Technique for Facial Contour Correction With Autologous Fat Transfer

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Autologous fat transfer is one of several techniques used for facial contour correction. The advantages of using autologous fat over other commercially available fillers include low supply cost, abundant supply source, secondary contour improvement at the donor site, lack of immunogenicity, and the potential for long-term improvement. In this article, we discuss our autologous fat transfer technique for the correction of facial contour irregularities.

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Facial contour irregularities may derive from numerous causes, including natural subcutaneous fat loss with aging, human immunodeficiency virus–associated lipoatrophy,[1] and linear morphea–induced atrophy.[2] These irregularities often are corrected by physical replacement of the lost volume with fillers or autologous fat. Although commercially available fillers are a convenient method of volume replacement, they often are associated with high costs, a lack of durable results, and occasional immunogenic reactions to the filler substance.[3-5] Autologous fat, on the other hand, is readily available, inexpensive, and lacks immunogenicity. There are many variations on autologous fat harvesting, preparation, and injection techniques. We describe our technique for autologous fat transfer, which has advantages such as technical simplicity and lack of requirement for expensive specialized equipment for fat preparation.

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AUTOLOGOUS FAT TRANSFER TECHNIQUE

Prior to treatment, patients are counseled on the expected benefits and risks of the procedure. In our experience, the most common complication is local bruising at the donor and recipient sites. Although more serious complications such as fat embolism[6] and infection have been reported in the literature, including a case of septic shock,[7] we have found the procedure to be generally well-tolerated and relatively safe.

The donor site is identified based on assessment of the patient's adipose tissue reservoirs as well as patient preference. Most commonly, the abdomen (Figure 1) or buttocks are utilized for donor tissue. In patients with minimal adipose tissue reservoirs, less common sites may be utilized to provide tissue, including sites of gynecomastia that are common in patients with human immunodeficiency virus–associated lipodystrophy (Figure 2). The recipient site then is outlined while the patient is sitting upright to appreciate the contour irregularity of the recipient site and the effect of gravity on its appearance.

Tumescent anesthesia consisting of lidocaine with epinephrine is administered at the donor site, and the recipient site is anesthetized via appropriate regional nerve blocks using lidocaine with epinephrine. If the patient declines a regional nerve block or the regional nerve blocks fail to provide sufficient anesthesia, a local

Figure 1. Anterior abdominal donor site due to adequate donor tissue supply. Note the closure of the cannula entry site with simple interrupted sutures.

Figure 3. Equipment for manual harvest and transfer of autologous fat. From top to bottom: blunt-tipped cannula for harvesting fat; syringe containing harvested fat attached to 14-gauge needle for injection; manual aspiration device with a 20-cc syringe for harvesting donor tissue.

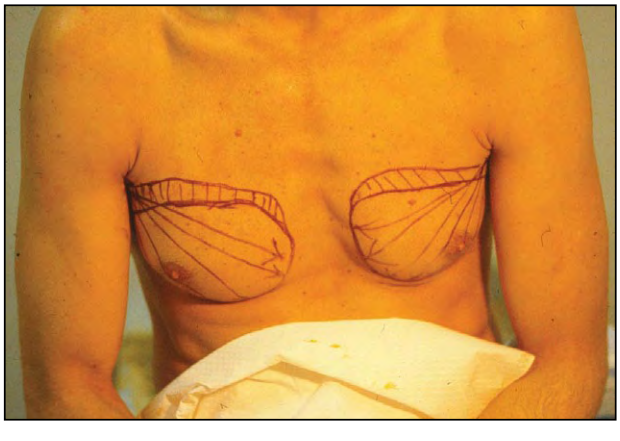

Figure 2. Selection of the breast as the donor site in a male patient with gynecomastia resulting from human immunodeficiency virus–associated lipodystrophy.

Figure 4. Demonstration of autologous fat injection in the right cheek of a patient with human immunodeficiency virus–associated lipoatrophy of the bilateral buccal cheeks.

anesthetic can be injected in a ring-block fashion around the recipient site, taking care to avoid infiltration of the recipient site and distortion of the recipient tissue. After the donor and recipient sites are anesthetized, the sites are sterilized.

