



Asian Blepharoplasty: Anatomy and Surgical Techniques

19

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There is a keen interest in aesthetic eyelid surgery within the Asian population. In the past several decades, with the increasing number of affluent Asians, especially from China, the demand for aesthetic surgery has grown steadily in the Eastern Hemisphere [32]. Upper eyelid blepharoplasty is the most commonly performed aesthetic procedure among affluent Asians [1, 2, 31]. The vast majority of patients desire the formation of an upper lid crease, or a “double eyelid.” This procedure has been given various names such as “double eyelid procedure,” “oriental blepharoplasty,” “lid crease procedure,” and “Asian blepharoplasty.” The term “Asian blepharoplasty” is utilized because this includes the various ethnic groups inhabiting the Eastern Hemisphere.

The terms “single” and “double” eyelid are used frequently by both the general public and the medical profession. A single eyelid lacks a crease, which is accompanied by a fullness of the pretarsal tissues. In contrast, a double eyelid possesses a crease, which is created by a folding of the eyelid skin (Fig. 19.1). Approximately 50% of Asians have an upper lid crease, which can be complete, partial, or intermittent. Many patients requesting blepharoplasty desire the formation of a crease, or a double eyelid. A common misconception is that the endpoint of Asian blepharoplasty is the creation of a more “Westernized” appearance [4, 6]. To the contrary, the majority of these patients do not desire a more Westernized appearance but rather an enhancement of their Asian features; they desire to have an eyelid crease like other Asians [3]. In the Asian patient, the anatomy of the upper eyelid, aesthetic goals, and surgical techniques are vastly different from that of Caucasian patients. The surgeon must be cognizant of these differences in order to be proficient in Asian blepharoplasty.

Anatomy

Doxonas and Anderson demonstrated important anatomic differences in the upper eyelids of Caucasian and Asian patients, which arise from the relationship of the orbital septum to the levator aponeurosis. Other authors have further clarified these anatomic differences through cadaver dissection and magnetic resonance imaging [8–12]. The levator palpebrae superioris originates from the orbital apex and courses anteriorly in the superior orbit. As it passes through the superior transverse ligament (Whitnall’s ligament), the transition from levator muscle to levator aponeurosis occurs. The levator aponeurosis then fuses with the lower anterior surface of the tarsal plate, fusing to a distinct pretarsal fascial layer [10, 11]. These distal aponeurotic fibers also interdigitate with the pretarsal orbicularis muscle to produce an eyelid crease. The largest concentration of these interdigitations is along the superior tarsal border. The extent to which the levator aponeurosis interdigitates with the pretarsal orbicularis determines whether the crease will be complete, partial, or intermittent. Among Asians, approximately 50% lack these interdigitations that are responsible for the crease. In Caucasians, the orbital septum fuses to the levator aponeurosis above the superior tarsal border. The intact septum prevents the anterior prolapse of orbital fat. In Asians, however, the orbital septum fuses with the levator aponeurosis well below the superior tarsal border (Fig. 19.2). The primary insertion of the levator aponeurosis also tends to be closer to the lid margin in Asians. This lower insertion results in two important differences from the Caucasian eyelid. First, the preaponeurotic fat pad extends more anteriorly and inferiorly, giving the upper eyelid a “fuller” appearance and making the crease, if present, less discernible. Second, the inferior extension of the orbital septum may prevent the terminal fibers of the levator aponeurosis from forming interdigitations with the pretarsal orbicularis muscle. As a result, the upper eyelid crease in Asians may

