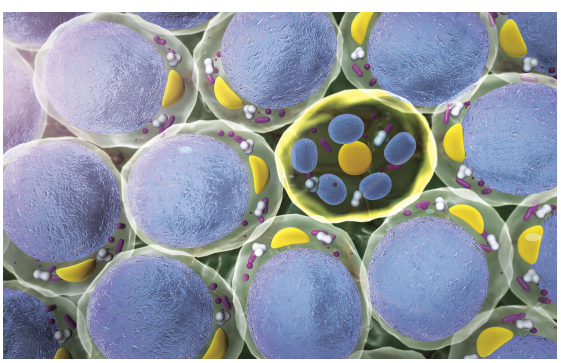
Autologous ENHANCEMENT

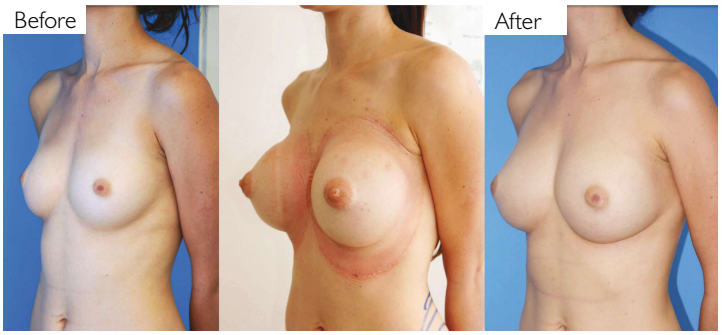
Improve outcomes and reduce complications in fat transfer for breast augmentation.

By Inga Hansen

THE ALLURE OF having augmented breasts that require no implants—only natural tissue grafted from one's own body—is proving irresistible to patients and surgeons alike. And as the availability of fat grafting to the breast has increased, surgeons are learning more and more about patient selection and techniques that improve outcomes and reduce the risk of complications.



"I have been doing this for about eight years now, and my experience has been that it is a great option for patients who seek revision or enhancement rather than just enlargement," says New Orleans-based plastic surgeon Kamran Khoobehi, MD. "Fat grafting patients either have tried implants and now want an alternative or are just not interested in implants."



Roger Khouri, MD, was able to bring this patient with tight tissue, an A cup and minimal donor fat up to a C cup with the Brava expander. Fat was harvested from the buttock, which further improved her profile.

The Ideal Candidate

The best candidates for fat grafting to the breast have three things in common: They do not want implants; they have enough excess fat to harvest for the augmentation; and they are realistic about the amount of enlargement that can be achieved.

Sydney Coleman, MD, of Tribeca Plastic Surgery in New York tells patients that they can expect a one cup increase in breast size. "The easiest patients are probably B to C cup, because they already have an envelope, so you have more room to place the fat," he says.

The most challenging patients are AA and A cups, and thin patients with very little fat to graft. "I can't get from a AA to a C cup with fat grafting," says Roger Khouri, MD, of the Miami Breast Center. "Without expansion, without preparation of the recipient's breasts, we can at best increase the size by 50%. However, if you prepare that recipient with the Brava expander, you can temporarily double or triple the recipient site in size—then we can more than double that breast and augment that A cup breast by 150cc."

The Brava expander, first used in breast augmentation by Dr. Khouri, uses suction to stretch the breast tissue, creating a larger space in which to place delicate fat tissue. "Brava is really, really essential for AA and extremely helpful for A cups," says Dr. Coleman. "It's still helpful, but not as helpful for a B to get them to a C."

Short term use of the expander does not generate tissue, instead "it creates a scaffold, so if you take a 100cc recipient, you can triple the recipient site in size, and now it's 300cc. Inside that 300cc breast, I can probably get 150cc to 200cc of fat to survive. She was originally 100cc and she gained another 150cc; this is probably the limit," says Dr. Khouri.

To achieve this level of expansion, Dr. Khouri has patients wear the Brava for a total of three weeks prior to the procedure. They wear it sporadically for one week to get acclimated to it and then intensively for the next 15 days. "I want them to wear it for at least 10 hours a day during the work week and then essentially not take it off on the two weekends and the day before surgery," he says.

Dr. Khoobehi counsels patients with AA or A cup breasts to wear the Brava for eight hours every day starting four weeks prior to surgery.

To support the revascularization of the transplanted fat, Dr. Khouri also counsels patients to stop smoking and halt the use of herbal supplements one month prior to the procedure. "Fat grafts don't survive well in smokers; another factor is the use of nutritional supplements. They tend to prolong bleeding time and if I create a channel with my grafting cannula, I expect as I retract my cannula to fill that channel with fat," he says. "If the channel fills with blood as soon as I introduce the cannula, there is no room anymore for the fat.

"The patient needs to understand where we are going and what we can realistically achieve," he continues. "Certainly, if there are requirements to wear the Brava, she needs to be able to comply. This is not for the patient who wants immediate augmentation."

