Blepharoplasty

Editor

JAMES E. ZINS

CLINICS IN PLASTIC SURGERY

www.plasticsurgery.theclinics.com

January 2025 • Volume 52 • Number 1

Preface
Blepharoplasty

James E. Zins, MD, FACS
Editor

Correction of facial aging of the periorbital area in general is perhaps the most difficult area of the face for the young plastic surgeon to master, and correcting aging in the lower lid region is perhaps the most difficult portion of the periorbital area. The reason for this is severalfold. First, the anatomy is quite complex, and mastering this anatomy in the three-dimensional view requires diligent study. In addition, multiple structures in the lower lid have been given multiple names, further confusing the neophyte. Finally, many different procedures have been suggested over the years to correct these signs of periorbital aging. Therefore, the first requisite in mastering this area is a firm understanding of this three-dimensional anatomy. Once the nuances of this anatomy and the relationship of the lower lid structures are understood in detail, addressing the problems of the aging periorbital area becomes easier to understand and treat.

Trends in treatment of the lower lid have evolved significantly over time. Traditionally, the lower lid aging was addressed by aggressive skin and fat removal through a skin or skin muscle flap. This often resulted in long-term adverse sequelae, including rounding of the palpebral fissure, lower lid scleral show, and overall periorbital deflation. More recently, less-aggressive or minimal skin removal, less-aggressive fat removal, and fat repositioning or fat grafting has been recommended. This is elegantly outlined in Core's excellent article in this issue. Tepper and colleagues[1] have popularized the "no-touch" technique of lower lid blepharoplasty. They suggest that minimizing trauma to the orbicularis muscle and orbital septum minimizes muscles dysfunction and lid malposition. An additional modern trend in lower eyelid surgery is the recognition of lower lid support using canthopexy/canthoplasty techniques in the majority of lower lid procedures. Even with mild laxity, lid-supporting techniques minimize the risk of lid malposition, which is the most common untoward effect of lower lid blepharoplasty. This is beautifully illustrated in the Pacella article on lower lid support.

In this issue, while adopting all of the principles outline above, we have suggested a graded approach to the lower eyelid. By this, we mean choosing the simplest procedure that will deliver an excellent result. In that rare instance where the patient presents with lower lid fat, no tear trough abnormality, and no skin excess, a retroseptal transconjunctival approach is all that is needed. This divides the inferior tarsal muscle and gives direct access to the fat pads. Division of the capsulopalpebral fascia also results in at least temporary lid elevation. Current trends also favor the transconjunctival over the subciliary approach, again in order to avoid lower lid misadventure. Transconjunctival techniques can be combined with both fat repositioning and skin resection using skin pinch (see Warren and Rosenfield's article in this issue) or skin-only flap elevation. Finally, more significant abnormalities of the lid-cheek junction and midface descent require a subciliary approach and soft tissue release, using mid facelift techniques as outlined in our article on complex cases.

It is hoped that this issue will serve the purpose of clarifying the complexities of lower lid anatomy

Clin Plastic Surg 52 (2025) ix–x
https://doi.org/10.1016/j.cps.2024.08.001
0094-1298/25/© 2024 Published by Elsevier Inc.

and simplifying the many options currently available for the correction of lower lid aging. If this should be the case, then the exercise has been worthwhile.

James E. Zins, MD, FACS
Department of Plastic Surgery
Cleveland Clinic
9500 Euclid Avenue
Desk A 60
Cleveland, OH 44195, USA

E-mail address:
zinsj@ccf.org

REFERENCE

1. Tepper OM, Steinbrech D, Howell M, et al. A retr ospective 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(1):40–9.

