The Hinge Hypothesis

Based on our observations we hypothesized that facial fat atrophy could be caused by a pure mechanical factor; for example, a piece of paper will show atrophy in the region where it is folded over and over again for a certain time interval. In this context we introduced the *hinge hypothesis of facial fat atrophy*[5] (Figs. 1-4 and 1-5). This hypothesis postulates that fat cells atrophy under high pressure. This can be observed clinically in skin overlying tissue expanders, in which subcutaneous fat atrophy is seen in the expanded flap.[6] This also occurs in the subcutaneous tissue of the skin under an abdominal belt. The only periph-

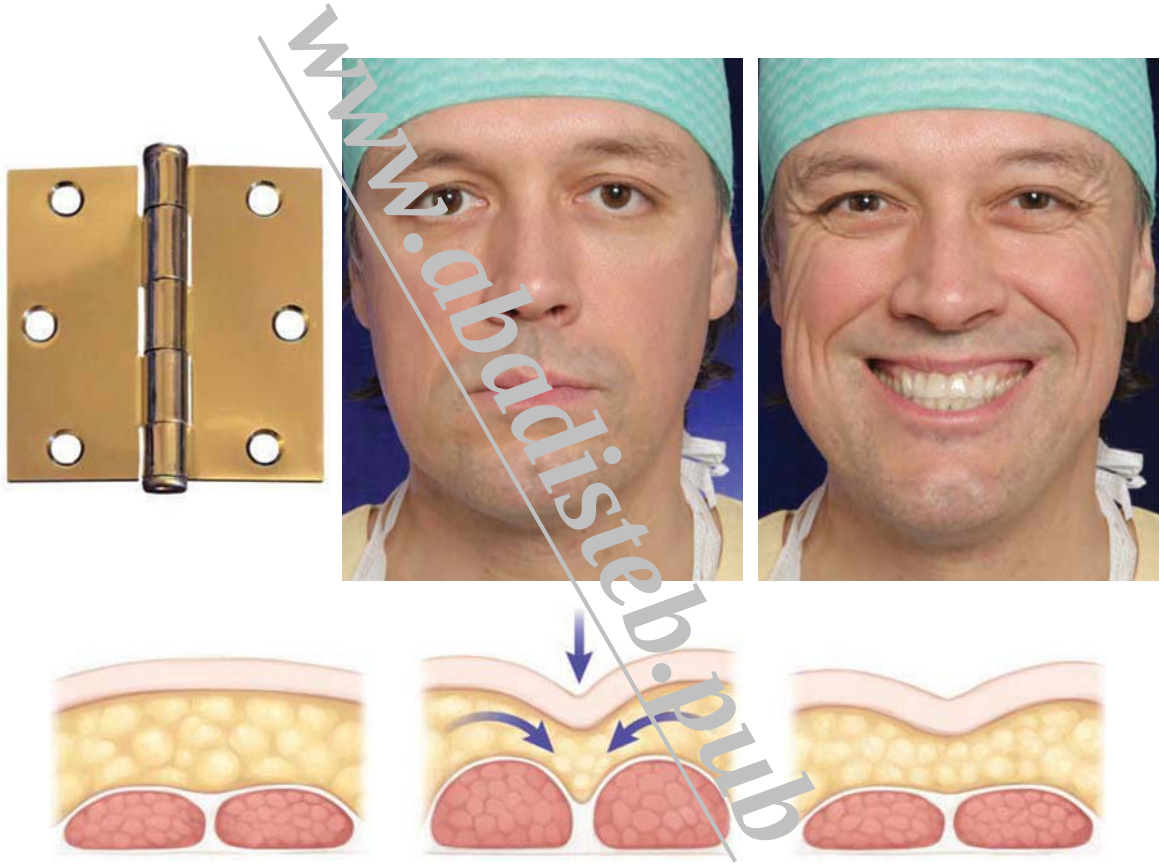

Fig. 1-4 Deep facial grooves are mainly present in areas of repeated facial animation, such as occurs with crow's-feet, orbitomalar grooves, nasolabial folds, and a marionette groove. With time these folds become permanent as a consequence of atrophy of the underlying fat tissue. These repeated movements mimic the action of a hinge and thus the *hinge hypothesis of fat atrophy.*

