Reconstruction of the Eyelids after Mohs Surgery

Jamil Ahmad, M.D.,¹ David W. Mathes, M.D.,³ and Kamel M. Itani, M.D.²

ABSTRACT

A variety of defects of the upper and lower eyelids can be encountered after Mohs surgery. The goals of eyelid reconstruction are to provide structural and functional restoration with an acceptable aesthetic result. A thorough knowledge of the intricate anatomy of the eyelids combined with familiarity of the wide variety of reconstructive options is required to achieve these goals. In this article, we review the anatomy of the eyelids, and we present commonly used techniques for reconstruction of the upper and lower eyelids and the medial and lateral canthal regions after Mohs surgery.

KEYWORDS: Mohs, eyelid anatomy, eyelid reconstruction, buried vertical mattress

The goals of eyelid reconstruction include structural and functional restoration with an acceptable aesthetic result. Structural restoration of the anterior lamella provides skin coverage and blood supply to the eyelid while that of the posterior lamella provides semi-rigid support to the eyelid and a nonabrasive mucosal surface for normal blinking, which helps keep the ocular surface moist to protect the cornea from drying. Functional restoration of the upper eyelid allows adequate mobility to protect the cornea, and that of the lower eyelid allows it to appose the globe and have stability, aiding in the normal flow of tears.

In this article, we review the anatomy of the eyelids, and we present commonly used techniques for reconstruction of the upper and lower eyelids and the medial and lateral canthal regions after Mohs surgery.

ANATOMY OF THE EYELIDS

A thorough understanding of eyelid anatomy is essential to achieve optimal surgical results. The shape, contour,

height, and mobility of the eyelid tissue must be restored to its presurgical specifications to allow for adequate protection of the eyes. The palpebral fissure is bounded by the upper and lower eyelid margins. The widest horizontal interpalpebral distance is 28 to 30 mm, and the greatest vertical interpalpebral distance is 9 to 12 mm.¹ The lateral canthus lies 2 mm higher than the medial canthus. On primary gaze, the upper eyelid margin lies 1 to 2 mm inferior to the superior limbus, and the lower eyelid margin rests at the inferior limbus.

The upper eyelid crease is formed by insertion of the fascial extensions of the levator aponeurosis, through the orbicularis oculi muscle, to the skin. In addition, the levator aponeurosis continues inferiorly to attach to the anterior surface of the tarsal plate. The upper eyelid crease runs parallel to the eyelid margin. This crease is 8 to 9 mm superior to the margin in men and 8 to 11 mm superior to the margin in women.² In the Asian eyelid, the upper eyelid crease is 2 to 3 mm superior to the margin and usually poorly defined because of the absence of the fascial extensions of the levator aponeurosis to the

¹Department of Plastic Surgery, University of Texas Southwestern Medical Center, Dallas, Texas; ²Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas, Texas; ³Division of Plastic Surgery, Department of Surgery, University of Washington, Seattle, Washington.

Address for correspondence and reprint requests: Kamel M. Itani, M.D., Department of Ophthalmology, University of Texas Southwestern Medical Center, 5323 Harry Hines Boulevard, Dallas, TX

75390-8895 (e-mail: kamel.itani@utsouthwestern.edu).

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skin and its lower insertion to the tarsal plate.²⁻⁴ The lower eyelid crease is less defined, beginning medially 4 to 5 mm inferior to the eyelid margin and proceeding in an inferolateral direction.¹ The lower eyelid crease is formed by the fascial extensions of the capsulopalpebral fascia.⁵ These fascial extensions are absent, and there is no palpebral crease in the lower eyelid of Asians.