Contributors

EDITOR

JAMES E. ZINS, MD, FACS
Head, Fellow, Section of Aesthetic Surgery, Director of Multidisciplinary Aesthetic Surgery Center, Post Graduate Aesthetic Fellowship, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland Clinic, Cleveland, Ohio, USA

AUTHORS

MOHAMMED S. ALGHOUL, MD, FACS
Adjunct Assistant Professor, Northwestern Feinberg School of Medicine, Chicago, Illinois, USA; Private Practice, Alghoul Clinic, Amman, Jordan

DANIEL BAHAT, MD
Resident, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland, Ohio, USA

KATHLEEN COERDT, MD
Resident Physician, Department of Dermatology, Cleveland Clinic Foundation, Cleveland, Ohio, USA

GRADY B. CORE, MD, FACS
Core Plastic Surgery, Birmingham, Alabama, USA

PIERCE L. JANSSEN, MD
Fellow in Aesthetic Surgery, Clinical Fellow, Resident, Department of Plastic Surgery, Cleveland Clinic Foundation, Aesthetic Fellow, Cleveland Clinic, Cleveland, Ohio, USA

REBECCA C.S. KELLEY, DO
Resident, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland, Ohio, USA

SHILPI KHETARPAL, MD
Staff Physician, Department of Dermatology, Cleveland Clinic Foundation, Cleveland, Ohio, USA

VIKAS S. KOTHA, MD
Resident, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland, Ohio, USA

DANIEL O. LARA, MD
Resident Physician, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland, Ohio, USA

TARYN MURRAY, MD
Staff Physician, Department of Dermatology, Cleveland Clinic Foundation, Cleveland, Ohio, USA

SALVATORE J. PACELLA, MD, MBA, FACS
Professor of Surgery, Division Head, Plastic and Reconstructive Surgery, Scripps Clinic and Green Hospital, La Jolla, California, USA

HOMA POURRIYAHI, MD, MPH
Medical Student, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

LORNE KING ROSENFIELD, MD
Private Practice, Burlingame, California, USA; Clinical Professor, Department of Surgery, UCSF, San Francisco, California, USA; Adjunct Professor, Department of Surgery, Stanford University, Stanford, California, USA; Consulting Professor, Department of Surgery, Duke University, Durham, North Carolina, USA

NICHOLAS R. SINCLAIR, MD
Assistant Professor, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland, Ohio, USA

ANDREW W. STEELE, MD, MS
Aesthetic Surgery Fellow, Core Plastic Surgery, Birmingham, Alabama, USA; Lehigh Valley Hospital - Pocono, East Stroudsburg, Pennsylvania, USA

SAMI TARABISHY, MD
Former Aesthetic Fellow, Department of Plastic Surgery, Cleveland Clinic, Cleveland Clinic Foundation, Cleveland, Ohio, USA

RAFAEL RAMOS VECCHIO, MD
Resident, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland, Ohio, USA

RICHARD J. WARREN, MD, FRCSC
Clinical Professor of Surgery, Division of Plastic Surgery, University of British Columbia, Vancouver, British Columbia, Canada

JAMES E. ZINS, MD, FACS
Head, Fellow, Section of Aesthetic Surgery, Director of Multidisciplinary Aesthetic Surgery Center, Post Graduate Aesthetic Fellowship, Department of Plastic Surgery, Cleveland Clinic Foundation, Cleveland Clinic, Cleveland, Ohio, USA

Contents

The Pinch Blepharoplasty

Lorne King Rosenfield, MD[a,b,c,d,*,1], Homa Pourriyahi, MD, MPH[e,2]

KEYWORDS

• Eyelid aging • Eyelid rejuvenation • Complications • Scleral show • Dry eye • Malposition • Pinch blepharoplasty • Stitch canthopexy

KEY POINTS

- The pinch blepharoplasty procedure offers a confoundingly simple but reliable and safe strategy for lower eyelid rejuvenation.
- The pinch blepharoplasty technique must be married to an equally well-executed lateral canthopexy if it is to be maximally harnessed and confidently executed.
- The pinch blepharoplasty approach delivers a correction of the aging eyelid that is distinctly comprehensive with its deliberate address of the excess skin, the periorbital/nasojugal grooving, and the eyelid posture.

Video content accompanies this article at http://www.plasticsurgery.theclinics.com.

INTRODUCTION

At the risk of sounding hyperbolic, the pinch blepharoplasty has, more than any other strategy, propitiously altered the trajectory of not only my esthetic practice but also my surgical philosophy itself. How you may ask, could one simple twist of technique deliver so profoundly? The answer is that, like so many other technologies, it is usually the ones that appear to be obviously so much better … only *after* you have experienced their predecessors.

