

13 Fat Grafting to the Face as an Isolated Procedure

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Abstract

The discovery of facial fat compartments and loss of volume in these compartments with aging has been well described. Both deep and superficial fat compartments lose volume, which contributes significantly to facial aging. The purpose of this chapter is to describe the authors' approach to full facial revolumization and restoration of fat compartment volume using autologous fat.

Keywords: Fat grafting, facial fat compartments, autologous fat, facial revolumization

Key Points

- Detailed preoperative facial analysis is critical to accurately identify and correct facial asymmetry.
- Key deep compartments include nasolabial and deep malar compartments. More superficial compartments include middle malar, superior cheek, temporal, perioral, and submental (► Fig. 13.1 and ► Fig. 13.2).
- Deep facial compartments are always restored first because they are the foundation of facial volumization (► Fig. 13.3). Preoperative bony contour and distribution of fullness dictate the contour and volume of grafting.

13.1 Preoperative Steps

- The facial rejuvenation procedure begins with a thorough preoperative analysis to identify areas of volume deflation and rhytides.
- Areas of volume deflation as well as deep rhytides are marked preoperatively in the dependent position to facilitate intraoperative accuracy.
- Careful donor site assessment and estimation of volume needed for volume restoration are key to a well-planned operation.
- Discussion with the patient is important to manage expectations of donor site incision placement.
- Fat is generally harvested from the medial thigh as this area contains the highest concentration of stromal vascular cells and is associated with the least amount of pain.

13.2 Operative Steps

See **Video 13.1**.

13.2.1 Fat Harvest

- Fat is typically harvested from the medial thighs with manual, low-pressure aspiration using a 10-cc syringe and a 3-mm multihole cannula.
- To optimize cell viability, no local anesthetic or epinephrine is used before aspiration.
- The aspirate is centrifuged for 1 minute at 2,250 rpm to remove cellular debris.
- The supernatant and infranatant are discarded before transferring the fat graft into 1-cc syringes.
- Fractionated fat is developed by emulsification of centrifuged fat between two 10-cc syringes through a 2-mm filter 60 to 80 times. Fractionated fat is primarily used for periorbital injections.
- Fat is then isolated and transferred to 1-cc syringes.

13.2.2 Facial Fat Augmentation

- The cheek is approached with a 14-gauge needle allowing access for a 2-mm blunt-tip Coleman cannula. Single entry point adjacent to the alar base provides access to deep and superficial cheek compartments. Antegrade/retrograde injections always begin deep, addressing nasolabial and deep medial compartments first, followed by superficial fat compartments.
- Augmentation of the mandibular border can greatly aid in creating a more aesthetic jawline. Up to 2 mm of chin projection can be achieved with fat grafting to correct mild microgenia.
- Temporal injection is performed using a single-port access within the temporal hairline. The key principle is disruption of the temporal fusion line to allow uniform fill in a radial fashion just lateral to the lateral brow.
- Central forehead injections must correct three distinct compartments—the glabella and the two superior brow regions. Injection is performed in the subcutaneous plane using an access point either in a mid-forehead crease (for those with long forehead) or in the hairline (for those with a shorter forehead).
- Perioral rejuvenation focuses small aliquots around the commissures in a cross-radial fashion, and into the philtral columns, providing subtle but vital restoration of youthful features. The senior author does not recommend injection into the vermilion of the lips due to the unpredictable nature of fat graft take within the lip.
- Fractionated fat is ideal for the periorbital region. Injection is performed through three separate access points in an

