Aesthetic Abstracts and Citations

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In this 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 readership in oculoplastic surgery. 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 article in full.

Kridel RW, Strum-O'Brien AK. Acellular dermal grafts for tear trough deformity in revision lower blepharoplasty. *Jama Facial Plast Surg* 2013;15:232–4.

The authors describe their experience with the implantation of custom-trimmed acellular dermal grafts (Alloderm grafts) to the "tear trough" for volume augmentation in 8 patients who had previously undergone lower blepharoplasty with the development of postoperative eyelid–cheek interface depressions, and one patient who had Graves disease with the same finding. All patients had inadequate native eyelid fat to reposition to address the deformity in this manner. The graft is placed through a transcutaneous incision without septal violation, over the noted depression, without suture fixation, and with subsequent orbicularis plication (at the canthus) and skin closure. The study includes 7 women and 2 men with an age range of 40 to 74 years. Follow up is 4 years in 1 patient, 9 and 10 months in 2 patients, and 2 to 4 months in the remaining 6 patients. One pre/postoperative patient photograph is presented. This woman has severe orbital hollows pretreatment. She is better after surgery (4-year follow up) but still very orbital volume deficient. The authors promote this surgical option as it is quick, long lasting, and the implanted material is biologically inert, stimulates tissue ingrowth (stability), creates no donor site morbidity, does not lead to the contour irregularities and other potential risks of fat grafting, and does not need repeat treatments as with hyaluronic acid gel filler injections.

Message: This is a small series with minimal follow up in all but 1 patient. It would have been nice to see more examples. A description of what the authors refer to as a "tear trough" would have been helpful. The only example photo-documented is primarily an orbital hollow and not a eyelid–cheek depression. This reviewer has used the method described for filing forehead depression with good success. The forehead skin is thicker and more forgiving as compared with eyelid skin. This is an intriguing concept worth thinking about.

De Pasquale AQ, Russa G, Pulvirenti M, Di Rosa L. Hyaluronic acid filler injections for tear-trough deformity: injection technique and high-frequency ultrasound follow-up evaluation. *Aesth Plast Surg* 2013;37:587–91.

This study illustrates the author's hyaluronic acid gel injection technique for tear trough effacement and demonstrates the utility of high-frequency diagnostic ultrasound in the assessment of dermal filler longevity. Twenty-two patients (18 women and 4 men; age range 29–65 years, mean 47 years) are included in the report. Twenty of the 22 patients had 3-year follow up. The patients were prospectively evaluated clinically and with photographs for tear trough fill when injected with high-concentration hyaluronic acid filler (24 mg/ml hyaluronic acid; 100–300 lm particles; Uma Jeunesse, Seventy BG s.r.l., Milano, Italy), with a 27-G needle. In addition, ultrasound evaluation determined both the presence and location of the filler on serial follow-up evaluations. Ice application was used for pain control, and the technique consisted of 3 depot injections (0.1–0.3 ml at a time) along the tear trough (0.5 mm below orbital rim) located 0.5 cm medial to the canthus, 1 in line with the pupil, and the last 0.8 cm medial to the lateral canthus (average approximately 0.45 ml filler per side). The needle progressed to bone, and the hyaluronic acid was deposited in a retrograde fashion as the needle was withdrawn through subcutaneous tissue. Patients were evaluated at 7 days, at 1, 6, and 12 months after the procedure, and then yearly. At 1 week follow up 21 of 22 patients received filler augmentation at the 3 sites (0.1–0.2 ml per site, no more than 0.4 ml total). Ultrasound examination started 1 month after injection. Injection-related complications included eyelid edema (2 patients, 9.1 %), bruising (4 patients, 18.2 %), discomfort or pain during the injections (2 patients, 9 %), and lumps due to overcorrection (6 patients, 27.3%). Per physician assessment all patients had excellent final cosmetic results. For various technical reasons (refer to article) it was difficult to assess volume of the filler accurately by ultrasound once it had been injected in the treated area. However, it was always possible to measure its thickness within the eyelid, and its duration lasted up to 36 months. Also, ultrasound demonstrated that filler was routinely found within the orbicularis muscle and not between the muscle and bone.

