Facial Esthetic Surgery



CHAPTER

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CHAPTER OUTLINE

FACIAL AGING
SURGICAL PROCEDURES
- Blepharoplasty
- Forehead and Brow Lift
- Rhytidectomy
- Septorhinoplasty
- Skin Resurfacing
- Facial Liposuction
- Cheek Augmentation
- Chin Augmentation or Reduction
- Otoplasty
- Lip Augmentation or Reduction
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- Scar Revision
- Hair Restoration

SUMMARY

Patients are increasingly seeking procedures that enhance their appearance for personal and professional reasons. Esthetic oral and maxiilofacial surgery is often included in a comprehensive treatment plan to complement restorative, prosthetic, and orthodontic treatment. Dental treatment plans, especially ones involving cosmetic therapy, arc enhanced if denlists remain aware of the wide variety of esthetic surgical options available to patients. Orthodontists planning orthognathic surgery complete a careful evaluation of facial proportions that frequently includes the diagnosis of external nasal deformities and other hard and soft tissue abnormalities. Prosthetic rehabilitation often involves attempts to increase support to the perioral region and can be enhanced with fadal rejuvenation procedures. Cosmetic restorative dentistry may provide (he finishing touch to cosmetic surgical treatment. Pediatric dentistry patients with traumatic scars or congenital deformities can also be helped. OraJ and head and neck pathology patients with skin cancers can be treated, reconstructed, and restored to both adequate function and .socially acceptable appearance.

Advances in medicine and nutrition, combined with increased public awareness of personal health care, enable patients to live longer, healthier, and more active lives. However, social pressure to maintain a youthful appearance as one ages encourages more people each year to undergo some form of esthetic enhancement. This trend is evident in members of the "baby boomer" generation, now in their 40s and 50s, who have grown increasingly interested in these procedures.

Research from the American Academy of Cosmetic Surgery indicates that the number of patients undergoing esthetic procedures increased dramatically between 1990 and 2000. Body liposuction remains the most popular procedure, with a tenfold increase over the last decade. The number of facial procedures, such as eyelid rejuvenation, face-lifts, and facial skin rejuvenation, has also increased dramatically (Table 26-1).

TABLE 26-1

Cosmetic Facial Procedures in the United States (1990-2000)

Procedure	1990	2000
Eyelid surgery	82,520	465,177
Face-lift	36,981	244,370
Forehead lift	26,436	145,881
Rhinoplasty	89,615	155,052
Liposuction	71,632	672,793
Chemical peels	n/a	1,145,631
Laser skin resurfacing	n/a	300,572
Hair restoration	57,714	222,497
Malar augmentation	9,570	21,481
Otoplasty	6,135	26,881
Botulinum injections	n/a	737,787

Courtesy American Academy of Cosmetic Surgery, 2001,

Women seeking esthetic surgery outnumber men approximately 9:1. However, men are increasingly seeking esthetic procedures, including eyelid and forehead rejuvenation and hair restoration. As expected, the popularity of specific procedures is age related. Patients under 35 years of ago usually desire liposuction, rhinoplasly, chemical peels, and laser skin resurfacing. As patients age into (heir 40s, 50s and 60s, they seek liposuction, eyelid and forehead rejuvenation, face-lifts and chemical or laser skin resurfacing.

Surgical technical advances also contribute to I he growth of esthetic surgery. New techniques and technical advances in equipment reduce surgical risks, recovery time, and incision visibility. Technical in nova lions include endoscopic or minimally invasive procedures that use small incisions, liposuction with barely noticeable access sites, and lasers that enhance hemostasis and allow precise control over depth of skin removal.

Appearance matters mere than many wish to admit, and interpersonal react inns are often influenced by appearance. Improved self-confidence occurs in many patients who have undergone successful esthetic surgical and cosmetic dental procedures. It is common Lo notice patients altering their wardrobe, makeup, find hairstyle after surgery; patients often are delighted in how others respond to their new image. However, it is important during the esthetic surgery consultation foi the surgeon to attempt to determine if the patient's desires for surgery are based on *personal* motivation, without undue outside Influences or unrealistic expectations. Patients with external pressures and unrealistic expectations art more likely to be dissatisfied with the treatment outcome despite successful technical results.[1,2]

FACIAL AGING

Facial aging involves the changes to the skin itself and resultant effects on the skin's appearance and those of the underlying soft tissues. Natural aging combined with sun exposure produces a wide range of skin changes. Natural aging results in loss of skin elasticity and collagen, melanocyte pigmentations, and fat atrophy. Sun exposure adds photo aging caused by ultraviolet light Ultraviolet light from sun tanning damages the skin and eventually causes a wrinkled, pigmented, and weathered appearance. .Solar radiation also leads to an increased incidence of skin Cancers. Gravitational changes on the skin and underlying tissues cause deep forehead lines, drooping brows, eyelid skin laxity and puffiness, loss of cheek roundness, and sagging neck and jaw lines (Fig. 26-1).

Although aging is an individual phenomenon, many factors can influence the appearance and rate of aging. 'These include general health, sedentary life style, sun exposure, genetic influences, nutritional balance, alcohol consumption, and cigarette smoking. Cigarette use, with its vasoactive effects of nicotine, accelerates skin aging and reduces the body's ability to repair wounds. The vasoactive effects can lead to poor healing in some esthetic surgical procedures.[3,4]

SURGICAL PROCEDURES

The procedures described in the following sections arc presented as isolated surgical techniques. However, in practice, several of these are often combined and performed during a single surgical appointment.

Blepharoplasty

Blepharoplasty (i.e., eyelid rejuvenation) is one of the most common facial esthetic procedures performed on women and men. Aging eyelids exhibit a puffy, drooping, and baggy appearance. These are the result of eyelid skin laxity, orbicularis muscle hypertrophy, and orbital fat herniation out into the eyelids (Fig. 26-2}. Redundant and folded skin of the upper eyelids is referred to as dermatochalasis. When extreme, the folded skin can extend beyond the eyelash margin and create a mechanical block to vision. Patients will typically notice this later in the day when their "eyes are tired." This sagging, redundant, and folded upper eyelid skin over the lashes is termed *hooding*. The main cause of baggy lower eyelids is gradual thinning and laxity of the fine collagenous orbital septum. This structure normally separates the internal orbital contents from the eyelid. Over time this curtainlike structure bows outward like a sail, then the intraorbital fat begins to herniate into the lower eyelids. The upper eyelid has two fat pads and the lower has three (Fig. 26-3), Besides the pouchlike filling of the lower eyelid, the outward shift o\ the orbital fat can create a subtle posterior settling of the globe (i.e., eyeball). This adds lo the appearance of sunken in, tired, and baggy eyes.