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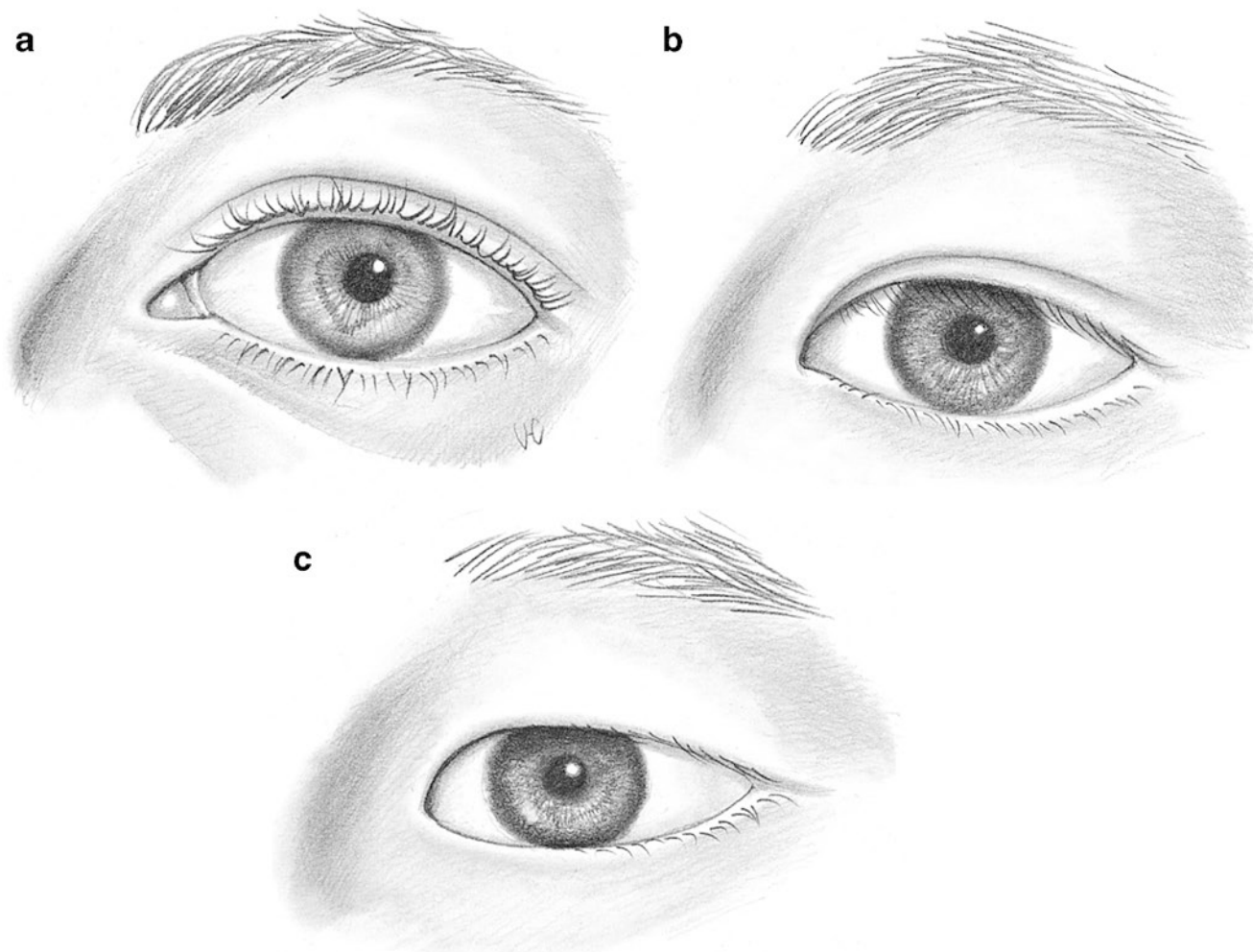


Fig. 19.1 (a) Caucasian eyelid crease. (b) Asian eyelid crease. (c) Asian eyelid, no crease

be absent or poorly developed. The increased “fullness” of the Asian eyelid is also attributable to the presence of a pretarsal fat pad.

In the lower eyelid, the anatomic differences are more subtle, owing to the more rudimentary development of the lower eyelid structure in both Caucasians and Asians. In Asians, the orbital septum fuses with the lower lid retractors in a slightly higher position than in Caucasians. This allows the preaponeurotic fat to prolapse anteriorly, producing the appearance of a fuller lid. In addition, the higher septal insertion may block the subcutaneous insertion of the distal fibers of the lower lid retractors, allowing the preaponeurotic fat to project more superiorly. In some cases, this may allow the preseptal skin to override the tarsus, producing an epiblepharon with secondary trichiasis [12].