Harvesting Fat for Transfer

Though there has been quite a bit of research and discussion regarding the best areas from which to harvest fat, these studies typically relate to fat grafting the face and hands. For large volume transfers, "wherever the patient has fat is the best place to get it," says Dr. Khoobehi. "You need to take fat from everywhere and, to get the best result, you mix the fat from different areas. Patients gain and lose weight differently in different areas, so the goal is to get the fat from different areas and mix it up."

Dr. Coleman's first choice is to harvest the fat from the back love-handle area, "because it makes the breasts and the buttocks look bigger, so it gives you a better shape," he says.

Very thin patients present the greatest challenge for harvesting. In these cases, surgeons must be careful to harvest the fat evenly across multiple areas to avoid creating any donor site defects. For these patients, Dr. Khouri uses a very fine cannula, the size of an IV line.

IMAGE COURTESY OF ROGER KHOURI, MD

"You harvest nice, thin droplets one at a time and insert the cannula through multiple needle pricks," he says. "Because you're not worried about hiding incisions, you can criss-cross and be more even in your harvesting and take the fat over a wide area."

For patients who do not have enough fat to create the amount of augmentation desired, putting in a small implant and shaping the breast with fat can give them both the size and natural feel they are seeking, says Dr. Coleman. But there may be a second option to come: "I'm actually working with some companies on making fat—and that's not that far off in the future," says Dr. Coleman. "The idea is to inject a type of collagen that will stimulate the ingrowth of fat and stem cells in the area to make new fat."

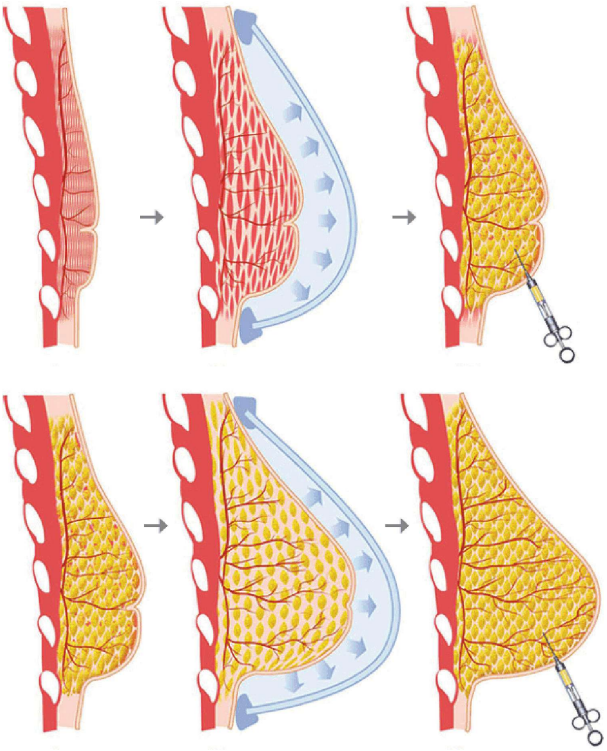
Fat Preparation & Injection

Dr. Khouri uses the Lipografter to harvest, prepare and re-inject the fat as tiny droplets to enhance its survival and avoid concerns, such as necrotic cysts. "This is 3-D grafting. You are sprinkling a mist of tiny fat droplets inside the recipient," he says. "You are not going to deliver a thick paste, that won't work. Injected blobs of fat will die."

Dr. Coleman agrees: "Getting it done quickly isn't the best choice. It increases the chance of getting cysts and a poor shape. I have a tendency to want to speed up—everyone is in a hurry—but I find that forcing myself to slow down and place the fat meticulously and thoughtfully, and really thinking about each area it goes into so I get the shape that I want is the really important thing."

To create both the shape and projection he wants, Dr. Coleman injects into multiple areas of the breast. "I have a tendency to place the fat under the skin, behind the breast and a little bit into the breast, but I don't put a lot into the breast tissue itself," he says. "I do place some in the breast for projection, but I'm very careful to use much denser fat."

Dr. Coleman centrifuges the fat at 1,200 gravitational force and then separates out the denser portion, which has less oil, more growth factors and a greater concentration of stem cells. He places the denser fat behind the areola to create projection and behind areas with stretch marks. "One of the really useful things about fat grafting to the breast is the diminution of stretch marks," he says. "So I'll take that really dense fat and place it against the skin where the patient has a lot of stretch marks in order to help remodel the skin—evidence is now coming out that shows the fat will thicken skin by improving the elastin and collagen, which is really helpful with stretch marks."

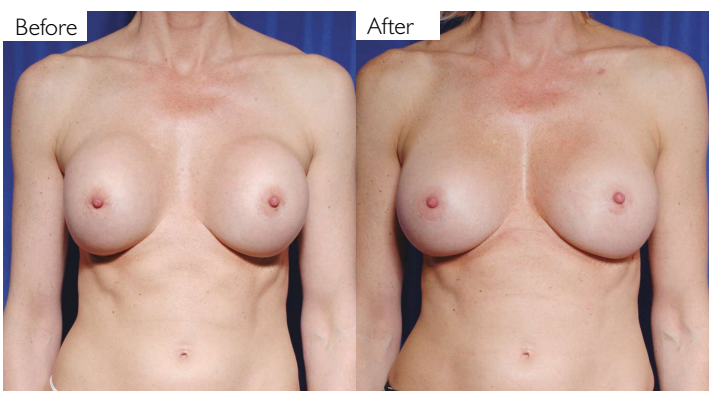


The external Brava expander generates a vascularized live scaffold by stretching the skin and breast tissue.