Well that is exactly what happened in my hands with the lower blepharoplasty. The pinch blepharoplasty is a truly transformative strategy that has revolutionized my approach to eyelid surgery, offering unparalleled control and esthetic results. And I am equally as gratified that many others have since adopted this approach. However, it has been my observation that what is being declared as a "pinch blepharoplasty" is not quite. That is, the pinchplasty wounds are still originating far too close to the eyelid margin, the pinchplasty walls are persistently too timid in their girth, and finally, the canthopexy stratagem is not being consistently invoked. So, it is the express purpose of this study to review the arc of the pinch blepharoplasty's evolution and my accompanying learning curve and then elucidate the exact "specifications" of its present state of the state.

A BRIEF HISTORY OF THE LOWER PINCH BLEPHAROPLASTY

One can only appreciate the birthing of the modern iteration of the pinch blepharoplasty with an understanding of what came before it. And I purposefully have used the word birthing because its evolution has been decidedly protracted, making it a veritable diorama of fits and starts: from its initial introduction as a simple skin excision in the 1920s[1,2] to profound neglect—for

[a] Private Practice, Burlingame, CA, USA; [b] Department of Surgery, UCSF; [c] Department of Surgery, Stanford University; [d] Department of Surgery, Duke University; [e] School of Medicine, Iran University of Medical Sciences, Hemmat Expressway, Tehran, Iran
[1] Present address: 440 EL Cerrito Avenue, Hillsborough, CA 94010.
[2] Present address: Apartment 3, No. 20, Taleghani Street, North Sheikh Bahai Street, Mollasadra Avenue, Tehran 19936 45754, Iran.
* Corresponding author. 1750 EL Camino Real Suite 405, Burlingame, CA 94010.
E-mail address: drr@drrosenfield.com

Clin Plastic Surg 52 (2025) 21–41
https://doi.org/10.1016/j.cps.2024.07.002

almost 50 years—until its resurrection in the early 1970s as a case report with the first description of a proper pinch excision[3] only to suffer another fallow 20 years until the early 1990s with the publication of another "pinch" case report.[4] Then my years-long hum of dissatisfaction with the skin–muscle technique was interrupted by a stroke of serendipity one night, within one presentation slide that revealed the *pinching* of the excess eyelids.[5,6] Inspired, this author went on to apply this tactic on a clinical series of patients, definitively proving its efficacy.[5,6]

MY "LEARNING CURVE" WITH THE PINCH BLEPHAROPLASTY

In the Beginning

I say "learning curve" because of all the surgeries I have practiced, none has illustrated the concept of iterative improvement more. Reflecting on my early experience with this blepharoplasty,[5] I was inspired, or perhaps it would be more forthright to say, I was chastened by my consistently inconsistent results. I was originally schooled on the reigning gold standard, the skin–muscle flap strategy. And to be fair, it served and still serves up very acceptable outcomes—most of the time. And there is the rub—I witnessed untreated wrinkled eyelid skin and/or compromised eyelid posture. Surgeons invoked heroic offensive strategies for skin flap support, such as the flap to orbital rim, "mother of all stitches," as dubbed by my partner Gil Gradinger. Others abandoned the skin muscle flap angle altogether and instead combined a transconjunctival approach for treatment of the fat and a CO_2 laser for resurfacing of the skin.[7] But despite my diligent application of these and many other variations on the theme, both scleral show and redundant skin sporadically plagued my results (**Fig. 1**A, B).