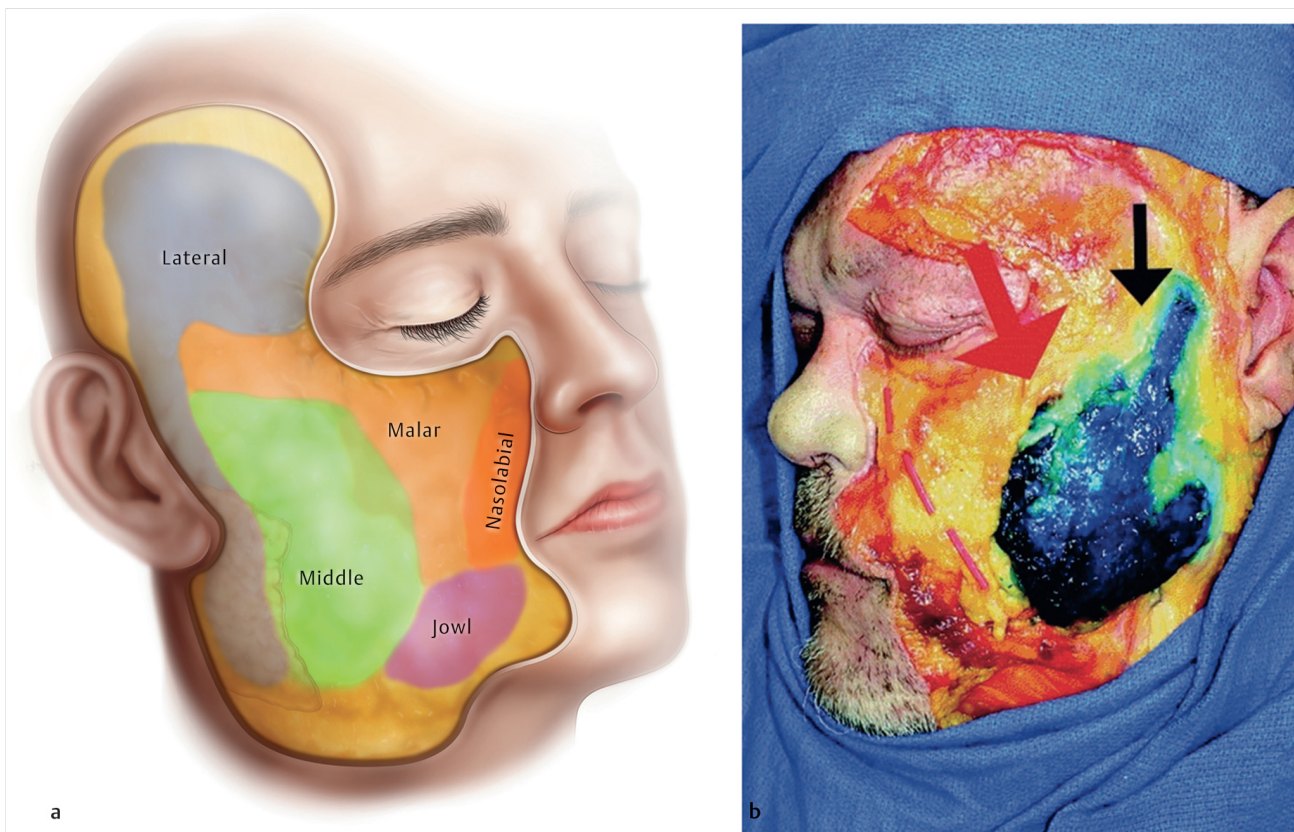


Fig. 13.1 (a) The superficial facial fat compartments are situated in the subcutaneous plane, partitioned by the terminal extensions of the retaining ligaments. The five superficial compartments of the cheek from lateral to medial are (1) lateral, (2) middle, (3) malar, (4) jowl, and (5) nasolabial. Each compartment has its own septal boundaries, a separate perforator blood supply, and its own tendency to deflation on aging. (b) Cadaver dissection of the facial fat compartments of the cheek. The inked compartment shown is the middle compartment. The red arrow marks the transition between the middle and malar compartments, which are separated by a high density of zygomatic ligaments along the lateral zygoma. (Reproduced with permission from Rohrich R, Stuzin J, Dayan E, Ross E. *Facial Danger Zones*. New York: Thieme; 2019.)

equilateral triangle configuration using a blunt cannula. The sequence of injection commences inferiorly into the cheek-orbital rim junction disrupting orbital retaining ligament in the suborbicularis plane, superiorly along medial superior orbital rim in a supraperiosteal plane, and along the lateral orbital rim and canthus.

- Fat augmentation is the ideal method for correction of deflated ear lobes. A 21-gauge needle is used for direct injection into the lobule with correction of the deformity as the end point.

13.3 Postoperative Care

- Patients rest with head elevated to 45 degrees.
- Cold compresses are applied to the face intermittently for the first 72 hours postoperatively.

- Patients are instructed to avoid strenuous activity for 2 to 4 weeks post facial fat grafting and use caution when applying glasses to avoid compression over grafted areas.

13.4 Case Example

A 57-year-old female who underwent facial fat augmentation. Autologous fat was harvested from the medial thigh and then prepared with centrifugation (2,250 rpm for 3 minutes). Facial fat compartments focused on were the deep nasolabial, deep medial malar, along with the lateral cheek compartments. Fractionated fat was used for periorbital augmentation and blending of the lower eyelid-cheek junction (► Fig. 13.4a–d).

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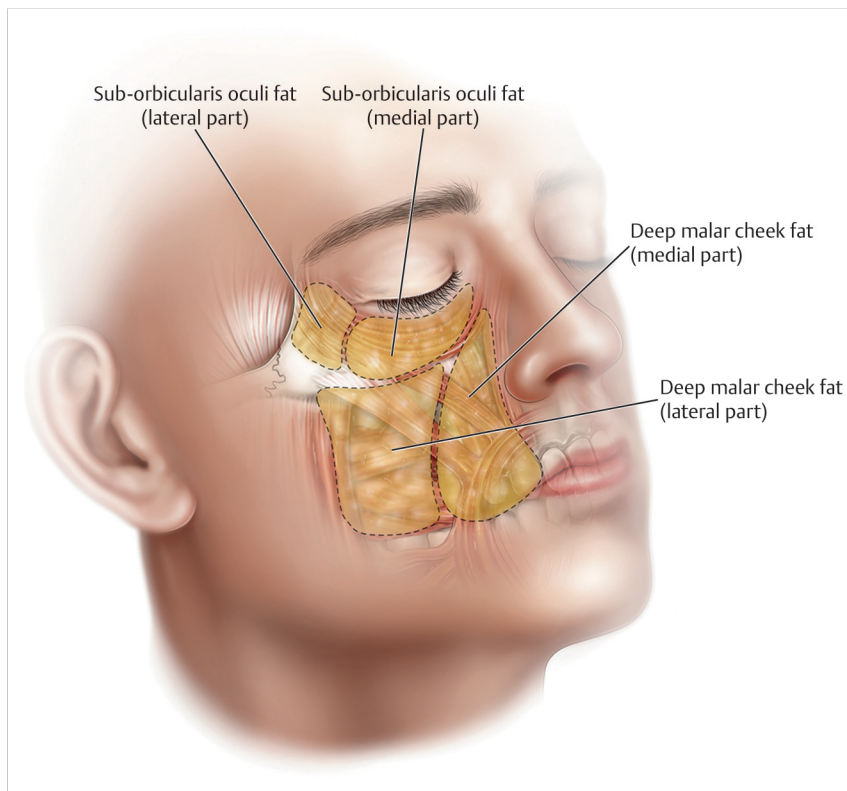