The height of the crease differs significantly among Caucasians and Asians, notably due to the differences in the height of the tarsal plate. The tarsal height is 10–12 mm in Caucasians compared with 6–8 mm in Asians. As a result,

the Asian crease is somewhat lower. The goal of Asian blepharoplasty should be to create an eyelid crease that is consistent with the patient’s ethnic appearance. Therefore, creating a Western crease on an Asian patient may result in an unusually high eyelid crease, resulting in an unnatural appearance.

The epicanthal fold presents a difficult set of challenges. Some patients request reduction or elimination of the epicanthal fold. Numerous procedures to eliminate or reduce the epicanthal fold have been described, most involving some variation of a Y-V plasty [5]. While these techniques may work well for the experienced surgeon with a high number of Asian patients, the author does not recommend this procedure for the novice surgeon. In general, it is best not to alter the epicanthal fold in Asian patients. Rather, the author recommends blending the lid fold into the epicanthal fold. For those who do desire removal of the epicanthal fold, such a procedure should be discouraged, because the epicanthal skin is thicker and has a higher propensity toward scarring and keloid formation.

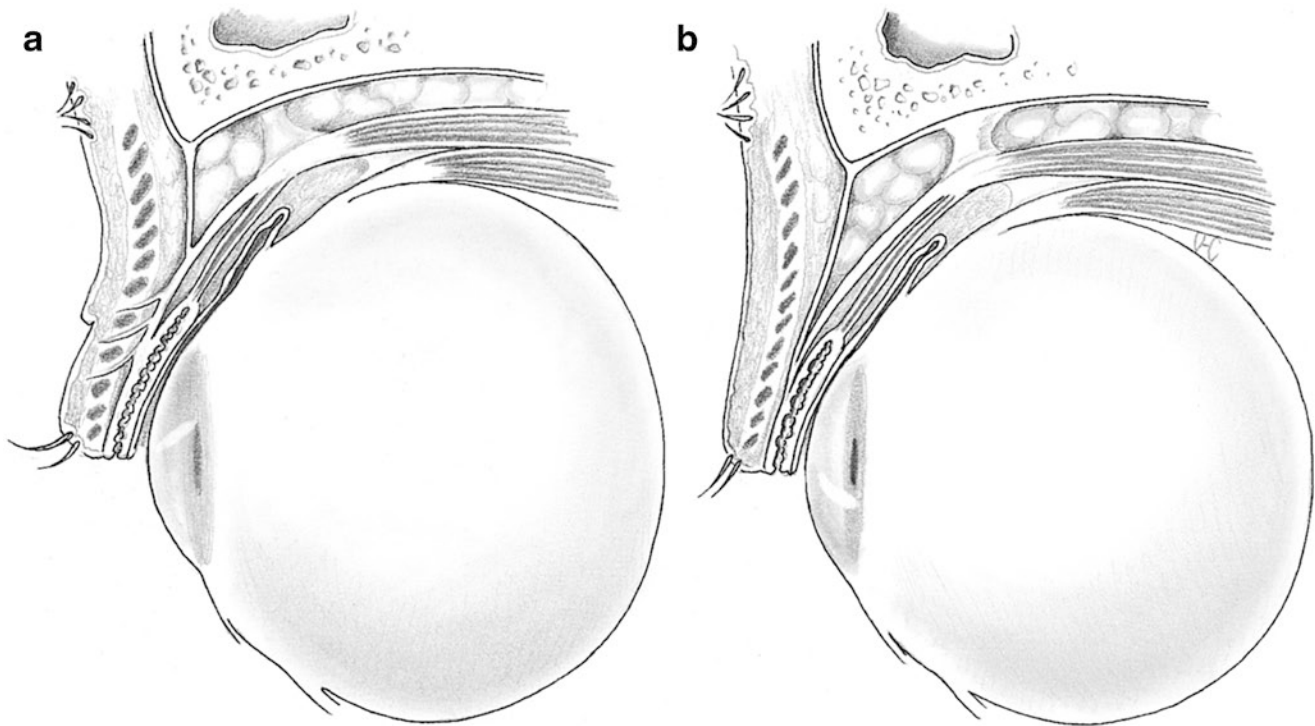


Fig. 19.2 (a) Caucasian upper lid. (b) Asian upper lid

Preoperative Evaluation

As with any type of aesthetic surgery, it is important for the surgeon to determine what the patient hopes to achieve with surgery. There must be clear communication between the surgeon and the patient regarding the shape and height of the crease desired. Sometimes, the patient has an idea regarding the desired result but is unable to articulate this to the patients, while at other times, the patient does not know what he or she wants and looks to the surgeon for guidance. Therefore, a thorough examination and discussion are vital so that the patient and surgeon can share the same common vision for the final surgical outcome [15]. Some patients have been known to wear clear plastic adhesive strips, commercially sold in Asian catalogs, for the purpose of creating an eyelid crease. The patient should be examined with and without these adhesive strips to determine the preoperative anatomy and the desired result. As with any type of aesthetic surgery, the patient may have unrealistic expectations about what surgery can accomplish, such as promotion in a career or improvement of a relationship. It must be made clear as to what surgery realistically can be achieved. In addition, common patient misconceptions must be addressed: Some patients expect no swelling, and some patients expect no incision and no sutures [4]. The use of a hand mirror and a cotton-tipped applicator (or similar device) to simulate the lid fold is often useful in the preoperative evaluation and

discussion. Visual aids, such as pre- and postoperative photographs of representative patients, are often helpful in the discussion.