During a blepharoplasty procedure, the surgeon removes excess skin and orbicularis oculi muscle and an appropriate amount of protruding orbital fat behind the; bulging orbital septum (Fig. 26-4). The upper eyelid incision is hidden in the upper lid crease. The lower-eyelid surgery can be performed in two ways: (1) with an Incision just below the eyelashes (i.e., subciliaryl or (2) from inside the lower lid (i.e., transconjunctival) (Figs. 26-5 and 26-6), With the transconjunctival approach, the surgeon removes fat but does not excise any skin, and relies

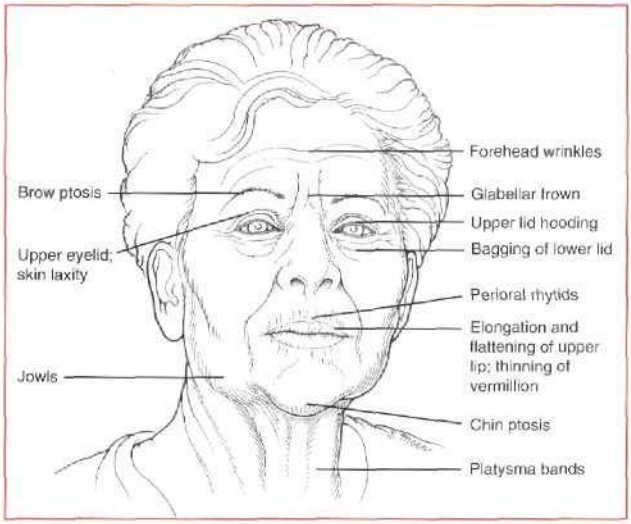


FIG 26-1 Facial changes associated with aging.

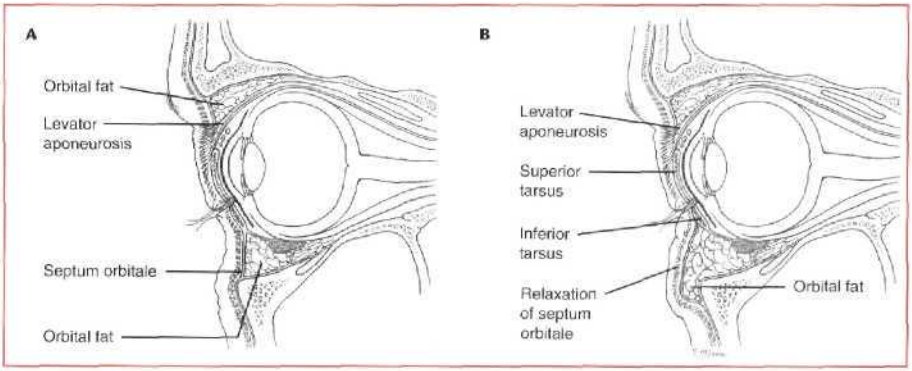


FIG. 26-2 A, Normal sagittal view of the orbit and eyelids. B, With aging, orbital fat protrusion extending out. into the lower eyelids. This is due to a lax lower orbital septum. This gives a baggy appearance of the lower lids.

on a skin-lightening procedure, such as chemical peel or laser resurfacing, to treat any remaining skin laxity.

Recovery time from eyelid surgery is usually 7 to 10 days (Figs. 26-7, .4 and *B*).[5]-(' Blepharoplasty can result in complications, which Includes excessive or inadequate skin removal, excessive or inadequate fat removal, dry-eye sensation, and intraorbital bleeding with fare but possible blindness.

Forehead and Brow Lift

A drooping forehead results in drooping eyebrows (i.e., brow ptoMs), lateral upper eyelid fullness or hooding, and accentuated upper eydid bagginess. Kernoving eyelid skin with blepharoplasty alont does not adequately address this problem if the brows are also ptotic. The normal or youthful eyebrow has the lower edge positioned at or slightly above the palpated bony supraorhital rim. The

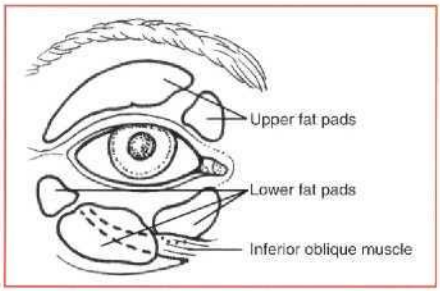


FIG. 26-3 Orbital fat pads of the right eye. Upper: Medial and central, *lower.* Medial, central, and lateral.

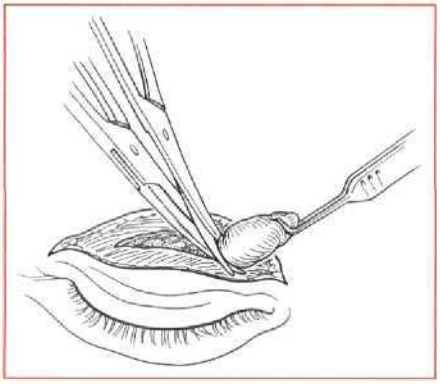


FIG. 26-4 Clamping and excision of the right upper medial fat pad.

ideal esthetic **female** brow gently arches above the orbital rim lateral to the iris (Fig. 26-8). The peak of the brow's arch should be aligned over the junction of the lateral edge of the iris and the sclera. Women often pluck their brows to reproduce this pattern. Male brows are generally flatter without an arch. Elevation of the brows to a rejuvenated position may eliminate or reduce the need to remove upper eyelid skin with blepharoplasty. Often a forehead and **brow lift** and **upper lid blepharoplasty** are **combined** during a single operation. Brow lifting reduces upper lid hooding by elevating the brow. Additionally brow **lifting** reduces forehead and nasal bridge creases.

Most brow elevation surgeries are presently performed endoscopically with video camera assistance. **This** approach uses multiple **small** scalp incisions for access. After the scalp is undermined and mobilized, the forehead soft tissues are suspended and anchored in their new position (Fig. 26-9). A continuous full-thickness scalp incision within or at the hairline (i.e., pretrichial approach) is still used when required, such as with extreme brow ptosis or when one does not wish to elevate the hairline (Fig. 26-10). Care is taken to prevent injury to the scalp's sensory nerves (i.e., supraorbital, supra**trochlear)** and facial nerve branches supplying motor innervation to the eyebrow region.

Postoperative recovery is 7 to 10 days (see Fig. 26-7, *A* and B).[7] Possible complications of brow lifting include asymmetric appearance, paresthesia, facial nerve deficits, and excessive lifting resulting in a "surprised" look.