Fig. 13.2 The deep facial fat compartments are situated deep to the mimetic muscles and superficial to the periosteum of the midface. The deep fat of the lower eyelid is located just deep to the orbicularis oculi and is divided into medial and lateral components. The deep malar fat similarly is situated deep to the elevators of the upper lip and is separated into medial and lateral components. In youth, the deep periorbital fat blends with the deep malar fat to volumetrically support the lower eyelid and cheek. Aging causes deflation of deep fat resulting in the loss of anterior cheek volume and an abrupt demarcation along the eyelid–cheek junction, and it contributes to the formation of the infraorbital V-deformity. (Reproduced with permission from Rohrich R, Stuzin J, Dayan E, Ross E. *Facial Danger Zones*. New York: Thieme; 2019.)

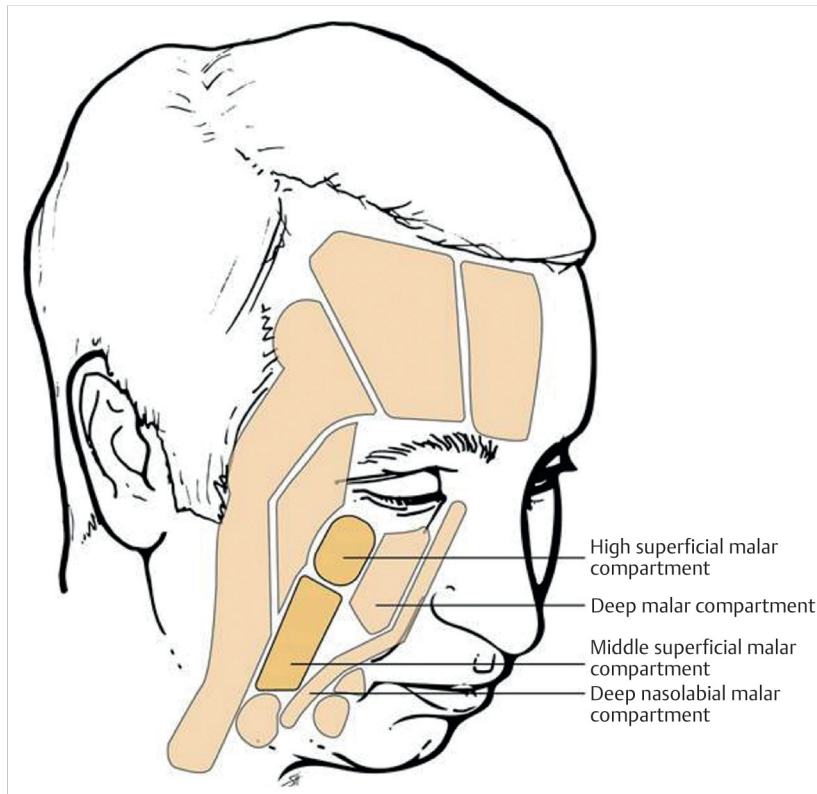


Fig. 13.3 Four key midfacial fat compartments to address with fat grafting in facial rejuvenation procedures. (Reproduced with permission from Schultz K, Raghuram A, Davis M, et al. *Fat grafting for facial rejuvenation*. *Semin Plast Surg* 2020;34(1):30–37.)



Fig. 13.4 (a–d) A 57-year-old female who underwent facial fat augmentation. Autologous fat was harvested from the medial thigh and then prepared with centrifugation (2,250 rpm for 3 minutes). Facial fat compartments focused on were the deep nasolabial, deep medial malar, along with the lateral cheek compartments. Fractionated fat was used for periorbital augmentation and blending of the lower eyelid–cheek junction.

13.5 Conclusion

Volume restoration with autologous fat of the facial fat compartments is essential to facial rejuvenation. It can be used independently or as an adjunct to rhytidectomy and blepharoplasty. Accurate preoperative facial analysis, knowledge of fat compartment anatomy, and precise intraoperative techniques are needed for successful outcomes.

Further Readings

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