Message: The postinjection long-term photographic results depicted are very good and the sonographic data are interesting. The retention of filler at 3 years (at least this high-concentration filler) stimulates thought as to more conservative injection amounts at even late retreatment. The authors suggest that the reproducible presence of filler within orbicualris (not between muscle and bone) substantiates the idea that the orbicularis is adherent to bone without a "sub-orbicularis" injection plane at the tear trough. It may also be true that the injection technique described (retrograde as needle is withdrawn through tissue) may account for this finding.

Youn S, Shin JI, Kim JD, Kim JT, Kim YH. Correction of infraorbital dark circles using collagenase-digested fat cell grafts. *Dermatol Surg* 2013;39:766–72.

This article details the use of collagen-digested fat cells to reduce "dark circles" overlying infraorbital hollows. Dark circles have been hypothesized to be due to hyperpigmentation related to active dermal melanocytes or postinflammatory change, to shadows cast by topographic change from relative fat herniation above, and to visibility of the subcutaneous vascular plexus or orbicularis muscle. Treatment of the first 2 causes using topical bleaching agents, lasers, chemical peels, or surgery has been described. The purpose of this study is to detail the efficacy and safety of treating the latter etiology with collagen-digested harvested autologous fat injected just below the skin overlying the dark circle. Collagenase is used to dissociate the connecting fibrils between fat cells in their lobules, which creates a

From Ophthalmic Plastic and Reconstructive Surgery, Beverly Hills Ophthalmic Plastic Surgery, Beverly Hills, California, U.S.A.

Accepted for publication July 3, 2013.

The authors have no financial or conflicts of interest to disclose.

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DOI: 10.1097/IOP.0b013e3182a650f6

suspension of fluid containing smaller clusters of cells. This fluid "filler "can be injected using small-gauge cannulas. The authors believe that the fine nature of this solution enables smooth dispersion of the fat grafts to the lower eyelid, which eliminates the occurrence of contour irregularities that often occur after conventional fat injections. In addition, the authors cite research suggesting that fat prepared in this way is purer and more viable.

Eighty-two Asian patients (23 men, 59 women) aged 20 to 39 years (average 26.6), with a mean follow up of 12.7 months (range 8–25) are included. Fat is harvested from the inner thigh using the standard Coleman technique. It is centrifuged and mixed with Clostridium histolyticum–derived collagenase type II (Sigma-Aldrich, Saint Louis, MO), (refer to article for full preparation details), and then respun to remove collagenase. After regional anesthetic blocks the fat is injected *strictly* subcutaneously with a 22-G cannula, with the cannula visible at all times through the skin. The endpoint of injection is when the underlying color of the orbicularis muscle is blocked out. Results were assessed using photographs evaluated (for reduction in dark circles) blindly by 3 cosmetic surgeons. Patients were grouped based on improvement. The bottom line is that 67% of patients improved, 28% were unchanged, and 5% worsened, with good photographs demonstrating each subset. Post-treatment bruising was minimal, there were no contour irregularities (lumps, bumps), and edema generally subsided in 7 to 10 days. Nine patients from the stable or worsened group underwent staged skin peeling or blepharoplasty to improve their result.

Message: Dark circles under the eyes are a common problem which is challenging to address. This article details a novel idea, which many of us may know little about. This is a study on a purely Asian population, and this factor may bias outcome. Notwithstanding this limitation, this article is worth evaluating for those interested in this frequent patient complaint.

Byun S, Mukovozov I, Farrokhyar F, Thoma A. Complications of browlift techniques: a systematic review. *Aesth Surg J* 2013;33;189–200.

