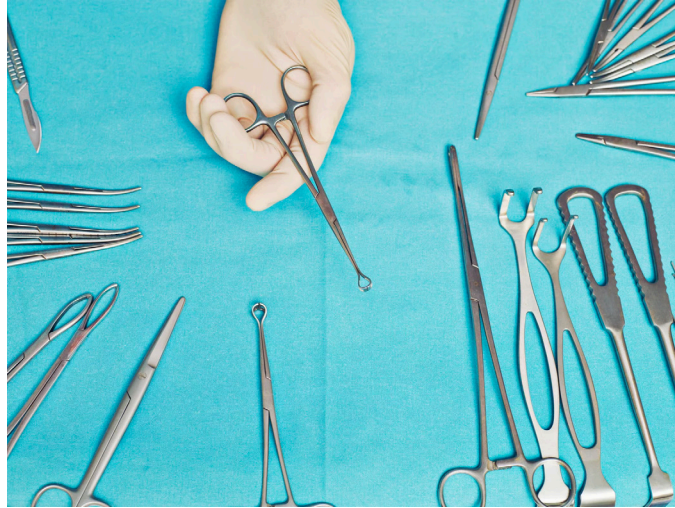


P O P S U G A R .

What Are Nanofat Procedures, and Why Is Everyone Talking About Them?

Jessica Ourisman | October 12, 2023



Getty | Martin Barraud

"Nanofat, nanofat, nanofat" — this was silently running through my head as I watched an Instagram Reel by double-board-certified plastic surgeon Ben Talei, MD. He was explaining a patient's facial rejuvenation, and it was the first time I had heard of the regenerative aesthetic treatment. Nanofat procedures consist of isolating the stromal vascular fraction (SVF) — a medley of supportive stem cells, growth factors, cytokines, and more — from human fat cells, which are then injected into the skin to rejuvenate its tissues for years at a time.

"Nanofat is a stem-cell-like treatment used for a variety of rejuvenation benefits," Dr. Talei tells POPSUGAR. "It is formed by harvesting fat from the body and breaking it down into its cellular elements, which [include] adipose-derived or mesenchymal stem cells (MSCs)." Oculoplastic surgeon Kami Parsa, MD, an expert in facial fat transfer, refers to these stem cells as the "magic ingredient" in fat for better skin, tissue quality, and overall glow following fat-transfer procedures.

Board-certified plastic surgeon Steven Cohen, MD, FACS, cofounder of the London Regenerative Institute and a regenerative medicine expert, puts it best: "Once the stem cells enter [the bloodstream], they are throwing off things like exosomes that are helping to repair other cells in the area. You are starting to look at applying cellular medicine to aesthetics instead of simply camouflaging the aging process. It's a Benjamin Button effect; it's real."

Interest in fat-transfer procedures has increased recently as patients shy away from fillers, says board-certified plastic surgeon **Kimberly Lee, MD**. The results are similar to those of chemical peels, laser treatments, or even PRP-boosted "vampire" facials. Yet unlike these modalities, which are short-term and must be repeated, nanofat's effects can last years.

Keep reading to learn more about nanofat procedures, the regenerative aesthetic technique that is biohacking antiaging.

Nanofat and Stem Cells

Nanofat's origins in plastic surgery came about in the 1980s and 1990s with two surgeons in Belgium. "Our operating room is often the lab, where you should notice improvements to trace back to their origins," says board-certified plastic surgeon Marc Mani, MD. "We traced it back to fat transfer, the reason being that stem cells were remodeling the skin." Board-certified plastic surgeon Cat Chang explains that fat transfer is a technique to restore lost volume in the face, replacing "like with like" in a way that cannot be done with filler; because nanofat is non-volumizing, however, it can be used without any risk of changing the face shape.

Pluripotent stem cells are the source of regeneration and repair for every organ in the body. Dr. Cohen once compared them to being the "aircraft carrier" containing the bio ingredients responsible for skin and tissue rejuvenation. Umbilical-cord blood is considered to be the best source of stem cells, but for adults, the options are limited to bone marrow and fat cells (and, most recently, hair follicles).



Image Source: Dr. Kami Parsa

How Do You Make Nanofat?

Nanofat is created when you purify a fat sample into its components — roughly 25 percent fat cells and 75 percent SVF. "Nanofat is a misnomer, as it contains *no* fat," Dr. Mani says. The process entails the harvesting of a small fat sample with a cannula from an area like the abdomen, thighs, or flanks, then purifying it and separating the regenerative ingredients from the fat cells.