Rhytidectomy

Rhytids are skin folds, creases, or wrinkles. Rhytids can be referred to as coarse or fine depending in the depth and anatomic cause. Rhytidectomy, or "removal of skin wrinkles/' is more commonly called *face-lift* surgery. This procedure rejuvenates sagging neck skin, fowls (i.e., sagging skin and fat posterior to the **labiomental** crease), **nasolabial** folds, and cheek laxity. Face-lift surgery can

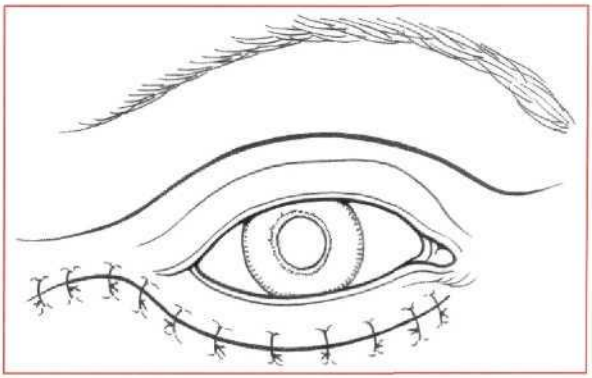


FIG. 26-5 Right upper bleplwopfasty incision and sutured lower subciliary incision.

result in an elevated cheek contour and a refined mandibular neckline.

Numerous techniques are used for face-lift surgery. The most common technique uses a type of lazy S incision from the temple, around the car, and. into the posterior hairline (Fig. 26-11). The facial and neck skin is dissected and elevated in an upward and backward direction, and the underlying fascial layers are tightened (Fig. 26-12 on page 610). The facial nerve must be protected during the dissection of the various layers (Fig. 26-13 on page 610).

Frequently, the submuscular aponeurotic system (SMAS) layer is either partially resected or suspended superiorly (or both) and posteriorly to provide additional and longer-lasting effects. The excess .skin is removed during wound dosure (Fig. 26-14, *A* to *D,* on page 611). To enhance neck contours, face-lift surgery often includes submental liposuction and platysma muscle tightening.

Recovery from face-lift surgery takes about 14 days.[y] Potential complications include hematoma, facial nerve injury, and hypertrophic scar formation.

Septorhinoplasty

Nasal surgery, or rhinoplasty, can alter a patient'? nasal appearance and correct nasal obstructive symptoms. When the nasal septum is also modified the procedure is called a septorhinoplasty. Appearance changes may include modifying the nasal profile, the nasal bridge width, removing a dorsal hump, or improving nasal tip definition (Fig. 26-15 on page 612). Patients of all ages may undergo nasal surgery. Younger patients usually seek to balance their nasal proportions with their existing facial features and eliminate nasal obstructive symptoms. Older patients often have rhinoplasty to rejuvenate a drooping nasal profile. With aging the upper lateral cartilages can separate and drift away from the nasal bones above them, causing an apparent nose lengthening and drooping nasal tip. This occurs more commonly in men.

Nasal surgery is performed mo.st often with all internal nasal incisions (Fig- 26-15 on page 612). Mure extensive nasal surgical procedures may require an "open" approach, which uses an additional eolumelUr skin

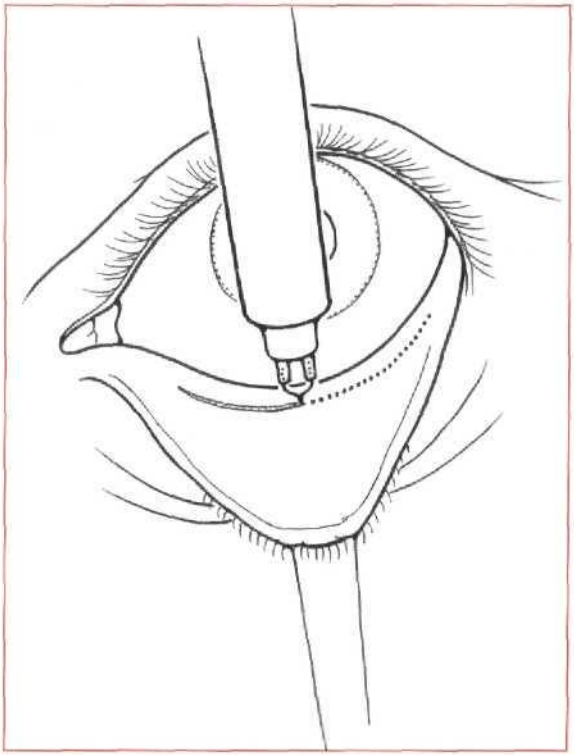


FIG. 26-6 Left lower transconjurlctival bleparopiasty incision with *a* hand **heJd** cautery.



FIG. 26-7 A, PreoperaHve frontal view of a middle-aged female with brow ptosis and mild dermatochalasis ol her upper lids. B, After upper lid bl^harnplasties and endoscopic forehead and brow lift, the patient shows improved definition to the upper lid crease and a more rested, youthful appearance.

extension incision (Fig, 26-17 on page 612). During nasal surgery, the nasal tip cartilages arc refined and the dorsal profile is improved with hump reduction and thinning. This is accomplished with a combination of trimming the nasal cartilages and shaping of the nasal bones, with rasping and bony osteotomies (Figs. 26-18 and 26-19 on page 613). Nasal dressings postoperatively include an external supportive splint and internal packing as required. These dressing? arc removed in 3 to 7 days depending on the surgery.

Initial recovery is seven to 10 days, with final results more fully appreciated in about .^ months (Fig. 26-20, *A* and *B*, on page 613).[1j]10 Potential complications include bleeding, asymmetry, infection, septal hematoma, and over- or undercorrection.

Skin Resurfacing

Skin resurfacing eliminates wrinkles, pigmentary discoloration, and significantly tightens the skin, resulting in a more youthful appearance. Patients may begin to notice perioral rhytids during restorative or prosthetic treatment. They may complain lo their dentist that anterior prosthetic restorations do not adequately fill out their lips. Women may remark that their lipstick "bleeds" or runs outward into the skin of the lips. This occurs in the

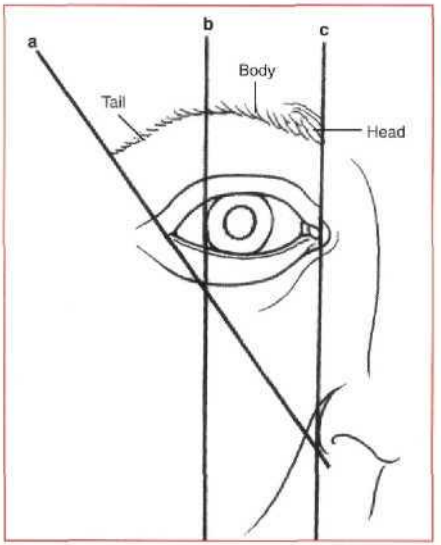


FIG. 26-8 Right female eyebrow. The highest part of arch of brow occurs within the body *(along line B),* which transects the lateral limbus of the eye.

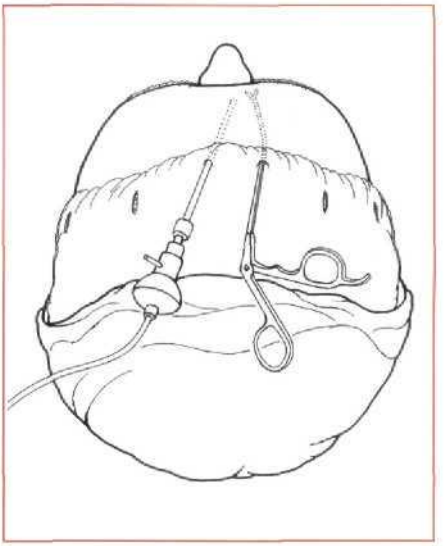


FIG. *26-9* Endoscopic forehead surgery with lighted endoscope *(left)* and scissors inserted on right.

