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Doctor pioneers 2-step breast enhancement technique

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Dr. Roger Khouri invented a device, called Brava, to expand breast tissue, seen on the mannequin in the background.

Women who lose their breasts to cancer have had limited choices when it comes to reclaiming that part of their anatomy: to undergo major breast reconstructive surgery or get breast implants that often feel unnatural.

Now there is another choice. Miami plastic surgeon Roger Khouri has pioneered a technique -- originally used for breast enlargement -- to give mastectomy patients natural-feeling breasts with a minimally invasive outpatient procedure.

The technique pairs an external chest-expanding device Khouri invented, called the Brava, with fat injections harvested from elsewhere on the woman's body to fill out the new breasts.

The Brava's plastic egg-shaped domes fit over a woman's breasts, and a battery-powered vacuum creates a gentle suction that stimulates tissue growth.

``It's based on the premise that when you stretch live tissue, it will grow,'' says Khouri, a reconstructive surgeon for more than 20 years and founder of the Miami Breast Center.

The concept, called tension-induced growth, is best seen in how children grow, he explains. As their skeleton enlarges and stretches the skin, new cells are generated to accommodate it.

Later, in separate outpatient visits, small amounts of fat are siphoned off the woman's body -- from her thighs, her belly, anywhere with excess fatty deposits -- and tiny droplets are injected into the breasts.

``It's like putting seeds in a field and planting them into recipient cells,'' Khouri explains.

A SCAFFOLD

To make sure the fat cells survive, Khouri says, ``Brava stretches the field and makes it larger. But the space it creates is not empty space. It is really a scaffold, loose tissue full of

blood vessels and other goodies -- a fertile ground for the seeds of fat.''

The result, he says, leaves the patient with the sensations of a natural breast, unlike patients with implants, which do not contain nerve endings.

The course of treatment requires the patient to wear the Brava device for 10 hours a day, generally overnight, for about three consecutive weeks before the fat is injected in an outpatient procedure. Typically, patients complete two to three courses of fat-grafting, as it's called, depending on how big they want their breasts.

While law dictates that the cost of breast reconstruction is covered by insurance, the outpatient procedures are covered but the cost of the Brava device, about $800, is not.

Surgically implanted tissue expanders have been used in post-cancer breast reconstruction for decades. For years they were combined with silicone implants, while within the past few years they have been combined with saline implants or flaps of tissue moved from the tummy, back or other area of the body.

Brava, which Khouri developed and introduced in 1999, has been used by more than 70,000 patients around the world for breast enlargement, he says. It's now manufactured and marketed by Miami-based Brava LLC, which Khouri co-founded.

The Brava is not regulated by the Food and Drug Administration, but Brava LLC has applied for FDA approval for its use in conjunction with fat grafting to the breast.

The long-term effects of injected fat on breast-cancer detection are still being studied. One of the concerns is that injected fat could interfere with the reading of mammograms.

In 1987, the American Society of Plastic Surgeons discouraged fat-grafting in breasts because of those concerns.

But last year, a society task force concluded that fat-grafting could be considered a safe method of breast augmentation, and that ``no interference with breast cancer detection was noted.''

``Based on the limited data available, we can't find any strong reasons not to do it,'' said Karol Gutowski, a plastic surgeon in Chicago who chaired the task force. ``But [surgeons] who do it should exercise caution when considering high-risk patients with a personal history of breast cancer.''

Surgeons should do it in a controlled fashion where the results can be monitored, Gutowski added.

Nilza Kallos, a radiologist and founder of the Breast Health Center in Miami, said in most cases, injected fat should not interfere with the reading of mammograms.

``Fat is very lucent and X-rays can pass through it very well,'' Kallos said. ``In fact, the mammograms of fatty breasts are very accurate.''

However, in the few cases where fat injected in a breast does die, it ``makes it more

challenging'' she said. A spot would be seen on the X-ray, and a biopsy might be needed.

Khouri began conducting clinical trials of his Brava/fat-grafting procedure for breast enlargement in 50 healthy patients in 2004. Two years later he began adding mastectomy patients to the study, ultimately treating 33 post-cancer patients. Clinical trials ended in October 2009.

He presented the interim results of the mastectomy work at an American Association of Plastic Surgeons meeting in April 2009, and this May he'll present the final results to the European Association of Plastic Surgeons in England.

His five-year study of healthy women who had the procedure for breast enlargement found an average of 90 percent of the injected fat survived, and ``did not create lesions that might interfere with cancer detection,'' according to the study report.

In the mastectomy study of patients who had breasts reconstructed from scratch using Brava and fat-grafting, the study report showed ``mammographies were read as normal fatty breasts . . . no new scars were added and the original mastectomy scars were markedly improved.''

Khouri says he's treated about 100 postcancer patients with the Brava and fat-grafting procedure.

FAT GRAFTING

In the past two or three years, the use of injected fat for breast augmentation has grown. ``Fat-grafting has gained more attention, and people are trying to make it work,'' Gutowski said. Though a handful of plastic surgeons in the United States are trying the technique, many who are not plastic surgeons are experimenting with it as well.

``That's where the patient has to be careful,'' Gutowski says. ``A lot of the success is due to the skill of the surgeon.''

Paul Smith, a plastic surgeon who specializes in breast reconstruction at the Moffit Cancer Center at the University of South Florida in Tampa, said he routinely uses fat-grafting to help fill out breasts after other types of breast reconstruction.

``I think Dr. Roger Khouri of Miami has impressive results that show that fat-grafting can be used to reconstruct a breast on its own,'' said Smith. As for the Brava, Smith said it appears to be safe for cancer patients, ``but I think more studies need to be done.''

Staria Petersen of Key Biscayne in one of Khouri's patients. Petersen, who is 75, had her first mastectomy 35 years ago; her second five years later. Afraid to get silicone implants because they are opaque and could interfere with mammogram results, Petersen wore a padded bra for three decades.

Three years ago she learned of Khouri's technique and was intrigued by the idea of losing fat where she didn't want it and putting it where she did, so she went to Khouri -- along with her 52-year-old daughter and 22-year-old granddaughter. They all had the procedure done.

``We all did it for different reasons, but we loved the idea because it was our own fat,'' Petersen said. ``My daughter would have never had done implants because of our history of breast cancer.''

Petersen's chest wall was completely flat, and the skin was tight and scarred, she said. She wore the Brava for three weeks. Fat was siphoned off her tummy and waist, and injected into her chest wall every week.

Petersen, now a B cup, said she has had normal mammograms since the procedure three years ago.

Though some users have complained of skin irritation from the Brava, Petersen said she found it comfortable.

``I wore it all the time. It didn't bother me at all,'' she said. ``In fact, I was kind of thrilled, because it was the first time I looked like I had breasts.''
