

## Aesthetic Abstracts and Citations

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**In the Aesthetic Abstract and Citations section, we highlight and briefly discuss recently published articles from other peer-reviewed journals that may be of interest to our oculo-facial plastic surgery readership. These are just cursory reviews to peak an interest on subjects, which the individual reader may desire to pursue in more detail by reading the manuscript in full.**

**Jeong HS, Lee BH, Sung HM, et al. Effect of botulinum toxin type A on differentiation of fibroblasts derived from scar tissue. *Plast Reconstr Surg* 2015;136:171e–8e.**

Over the past decade, it has been reported that the local injection of botulinum toxin type A (BTX-A) may reduce wound contracture and scar formation after incisional surgery. The mechanism of how BTX-A modulates scar formation is still under investigation, although it is believed that it functions by modulating fibroblast proliferation and differentiation. It is suggested that BTX-A downregulates the production of transforming growth factor (TGF)- $\beta$ 1, which in turn promotes fibroblast growth, the production of collagen type 1, and the differentiation of fibroblasts to myofibroblasts which enhances wound contraction. In this study, the authors set out to determine what effect BTX-A has on fibroblasts derived from normal and hypertrophic scar tissue. Specifically, the authors studied whether BTX-A inhibits fibroblast proliferation and the differentiation of fibroblasts into myofibroblasts, in vitro, in these 2 tissue specimens. The authors cultured fibroblasts obtained from 10 scars (9 patients), 5 of which were normal, mature scars and the remaining 5 hypertrophic scars. Fibroblasts were isolated after induction with TGF- $\beta$ 1 and culture with BTX-A. Control groups were not cultured with BTX-A. The authors investigated fibroblast proliferation, reverse transcription PCR, and immunohistochemistry. They found that BTX-A significantly decreased fibroblast proliferation in both normal and hypertrophic scar samples. Also, BTX-A decreased the differentiation of fibroblasts into myofibroblasts in hypertrophic scars, defined by a reduced production of  $\alpha$ -smooth muscle actin. This effect was not shown in the group of normal scars.

**Message:** This study provides in vitro evidence that BTX-A reduces fibroblast proliferation in both normal and hypertrophic scars, and myofibroblast differentiation selectively in hypertrophic scars. This concept of chemoinhibition may be worth keeping in mind when treating hypertrophic scars or postsurgical scars under undue tension.

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**Stephens DM, Richards BG, Schleicher WF, Zins JE, Langstein HN. Is ketorolac safe to use in plastic surgery? A critical review. *Aesthet Surg J* 2015;35:462–6.**

The reduction of pain following aesthetic surgery plays a vital role in postoperative patient comfort, and in reducing the administration of narcotics, with their inherent side effects. Ketorolac tromethamine (Toradol), a powerful nonsteroidal anti-inflammatory drug (NSAID), provides analgesia by nonspecifically blocking the cyclooxygenase (Cox 2) pathway, thus inhibiting the synthesis of prostaglandins, prostacyclins, and thromboxane A<sub>2</sub>, without effect on the coagulation profile. Despite this, aesthetic surgeons have been fearful of prescribing Ketorolac after surgery for fear of bleeding and postoperative hematoma. Interestingly, postoperative treatment with Ketorolac has been evaluated in other surgical disciplines (i.e., otolaryngology, orthopedic surgery, urology, cardiac, neurosurgery, and general surgery) without an increase in such complications. In this report, the authors critically review the literature on the use of Ketorolac after plastic surgical procedures to evaluate if there is an increased rate of postoperative hematoma and bleeding after surgery. An in depth review of the literature found only 6 relevant studies, which included 981 procedures including facial aesthetic surgery, breast augmentation/reduction, and breast reconstruction with vascularized flaps. Two of these evaluated facial aesthetic surgeries specifically. Overall, the results showed a similar incidence of hematoma when comparing Ketorolac use (2.4%) to no treatment with Ketorolac (control—2.5%). Also, when the combined procedures from all studies were subdivided into specific operation performed (facial or breast), there was no statistically significant difference in bleeding in the Ketorolac group as compared with control. Individually, 5 of the 6 studies showed no increased risk of bleeding with the use of Ketorolac. One study, an outlier, showed and increased incidence of hematoma in breast reduction surgery. All studies showed a significant reduction in both postoperative pain and narcotic use.