As with any surgical procedure, a comprehensive ophthalmic examination is mandatory before surgery. It is important to document preexisting ocular pathology, such as dry eye, and eyelid malpositions, such as entropion, ectropion, and eyelid retraction. A basic secretor test and slit lamp examination should be performed on all patients to determine the presence of dry eyes. In addition, lid height, levator function, margin fold distance, and margin crease distance all should be measured. If blepharoptosis is present, its etiology must be determined and then managed appropriately. This may require simultaneous surgery on the levator aponeurosis at the time of blepharoplasty” [9, 25].

Surgical Techniques

Numerous surgical techniques have been devised to create a double eyelid. These techniques fall into one of two broad categories: suture techniques or external incision approach. Suture techniques involve the use of full-thickness sutures to create a scar tract between the skin and conjunctiva at the desired height, thus creating an eyelid crease. Mikamo published the first description of the suture technique in 1896 [19]. Numerous variations of the suture technique have been

described [2, 20, 26], all with one common goal—creating adhesions along the superior tarsal border between the levator aponeurosis and the overlying skin and orbicularis muscle (Fig. 19.3). Over the years, the popularity of suture techniques has waxed and waned, compared to external incision techniques. Recently, there has been renewed interest in the suture techniques, especially in Asia [5, 13, 14, 16, 22]. Various types of suture materials have been advocated, some absorbable and some permanent. Suture techniques have the advantage of being relatively less invasive and are generally easier to perform. However, there are relative disadvantages associated with this technique. Over time, the crease has a greater tendency to fade or disappear, compared to the external incision approach. Because the suture techniques do not require a large skin incision, they are not recommended in patients requiring skin or fat removal.

After anesthetizing the eyelid with local anesthetic, the lid is everted and the superior tarsal border identified. Three double-armed sutures are passed from the conjunctival side toward the skin surface. The sutures then can be brought out onto the skin surface and tied or buried beneath small stab incisions. An alternate method employs a threaded needle

that may be passed through the pretarsal tissues along the superior tarsal border through several stab incisions. A 4–0 silk suture is then passed in a continuous fashion along the defect. A section of rubber catheter is sutured externally, and the compressive effect of the catheter combined with the scarring from the needle tract produces an eyelid crease [27, 28]. In these techniques, the sutures are left in place for as brief as 2–3 days or as long as 8–10 days, depending on the technique and the surgeon's assessment of postoperative crease formation.

