Fat Grafting: A Growing Problem?

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In the late nineteenth and early twentieth centuries, the facial indentations, flatness, and hollows seen with age were treated with injections of paraffin and petroleum jelly.[1] These products must have had some benefit, considering how long the treatment was offered, but the complications of hydrocarbons in soft tissues were many and severe, leading to their clinical demise. The past few decades have seen injected fat and greatly improved fillers transform the rehabilitation of the aging face; the use of fillers has grown exponentially, and fat grafting has become common.[2,3]

When there is a global shift in treatment paradigms, the benefits shine brightly, and new procedures are universally and quickly adopted. As in other parts of life, it may be years or even decades before all the consequences of treatment become apparent. One might think of the nasal tip graft. Introduced by Sheen in 1975,[4] the tip graft added volume and definition to a structure that had only been subtracted from throughout the previous history of nasal surgery. It solved many problems of nasal shape so well that it was universally adopted. It was not until decades later, after tens of thousands of tip grafts had been placed, that the grafts became more visible and unsightly as the skin of the nasal tip thinned. Many of these patients needed reoperation.

This is a common pattern of cognitive and technical evolution evident throughout human endeavor and plastic surgery. It is not reasonable to expect that every new procedure, drug, or concept be tested for decades, and one should be aware of the phenomenon.

Since the late 1980s, I have been using volume in the face, beginning with injected fat and later including off-the-shelf fillers. I remain a fervent injector of fat, usually in combination with face lifts, but years of fat grafting have left me with a long-term perspective of fat that I did not consider in the past.

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Fat is a biological tissue, part of the human body, and subject to the body's physiologic dictates. Exasperating personal experience and observation of patients over the past 33 years have led me to confirm what everyone knows: that there is a pronounced tendency for people to gain weight with age. Despite an ongoing obesity epidemic, this is not a universal phenomenon; women likely to gain weight with age tend to be the young, child bearing, and premenopausal. Older, thin, fat-depleted patients are not likely to gain weight if they have not already. Men do not have the same excuses but gain weight as well. This may take decades; gaining only 1 pound per year will result in gaining 25 pounds from age 40 to 65 years.

As known from the early days of plastic surgery, grafted tissue maintains the characteristics of the donor site, not the characteristics of the recipient site. It should be no surprise that this effect occurs in fat grafting, *as the patient gains weight, so does the grafted fat.* I am seeing this effect occur both in my patients and in other patients who have had fat grafting. Discussions with experienced facelift surgeons with high-volume practices indicate that the issue is widely noted, although its incidence is not currently quantifiable. The majority of the patients were in their 30s to early 50s when they underwent grafting. Although the amount of fat placement is usually not known, most of the patients relate having enough treatment to alter facial contours, not just to fill a wrinkle or a crease. Almost all of these were accompanied by weight gain (although I have seen a few patients have visible graft growth even in its absence). Older patients typically do not gain additional weight, do not retain grafted fat as efficiently as younger ones, and are a far more forgiving group of patients to fat graft.

The problem for the patient is that the enlargement of the face with weight gain and expanding fat grafts almost never appears good. The gamut runs from an overly fat face to a frankly distorted

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one. These patients are generally very unhappy with their current results even though they were treated with the best of intentions and may have had lovely results initially.

The problem facing the clinician is that, at present, there are very poor choices for removing excess fat. At the time of this writing, microliposuction or direct removal of fat has been used with only modest success. Although fat can be partially removed from some parts of the face, in certain areas such as the eyelid, smoothness of the skin is often lost, thus trading one deformity for another. You cannot go home again.

As more people in the younger groups undergo fat grafting performed by more clinicians, I am concerned that we will see an increase in the number of patients who are frequently desperately unhappy and difficult to treat. The young fat grafter will not experience such problems before 5 or so years into practice when it occurs to a patient of theirs and the issue becomes personal. The infrequent fat grafter may never see the problem, thinking like the rhinoplasty surgeon that his or her tip grafts were perfect and remain so.

Blaming the patient is a time-tested way of shifting causation away from the clinician, but is an unsatisfactory response to the frailties of humanity and the obligations of a physician. Weight gain with age is not a moral deficiency, it is part of the human condition.

Both patients and clinicians are motivated by immediate gratification. The concept of years or decades in the future is just not acceptable to the patient whose mirror is demanding changes now. The clinician does not know who is going to gain weight, and the choice becomes whether to refrain from a worthwhile procedure now to avoid a potential side effect later.

What to do? The phenomenon clearly exists, but are we seeing a tiny fraction of people with fat grafts or the first wave of a tsunami of patients? Is there a real problem or not? What is the dose-response curve? The question is not unlike the issue of climate change. What price should be paid now to possibly forestall an event that is remote and uncertain but uncorrectable and potentially disastrous if and when it arrives?

None of this is clear yet. In my opinion, it makes sense to pay attention and be thoughtful about the trends and results of today. My personal response has become to be very conservative about fat grafting younger patients, although I enthusiastically graft older patients, whose faces are much more forgiving. I do not overcorrect; I try to place fat in a discrete plane, usually preperiosteal, where it is theoretically easier to remove. I stress to all the possibility of growth of the fat with or without weight gain, and the fact that it is currently hard to remove. Because there is not an easy way to answer the question, "Why didn't you tell me the fat could grow?," I include it on the consent. In detail.

All of us strive to do the best that we can do for patients. This article is offered only to encourage thought and observation on this potential issue and to verify the observed trends.

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