I. Anatomy

- A. Skin
  Thinnest skin in the body with minimal subcutaneous fat and excellent blood supply.

- B. Orbicularis muscle
  Divided into the palpebral and the orbital sections. The palpebral is further divided into
  the pretarsal and preseptal areas. Pretarsal portion attaches to the tarsus and to the lateral
  orbital tubercle via the lateral canthal tendon.

- C. Subcutaneous fascia
  Deep to orbicularis muscle with neural and vascular supply to lid

- D. Septum
  Divides extraorbital contents from intraorbital contents. In upper eyelid it attaches to
  levator at the superior edge of the tarsus (western eyelid). In the lower eyelid it attaches to
  the inferior edge of the tarsus. Laterally it blends with lateral canthal tendon, medially
  extends from upper to lower lid.

- E. Orbital fat
  Two compartments in the upper - medial and central Three compartments in the lower -
  medial, central, and lateral

- F. Other structures
  Levator muscle - primary lid elevator, CN III
  Muller's muscle - originates from belly of levator and inserts on the retrotarsal margin,
  sympathetic
  Tarsal plate - fibrous plate that is 10 mm wide upper lid and 5mm wide in the lower lid in
  the central aspect. It tapers at the medial and lateral margins.
  Lid crease - line created by the insertion of levator aponeurosis and orbital septum into
  the orbicularis, subcutaneous tissue and skin
  Lid fold - tissue above lid crease that may prolapse over crease
II. INDICATIONS

Functional

- A. Impaired vision secondary to overhanging lid skin or brow ptosis
- B. Visual field defect
  - Superotemporal skin excess or large medial upper fat pad
- C. Asthenopia - sagging skin on to eyelashes causing frequent blinking and eye fatigue
- D. Interference with optical correction secondary to bulging fat pads contacting eye glasses
- E. Full thickness skin graft donor site

Cosmetic

- A. Blepharochalasis - atony and relaxation of the lid skin which becomes extremely thin and wrinkled. Etiology unknown, rare, usually young women, generally poor surgical result
- B. Dermachalasis - relaxation and hypertrophy of the lid skin, the fascial bands which connect the skin with the orbicularis muscle become relaxed resulting in a flabby pouch (pseudoptosis). Secondary to age and sun exposure.
- C. Pseudoherniation of intraorbital fat - secondary to thinning of the orbital septum and orbicularis. Hereditary.
- D. Hypertrophy of the orbicularis muscle - secondary to blepharospasm or excessive squinting
- E. Festoons - lower lid with marked thinning and redundancy of the orbicularis

III. Contraindications (relative)

Proptosis, deep set eyes, dry eyes, coagulopathy, significant ocular pathology

IV. Preoperative evaluation

- A. Complete H and P
- B. Thorough ophthalmologic exam - acuity, pressures, shirmer test, EOM's, ptosis with scleral show, eyelashes, puncta, lid laxity test (snap back test - if slowly snaps back or can easily be pulled 6mm away from globe then must also perform a tightening procedure), retina.
- C. Observe for other concomitant cosmetic deformities
- D. Generalized skin conditions (acne, keloids)
- E. Document with photographs preoperative and postoperative
- F. Examine for realistic expectations
- G. Review anesthesia choices
V. Operative techniques

- A. Upper lid
  Elliptical incision lower most aspect 7 - 12 mm from ciliary margin in mid-pupillary line following superior border of tarsus.
  Lateral edge is slanted upwards to avoid dog ear and tighten skin of lateral canthus. A skin or skin muscle flap should be performed. One should pinch the flap and ensure that no more than 1-2mm of eyelid opening occurs. Remove fat from medial and central fat pads while taking care not to injure the superior oblique muscle which separates them. Close with fine nylon suture. Variations include:
  - the production of a supratarsal fold by directly sewing the levator aponeurosis to the lower skin incision.
  - Silver's technique involves the development of a flap after the lower incision is made and then draping the excess skin over the incision and excising this skin only.
  - A Lewis interpolation is designed to remove excess skin in the lateral canthus by connecting the upper and lower ellipses with a Z plasty.
  - Laser blepharoplasty performs all the steps with the laser. It's advantage is decreased time and swelling.

- B. Lower lid
  A skin or skin muscle flap with an incision 2 mm below the ciliary margin or in the first natural crease. Extend laterally into a natural crease. Applying gentle pressure to the globe after the septum has been incised allows for better identification of the orbital fat. Absolute hemostasis is necessary. Care must be taken to avoid excess fat removal laterally to avoid a hollow appearance. Remove half of the skin you feel would remove all the excess to avoid ectropion. Close with fine suture. Variations include:
  - Hypertrophy of the orbicularis oculi muscle. Can excise or imbricate the muscle.
  - Festoons can trim muscle and suture to soft tissue or periosteum. Senile lids with marked skin excess but little fat herniation. Excise greater amount of skin and consider temporary tarsorrhaphy postop to allow skin to readhere to the muscle. Silver's technique as in upper blepharoplasty.
  - Transconjuctival approach - advantages include decreased edema and no scar. Incidence of ectropion, scleral show, and epiphora is also lower. Unable to excise excess skin. May perform preseptal or postseptal.
  - Lower lid tightening procedures may also be necessary. They should be tailored to the site of laxity (medial or lateral)

POSTOPERATIVE CARE

Cool compresses, close observation to rule out hematoma, HOB elevated, bacitracin. Suture removal in approximately 3-4 days. Makeup in 1 week.
COMPLICATIONS

- A. Dissatisfied patient
- B. Dry eye syndrome - patients with inferior scleral show, exophthalmos, proptosis, sagging lower lid, abnormal shirmer's test, excessive skin removal, iatrogenic injury to lacrimal sac. Treat with corneal lubrication and observation initially.
- C. Epiphora - Common postop for the first few days secondary to swelling. Remember that the lower canaliculus is responsible for 85% of the drainage and that no dissection medial to the puncta should be performed. Excessive skin and muscle excision can also result in eversion of the punctum. Treat with observation initially.
- D. Corneal injury - BE CAREFUL to protect cornea during all aspects of the surgery. POSTOPERATIVE PAIN THAT IS PERSISTENT MUST BE EVALUATED WITH FLUORESCEIN STAIN TO RULE OUT CORNEAL ABRASION.
- E. Subcutaneous or submuscular hematoma - allow liquification and attempt needle aspiration. Early steroid injections may also help reduce scar formation.
- F. Retrobulbar hematoma - look for signs of hard, proptotic eye. Decrease visual acuity is a late sign. Begin mannitol, cold compress, perform lateral canthotomy, open incision.
- G. Blindness - etiology unknown. Felt to primarily be related to retrobulbar hematoma with pressure on the central retinal vessels.
- I. Ptosis - damage to levator aponeurosis. Must repair primarily.
- J. Infections - rare. Treat as usual.
- K. Skin loss - exceptionally rare because of excellent blood supply.
- L. EOM muscle imbalance - Inferior oblique is vulnerable between medial and middle fat pads of inferior bleph (especially transconjunctival). Most smaller injuries will resolve on their own in time. If imbalance exists after 6 months then surgical correction is necessary.
- M. Ectropion - Must take all precautions listed above in preoperative and operative steps.
- N. Lagophthalmos - may be normal in early postoperative period. Permanent if excised to much skin. May require FTSG.