The earliest description of an external incision approach dates to 1929, when Maruo published both his suturing and incision techniques [18]. Asian blepharoplasty via an external incision is the author's preferred surgical approach. The technique is more technically difficult and more time consuming but, when performed properly, yields superior results. The crease is more likely to be permanent, and excess upper lid skin and herniated orbital fat can be debulked if desired. When performed properly, formation of an eyelid crease using an external skin incision produces a crease that is more physiologic or "dynamic" in appearance. This dynamic effect is achieved by fixing the superior and inferior edges of the skin incision to the levator aponeurosis, approximately at the height of the superior tarsal border. The slight redundancy of skin superiorly is allowed to drape over the incision, producing the fold or "double eyelid." The eyelid crease is most visible when the eyes are open and tends to disappear during downgaze or eyelid closure [7, 8]. In contrast, suture techniques produce a "static" crease, which tends to remain visible even with eyelid closure.

To determine the height of the crease, the lid is everted and the height of the tarsus is then measured. The incision is then outlined with a tapering toward the epicanthal fold, if present. The surgeon may use the same local anesthetic mixture that he or she uses for other types of blepharoplasty. The author prefers 2% lidocaine with epinephrine (1:100,000) mixed equally with 0.5% bupivacaine with epinephrine (1:200,000). One milliliter of sodium bicarbonate may be added to 9 ml of the above mixture to raise the pH and thereby reduce the pain associated with injection. Preoperative ice compresses and topical anesthetics may also be used at the surgeon's discretion. The choice of office surgery versus intravenous sedation in an outpatient surgery center will depend upon the health and cooperation of the patient.

After excision of skin and orbicularis muscle, the orbital septum can be opened and the preaponeurotic fat removed, if desired (Fig. 19.4). Younger patients generally require a small skin excision, whereas older patients may require greater skin removal. The amount of skin removal will determine the margin fold distance. The amount of fat removal required in an Asian patient is generally less than that in a