**Message:** The study is limited as only 6 reports met inclusion criteria. However, it is well performed, concise, and clearly written. Whether the conclusions drawn apply specifically to blepharoplasty needs further study. However, it is encouraging that evidence in facial aesthetic surgery (2 of the studies in this report) has examined ketorolac use postoperatively and found no increased incidence of hematoma formation.

**Tepper OM, Steinbrech D, Howell MH, Jelks EB, Jelks GW. A retrospective review of patients undergoing lateral canthoplasty techniques to manage existing or potential lower eyelid malposition: identification of seven key preoperative findings. *Plast Reconstr Surg* 2015;136:40–9.**

In aesthetic canthal surgery, there is an art to finding a balance between maintaining function (appropriate eyelid suspension and support), and appearance (less distortion is better). Identifying a preoperative evaluation palate to improve safety, efficacy, and patient satisfaction is worthwhile. In this report, the authors describe their experience with looking at specific physical findings preoperatively to improve surgical success with aesthetic canthal procedures. The authors evaluated all patients operated on in 2005. One-hundred and forty-six out of 288 (52%) patients were included, and all had at least 5-year follow up. Five standard preoperative evaluations included 1) vector analysis (defined as positive, neutral, or negative),

2) snapback/distraction testing, 3) identification of scleral show, 4) an assessment of canthal tilt (positive/neutral/negative), and 5) measurement of the soft-tissue distance from the lateral canthus to the orbital rim (defined as  $>$  or  $<1$  cm). In patients with pre-existent lower eyelid retraction, a grading of midface descent and what the authors refer to as “eyelid restriction” (assume limitation of upwards eyelid excursion) was added. Thus, 5 to 7 parameters were evaluated in each patient. The authors performed 4 variations of canthal surgery guided by findings on preoperative examination. These included inferior retinacular lateral canthopexy or canthoplasty, performed through an upper eyelid crease access point, in 85% of patients, and a tarsal strip or a dermal-orbicular pennant lateral canthoplasty in the remaining 15% of patients. The authors found 62% of patients had negative vector topography and suggest this morphology may increase the likelihood for patients to seek cosmetic eyelid surgery. The authors found a 13% overall reoperation rate over a 5-year period, greater in those having a tarsal strip or dermal-orbicular pennant. These patients were more complicated with a greater number of preoperative deformities. The major finding in those needing reoperation was preexistent midface descent. Patient and surgeon satisfaction with outcome was high (88%–100% depending on procedure) in all but those who underwent tarsal strip lateral canthoplasty (53% and 63%, respectively). This group also had the highest reoperation rate (46%). The parameters of evaluation described are presented nicely in a flow sheet (Fig. 9) within the body of the text.

**Message:** This is a nice summary of the authors’ preferred method of selecting their range of canthal suspension during blepharoplasty. Reference to previous publications is needed to understand the procedure choices and details. An explanation of how procedure satisfaction was identified, and a discussion of what findings correlated to procedure choice would have added clarity. The finding that in aesthetic patients open canthal surgery (such as a tarsal strip), correlates to reduced patient satisfaction (although lower than expected), is important and in line with one of the reviewers (GGM) personal experience.