Steal like an Artist

Great ideas are often described by the "inventor" as a classic "in the bathtub" eureka moment. This yarn may sound good at the podium or on the page, but that is not how most advances are actually birthed. Instead, the path to "better" is usually one paved by a labyrinth of uneven but sometimes revelatory steps. And on this journey, one becomes primed to adopt—or rather steal—any better idea that could facilitate a leap. Well, one seminal night in 2000, Dr. Glenn Jelks clicked his next slide to display 2 Brown Adson's pinching the lower eyelid skin into a standing wall of redundancy, aching to be amputated like an overgrown skin tag. That was my supposed "aha" moment—but what was really the final piece of my dogged puzzle. And this potent strategy had literally been sitting in plain sight since the early 1970s when Parkes and colleagues[3] first published a description of the skin pinch, and Dinner, in the early 1990s, first married the transconjunctival approach for the fat treatment to the pinch technique for skin excision.[4] And I must confess that I also "stole" from myself: or at least from my evolving strategies treating excess tissue in other zones of the body—namely the facelift and the abdominoplasty. Aged tissue, no matter its location, need not be undermined or otherwise mobilized in order to be tightened or excised. This insight became a girding principle in the powerful lateral recruitment and redraping of neck skin in my pinch rhytidoplasty and in the effective discontinuous dissection and advancement of abdominal skin in my high-tension abdominoplasty.[8,9] Thus, it was not a giant leap to now reconsider lower eyelid excess/wrinkling as it is nothing more than what may be analogized to a rumpled bed.

Version 1.0

So, I went to work applying the transconjunctival (TC)-Pinch strategy to about a hundred cases in the early 2000s and published my first report in 2005 in plastic reconstructive surgery (PRS).[5]

With this first series, the following surgical principles were evinced:

1. To avoid any distortion of the eyelid skin, local anesthesia was injected either *before* the patient sterile prep or if under general anesthesia not until *after* the pinch itself.
2. Originally, the path of the pinch followed the same trajectory as my skin muscle flap incision as a straight line within a few mms of the eyelid margin preserving a lateral wedge of intervening eyelid skin as a bulwark against possible scleral show—a la Gradinger's personal communication.
3. A canthal tightening, reminiscent of Dr. Fagien's original description, was employed *only* if the patient demonstrated obvious scleral show or eyelid laxity.[10]
4. A second stage, "re-pinch," was invoked, preferably planned, in cases with voluptuous skin excess (**Fig. 2**A–E).

The power of this pinch soon became undeniable: its effect was similar to the making of a rumpled, wrinkled bed. That said, upon my painfully honest assessment, I identified cases of both persistent skin that necessitated an *unplanned re-pinch* and *subtle scleral show* despite being initially exempt from the stitch canthopexy.

Fig. 1. (*A*) Demonstrating scleral show post-submuscular (s-m flap0. (*B*) Demonstrating residual skin post-s-m flap blepharoplasty.

Version 2.0

I went back to the operating room—our proverbial "drawing board"—and made some edits to the original guiding rules of conduct for this strategy:

1. The latitude of the pinch drifted slightly southward to proffer additional insurance against eyelid posture distortion.
2. Beyond the stitch canthopexy for therapeutic purposes, a "prophylactic" iteration was also adopted. This principle could be compared to the tightening of a clothesline before one hangs the wet clothes. Now *all* patients enjoyed some form of eyelid tightening and the stigmatizing scleral show was further obviated.

This new and improved iteration of the pinch technique was then reported in aesthetic surgery journal (ASJ).[6]

Version 3.0

And now we come to the centerpiece of this update: the insights, strategies, and outcomes that have evolved over the last 25 years since my original "rediscovery" of the pinch technique's remarkable promise. Now I can state unequivocally—