The eyelid is divided into two lamellae (Fig. 1). The anterior lamella consists of skin and the orbicularis oculi muscle, and the posterior lamella consists of the tarsal plate and conjunctiva. The eyelid skin is the thinnest skin in the body, less than 1 mm thick, due to the attenuated dermis. At the eyelid margin, the skin is tightly adherent to the tarsal plate. The orbicularis oculi muscle is composed of a pretarsal, a preseptal, and an orbital component.⁶ The deep surface of the pretarsal orbicularis is tightly adherent to the anterior surface of the tarsal plate in the upper eyelid. The pretarsal orbicularis attaches medially to the anterior and posterior arms of the medial canthal ligament to surround the lacrimal sac, and the superior and inferior lacrimal canaliculi are found within its muscle fibers. It plays an integral part in the lacrimal pump mechanism. Laterally, the pretarsal orbicularis attaches to the lateral canthal ligament and the Whitnall tubercle. The preseptal and orbital components attach medially to the medial canthal ligament and laterally to the zygoma, lateral to the orbital rim. In addition to the previously mentioned attachments, the orbital orbicularis attaches medially to the maxillary and frontal bones and extends peripherally to overlie the orbital rims. A small segment of the orbicularis oculi muscle called the muscle of Riolan is separated from the pretarsal component by the eyelash follicles and forms the gray line along the eyelid margins.⁷ The fibrous superior and inferior tarsal plates provide semirigid support to the eyelids. The superior tarsus is 10 to 12 mm at its greatest vertical dimension, and the inferior tarsus is 3 to 5 mm.⁸ The posterior surface of the tarsal plates is tightly adherent to the palpebral conjunctiva that reflect at the conjunctival fornices to become the bulbar conjunctiva that line the globe. The tarsal plates attach to the bony orbit through the medial and lateral canthal ligaments. The medial canthal ligament is formed from the superior and inferior limbs projecting from the medial aspects of the superior and inferior tarsal plates, respectively. The medial canthal ligament splits into an anterior arm that attaches to the anterior lacrimal crest, a posterior arm that attaches to the posterior lacrimal crest, and a superior arm that attaches to the orbital process of the frontal bone.⁹ The lateral canthal ligament is formed from the superior and inferior limbs projecting from the lateral aspects of the superior and inferior tarsal plates, respectively. The lateral canthal ligament attaches to the Whitnall tubercle on the zygomatic bone, 1.5 mm within the orbital rim.¹⁰

The orbital septum is a layer of dense connective tissue that divides the superficial soft tissue of the eyelids from the orbit. The septum has multiple fibrous attachments anteriorly to the orbicularis oculi muscle.¹¹ It is attached medially to the anterior and posterior lacrimal crests and laterally to the lateral canthal ligament and the Whitnall tubercle. In the upper eyelid, the central portion of the septum fuses with the levator aponeurosis 2 to 3 mm superior to the tarsal plate, and in the lower eyelid, the central portion of the septum fuses with the capsulopalpebral fascia at the lower edge of the tarsal plate. Peripherally, the orbital septum attaches to the periosteum of the orbital rim forming the arcus marginalis.¹² In the upper eyelid, the medial and central fat pads lay between the orbital septum the levator aponeurosis.¹³ The lateral part of this space is occupied by the lacrimal gland. In the lower eyelid, the medial, central, and lateral fat pads lay between the orbital septum and the capsulopalpebral fascia.¹³

The upper eyelid retractors are the levator palpebrae superioris muscle and the Müller muscle. The levator palpebrae superioris arises from the annulus of Zinn in the orbital apex. As it approaches the upper eyelid, the levator palpebrae superioris is encircled by the Whitnall ligament¹⁴ and transforms into the fibrous levator aponeurosis. The levator aponeurosis fans out in medial and lateral directions to attach to the posterior lacrimal crest and zygomatic bone, respectively. It extends 14 to 20 mm from the Whitnall ligament to attach to the anterior surface of the tarsus, also sending superficial fascial extensions to the dermis. The Müller muscle is sympathetically innervated and arises from the inferior surface of the levator palpebrae superioris and extends ~15 mm to attach to the superior edge of the tarsal plate.¹ The lower eyelid retractors are the capsulopalpebral fascia and inferior tarsal muscle, which are the anterior continuations of the inferior rectus and inferior oblique muscle sheath. The lower eyelid retractors have three attachments including the Tenon fascia, the inferior edge of the tarsal plate through the inferior tarsal muscle, and superficial extensions to the dermis.¹