"We get rid of the fat cells through a process called emulsification, which leaves us with incredible stem cells," Dr. Parsa explains. "They can be used to complement most facial plastic surgery and procedures such as Morpheus8 [radiofrequency microneedling] or CO2 laser resurfacing and can be microneedled into the skin for amazing results."

At this point, the clear fluid can be used on its own or combined with another substance. All of the plastic surgeons interviewed frequently combine it with fat prior to fat grafting. Dr. Talei habitually combines nanofat with PRP in his PHAT (platelet hybridized adipose therapy) treatment for the comprehensive array of tissue regenerative cell signaling cued by the combination.



Image Source: Dr. Kami Parsa

How Does Nanofat Differ From Other Cosmetic Treatments?

The first thing to know about nanofat is that it is predominantly used as an adjunctive treatment along with facial plastic surgery, such as during fat grafting or combined with radiofrequency microneedling — for now. But as mentioned, nanofat can be used alone to outperform certain chemical peels or lasers in several notable ways. Namely, their method and quality of regeneration, efficiency, longevity, and degree of invasiveness. It is also remarkably effective for notoriously difficult-to-treat skin concerns including melasma, hyperpigmentation, acne scars, and deep scarring.

"Stem cells and their secretions can lead to the production of all the components needed for healthy, youthful skin. Instead of causing inflammation, they work through a more regenerative response, with the cell-signaling proteins allowing the different types of cells to communicate with each other," says board-certified plastic surgeon Jennifer Levine. She adds that they rebuild healthy tissue in the organized, extracellular matrix of collagen, elastin, proeoglycans, etc. (Nanofat itself is also anti-inflammatory in nature, but plastic surgeon Jason Roostaeian,

MD, reminds us that its delivery methods — i.e., injection, microneedling — can still be aggressive and inflammatory in nature.)

"Nanofat is also rejuvenating the SMAS layer, which is the support system for the skin in the face," Dr. Talei says, adding that this is in contrast to the effects of overfilling and dissolving filler, as well as the repeated use of certain deep heat treatments — which plastic surgeons Dr. Mani and Dr. Roostaeian agree can be detrimental to this important layer of facial anatomy. "Treatments promoting 'collagen growth' are a fallacy," Dr. Mani says. "What you really need is elastin and good, organized collagen. Stem cells, growth factors, and the other regenerative cells that come with it are the way to do it."



Dr. Steven Cohen

Most cosmetic treatments require a series of multiple appointments and regular follow-up appointments as maintenance — but a single nanofat treatment yields results that don't just last but continue to improve, for years. Dr. Mani's signature MIST (minimally invasive stromovascular treatment) procedure yields an approximate three-day healing period. Within weeks, improvements to the skin and sun damage begin at the micro-level, and new blood vessels form around day 28. "At about six months, the fine lines will start to diminish and soften, and at two-and-a-half years, the patient will look better than ever," he says. "This is opposed to a vampire facial, which lasts about two months."

Even in nonsurgical settings, regenerative ingredients are helping aestheticians provide longer-lasting, more efficient results. "My practice has progressed so much once I began [using stem cytokines] and concentrating on the most efficient way to treat conditions like melasma, acne scarring, and pigmentation. These treatments allow me to be less invasive and have longer-lasting efficacy," aesthetician Jenn Mills of Ritual Body Studio says. "Before utilizing stem cytokines in my practice, I relied on more aggressive peels to correct [these skin concerns], but the results weren't always long-lasting — especially with pigment."

How Invasive Are Nanofat Procedures?

If nanofat sounds too good to be true, keep in mind that it is a more invasive procedure than your average trip to the dermatologist for some Botox, filler, or microneedling. Even though the doctor is only taking a couple tablespoons of fat, liposuction is no walk in the park. "Super-

skinny patients or those that do constant aerobic exercises are not the best candidates as they don't have enough fat," Dr. Parsa says. (That being said, he has performed more than 4,000 fat-transfer procedures and has never had a patient he couldn't find fat on.)

Although you will be thoroughly numbed, you will be awake (unless it is performed along with fat transfer or another plastic-surgery procedure). So if you are skittish about needles, this is not the best option for you. You will also be puffy and swollen following the treatment, with downtime ranging from two to five days, so be sure to schedule yours over a long weekend or be prepared to work from home.