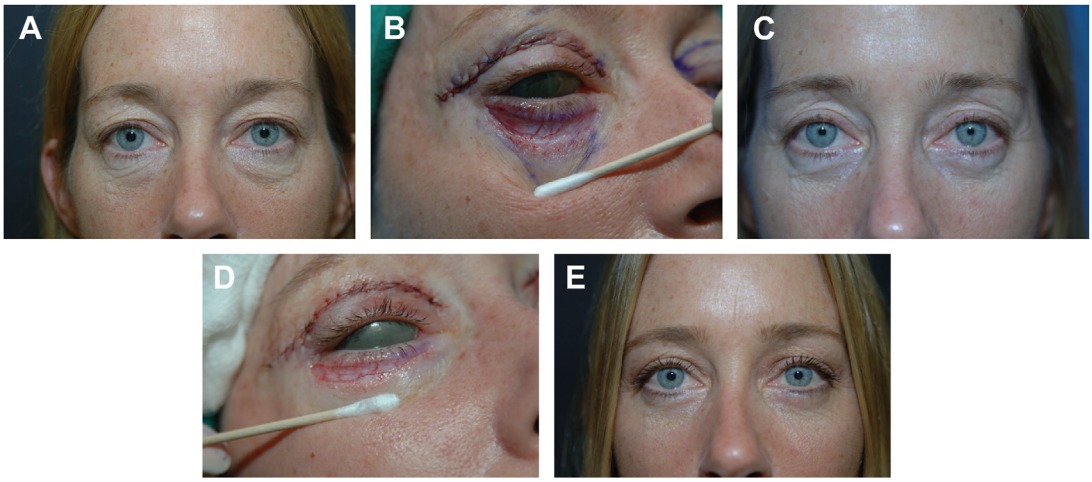

Fig. 2. (*A*) 49 year old woman preoperative first pinch. (*B*) Intraoperative first pinch wound. (*C*) Postoperative first pinch 10 months. (*D*) Intraoperative second pinch wound. (*E*) Postoperative second pinch 9 months.

after well over 3500 cases—that the pinch technique has proven to be a superior strategy to the lower eyelid blepharoplasty.

The present elements of the technique that have been honed to realize ever-improving outcomes are enumerated in the following:

1. As much as the aforementioned "re-pinch" was very effective at cleaning up most of the lingering lower eyelid skin, having to contemplate, even if planned, a second surgery was incentive enough to seek to reduce this predestined revision rate. The only way to do so was to go as Willy Sutton would have declared if he had been asked why venture lower on the eyelid: "Because that is where the excess skin is!" But to do so would mean daring to go beyond the lid margin—our preferred latitude since the beginning of time. Well, a page was taken from my orbital floor fracture playbook of yore—that is, making a point of entry into the eyelid excess at decidedly lower latitude with predictably imperceptible scarring. And so the *lower* pinch came to pass and my pinches crept ever lower on the eyelid and its full potential unleashed with its brazen placement in the very *center* of the skin excess, delivering a heretofore unrealized robust, verily comprehensive skin excision. One could envision this antipodal strategy as akin to addressing a roll in a large living room carpet most effectively by moving instead to the same side of the carpet as the roll (**Fig. 3**A–C).
2. As my confidence grew in both the efficacy and safety of this hearty pinch, I shifted my focus to the now popular hot topic in the world of blepharoplasty: the periorbital/nasojugal groove. Efforts were being made by our profession to address this "deformity" very directly with autologous fat grafting or infraorbital fat repositioning—with or without orbicularis retaining ligament (ORL) release.[11–13] Although these strategies can certainly be effective, their unpredictable results and inherent revision rates are simply above, what I call, my complications "boiling point."[12,14,15] So I was motivated to review my results up to then and happily noted a definite improvement in the nasojugal/orbital grooves, albeit by indirect means. This effect is akin to the aforementioned making of a messy bed and simultaneously covering a hole in the mattress (**Fig. 4**A, B).
3. So now, with my pinch already lower on the eyelid—and ever closer to the groove—an effort was made more deliberately to efface the nasojugal groove by gathering the skin mirroring its trajectory, thus describing a "hockey stick"-shaped wall (**Fig. 4**C).
4. And to facilitate and maximize all of the previous strategies, the addition of hyaluronidase to the local anesthesia delivered a more robust and stable pinch wall (Video 1 pinch w/ hyaluronidase).

PRESENT STATE OF THE STATE
The Pinch Blepharoplasty in 2024

With an experience of well over 3500 cases and counting, the following expository highlights my present working blepharoplasty algorithm.

Preoperative care

1. *History*: The single most important question to ask is whether the patient suffers from dry eye. And the magnitude of this symptom can be elicited by asking whether the patient presently carries drops in their pocket or purse. If there is indeed a significant history, the patient should be evaluated and "optimized" by an ophthalmologic surgeon prior to surgery.[16]
2. *Physical*: The most important data point to collect is a measure of the various components of the patient's periorbital morphology: the size of the globe, the posture and stamina of the eyelid, the projection of the malar, and cant of the palpebral fissure.[17,18]
3. *Patient selection*: As much as this strategy is efficacious for all comers, like any technique, some patients are particularly better or particularly poorer candidates than others.