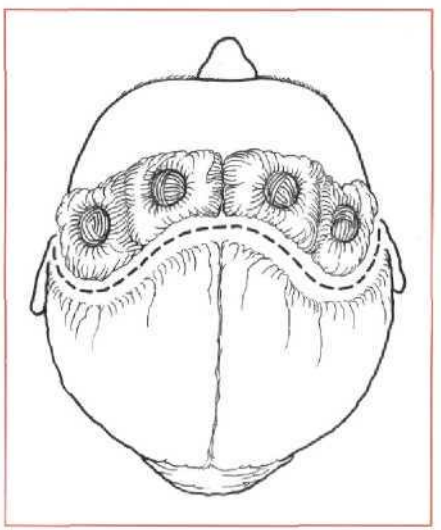
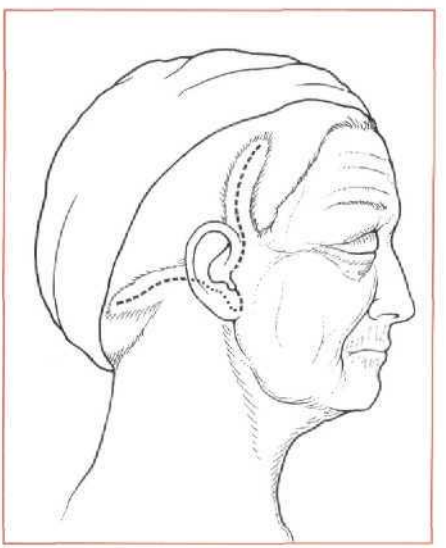


FIG. 26-10 The coronal forehead lift incision is placed several centimeters behind the frontal hairline.



FIG, 26-11 Incision line for face-lift.



FIG. 26-12 Face-lift dissectfon: Rfght posterior view of supine patient. A malleable retractor and tissue rake are seen adjacent to the ear.

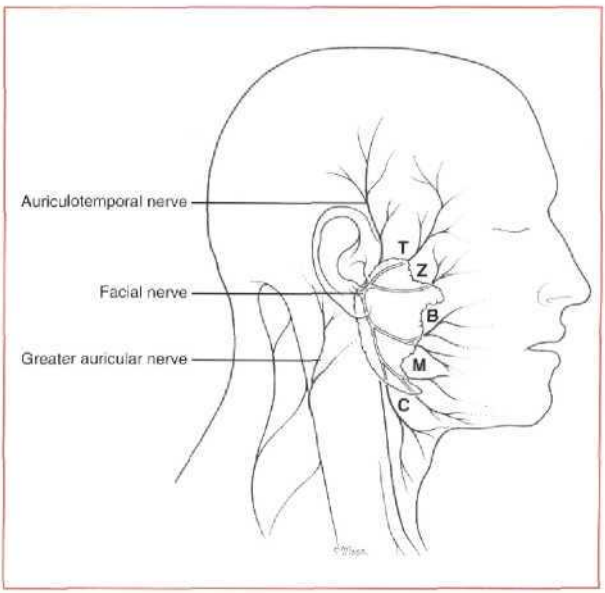


FIG. 26-13 Nerves associated with face-lift surgery. Motor: facial nerve and branches—temporal *(T),* 7ygomatic *(Z),* buccal *(B),* marginal mandibular *(M),* and cervical *(C).* Sensory: auricjlotemporal and greater auricular nerve.



FIG. 26-14 Facelift surgery. A, Preoperative frontal view. B, Postoperative frontal view. C, Preoper-^live lateral view. *H,* Postoperative lateral view.

fine channels of the vertical perioral rhytids. The dentist is limited by the supporting jaws and occlusal relationships as to how far the underlying frame (i.e., teeth) can stretch and support the overlying canvass (i.e., lips). Although excision methods such as blepharoplasty or face-lift eliminate skin excess anil contours, .skin resurfacing treats the fine rhytids or wrinkles. Skin resurfacing is often performed after forehead and face-lifts and blepharoplasties to achieve even more dramatic results.

Skin resurfacing collectively refers to chemical peek, derm a bra si on, or laser skin resurfacing. Chemical peels use agents such as trichloroacetic acid (TCA), glycolic acid, or phenol. These chemicals cause the old superficial skin lo peel off as if it were sunburned. This occurs after the new skin has reformed beneath the more superficial sloughing layers. Dermabrasion is a mechanical sanding performed with a diamond wheel or small wire wheel. Laser resurfacing vaporizes the skin and superficial layer of the dermis, usually with a carbon dioxide or erbium laser. Dennabrasion and laser have the advantage of reeontouring irregular skin surfaces, such as traumatic or acne scars.

The laser or mechanical dermabrader typically penetrates from the papillary to midreticular layer of the skin (Fig. 26-21). The newly formed epithelium arises from the pores of the preserved deeper piloscbaccous units (i.e., hair, sebum, and sweat glands). The skin from these areas sprouts outward over the fresh, smooth, tightened surface. Surgeons frequently combine peeling with cither laser or dermabrasion on the same patient.

After the skin-resurfacing procedures are completed, various facial dressings are used to protect the skin during healing. The skin is healed or resurfaced in 5 to 14 days, depending on the method used and ihc depth of the treatment. The new, more youthful skin is tighter, smoother, and less irregularly pigmented. The tightening is due to new collagen formation within the dermis. The fresh skin's color progresses from red to pink and returns to normal as it fully matures in 2 to 3 months. Makeup can be used after initial healing to camouflage the fading erythema.

Possible complications of these procedures include hyperpigmentation with postoperative sun exposure.,

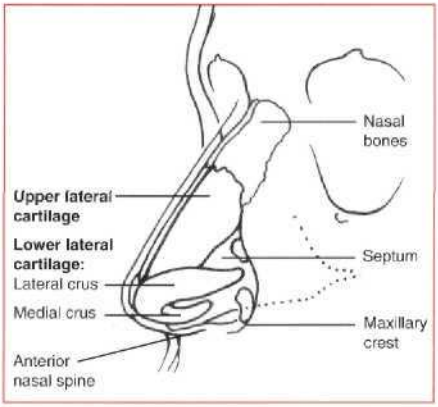


FIG. 26-15 Nasal anatomy.

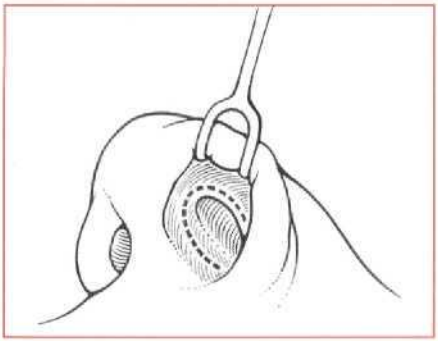


FIG. 26-16 Intercartilaginous incision of the left side.