How Is Nanofat Used?

Research confirms that nanofat's aesthetic results include improvements in fine lines and wrinkles, sun damage, scarring, and pigmentation, with data to show remodeled tissue and the creation of new blood vessels (i.e., angiogenesis). Some reports indicate it can help thicken skin, which is why Dr. Chang frequently uses it to treat the thin skin of the eyes and neck. The most frequent treatment areas are the face, neck, and décolletage. Dr. Talei also injects nanofat combined with PRP into the lips, as well as into the hair follicle for hair restoration.

Each surgeon has their preferred method for optimizing nanofat at their practices. But they do follow similar steps of harvesting, preparing, and delivering the nanofat. What *all* surgeons are adamant about is that each treatment is bespoke and tailored to meet the individual needs of the patient.



Image Source: Dr. Ben Talei

How Doctors Harvest the Fat (i.e., Liposuction)

While under IV or twilight sedation, the surgeon thoroughly numbs the area where the fat will be retrieved. Then a cannula is used to extract a small amount of fat from the patient — we're talking a couple of teaspoons total. Dr. Cohen says the fat can technically be taken from anywhere the patient has it, but it is typically extracted from the abdomen, flanks, or thighs. If it is taken from the thighs, the surgeon will remove it from both of them for the sake of symmetry.

Once the fat is retrieved, it is rinsed and broken down into its components. Different types of devices exist to filter the fat through a series of grates, and occasionally with collagenase, until it is purified into the clear fluid that is nanofat. Removing all the fat and fascial cells ensures that the injection of nanofat will not result in any changes in volume. At this point, it can be used in its purest form, or the surgeon may opt to combine it with PRP (as is the case with Dr. Talei's PHAT treatments) or even with structural forms of fat in fat-transfer procedures.

Each surgeon also has a preferred delivery method that depends upon their careful assessment of the patient's presenting concerns. The fluid is typically injected via a cannula to diffuse it, but it can also be injected at different depths for more targeted treatments. It can also be combined with microneedling — or a combination of all three — depending on the surgeon's treatment plan. For instance, at Dr. Cohen's practice, he uses nanofat with fat grafting, microneedling, and within a Biocream for his patients to continue to apply.



Image Source: Dr. Ben Talei

Who Could Benefit From Nanofat Procedures?

"My dream in life would be for patients to start doing this before they ever get filler," says Dr. Mani, who regularly removes filler before letting his patients receive surgery. "But if someone has concerns about their skin and wants long-term results, I would say late 20s or early 30s." If

you are considering a more volumizing procedure incorporating nanofat (such as fat transfer), Dr. Cohen says that at the point that you start going in for filler regularly in more than one area, it might be time.

Also keep in mind that younger sources of stem cells are technically considered to be more potent. That means opting for nanofat when you are younger will potentially have more pronounced effects. That being said, these plastic surgeons regularly perform facelifts on older patients and see incredible results even from aged stem cells. Many patients are also excited to be using their own bio-material, rather than opting for some sort of foreign material.

Nanofat Procedure Before and After



Image Source: Dr. Marc Mani

How Much Does a Nanofat Procedure Cost?

Cost can vary greatly, from \$5,000 up to \$25,000, depending on where you go and what areas you treat. But when it comes to something as serious as a medical procedure — aesthetic or not — it's important to go to a trusted plastic surgeon. As with filler, the procedure carries a low risk of vascular occlusion. Dr. Parsa adds that infection, bruising, and swelling are also risks, and he recommends removing all filler prior to the procedure to avoid excessive swelling. If you opt for a full-on fat transfer, you will want to meticulously vet your surgeon, as well as ensure they make the most of the regenerative potential in the treatment, as not all do.



Image Source: Dr. Steven Cohen

Is It Worth It?

Any cosmetic or plastic-surgery procedure is a highly personal choice, including how you achieve your desired results. To be sure, there is no singular "right" way to reach your cosmetic goals. There are pros and cons to every treatment — as board-certified dermatologist ShaKer Hamadiya, MD, points out, there is even a certain comfort in knowing your facial filler is temporary and reversible (not to mention, infused with pain-stopping lidocaine) as opposed to the permanence of fat-transfer surgery. But if you are the type of beauty consumer who wants robust results for the skin that are research-based and long-term — and you are willing to go through a more invasive, one-time procedure to get there — nanofat injections could very well be worth it to you.

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