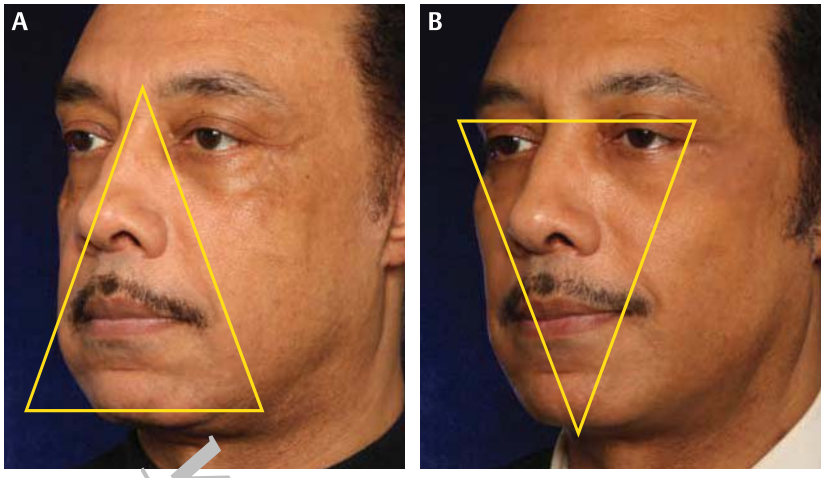

Fig. 1-10 **A,** This 62-year-old man presented for a secondary facelift 10 years after a primary superficial myoaponeurotic system (SMAS) facelift. **B,** One year after an extended minimal access cranial suspension lift, temporal lifting, and fat grafting of the upper eyelid sulcus, malar area, nasolabial folds, and marionette grooves, the main rejuvenating factor in the correction is centrofacial volume restoration by microfat grafting, which has turned the triangle of age into the inversed triangle of youth.

Fig. 1-11 **A,** This 69-year-old patient had a lifting procedure combined with microfat augmentation of the periorbital and midface region. In older patients the importance of correcting midfacial volume depletion cannot be underestimated. **B,** The patient at approximately 35 years of age. **C,** The result at 4 years postoperatively, with a stable replenishment of the midface area.

The 46-year-old woman in Fig. 5-15 had a MACS lift with microfat grafting in the malar area. She had an acne scar on her right cheek that was treated with subcision, deep blunt-cannula microfat injection, and SNIF in the intradermal level. The 1-year follow-up result shows the correction of the sagging by the lifting procedure, the replenishment of the midface and eyelids by the blunt-cannula microfat grafting, and the improvement of the acne scars in the right cheek by the sharp needle intradermal fat grafting treatment with subcision.

Fig. 5-15 *Left,* Preoperatively at age 46 years. *Right,* At 1 year postoperatively.

Postoperative Results

The results are presented 1 year postoperatively (Fig. 7-33). This case illustrates the power of centrofacial rejuvenation, because no lifting procedure was performed. Significant change in the emotional expression of the face was achieved by altering the periorbital and perioral region. Compared with the picture taken at age 25 years, replenishment of the upper eyelids, correction of the malar volumes with blending of the eyelid-cheek junction, shortening of the vertical

Fig. 7-33 **A,** At 25 years. **B** and **D,** At 1 year postoperatively. **C,** Preoperatively at age 68 years.