The authors' performed a literature search on browlift publications to identify whether there is a difference in complication rates between open and endoscopic approaches to surgery, based on incision site and plane of dissection. Open approaches include anterior hairline, coronal, temporal, midforehead, direct, and transblepharoplasty techniques. The following databases were searched; MEDLINE, EMBASE, CINAHL, LILACS, Web of Science, Cochrane Libraries, controlled-trials.com, and clinicaltrials.gov. The key words used for the search were *brow* or *browlift* or *eyebrow* or *forehead* and *surgery*, and the search included a 32-year span from January 1980 to January 2012. Only studies (noncase report) written in English of open and endoscopic procedures, with more than 10 subjects, studies that described incision site and plane of dissection and in which complications were reported were included (see report for details of inclusion/exclusion criteria). The search returned a total of 7920 articles, which was reduced to 82 after exclusion criteria were assessed. Eighty of the 82 studies were retrospective chart reviews. There were no randomized controlled trials, but there were 2 cohort studies that compared endoscopic and open surgery. Endoscopic techniques were used in 35 studies and open techniques in 49 studies. The most commonly used surgical approaches were anterior hairline incision with subcutaneous dissection (11 studies), coronal incision with subperiosteal (7 studies) or subgaleal dissection (7 studies), and endoscopic approaches with subperiosteal dissection (32 studies). Among all browlift techniques the following were the most common complications: alopecia (3.0–8.5%) highest with the anterior hairline incision with subcutaneous dissection (8.5%), motor branch nerve injury (0.0–6.4%) highest with the coronal incision with subperiosteal dissection (6.4%), paresthesia/dysesthesia (0.3–6.2%) highest with endoscopic surgery in the subperiosteal plane (6.2%), and unacceptable scarring (1.4–3.6%) highest with the coronal subgaleal approach (3.6%). Across the board there was a larger percentage of complications with endoscopic surgery. Of note to our specialty is that transblepharoplasty browpexy in a subgaleal plane (just above perisoteum) is most commonly associated with hematoma (2.4%), repeat surgery (1.3%), motor nerve injury (frontal branch of facial nerve; 1.0%), and asymmetry (1.0%). Complications were less commonly reported for midforehead, direct, and temporal browlifts.

Message: Analyzing data from such a large series of studies in a statistical way is complex and difficult to review in this abstract. Please refer to the article for this explanation. It is interesting that the "less invasive" endoscopic technique was associated with more complications than open approaches and with a greater variety of complications. Also we have placed too much emphasis on avoiding frontal branch injury with this procedure when, in fact, sensory injury (supraorbital nerve or branches) is more frequent (6.2% vs. 1.5%). This reviewer's experience is consistent with this.

Lopiccola MC, MD, Mahmoud BH, Liu A, MD, Sage RJ, Kouba DJ. Evaluation of orbicularis oculi muscle stripping on the cosmetic outcome of upper lid blepharoplasty: a randomized, controlled study. *Dermatol Surg* 2013;39:739–43.

In the previous aesthetic citation section of this journal, an article on the cosmetic benefit of orbicularis excision during upper blepharoplasty was presented. The authors report a randomized, blinded study, comparing aesthetic outcome with blepharoplasty when performing skin excision and orbiculectomy on 1 eyelid and only skin excision on the other eyelid. Only 10 patients were included in the study (7 women, 3 men; average age 57 years, range 48–76). All surgeries were performed by a dermatologist with a standard scalpel and scissors for cutting; and all wounds were closed with Dermabond. There were no adverse events related to surgery. The aesthetic parameters evaluated were scar thickness, width, color, texture, and overall eyelid appearance. Each parameter was graded 1 to 5 (1, excellent eyelid aesthetics, scar matches surrounding skin; 5, poor eyelid aesthetics, scar does not match surrounding skin). In addition a composite score of all variables was assessed. Both patient and 2 separate blinded physician evaluations of these parameters were performed at 1, 3, and 17 months after surgery. As opposed to the previously cited article on this topic, which did not have a control for comparison, and subjectively stated a benefit to orbicularis excision; this report found no statistically significant difference noted in any variable, or the composite score of all variables, between the orbiculectomy and the nonorbiculectomy side. This was true for both patient and blinded physician grading of outcome.

Message: This is the first controlled study evaluating orbicularis excision during upper blepharoplasty. The data suggest that orbiculectomy has no effect on the aesthetic outcome of upper eyelid blepharoplasty relating to the variables studied. The patient number is small, weakening the power and conclusion of the report. In addition, some may question the report as it is performed by a members of a nonsurgical discipline.