FIG. 26-17 Open rhinoplasty wilh nasal speculum in place showing nasal septum and lower lateral cartilages.

hypopigmentation, hypertrophic scarring, and infection (Fig. 26-22, *A* and *S*).[012]

facial Liposuction

Facial liposuction is uscd to reduce submental and neck fullness. These excessive fat deposits are typically located superficial to the platysma. This can be detected by having the patient "tense their neck" or attempt to move theil chin interiorly against finger resistance then gently grasping the submental area or neck foid with the thumb and forefinger (i.e., pinch test), The purpose of liposuction is to remove the underlying coalesced fatty deposits allowing the overlying skin to rectrape over a newly formed neckline. This occurs partially because of the direct removal of fat. Further "shrinkage" of fat deposits occurs as a result of circumferential scarring of the fat as a result of instrumentation with the suction cannula during fat removal. Younger patients often have facial liposuction as a single procedure because they

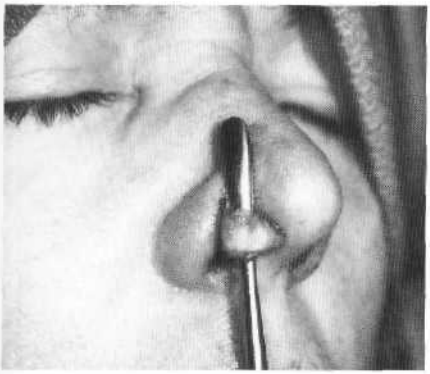


FIG. 26-18 Delivery of right lower lateral *curtilage* for trimming in a "dosed rhinoplasty."

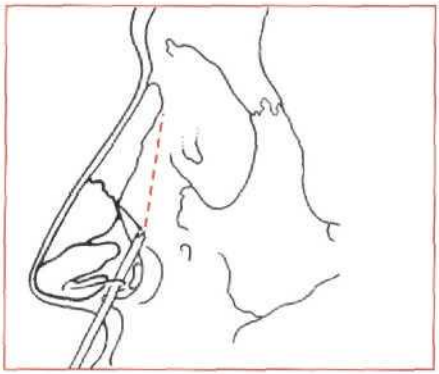
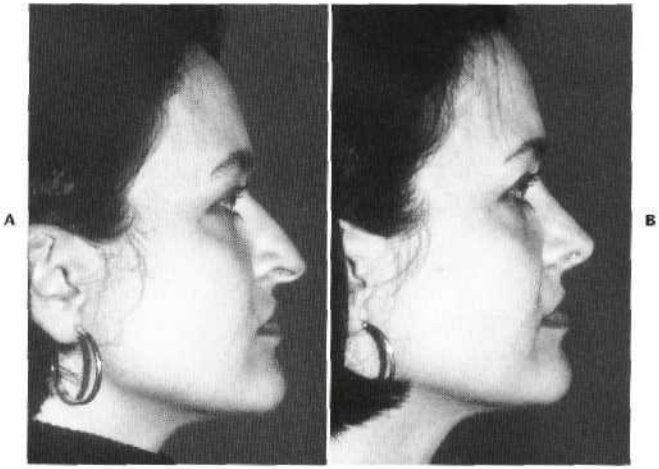


FIG. 26-19 Lateral nasal osteotomy *(dotted tine)* pcrlormed with an O5teotome from the bony piriform rim to the proximal edge of th£ nasal bone. The nasal bones are then infractured, whích narrows the nasal dorium.



FIG, 26-20 Rhinoplasty patient A, Preoperativc. B, Postoperative.

have good skin tone that redrapes and adapts well Older patients with skin laxity can also benefit from facial liposuction, but often also need additional face-lift and neck-lift surgery to tighten the skin or a platysmal muscle plication {i.e., corsetlike tightening by suturing techniques) to repair or tighten a central platysmal dehiscen.ee. Only small incisions are necessary under the chin or behind the car lobes to reach the entire neck. The fat is removed using a tubular canula under vacuum suction (Fig. 26-23),

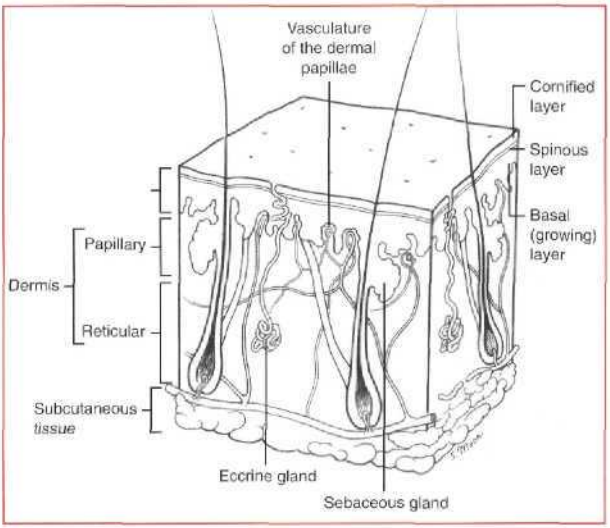


FIG. 26-21 CroiS-sectional anatomy of the skin layers.

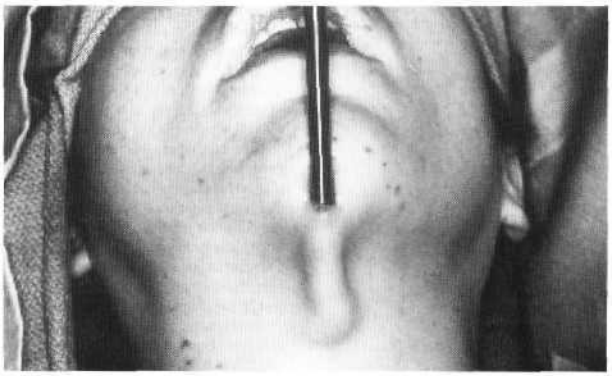


FIG. 26-22 Laser skin resurfacing. The patient had acne scarring and rough skin texture, A, Preoperative. B, Postoperative,

After surgery a tight pressure dressing is applied to eliminate dead space and allow overlying skin to closely adapt to underlying soft tissue. Surgical recovery is 7 to 10 days, hat 3 to fi months are needed for Ihe final results to be fully appreciated. This delay is due to the gradual process of remaining fat atrophy, remodeling, and skin tightening (Fig. 26-24, *A* and B).[13,14] Potential complications include uneven contours, infection, or marginal mandibular nerve injury (i.e., facial nerve motor branch).

Cheek Augmentation

Cheek augmentation provides for higher, more defined, prominent cheekbones and more youthful cheek fullness. Cheek augmentation is usually accomplished using a synthetic or allaplastic implant placed through a maxillary vestibular incision. The mafar or cheek implants are supplied precontoured by the manufacturers and available in varying sizes, thicknesses, and configurations (Fig. 26-25). These can also be custom made from three-dimensional (3-D) models of Ihe patient's facial



FIG, 26-23 Submental liposuction with *a* canula.