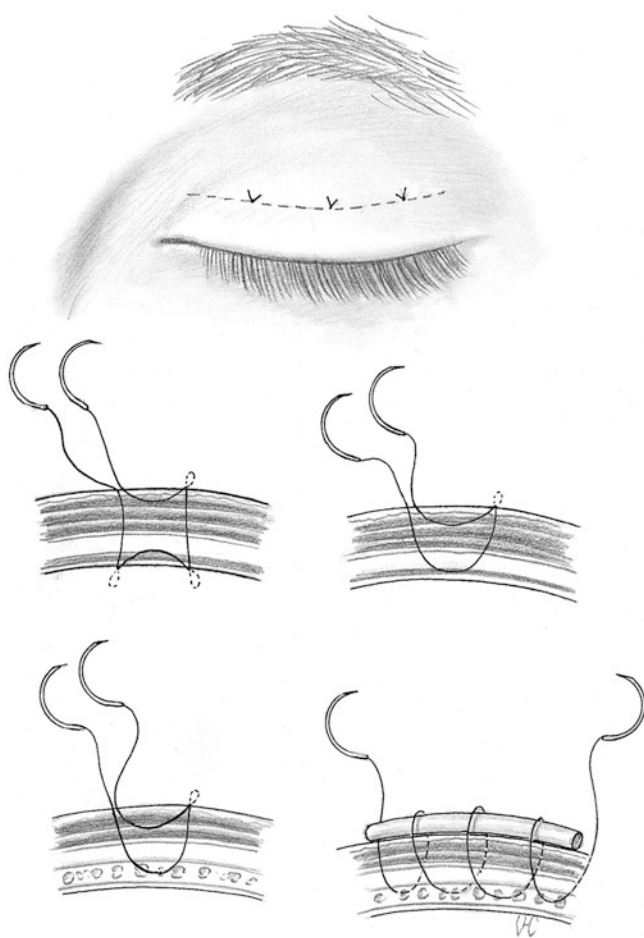


Fig. 19.3 Suture techniques to create a double eyelid

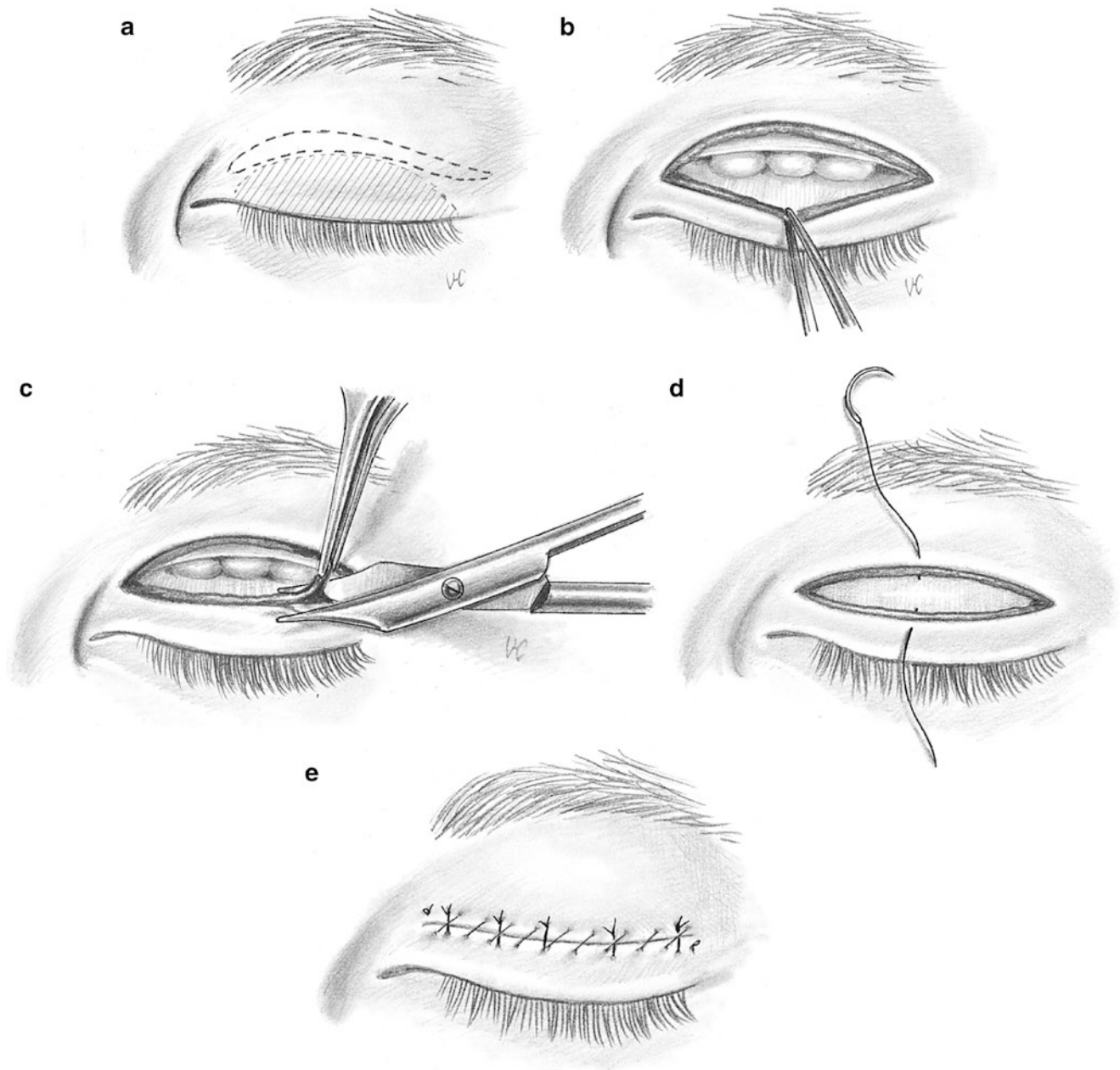


Fig. 19.4 (a) Skin marked at approximate edge of superior tarsal border. (b) Opening for removal of preaponeurotic fat. (c) Trimming edge of pretarsal orbicularis to provide exposure to tarsus. (d) Crease sutures

of levator aponeurosis. (e) Five crease sutures placed. Remainder of skin closed with running suture