**Mahmood U, Baker JL, Jr. Lateral subcutaneous brow lift: updated technique. *Aesthet Surg J* 2015;35:621–4.**

The lateral subcutaneous brow lift has been described previously. It is advantageous in the appropriate patient, who desires a lateral brow lift, with minimal operative time, recovery, and cost. It is also neuroprotective because of the plane of dissection utilized. This study reviews a surgical modification of the standard procedure performed in 100 patients. A pretrichial incision is made starting medially in line with the pupil, and coursing laterally along the hairline ending temporal to the tail of the brow. The incision, on average runs 5 cm. Dissection proceeds subcutaneously to a distance approximately 1 cm above the orbital rim. The modification described is to extend the dissection pocket laterally approximately 1 cm temporal to the lateral canthus with manual probing. The skin flap is raised and the lateral brow is elevated to the desired height. A vertical incision is made in the flap which is then fixated with a single 3-0 nylon cardinal suture. This allows appropriate excision of skin on both sides of this fixation point. The wound is closed with 4-0 nylon suture, and the cardinal suture is removed. There is minimal description of surgical results, but the authors report no complications including paresthesias, scarring, hairline infection, seromas, or hematomas. The authors highlight benefits of the procedure, including dissection above the sensory nerves,

the ability to perform the procedure in 15 minutes per side under local anesthesia, and the lack of need for special equipment.

**Message:** Many in our specialty routinely perform lateral subcutaneous brow lifts. The surgical modification described is small but may further enhance results by localizing greater superficial release and elevation of the outer brow. This short article is worth reading for those interested in this variant of brow lift surgery.

**Doumit G, Gharb BB, Rampazzo A, et al. Surgical anatomy relevant to the transpalpebral subperiosteal elevation of the midface. *Aesthet Surg J* 2015;35:353–8.**

Elevation of the midface may be accomplished endoscopically or transeyelid. When performed through the eyelid, a sub- or suprapariosteal dissection plane can be used. In this study, the authors performed cadaveric dissections of the major motor and sensory nerves at risk of injury during subperiosteal transeyelid midface lifting. This was done to identify parameters of safety in protecting these nerves when elevating (releasing retaining ligaments) and suspending (suture placement) the midface during surgery. The nerves studied included the infraorbital nerve (a branch of cranial nerve 5 - sensory) and the zygomatic branches of the facial nerve (branches of cranial nerve 7 - motor). In addition, the authors assessed the effect of releasing the zygomatic and masseteric cutaneous ligaments on amount of vertical midface elevation. The authors’ technique consisted of midface elevation via a transconjunctival and upper gingiva-buccal sulcus incision. The authors identified, on average, 3 branches of the zygomatic division of the facial nerve. These branches were within a zone approximately 6 mm above and below the inferior border of the zygomaticomaxillary suture and about 6 mm anterior to the tragus. On average, the deep portions of the 2 superior branches of the nerve course approximately 1.5 mm above bone (inferior branch does not lie above bone). The infraorbital nerve emanates an average of 9.4 mm below the orbital rim and generally divided into 5 branches that innervate the lower eyelid, ala, medial and lateral upper lip, and lateral cheek areas. These branches have varied deep (suprapariosteal) courses, the longest of which are the medial and lateral upper lip branches (approximately 12.5 mm in length). Finally, the authors found that vertical elevation of the midface with their approach was approximately 4 mm medially and laterally without release of the retaining cutaneous ligaments, with an additional 4 mm to 5 mm of elevation with release of these retaining ligaments. The authors concluded that because of the course and proximity of the nerves studied in relation to the periosteum, damage to these nerves can occur when the zygomatic ligaments are released or the mid face suspension sutures are placed, although this has rarely been reported in the current literature (6.4%-sensory, 1.0%-motor, respectively). These data suggest engaging deep midface tissue 13 mm lateral to the ION is protective. While the authors do not state it, a more inferior engagement of tissue should protect against motor neurodamage.

**Message:** The study is a valuable read for all in our field as it is so pertinent to our subspecialty. A few points are worth contemplating. First, if surgery is truly subperiosteal, the zygomatic ligaments need not be released if the underlying periosteum is mobilized and released for elevation. What is added, besides the author’s suggested increase risk of nerve injury? Finally, many perform this surgery suprapariosteally without more than minor issue with neuromotor or sensory changes. Maybe the rich neuroanastomoses of these nerves is protective.