The arterial blood supply of the upper eyelid is derived from the angular, supratrochlear, supraorbital, superficial temporal, and lacrimal arteries through the superior marginal arcade and the peripheral arcade. The superior marginal arcade is located 2 to 3 mm superior to the eyelid margin in the pretarsal space found between the skin and tarsal plate.⁴ The peripheral arcade is located in the space between the levator aponeurosis and the Müller muscle.⁴ The arterial blood supply of the lower eyelid is derived from the angular, infraorbital, transverse facial, and zygomaticofacial arteries through the inferior marginal arcade, located 2 to 4 mm inferior to the eyelid margin.¹ Venous drainage of the eyelids is through the facial and ophthalmic veins.¹ Lymphatics from the medial aspects of the eyelids drain to the

Figure 1 Sagittal section through upper and lower eyelids.

submandibular lymph nodes and that from the lateral aspects drain to the preauricular lymph nodes.¹

Sensory innervation of the upper eyelid is provided by the ophthalmic branch of the trigeminal nerve (cranial nerve [CN] V1) through its nasociliary, supra-trochlear, supraorbital, and lacrimal branches. Sensory innervation of the lower eyelid is derived from the maxillary branch of the trigeminal nerve (CN V2) through the infraorbital and zygomaticofacial branches. Motor innervation to the orbicularis oculi arises laterally to enter its deep surface and in the upper eyelid is from temporal and zygomatic branches of the facial nerve (CN VII) and in the lower eyelid is from the zygomatic and

buccal branches of the facial nerve (CN VII). The oculomotor nerve (CN III) provides the motor innervation to the upper and lower eyelid retractors.¹³

RECONSTRUCTION OF LOWER EYELID DEFECTS

Pentagonal Excision with Direct Closure

Full-thickness defects of the lower eyelid up to 25% of its length can be converted into a pentagonal excision and closed directly in the younger patient with less eyelid laxity. In the older patient with more eyelid laxity,

Figure 2 Modified pentagonal excision. (A) Upper eyelid skin markings showing area of anterior lamella to be excised using traditional pentagonal excision (line) and modified pentagonal excision (shaded). (B) Everted upper eyelid conjunctival markings showing area of posterior lamella to be excised.

defects up to 40% of the length of the eyelid margin can be closed directly. When designing the pentagonal excision, care is taken not to extend the skin excision beyond the lid crease if possible. If necessary, the anterior lamella can be excised as a pentagon and the posterior lamella can be excised as a rectangle to avoid extending the skin incision across the lid crease (Fig. 2).

As opposed to the classically described *three-suture technique*, we prefer to use the *buried vertical mattress technique* described by Burroughs et al¹⁵ (Fig. 3). The buried vertical mattress suture is performed using a 6-0 Vicryl suture on an S-29 needle (Ethicon, Inc., Somerville, NJ) in a “far-far-near-near-near-far-far” pattern (Figs. 4 and 5). The suture is first passed through the tarsus at one of the wound edges far from the eyelid margin and out of the tarsus at the eyelid margin far from the wound edge. The suture is then passed back through the same tarsus at the eyelid margin near the wound edge and out of the tarsus at the wound edge near the eyelid margin. The suture is then passed through the tarsus of the opposite wound edge, near the eyelid margin and out of the tarsus at the eyelid margin near the wound edge. The suture is then passed back through the same tarsus at the eyelid margin far from the wound edge and out of the tarsus at the wound edge far

from the eyelid margin. The suture is then tied and buried deep to the orbicularis oculi muscle everting the wound edges at the eyelid margin. Simple interrupted 6-0 Vicryl sutures are performed along the anterior aspect of the tarsus to approximate the remainder of the tarsus. Another simple interrupted 6-0 Vicryl suture is used to align the lash line. It is crucial to align the lash line for a good cosmetic outcome. The skin is closed using simple interrupted 6-0 nylon sutures.