FIG. 26-24 Submerrtal ItpQSUCtion. A, Preoperative profile view. B, Postoperative profile view.

bone structure made from reconstructed computerized tomography (CT) scans. The surgeon selects the implants based on the patient's existing anatomy and desired result. Generally the implants are partially malleable and can be custom contoured in situ then stabilized with bone screws to the underling maxilla and zygoma or suture retained within the soft tissue pocket that has been created.

Surgical recovery is 1 to 2 weeks with final results fully appreciated in about 2 months.[15] Complications may include infection, over- or undercontouring, or asymmetry. Transient infraorbital nerve paresthesia can be anticipated.

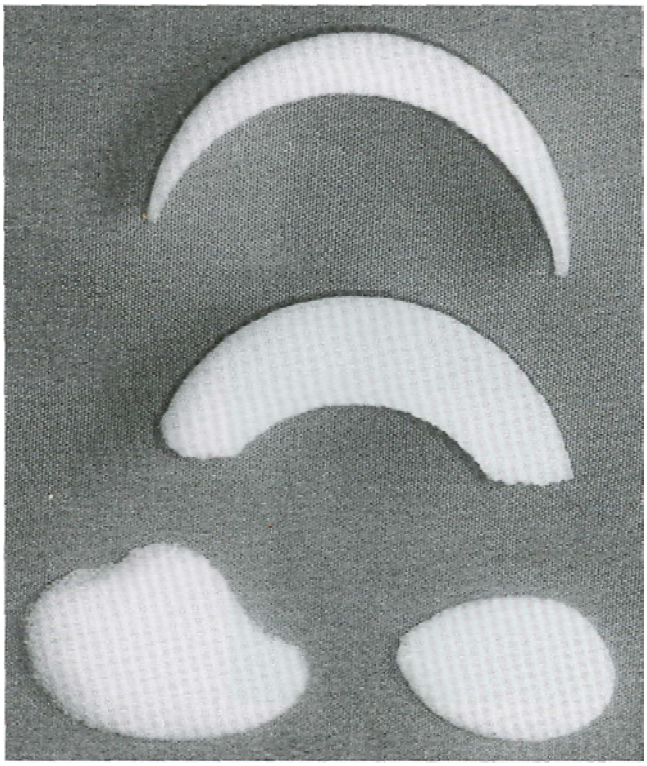


FIG. 26-25 High-density porous polyethylene implants. Precontoured shapes for chin augmentation *(top, middle)* and cheek augmentation *(bottom, side by side)*.

Chin Augmentation or Reduction

Chin projection and contour influences neck definition and nasal size appearance. Noses look larger if the chin is recessive and necklines are more defined with a more prominent chin. Decisions to augment or reduce the chin are decided by evaluating the facial proportions, similar to the treatment planning that takes place with orthognathic surgery or a patient undergoing comprehensive prosthetic rehabilitation that alters the vertical dimension.

Augmentation of the chin can be performed using allopiastic implants or by advancement of the inferior border of the mandible (i.e., genioplasty). Advancement genioplasty is discussed in Chapter 25. Alloplastic chin augmentation is not as popular with oral and maxlllofacial surgeons because of lack of remodeling (i.e., edges may be felt), potential for underlying bone resorption, and increased risk of infection. Fig. 26-26 demonstrates the use of an allopiastic implant for chin augmentation. Simultaneous liposuction can enhance the esthetic results of chin advancements.

Potential genioplasty complications include infection and lip numbness. Recovery time is about 1 week, with the final result fully appreciated in about 6 weeks.[16,17]

Otoplasty

Otoplasty is altering the appearance of the ears. The most common ear deformity is overly prominent or protruding

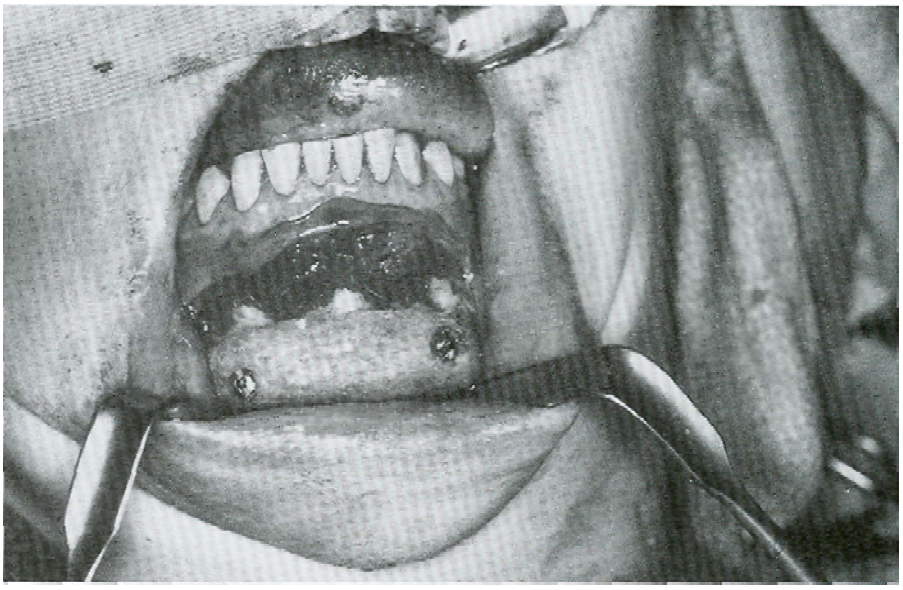


FIG. 26-26 Placement and screw fixation of an alloplastic chin implant through a vestibular incision.

cupped cars. This deformity can be a source of awkwardness, especially in school-age children. Adults may also choose otoplasty for ear deformities not addressed while they were younger. Overly prominent ears are either caused by hypertrophy of the conchal bowl cartilage (i.e., lower one half of the base) or lack of formation of the antehelic fold (Fig. 26-27, A and B).

Surgical correction involves exposing the ear cartilage through a postaurkular incision. The cartilage is then partially excised or reshaped using cartilage scoring, sculpting techniques, and retention sutures (see Fig. 26-27, *A* and *B)* (Fig. 26-27, C to E), A molded protective dressing is worn for 1 week, and the patient then uses a headband to protect the cars during .sleeping for a number of months. Possible complications of otoplasy include infection, asymmetry, hematoma, and recurrence of the initial deformity,[13,19]

Lip Augmentation or Reduction

Lip augmentation can increase the thickness and vertical exposure of either the upper or lower lip. However, this procedure is most commonly performed on the upper lip to accent the perioral region. Generally the lower lip is 30% larger in vertical dimension (i.e., vermilion to wet line) than the upper lip. Many methods for lip augmentation are available and include implantation of synthetic materials, bovine collagen, human cadaveric dermis, and autoiogous fat or dermis. Each material has its own advantages and disadvantages. The selected material is placed to plump the lip's central vermilion and to define the vermilion border.

