Minimal Invasive Techniques for Periorbital Rejuvenation

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Background: The lower eyelid anatomy is very complex and variable. Many operative and non-operative interventions have been described and to improve the aesthetic properties of the lower eyelid and cheek region. In general, the more invasive the procedure, the higher the risks and complications. As our knowledge of orbital soft tissue and bony aging deepens, our focus in minimizing invasive surgical interventions has accelerated. Herein, we describe a series of minimally invasive techniques that can be customized to enhance outcomes of brow, lower eyelid and cheek rejuvenation.

Methods: The lower eyelid is evaluated for lateral and medial canthal position, degree of scleral show, globe protrusion, inferior, lateral and superior orbital rim position relative to the anterior cornea and dorsal nasal height. The regional anatomy of the orbit is analyzed in the context of eyebrow position, the brow shape, the inclination of the forehead and the relative prominence of the zygomatic-orbital and maxillary bones. The deep and superficial fat compartments of the orbital region and lower eyelid are assessed. The degree and extent of tear trough deformity is noted. The degree of excess skin and the extent of textural and pigmentary charges of the skin surface are noted along with the tone of the lower eyelid.

Results: Diagnosis of the presenting deformities associated with periorbital and eyelid aging led us to formulate 4 minimally invasive procedures that can be used alone or in combination with other eyelid procedures and during face and browlift:

1. **Superficial Cell Grafting and Deep Compartment Fat Injection**. A specially designed, disposable, off the shelf fat drawing and cell grafting kit is used. Fat is injected through 18-gauge needle incisions with a variety of small, disposable cannulae.
2. **Minimally invasive release of the orbitomalar ligament** is carried out through 3 mm incisions after volume restoration if needed.
3. **Pinch blepharoplasty** and chemical peel or laser resurfacing is then performed if indicated for skin laxity and/or photodamage.
4. **Marionette browlift with shuttle needles**

Over a 6 years' period, these procedures have been carried out in 120 patients having either lower eyelid surgery either alone or in combination with other procedures. Case examples will be presented for each of the 4 techniques and their limitations will be discussed.

Conclusions: Using a precise diagnostic workup, complex orbital and eyelid aging can be addressed using a simplified treatment algorithm which alters the current treatment

philosophy of fat reduction and skin muscle flap dissection for lower eyelid surgery in many cases without compromising outstanding surgical outcomes.