

Volumetry: A New Dimension in Contouring the Massive Weight Loss Patient

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Abstract

Massive weight loss patients may become volumetrically challenged. In a landscape of skin excess and overhang, significant tissue deflation may develop, particularly in the face, breast, and buttock area. Strategies for volumetric reconstruction and enhancement depend on the use of commercial injectable fillers, fat grafting, flap rotation, and shifting of tissue from a site of excess to one of deficiency.

Introduction

Adding volume is one of the last things one would think a patient who has undergone massive weight loss would desire; however, massive weight loss actually leads to significant deflation of the skin from head to toe, and this deflation is most apparent in the face, neck, breasts, and buttock. Following massive loss of volume (fat), these parts of the body can take on an appearance best described as a deflated balloon—not the fit, attractive physique one would hope to achieve following significant weight loss. Volume lost in specific body regions may be restored, however, in the massive weight loss patient through the use of fillers, tissue grafting, local tissue rearrangement, and prosthetics to achieve fullness, shape, and a positive body image.

The Face

Changes in facial skin due to massive weight loss may mimic the aging process, which visually can add years to a face, even in the most youthful patient. As the volume of the face decreases, the skin becomes more lax and the facial folds more pronounced, the skin of the brows may descend into the eyes causing fullness and skin excess of the upper lids, cheeks may descend causing an elongation of the lower eyelids, the jawline may appear more blunted and jowled, and most notably, the neck may appear more full with lack of definition between the neck and the jaw.

Cosmetic treatment includes injection of fillers, fat grafting, lifting of tissues with suspension in face, and necklifting.¹ These treatments may be performed as isolated procedures or may be used together to complement each other in achieving more comprehensive correction.

Fillers. Most fillers are off-the-shelf products and include those made with hyaluronic acid (e.g., Juvederm® [Allergan, Irvine, California], Perlane® [Medicis Aesthetics, Scottsdale, Arizona], and Restylane® [Medicis Aesthetics, Scottsdale, Arizona]) or poly-L-lactic acid (e.g., Sculptra®, Sanofi-Aventis, Bridgewater, New Jersey).

Hyaluronic acid products are indicated for correction of moderate-to-severe facial wrinkles and folds and can be used to blunt pronounced folds between the nose and lip (nasolabial folds) and to plump thinned lips that have frowning corners of the mouth due to loss of volume (Figure 1).

The poly-L-lactic acid products are used to plump up flattened, descended cheeks and the areas around the eyes, and treating these areas subsequently can lift the lower part of the face, which improves the overall appearance.

Fat grafting. A patient's own fat may also serve as the filler, and this fat in volumes of approximately 10 to 30cc can be used to fill the nasolabial folds and lips, either as a stand-alone procedure or in combination with facelifting (Figure 2). Fat grafting is a small operative procedure that can be combined into larger body contouring procedures. Fat is harvested from the abdomen or thigh, concentrated with removal of fluid components of the aspirate, and transferred into the face. The grafted fat will incorporate almost completely into the recipient site. When there is an extreme degree of volume loss and surgical facelifting is required, fat grafting can easily be incorporated into the procedure.

The Breast

The breast of the female patient who has undergone massive weight loss may incur significant deflation with ptosis, medial displacement of the nipple, areolar complexes, and sliding down of the inframammary folds (IMFs). As the fatty component of the breast tissue decreases, the overall volume of the breast decreases.

Corrective options for the breast include breastlift (mastopexy), augmentation with fat grafting, augmentation with breast implants, and combinations of these procedures (Figure 3). Most women pursue a breastlift, with removal and tightening of the skin around the existing breast tissue. The underlying breast tissue may be rearranged to transfer redundant tissue from under the arm to the central breast area as an auto-augmentation, and the tissue is stabilized to avoid displacement and descent² (Figure 4).

Fat grafting is a new addition to the breast augmentation armamentarium, and hundreds of milliliters of purified fat can be transferred into the breast tissue, subcutaneous tissue, and pectoralis muscles. This is a new technique, and there is not much data yet available on it. In 2010, Parrish and Metzinger³ stated that the available literature on this procedure consists primarily of case reports and case series, with no controlled trials. Therefore, outcomes thus far have not been measured in a standardized way. Concerns have been raised that the placement of mature adipocytes and adipocyte-derived stem cells into the hormonally active environment of the breast may potentiate breast cancer, but there have been no clinical trials yet that investigate this possibility, and a consensus regarding the basic science is still developing.

The Buttock

The massive weight loss patient has increased vertical length between the upper back and the buttock, an area of tissue that was previously expanded with subcutaneous fat. This span of back tissue following weight loss becomes deflated, and redundant tissue buries the buttocks below it. Many weight loss patients pursue belt lipectomies with abdominal panniculectomy or abdominoplasty to treat the abdomen, continuous with a backlift to raise the buttock and the outer thigh. In some cases, there is so much redundant back tissue, that it can be recycled to create an autogenous implant for the buttock (Figure 5). Provided circulation by the superior and inferior gluteal arteries, autologous gluteal augmentation with a patient's own tissue provides a solution to the deflation of the buttock.⁴ While gluteal implants can be used to treat deflation of the buttocks, in this author's opinion, harvesting the material for augmentation directly from the patient's own body and injecting it into the gluteal muscles and subcutaneous fat should be considered as an option before synthetic implants.

Conclusion

Patients who have sustained massive weight loss may seek corrective surgery for excess or hanging skin due to volume loss. The face and neck, breast, and buttock areas are particularly susceptible to volume deficiency after massive weight loss. Options include use of fillers; autogenous tissue, including grafts and flaps; and implants in order to add volume necessary to achieve a youthful, shapely body.

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