Lateral Canthotomy and Inferior Cantholysis with Direct Closure

When full-thickness defects of the lower eyelid cannot be closed directly after a pentagonal excision, a lateral canthotomy and inferior cantholysis can be performed to allow more advancement of the lateral edge of the defect. By combining these techniques, defects up to 35 to 50% of the length of the eyelid margin can be closed directly, depending on the age and eyelid laxity of the patient. Using Westcott scissors, the lateral canthotomy is performed by splitting the lateral canthal ligament into superior and inferior halves, which become lateral extensions of the superior and inferior arms, respectively (Figs. 6 and 7). The inferior half of the lateral canthal

Figure 3 Buried vertical mattress technique. (A) Buried vertical mattress suture. (B) Anterior tarsal sutures. (C) Lash line suture.

Figure 4 Buried vertical mattress technique. (A) Traumatic full-thickness laceration of right lower eyelid. (B) Far-far suture pass. (C) Far-far-near-near suture pass. (D) Far-far-near-near-near-near suture pass. (E) Far-far-near-near-near-near-far-far suture pass. (F) Buried vertical mattress suture complete. (G) Anterior tarsal suture first pass. (H) Anterior tarsal suture second pass.

Figure 5 Buried vertical mattress technique (continued). (A) Lash line suture. (B) Traumatic full-thickness laceration closed.

ligament is then cut from its attachment at the Whitnall tubercle. The eyelid defect can then be closed directly as previously described. After closure of the defect, the skin incision at the site of the lateral canthotomy is approximated using a continuous 6-0 nylon suture.

Tenzel Semicircular Advancement Flap

In 1975, Tenzel¹⁶ described the use of a semicircular advancement flap over the lateral canthal region combined with a lateral canthotomy and inferior cantholysis to reconstruct defects of the central lower eyelid up to 50% of the length of the eyelid margin. The flap is designed so that the incision begins at the lateral canthus and curves superiorly and temporally in semicircular fashion. The incision is not truly semicircular but usually has a horizontal dimension greater than the vertical dimension.¹⁷ The incision is carried down to the lateral canthal ligament and lateral orbital rim to create a skin and muscle flap. After the flap dissection is complete and the lateral canthotomy and inferior cantholysis has been performed, the flap can be advanced medially and the defect can be closed directly as described above. The lateral canthus is reconstructed by suturing the deep surface of the orbicularis oculi to the periosteum overlying the Whitnall tubercle using a 5-0 Vicryl suture.¹⁸ Levine and Buckman¹⁸ modified the Tenzel semicircular advancement flap by severing the orbital septum from its attachment to the inferolateral arcus marginalis and releasing the inferior eyelid retractors and conjunctiva from the inferior edge of the tarsal plate. They were able to close defects between 60% and 80% of the length of the eyelid margin with excellent aesthetic results.

Mustardé Laterally Based Cheek Rotation Flap

Mustardé^{19,20} described the use of laterally based cheek rotation flaps for reconstruction of full-thickness lower eyelid defects up to 100% of the length of the lower eyelid margin. In defects greater than 50% of the length of the lower eyelid margin, Mustardé combined this flap with a composite nasal mucocartilaginous graft to

reconstruct the posterior lamella. We prefer to use this flap to reconstruct superficial defects of the medial aspect of the lower eyelid. The superficial defect is converted into a superiorly based triangle. The flap is dissected in a subcutaneous plane, and the dissection is carried only as far laterally as required to provide tension-free closure of the defect. We prefer to suspend the flap to the periosteum of the lateral orbital rim and the leading edge of the flap to the periosteum overlying the inferomedial orbital rim to prevent the development of ectropion. The advantage of this flap is that it uses skin from the lateral aspect of the eyelid to reconstruct its medial aspect providing similar color and texture match.