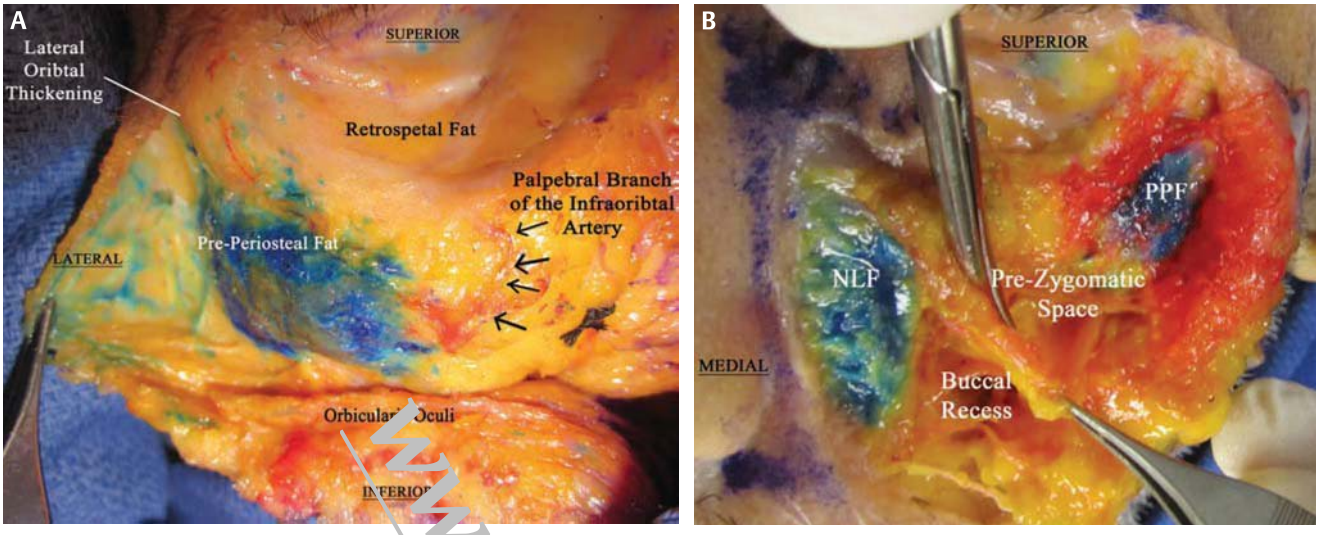

Fig. 8-3 Cadaver dissections. **A.** The preperiosteal fat pad has been percutaneously dyed with methylene blue. The fat compartment lies on the maxilla in the floor of the prezygomatic space. The palpebral branch of the infraorbital artery is marked with *arrows.* **B,** The preperiosteal fat pad *(PPF)* lies on the maxilla in the floor of the prezygomatic space. The nasolabial fat pad *(NLF)* is labeled for reference. (From Surek CC, Beut J, Stephens R, et al. Pertinent anatomy and analysis for midface volumizing procedures. Plast Reconstr Surg 135:818e-829e, 2015.)

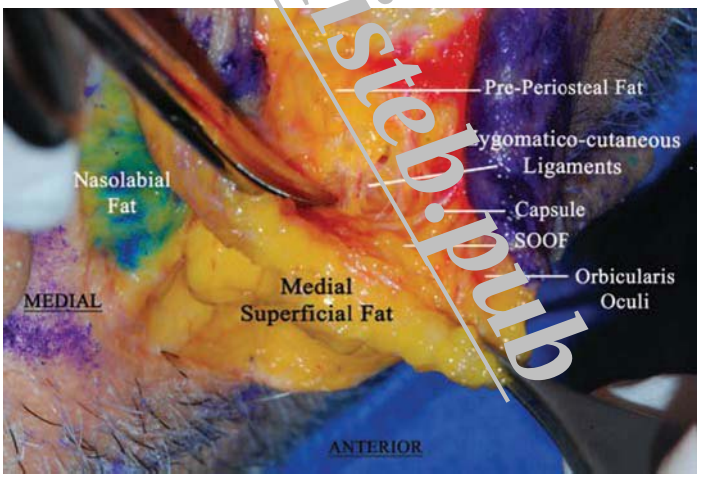

Fig. 8-4 Bird's-eye view of a cadaver dissection. The layers of the upper midface are labeled. (*SOOF,* Suborbicularis oculi fat.) (From Surek CC, Beut J, Stephens R, et al. Pertinent anatomy and analysis for midface volumizing procedures. Plast Reconstr Surg 135:818e-829e, 2015.)