After allowing 15 minutes for adequate vasoconstriction, subcutaneous fat from the donor site is harvested by hand using a 20- to 60-cc syringe attached to a 3- to 4-mm cannula (Figure 3), which is inserted through a 4- to 5-mm incision. As the cannula is advanced, the fat to be harvested is mechanically separated and the fat is suctioned as the cannula is withdrawn. It is important to remain within the subcutaneous plane and not unintentionally advance the cannula into deeper tissue compartments; this practice may be facilitated by pinching up the subcutaneous fat compartment and keeping the cannula within the pinched-up tissue. The donor site incisions then are closed with simple sutures.

After a sufficient volume of adipose tissue has been aspirated, the syringe is held or placed in a vertical position with the plunger superior to the cannula, allowing the infranatant and supernatant to separate. The infranatant is discarded by depressing the syringe plunger, which leaves concentrated adipose cells (present in the supernatant) ready to be transferred to smaller syringes for injection.

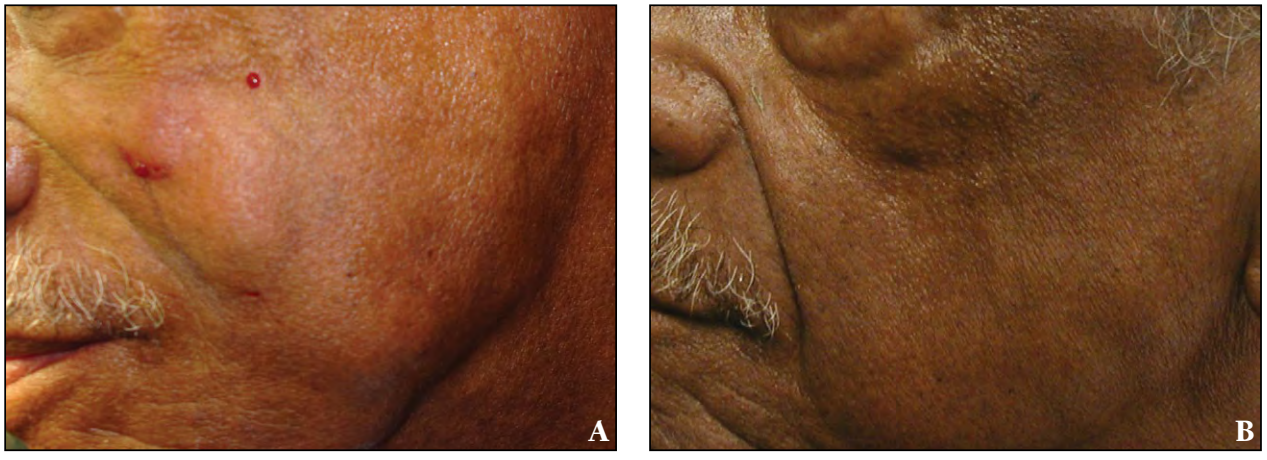

Figure 5. Following autologous fat transfer, the patient had corrected subcutaneous fat loss in the cheek (A). At 6-month follow-up, there was a loss of volume with incomplete correction of the contour defect (B).

Concentrated fat is transferred to 1- to 3-cc syringes and is injected into the subcutaneous compartment of the recipient site using a 14-guage needle (Figure 4); these recipient sites do not require closure with sutures. The appearance achieved at the end of the procedure should be the same as the ideal or goal final result (Figure 5A). Even though some volume loss is common after the procedure, it is unpredictable and varies substantially among different patients and recipient sites (Figure 5B). If notable volume loss is observed in the future, further correction may be provided.

It is important to note that we do not advocate washing, filtering, or centrifuging donor tissue, as there is no quality evidence showing that these steps contribute to improved clinical outcomes in humans. Anecdotally, we have obtained excellent short-term and long-term results using our methodology.

CONCLUSION

Autologous fat possesses many of the properties of an ideal filler, such as its lack of immunogenicity, inexpensive and abundant supply, and potentially durable results. Techniques for autologous fat transfer are quite variable among practitioners, and it remains uncertain which methodology for graft harvesting, preparation, and injection is optimal; however, our straightforward method for autologous fat transfer allows for easy maintenance of sterility and shortened procedure time as well as obviates the need to purchase specialized equipment.

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