Although less commonly performed., lip reduction, or cheiloplа&ty, is also possible. Excess tissue is removed from the intraoral portion of the protuberant lip and the lip mucosa undermined and sutured in a more internally-rota ted position *(Fig.* 26-28, *A* and *B).* Recovery ranges from days rts weeks, depending on the method used.[5]

Potential complications include infection, asymmetry, and over- and undcrcorrection. Additionally many of the natural materials placed in the lips resorb with time and may require further augmentation.

Botulinum Neurotoxin Therapy

Although first used for treatment of eye muscle spasms and eye muscle dysfunction, botulinum neurotoxin can also be used to reduce facial wrinkles of the forehead and the crow's-foot region (i.e., wrinkles emanating from the lateral canthus) around the eyes. Botulinum toxin is produced by the anaerobic microorganism *Clostridia botitlimim* and is responsible for botulism food poisoning. The toxin blocks neurotransmittcr release at the neur.omuscular junction and thus temporarily paralyzes the muscle. The temporary paralysis creates long-term muscle weakness and atrophy. The most common region injected for facial rhytids is the forehead and glabellar region.

Very dilute doses can be safely injected with a 30-gauge needle to selectively paralyze specific facial muscles whose animation has caused overlying skin wrinkles. The desired muscle paralysis occurs in 3 to 7 days and persists for 4 to 6 months (Fig. 26-29, *A* to D).

Retreatment with botulinum toxin injection may be necessary to further weaken or decrease muscle activity. Potential complications include diffusion into unintended muscles that can cause undesired eyebrow drooping or diplopla (i.e., double vision).[20]

Scar Revision

Facial scars can be caused by severe acne, facial trauma, or incisions needed for other surgery. Factors making scars noticeable include: hypertrophy or keloids, uneven margins that cast shadows, color mismatch with surrounding skin, and tethering to underlying soft tissues that accentuates the scar during facial animation. Although a scar can never be totally eliminated, it can be altered and blended to significantly camouflage its appearance. Depending on The scar, it can be Improved in appearance by reexcision, altered by redirecting its alignment to better hide it in a natural facial crease, or blended with a skin-resurfacing procedure (Fig. 26-30, *A* to E). Recovery time varies with the extent of the scar and the method of treatment.[21,22] Possible complications include infection and hypertrophic scarring.

Hair Restoration

Although predominately associated with male pattern baldness, hair restoration can also be performed on women with alopecia. With improvement of surgical techniques that avoid a "plugged" appearance, hair restoration has increased in popularity.

Hair follicles are harvested from the posterior scalp below the vertex and prepared into micro- and minigrafts of one to four hairs per graft (Fig. 26-31). The grafts are then meticulously placed into the desired locations Lo restore the hairline. Preoperative planning is important to avoid an inappropriate looking hairline as the patient ages, and to ensure the patient has adequate hair density to obtain a good result. Surgical treatment may need to be performed in stages to complete the treatment plan. The grafted hair units are typically more resistant to the balding hormonal effects of testosterone and androgens.

Postoperative healing is complete in about 2 weeks, but the transplanted hairs do not begin to grow until about 3 months, and a final mature result is not achieved until 9 to 12 months after surgery (Fig. 26-32, *A* and B).[23,24] Complications can include infection, loss of preexisting hair, poor graft growth, inappropriate hairline placement, and scarring.

SUMMARY

The current demand for facial esthetic surgery and cosmetic dentistry will continue to grow in popularity. The magnitude and appropriateness of any given comprehensive esthetic treatment plan should he carefully consid-

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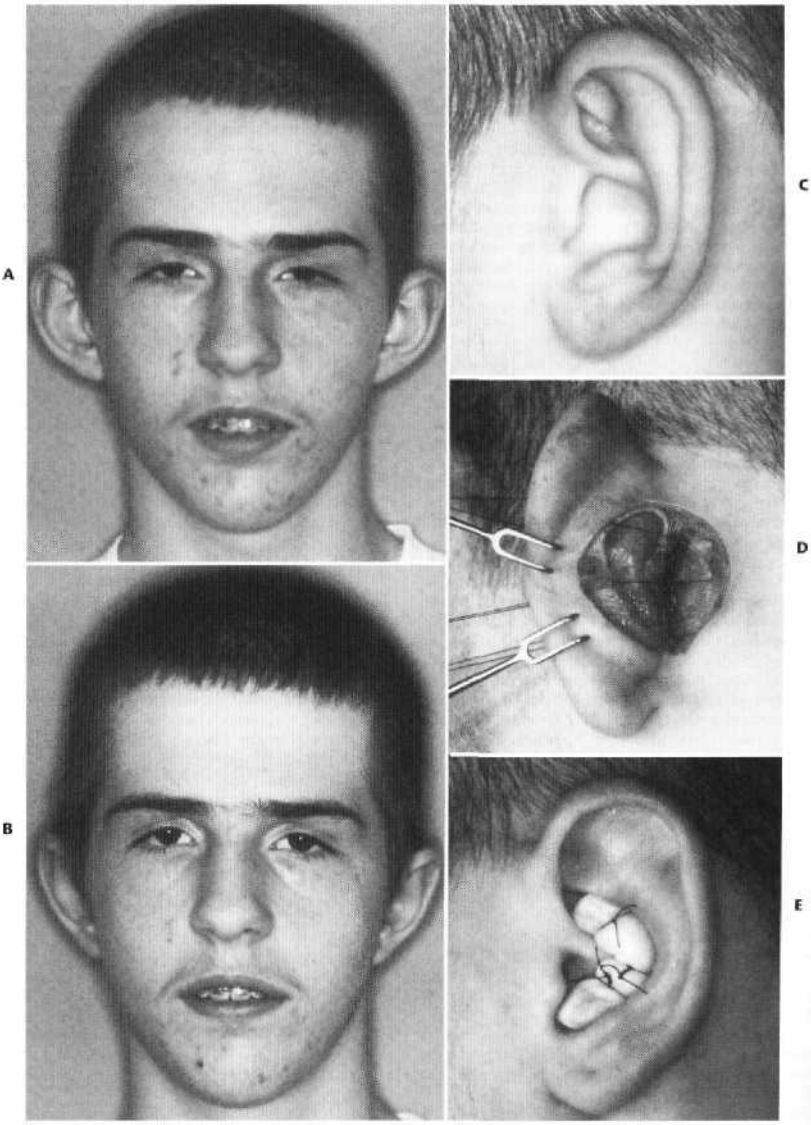


FIG. 26-27 Teenage boy with prominent cars caused by conchal bowl hypertrophy. A, Preoperative frontal view. B, Postoperative frontal view. C, Lateral view of right ear before surgery. D, Postauricular dissection with excess cartilage removed. E, Sterile cotton roll sutured into place to bolster the shape and serve as part of the pressure dressing.

