours under general anesthesia, plus recovery time. "This is surgery and it carries all the potential risks of any surgical procedure," he says. And, says Hedrick, Cytori's focus, at the moment, is breast reconstruction for cancer patients who can't tolerate artificial implants--though it could someday be used for cosmetic breast enlargements.

Back to the hype. The sensationalized reports began with an article entitled "Breast boost in your lunch hour," in the July 9 issue of the British trade magazine "Chemistry & Industry." That piece was then picked up by blogs and news Web sites. Soon, publicity-seeking plastic surgeons were offering up interviews to discuss a procedure that they'd never seen. When the article appeared, Cytori contacted Chemistry & Industry about the errors and the piece was pulled from the magazine's Web site. The magazine's editor, Neil Eisberg, told NEWSWEEK that "an earlier, uncorrected draft of the story was published by mistake," and he notes that the magazine is working with Cytori on an in-depth follow-up piece about the Cytori system that will clarify matters.

The quickie boob-boost story, though, didn't just raise more hopes than bra sizes. It overshadowed some truly exciting research into ways that fat can be created and moved around the body for everything from reconstruction in the aftermath of a trauma, to the correction of birth defects, use in injectable wrinkle fillers and breast or buttock enlargements. So while there may be legions of scientists pursuing ways to melt fat, or prevent it from growing in the first place, a growing group of researchers around the country are striving to keep fat alive. "The ultimate goal in plastic surgery is to restore form with your own natural tissue," explains Stephen B. Baker, a Georgetown University associate professor of plastic surgery who is working on a variety of strategies to improve the reliability of fat grafts under a grant from the National Institutes of Health

and the Plastic Surgery Education Foundation. "Artificial materials are more prone to getting infected, moving, or not aging well with the body," he says.

And though natural fat grafts are being used in some reconstructive procedures, graft viability can vary so much that many surgeons hesitate to use it for purely cosmetic purposes. "It's not just unpredictable," says Baker. "It's unpredictably unpredictable." And in February, the American Society of Plastic Surgeons and the American Society for Aesthetic Plastic Surgery announced jointly that they did not recommend fat grafts for cosmetic breast augmentation because of the low survival rate of the transferred cells and long-term problems with cancer detection.

Those who want to boost their busts still have the FDA-approved option of saline or silicone breast implants. But, says Baker, plastic surgeons would love to have the option of a more natural substance that wouldn't have the disadvantages of man-made materials. And he says he doesn't hesitate to detail those disadvantages to prospective patients: "I feel it's my responsibility to tell the 22-year-olds who come in asking for breast implants that this is a lifetime commitment--you'll age, but your implants won't," he says. "In 10 or 20 years, as your natural tissue loses elasticity it can hang over the implant like Snoopy's nose. Then you need to get a bigger implant to fill out the skin--and you can only go so big--or you'll have to get a breast lift."

For post-treatment breast-cancer patients who have had partial mastectomies followed by radiation, artificial materials may not even be an option. Because radiated tissue usually can't tolerate implants, patients either have to live with the altered breast, or in some cases they can have a flap of skin, muscle and fat taken from someplace else in the body. But that leaves scarring and may not be a realistic option for women who have only had a small part of the breast excised. There are about 300,000 new cases of breast cancer being diagnosed every year in Europe and about 213,000 cases in the United States. A large portion of those women will have either lumpectomies or partial mastectomies.

Those are precisely the patients that Cytori's new technology is designed for. "We wanted to focus on the unmet medical needs of women who've had the terrible diagnosis of breast cancer. There are millions of women who haven't had any real reconstructive option," says Hedrick.

But for Cytori's technique to be reimbursable by either insurance or government programs in Europe or the U.S., the company says it needs clinical evidence that doctors can actually put the technique into practice in the operating room in a safe and viable way. The process, which Cytori calls "celution," involves a device that extracts regenerative and stem cells from fat that has been removed via liposuction from the belly or thighs. Those cells are then mixed back in with regular fat and the new "supercharged," and hopefully more viable, fat can be injected into an area that needs filling out.

The company has gotten approval in the European Union for the system that does the turbo-charging, but it is still awaiting the results of clinical trials to make the push for commercial applications. Cytori points to early successes in a November 2006 Japanese study of 11 women who were injected with the supercharged fat to restore breast tissue after partial mastectomies. In addition, they have recently launched a 36-patient double-blind, placebo-controlled study in Spain. A spokesman says the company has spent seven years and about \$100 million developing the stem-cell-extracting technology--including a \$45 million investment from the imaging-technology manufacturer Olympus, which will help produce the device if it goes into wider use in 2009, as hoped.

Henrick admits that while the current focus of 'celution' is cancer patients and heart-disease patients (the technique has also shown promise in reviving damaged heart muscle), the company can't help but look ahead at the lucrative cosmetic market. Last year there were more than 329,000 breast-enlargement procedures in the United States, according to the American Society of Plastic Surgeons. "There will certainly be enormous cosmetic opportunities later on, he says. "For instance, there may be women who would never consider a silicone implant, but might consider this."

Baker's team at Georgetown University is pursuing another intriguing and potentially less invasive method of fat grafting. Researchers were looking into a neurochemical pathway that stimulates fat growth and plays a role in obesity. They found that Neuropeptide Y (NPY) rises in stressed mice, accelerating the growth of fat and promoting the blood vessels necessary to sustain fat tissue. By blocking the receptors for NPY they could prevent the stressed mice from gaining fat

even if they were fed a high-fat diet--and could even reduce fat deposits by 40 to 50 percent in a matter of weeks.

Baker looked at that research and wondered whether the process could work the other way. Was it possible to get fat to grow if you stimulated NPY? The answer was yes--at least in mice where they were able to produce a halo of fat in a targeted area. But will the technique work in humans? Baker says it has great potential because the NPY receptors in mice are very similar to that of humans--and because the fat that they grew in the mice was human fat. "Everyone is talking about the stress factor and fat, but if we are able to add fat via injections without doing surgery, and if 99 percent of it stays, that will be the really big news in five or 10 years," says Baker.

Both Baker and Hedrik know that the cosmetic applications of any new fat-grafting procedure will have to undergo extensive testing before they can be widely used. "We'll have to meet a higher bar to expand into [the] cosmetic market," says Hedrick. "There's a very big difference between treating someone who's been sick and someone who's well and just wants improvement. Patients who come in for cosmetic reasons expect zero complications." In the meantime, anyone dreaming of a one-hour breast boost should remember that old axiom: there's no such thing as a free lunch.

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