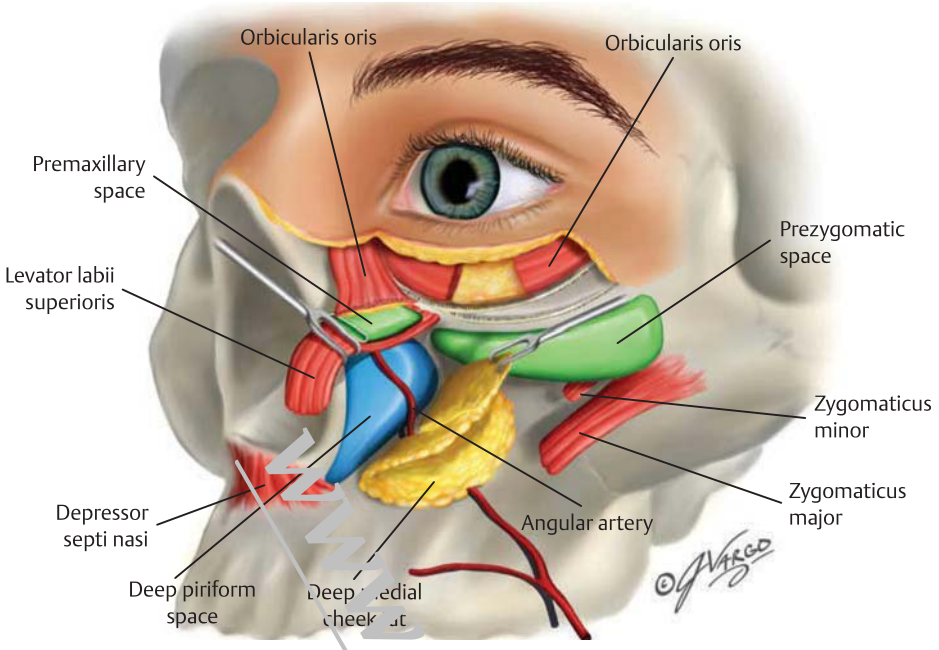

Fig. 8-8 The deep piriform space and important adjacent structures. (Copyright James Vargo.)