Caucasian but may be important if the eyelid has a full or bulky appearance. The amount of fat removed should be conservative so as to avoid hollowing of the superior sulcus. The patient's perception of a successful result is dependent upon symmetry and height of the eyelid fold, as well as a reduction in the bulk of the upper eyelid. Therefore, the appropriate amount of skin and fat excision requires both experience and artistic judgment [29, 30].

As with all surgical procedures, thorough knowledge of eyelid anatomy is important. Iatrogenic damage to the leva-

tor aponeurosis, which lies beneath the orbital septum and fat, can result in ptosis and is difficult to repair. As with any form of surgery, meticulous hemostasis must be maintained in order to avoid the dreaded complication of retrobulbar hemorrhage. The lid crease then can be formed using one of several methods. Five or six interrupted sutures incorporating skin, levator aponeurosis, and skin in each bite may be used to form the lid crease. Alternatively, these sutures may incorporate skin, tarsus, and skin with each bite (Fig. 19.5) [1]. A third method employs buried sutures incorporating tar-

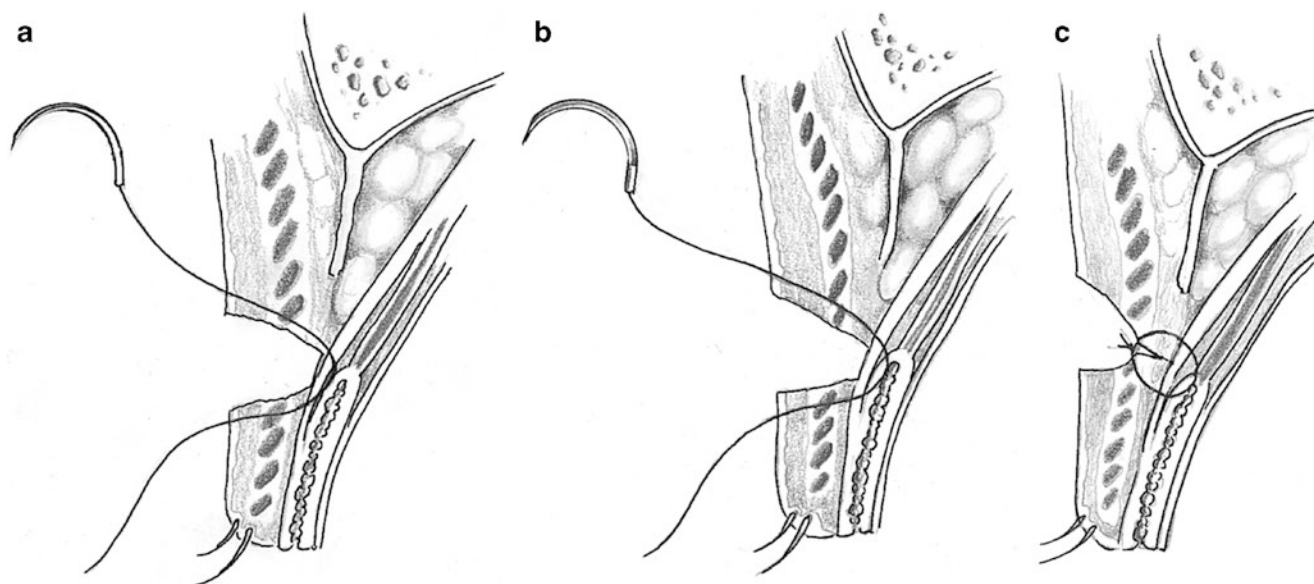


Fig. 19.5 Wound closure. (a) Skin, levator, and skin sutures. (b) Skin, tarsus, and skin sutures. (c) Subcuticular tissue, tarsus, and subcuticular tissue sutures

sus and subcutaneous tissue with each bite [21, 23, 24, 27]. The remainder of the skin incision then can be closed with either running or interrupted sutures. Permanent or absorbable sutures may be used. The author prefers 6-0 nylon, which is removed approximately 1 week postoperatively. Representative preoperative and postoperative photographs are presented for review.