Hughes Tarsconjunctival Flap

In 1937, Hughes²¹ described a method for reconstruction of the lower eyelid using a superiorly based tarsconjunctival flap from the upper eyelid. Since then, various authors²²⁻²⁸ have modified this flap. We perform the Hughes tarsconjunctival flap by measuring the width of the defect while applying adequate tension to the remaining lower eyelid to ensure proper apposition of the lower eyelid to the globe after reconstruction (Figs. 8 and 9). The flap is designed centrally on the upper eyelid where the tarsal plate has its largest vertical dimension, and the leading edge is placed 4 mm superior to the upper eyelid margin to preserve a strip of tarsal plate for structural support. The vertical limbs of the flap are made perpendicular to the leading edge, and the incision is made through conjunctiva and tarsal plate and then carried superiorly toward the conjunctival fornix until the flap can be adequately advanced into the lower eyelid defect. We do not transect the Müller muscle from the flap because we suture the superior edge of the full-thickness skin graft to it. The flap is inset by suturing the tarsal plate of the flap to the remaining tarsal plate or canthal tendons on the edges of the lower eyelid defect using 5-0 Vicryl sutures and to the conjunctiva at the inferior edge of the defect using a 6-0 Vicryl suture. A full-thickness skin graft is then sutured to the edges of the defect using 6-0 nylon sutures

Figure 6 Lateral canthotomy and inferior cantholysis with direct closure and Tenzel semicircular advancement flap. (A) A 59-year-old man with left lower eyelid defect after Mohs surgery for basal cell carcinoma. (B) Left lower eyelid tissue excised to create full-thickness defect. (C) Lateral canthotomy. (D) Increased mobility of left lower eyelid after lateral canthotomy. (E) Inferior cantholysis. (F) Inferior cantholysis of left lower eyelid allows direct closure of defect. (G) Tenzel semicircular advancement flap. (H) Buried vertical mattress suture.

Figure 7 Lateral canthotomy and inferior cantholysis with direct closure and Tenzel semicircular advancement flap (continued). (A) Anterior tarsal suture. (B) Lash line suture. (C) Lower eyelid defect and Tenzel semicircular advancement flap closed. (D) Seventeen-month postoperative view of eyelids. (E, F) Seventeen-month postoperative views of patient.

Figure 8 Hughes tarsoconjunctival flap. (A) An 84-year-old man with right lower eyelid defect after Mohs surgery for basal cell carcinoma. (B) Precise measurement of lower eyelid defect using calipers. (C) Dissection of upper eyelid tarsoconjunctival flap. (D) Upper eyelid tarsoconjunctival flap elevated. (E) Suturing of tarsoconjunctival flap into lower eyelid defect to reconstruct posterior lamella. (F) Tarsoconjunctival flap inset. (G) Full-thickness skin graft from ipsilateral upper eyelid sutured to tarsoconjunctival flap to reconstruct anterior lamella. (H) Sixteen-month postoperative view of eyelids.

Figure 9 Hughes tarsoconjunctival flap (continued). Three weeks after the first stage, the second stage with division of the pedicle was performed. (A, B) Sixteen-month postoperative views of patient.

and superiorly to the remnants of the Müller muscle using a 7-0 Vicryl suture. The skin graft is bolstered using Xeroform petrolatum gauze (Tyco Healthcare/Kendall, Mansfield, MA) and a tightly applied eye patch. The second stage is performed 3 weeks later. The pedicle is transected 1 mm superior to the skin graft, the superior edge of the skin graft and tarsal plate are deepithelialized, and the transected edge of the conjunctiva is advanced anteriorly and sutured using a 7-0 Vicryl suture to the skin graft to reconstruct the lower eyelid margin. The anterior advancement of the conjunctiva onto the eyelid margin prevents abrasion of the cornea as opposed to allowing the eyelid margin to heal by secondary intention, which may lead to keratinization of the eyelid margin and corneal irritation.

RECONSTRUCTION OF UPPER EYELID DEFECTS

Pentagonal Excision with Direct Closure

As in the lower eyelid, full-thickness defects of the upper eyelid up to 25 to 40% of its length can be converted into a pentagonal excision and closed directly, depending on the age and eyelid laxity of the patient. The defect is closed directly using the buried vertical mattress technique as described above.¹⁵ However, because the superior tarsus can be up to 9 mm larger than the inferior tarsus in its greatest vertical dimension, it must be approximated

using at least two or three simple interrupted 6-0 Vicryl sutures.