Implant to Fat Procedures

One of the fastest-growing patient groups seeking autologous breast augmentation is women with breast implants. For these patients, there is no need to use an expander, since the pocket is already large enough to accept the fat graft. The main difference, according to both Dr. Khouri and Dr. Coleman, is that these patients may require two sessions to fill out the area and create an aesthetically pleasing shape.

"If someone wants the implant taken out at the same time that you're putting the fat in—which is what most people want—then you really need to prepare them for a second procedure, because the powerful thing about fat grafting to the breast is it allows you to shape the breast," says Dr. Coleman. "If there's an implant



Kamran Khoobehi, MD, replaced this patient's implants and used fat to create cleavage.

TOP IMAGE: COURTESY OF ROGER KHOURI, MD; BOTTOM IMAGE: COURTESY OF KAMRAN KHOOBEHI, MD

already in place, the amount of shaping that is available to you is much more limited, so you can't have the same precision that you would if you were just starting out from scratch. A large percentage of the time, they don't need a second procedure, but I like to prepare them for that possibility."

Small patients with large implants may also require a downsizing of the implant prior to total autologous fat augmentation. "If the implant is huge, and there is very little skin covering it, we can't bring them to no implant in one stage," says Dr. Khouri. "I have to downsize the implant typically half the size. If they come to me with a 400cc implant and they are skinny, tiny, and there's a very thin envelope—1 cm or so—I can't take that 1 cm envelope and turn it into a full breast, so—even though I thickened it with the expander—I still have to put a smaller filler implant behind it to obtain projection."

He notes that many patients stop at this phase. "A small implant camouflaged with a lot of healthy fat is not a big problem, and it feels very natural," says Dr. Khouri. "So many patients stop at that phase. But if they want to get to the point where they have no implant, then we go back and do a second session. With a little mushrooming effect—I typically put a purse string suture under the skin, which mushrooms out and projects the breast—I can give them a nice projection, a nice apex and a breast that looks natural and beautiful without an implant."

When counseling patients on the number of procedures needed to achieve full augmentation with fat, Dr. Khouri breaks down patients into groups. "For the cosmetic patients, I typically in one operation can give them nice, natural-looking breasts. The mastectomy patient with implants, if they're not radiated, will take three surgeries to get there. The augmentation patient who wants to remove her implant will take one or two surgeries."

Implant + Fat

As surgeons become more comfortable with performing fat transfer to the breast, they are finding that the procedure offers benefits to several patient groups. For example, Dr. Khoobehi often combines fat with implants. He finds that the best—and most satisfied—patients for these procedures are women who have had multiple pregnancies and have lost a lot of volume in their breasts. "They are thin skinned and I know that if I put the implant in, there is not enough soft tissue to cover the implant," he says. "I need the fat as a cushion, as a layer, so the implant will not be palpable."

He also uses fat to create cleavage in implant patients with a wide gap in their chest muscles. "When you look at the patient, the chest muscles are separated from each other—there's a big gap in between. I know if I put in implants, there is going to be a big gap," he says. "I use the fat grafting for cleavage and the implant for enlargement."

Fat has also become a valuable tool in Dr. Khoobehi's practice to correct asymmetries and skin laxity in long-term implant patients. "One of the biggest advantages of the fat grafting is for revisions and asymmetries. It's a very valuable tool for very tough situations where you don't have any other tool," he says. "In the past when the patient had a breast implant and came back five years later with some sagging and excess skin, the only option was to go with a bigger implant. But now you have the option of filling and adding some soft tissue."

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Aftercare

Unlike implants, which require a significant amount of postsurgical care, fat transfer patients should be counseled to leave the area alone. "I tell the patient not to do massage," says Dr. Khoobehi. "You want to let the tissue revascularize and you don't want any aggressive stimulation or massage for the first few weeks."

Because fat does have the ability to shrink and grow with weight loss and weight gain, Dr. Khouri reminds patients to eat well in the days following transplant. "I used to say jokingly that the best way to make sure that fat survives is to eat it, and that is certainly one of the factors," he says. "We're grafting metabolically active tissue, and it certainly helps to try to gain weight or at least eat well after surgery. And you want to avoid any external compression on the breast."

In order to keep the breast expanded as the fat revascularizes, Dr. Khouri recommends that patients continue with the Brava on a low, gentle pressure for a few days after surgery. "Or sometimes we'll put a special dressing on them to hold onto that swelling they have after surgery so it doesn't shrink back," he says. "The longer you can hold onto that swelling from the Brava, the more it becomes permanent." ME

Inga Hansen is the executive editor of *MedEsthetics*.