Postoperative Care

The postoperative care of these patients is similar to that of any blepharoplasty patient. They are instructed to avoid strenuous exercise, sun exposure, and aspirin or other anticoagulants. An antibiotic ointment is used on the wounds three to four times daily, and ice compresses are applied for the first 48–72 h. Acetaminophen is helpful for postoperative analgesia.

If nonabsorbing sutures are used, they may be removed approximately 5–7 days after surgery. Interrupted sutures used to form the eyelid crease may be left longer if the crease formation appears to be delayed. The patient should expect a moderate amount of edema and ecchymosis. It is normal for the crease to appear somewhat high initially due to postoperative edema. As the edema resolves, the crease will then appear to be lower. As with all blepharoplasty patients, the surgeon should counsel the patient about the possibility of minor postoperative revisions, which usually can be performed with local anesthesia in an office setting. One should wait a minimum of 1 month after surgery to determine the final height and contour of the upper eyelid fold. Pretarsal

edema can especially influence the perceived height of the upper lid fold.

Complications

Numerous complications may be associated with blepharoplasty of any type. They can include common problems such as excessive or insufficient skin or fat removal, abnormalities of the lid crease, ptosis, lagophthalmos, lid retraction, exposure keratopathy, and lacrimal gland prolapse. Rare but serious problems such as infection, orbital hemorrhage, and blindness also may occur [7, 17]. These complications are discussed in greater detail elsewhere in the text.

The problems most commonly seen in Asian blepharoplasty patients are related to the height, shape, and permanence of the eyelid crease. An abnormality of the crease height most often results from excessively high placement of the crease. This usually results from the surgeon's failure to recognize the differences in tarsal height among Asians or from an error in marking the crease height preoperatively. An overzealous removal of eyelid skin or the preaponeurotic fat pads may result in superior sulcus hollowing and may further accentuate the crease height. Asymmetric skin removal may alter the margin fold distance, giving the illusion that the crease is higher on one side compared with that of the other side. The surgeon should consider the possibility of an undetected ptosis when the crease of one eyelid appears higher than the other [23].

If the skin is inadequately fixated to the underlying levator aponeurosis, disappearance of all or part of the crease may



Fig. 19.6 An Asian female presented for consultation after having a bilateral upper lid blepharoplasty performed elsewhere. Her complaint was that the eyelid folds did not look “clean.” On examination, she was found to have two high creases and multiple pretarsal creases

occur (Fig. 19.5). The resulting appearance is a crease that is shallow, discontinuous, or obliterated. Multiple creases may arise after unpredictable scar formation after reoperations (Fig. 19.6). Occasionally, the patient may desire reversal of the lid crease procedure [3, 4].

Conclusion

Blepharoplasty in the Asian patient represents a unique set of challenges. The eyelid anatomy, aesthetic goals, and surgical techniques are vastly different from that of Caucasian patients. In Caucasians, upper eyelid blepharoplasty is largely a procedure to debulk skin and preaponeurotic fat. In Asians, the primary goal is to create an eyelid crease. Debulking of skin and preaponeurotic fat is secondary and mainly to enhance the appearance of the crease. The common mistake made by surgeons is to apply Western concepts of anatomy, aesthetics, and surgical techniques to Asian patients. The majority of Asian patients desire the formation of an eyelid crease to enhance their natural Asian features. Ophthalmic surgeons who have gained familiarity with the anatomy and surgical techniques involved are most able to help the patient achieve his or her desired outcome.

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