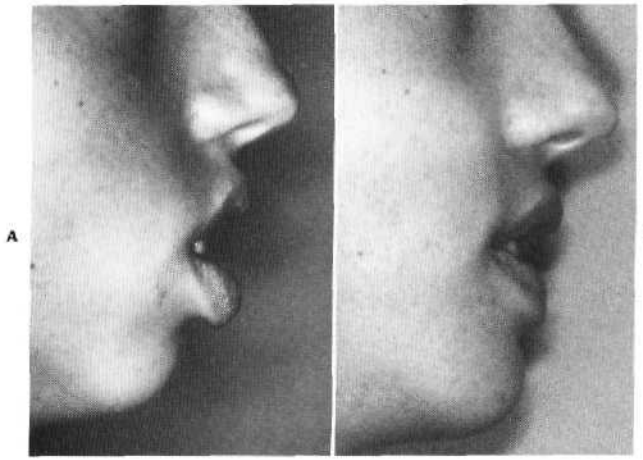
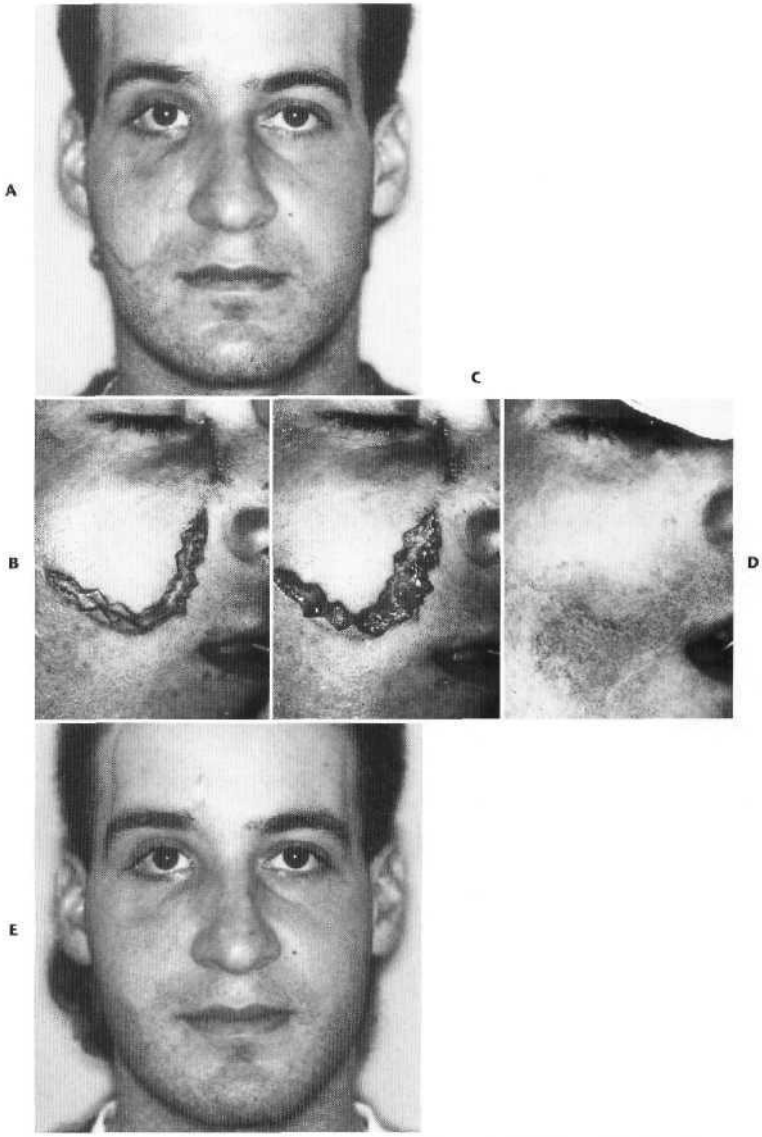


FIG. 26-28 Reduction cheibplasty. A, Preoperstive lateral view B, Postoperative lateral view.



FIG. 26-29 Botulinum toxin injection. A, Preoperative frontal view with eyebrows raised, accentuating heavy horizontal rhytids .Dob* indicate planned injection sites. B, Forehead animated, causing vertical furrows in thegiabellar region. C, Six weeks postinjection, showing residual upper forehead crease.[1], D, Additional selective injection oi the upperforehead yielded this 6-month postoperative result.



FIG, 26-30 A, Patient who sustained multiple facial fractures and a full-thickness oblique laceration of the right cheek (has a tethered, thick, residual scar in this area). B, Intraaperative view of geometric outline. C, Excision of the scar that was undermined arid sutured. D, Sfx weeks later the area was mechanically dermabraded. E, Postoperative appearance at 3 month?.



FIG. 26-31 Harvested minigrafts from a **strip** of hair-bearing scalp in the vertex region.

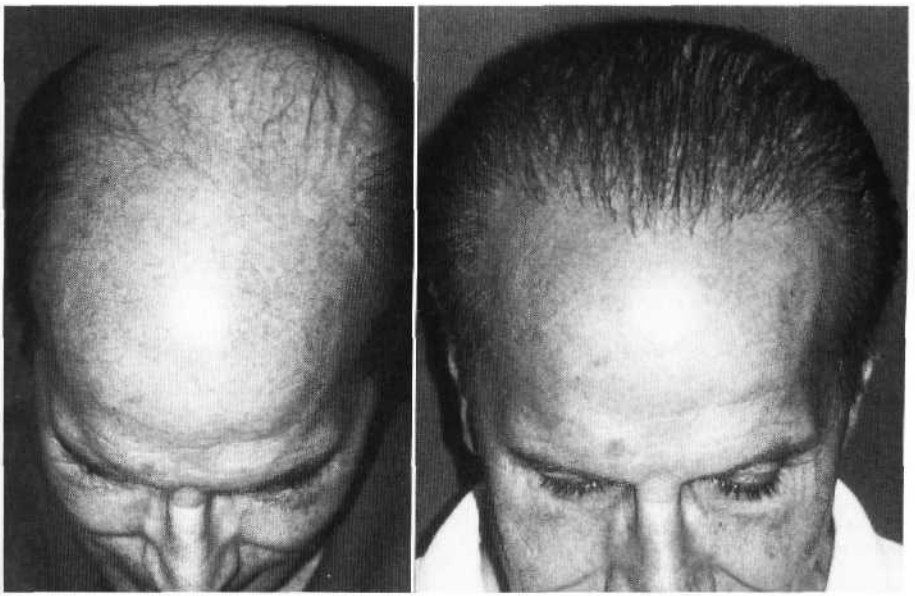


FIG. 26-32 Hair restoration. A, Preoperative view from above. B, Appearance after two surgical hair-grafting sessions and 6 months or graft maturation.

ered by the patient and dentist before initiation of any phase of the treatment. The oral and maxillofacial surgeon, trained in esthetic procedures and working with dental practitioners, can enhance the overall final esthetic result leading to increased patient satisfaction.

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