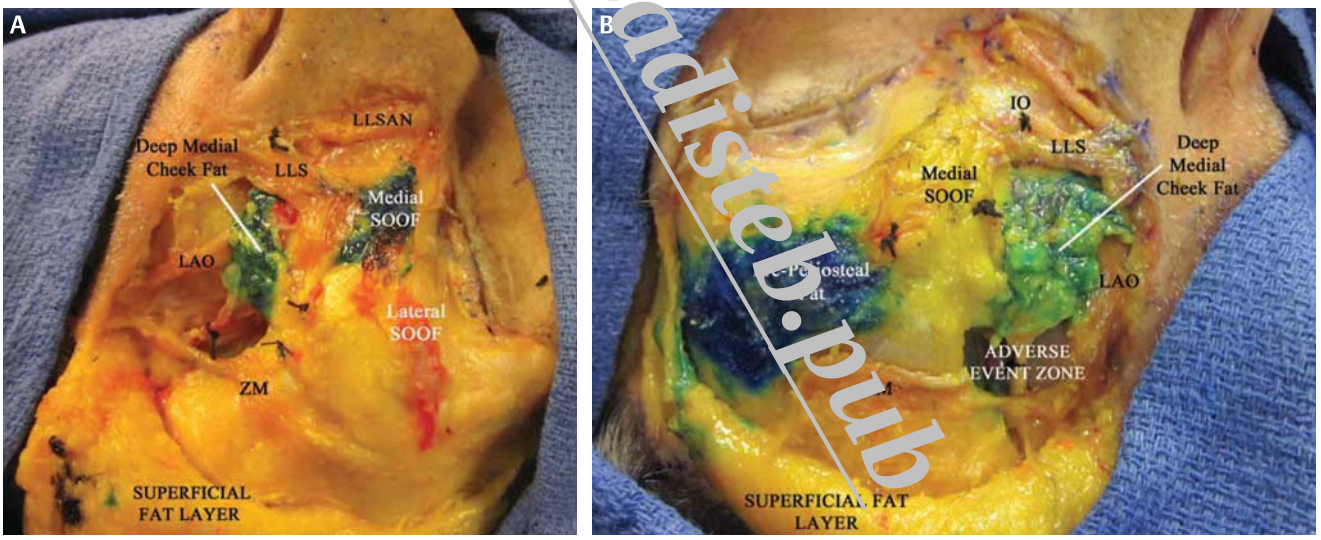

Fig. 8-9 **A,** The superficial fat compartment layer has been reflected, revealing the deep medial cheek fat and medial suborbicularis oculi fat *(SOOF),* stained with methylene blue. The zygomaticus major *(ZM),* levator anguli oris *(LAO),* levator labii superioris *(LLS),* and levator labii superioris alaeque nasi *(LLSAN)* are indicated. Hyaluronic acid filler homogenized with red dye has been injected into the lateral SOOF overlying the preperiosteal fat compartment. The orbicularis has been removed to demonstrate the floor of the prezygomatic space. **B,** The superficial fat compartments have been retracted. The preperiosteal fat is stained with methylene blue, and remnants of lateral SOOF are noted resting on the capsule of the preperiosteal fat. The loose areolar consistency of the deep medial cheek fat is noted lateral to the levator anguli oris (cut). A cavernous communication into the buccal recess denotes a deep injection adverse-event zone. (*IO,* Infraorbital nerve.) (From Surek CC, Beut J, Stephens R, et al. Pertinent anatomy and analysis for midface volumizing procedures. Plast Reconstr Surg 135:818e-829e, 2015.)

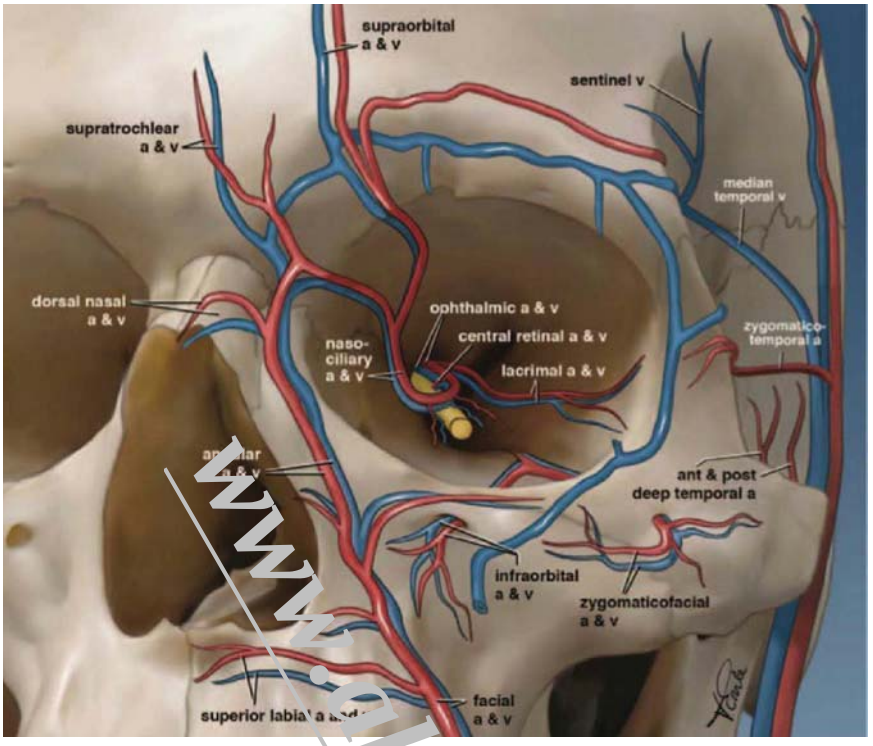

Fig. 10-1 Vascular anatomy of the upper face showing the possible points of connection between the facial artery (external carotid system) and the ophthalmic artery (internal carotid system). (*a,* Artery; *ant,* anterior; *post,* posterior; *v,* vein.) (Courtesy Jean Carruthers.)

Fig. 10-2 Anatomic dissection of the nose and its soft tissue layers. The skin envelope has already been removed, and the fibromuscular layer has been split in the midline and reflected to show the underlying osteocartilaginous framework. No blood vessels lie beneath the fibromuscular layer. All major blood vessels lie on its superior surface.