Tenzel Semicircular Advancement Flap

The Tenzel semicircular advancement flap described above for lower eyelid reconstruction can also be used to reconstruct the upper eyelid. The flap is designed so that the incision curves inferiorly and temporally in a semicircular fashion, and it is combined with a lateral canthotomy and superior cantholysis.¹⁷

Hinge Flap with or without Cheek Advancement Flap

In 1919, Esser²⁹ described an operation for reconstructing defects in the lower eyelid by rotating a full-thickness flap from the upper lid. However, as Mustardé³⁰ has noted, taking significant tissue from the upper lid runs the risks of interfering with a “complex and highly valuable structure” to repair a structure that can be repaired with other excellent techniques. Thus, this flap is not often used for lower lid reconstruction but can be used for upper lid reconstruction.

Mustardé³⁰ described a technique that employs the use of a hinge flap with or without a cheek flap depending on the amount of upper eyelid skin to reconstruct. After division of the inferior limb of the lateral canthal tendon, slightly more than a quarter of the

lower eyelid may be transferred to the upper eyelid. When using this technique, one can ignore ~25% of the upper eyelid defect as the eyelid tissues are capable of stretch. The laterally located pedicle must be 4 mm to preserve the marginal artery that runs ~3 mm from the eyelid edge on the anterior surface of the tarsal plate. The hinge should be made at the midpoint of the upper eyelid defect. For reconstruction of larger defects of the upper eyelid, this technique is used in combination with a cheek advancement flap for reconstruction of the donor defect of the lower eyelid, as previously described. In this situation, the hinge point must be moved laterally, preserving one fourth of the lower eyelid from the lateral canthus. If the defect involves more than 75% of the upper eyelid, the hinge flap should be based medially. Greater than half of the length of the lower eyelid will be used to create the hinge flap and, thus, a composite free nasal septum chondromucosal graft is required for reconstruction of the posterior lamella of the lower eyelid to provide adequate support.

Cutler-Beard Bridge Flap

In 1955, Cutler and Beard³¹ described reconstruction of large defects of the upper eyelid using an inferiorly based, full-thickness advancement flap from the lower eyelid. The leading edge of the flap is designed 3 to 5 mm inferior to the eyelid margin at the inferior edge of the tarsal plate to preserve this supporting structure in the lower eyelid and to avoid damage to the inferior marginal arcade. The vertical limbs of the flap are carried inferiorly to the conjunctival fornix to allow for maximal advancement of the flap. The flap is advanced under the bridge created by the intact inferior eyelid margin and inset into the upper eyelid defect. The conjunctival layer is separated from the orbicularis layer and inset into the upper lid defect. The tarsal plate is reconstructed by suturing a conchal cartilage graft using an interrupted 6-0 Vicryl suture to the remaining tarsal plate. The levator aponeurosis is sutured to the superior edge of the graft to restore elevation of the upper eyelid, and the skin is closed. The pedicle is divided at 3 weeks, and the edge of the remaining flap is sutured to the inferior edge of the lower eyelid bridge after deepithelialization of this edge. Fischer et al³² review their experience with three patients and report both good aesthetic and functional results.

RECONSTRUCTION OF MEDIAL CANTHAL DEFECTS

Secondary Intention Versus Skin Grafts

Healing by secondary intention of medial canthal defects was first described by Fox and Beard.³³ Harrington³⁴ reported consistently excellent results when medial canthal defects 10 mm or less in diameter were allowed to

heal by secondary intention. However, when defects 15 to 22 mm in diameter were allowed to heal in this way, their clinical course became complicated with excessive scarring and ectropion. In our practice, this option is used only for small defects because of the unpredictable scarring and the lengthy time required for the defect to heal. Instead, we have found improved results when a full-thickness skin graft is used to reconstruct superficial defects of the medial canthus. Full-thickness skin grafts have the advantages of a lesser requirement for wound care, faster wound healing, and, overall, an easier recovery for the patient while resulting in an equal, if not better, aesthetic outcome when compared with healing by secondary intention. If there is adequate skin laxity of the ipsilateral upper eyelid, we prefer to use this as donor skin. Other donor sites in order of preference are the postauricular and supraclavicular skin. We prefer to use a graft that is up to 10% wider than the defect to compensate for secondary contraction. The graft is sutured into place using an intermittently tied, continuous 6-0 nylon suture around the wound edge. We do not place any sutures blindly through the center of the graft into the highly vascularized medial canthal region because there is a risk of causing a hematoma resulting in graft failure. A Xeroform petrolatum gauze is used as a tie-down bolster. The tie-down bolster and the sutures are removed between 5 and 8 days postoperatively.

Glabellar Flap

In individuals with redundant glabellar skin, this skin can be recruited in the form of a rotation^{35,36} or transposition flap³⁷ to reconstruct medial canthal defects. The glabellar flap is designed as an "inverted V" overlying the glabellar skin, with the base located inferomedially, adjacent to the medial canthal defect. The glabellar flap has a random-pattern blood supply derived from the subdermal plexus and is dissected in a plane deep to this plexus to yield a flap composed of skin and some subcutaneous tissue that will match the thinner skin of the medial canthus. Yildirim et al³⁸ describe combining a glabellar flap with a V-Y nasolabial advancement flap to repair medial canthal defects up to 30 mm in diameter. The glabellar flap has the advantages of being relatively easy to perform, having less secondary contraction than does a full-thickness skin graft, having a good blood supply making it useful in reconstructing defects that extend down to bone, and providing an excellent aesthetic result.³⁶ A disadvantage of this flap is that closure of the donor site results in narrowing of the space between the eyebrows.

Forehead Flap

The forehead flap was originally described by Kazanjian and Roopenian.³⁹ This is an axial flap and is usually

based on the supratrochlear and supraorbital arteries. This flap is initially elevated in the submuscular plane and then in a subperiosteal plane as the pedicle is approached to avoid damage to these arteries. The base of the flap is 2 to 3 cm wide, and the flap can be up to 7 or 8 cm in length.⁴⁰ The flap is bridged over any intervening skin and inset into the defect. The donor site is closed primarily. The pedicle of the flap is divided 3 weeks after the initial surgery. This flap can be combined with various other procedures to repair full-thickness defects of the eyelids. Price et al⁴¹ reviewed their experience using the forehead flap to reconstruct various periorbital defects in 18 patients and found it to be a reliable and versatile technique that resulted in excellent aesthetic and functional reconstructions.

We use this flap to reconstruct medial canthal defects that may or may not involve the eyelids when the aforementioned techniques cannot be performed due to poor blood supply at the recipient site, deep or extensive tissue loss at the recipient site, and unavailability of the usual donor sites for more suitable reconstructive techniques.⁴² The significant disadvantages of this flap include its thickness and variable color and texture match when compared with the native skin of the eyelid and that it requires at least two stages to perform and possibly a third stage if contouring of the flap is required. Various authors have described a variation of the forehead flap, the median forehead island flap, which has the advantage of requiring only one stage to perform.^{43,44}

RECONSTRUCTION OF LATERAL CANTHAL DEFECTS

Superficial defects of the lateral canthal region can be repaired using a Tenzel semicircular advancement flap. The semicircular incision is usually 3 to 4 times the diameter of the defect, and the flap dissection is performed superficial to the orbicularis oculi muscle.

CONCLUSION

A variety of defects of the upper and lower eyelids can be encountered after Mohs surgery. The goals of eyelid reconstruction are to provide structural and functional restoration with an acceptable aesthetic result. A thorough knowledge of the intricate anatomy of the eyelids combined with familiarity of the wide variety of reconstructive options is required to achieve these goals.

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