That said, the ideal candidates are those with

Fig. 3. (*A*) 63 year old woman pre-pinch lower and upper blepharoplasty. (*B*) Postoperative day 5. (*C*) Postoperative 12 mo.

Fig. 4. (*A*) 79 year old woman pre-pinch with groove. (*B*) 9 months postoperative with groove correction. (*C*) Intraoperative hockey stick pinch.

- Not surprisingly, a presentation of an abundance of wrinkled, thin skin coupled with a moderate excess of herniated fat countenances the most *accurate* and *effective* pinch possible (**Fig. 5**A, B).
- Paradoxically, a morphologically compromised facies, for although normally something to be feared, is now neutralized by the dynamic duo of the pinch and pexy. And one could tout that it is possible to not only *prevent* worsening of preexisting scleral show but to even *improve* upon it (**Fig. 6**A, B).

The less-than-ideal candidates present with

- Thick, sun-damaged, leathery wrinkled skin, which inhibits the surgeon's ability to most accurately and comprehensively pinch this redundancy (**Fig. 7**A, B).

4. *Patient Prep*: As noted earlier, if there is a history of dry eye, the patient is "optimized" by an ophthalmologist prior to surgery.
5. *Photography*: The camera and the patient must be studiously aligned on the Frankfurt plane fairly and accurately document the posture of the eyelid margin relative to the globe lest a scleral show may be either concealed or magnified unwittingly.

Intraoperative care

1. *Antibruising therapy*: An oral dose of tranexamic acid (TXA) 650 mg is now routinely given 1 hour before the surgery.[19]
2. *Sedation anesthesia*: To negate the risk of O_2 delivery while utilizing a bovie, it is recommended that a trans nasal feeding tube be placed along with of a compressible plug at the opening of the nares (**Fig. 8**A).
3. *Local anesthesia*: The local anesthetic is now injected into the lower eyelid at the start of the surgery because of the addition of hyaluronidase, as suggested by a visiting colleague (Dr. Steven Teitelbaum), that dramatically enhances the "pinchability" of the skin: not only can more of the redundancy skin now be recruited but the resultant wall of excess is far more stable, dispelling the prior necessity to conduct the skin excision as soon as possible for fear of its collapse (**Fig. 8**B).
4. *Surgical "order"*: It is critical that the surgical steps be conducted in an advantageous order:
   - If a transconjunctival excision of fat is to be conducted, then it is best performed *before* the canthopexy to take advantage of the facile distraction of the eyelid.
   - And the pinch should be conducted *after* the canthopexy and equally so if an upper blepharoplasty is to be performed, since both of these antecedent maneuvers will certainly "pretreat" some fraction of the skin redundancy.
     a. *Transconjunctival fat excision*: For the most facile exposure strategy, the lower lid is distracted with a couple of skin hooks, the conjunctiva divided with electrocautery, and a Desmarres retractor deployed, bringing the post-septal fat immediately into clear view, ready for the plucking. Of note, to ensure both a post-septal plane of dissection and ample conjunctival edge for closure, the

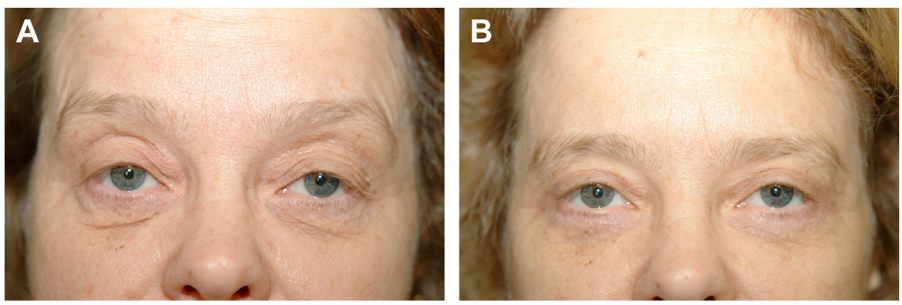

Fig. 5. (*A*) 63 year old woman prepinch. (*B*) Post 9 months pinch.

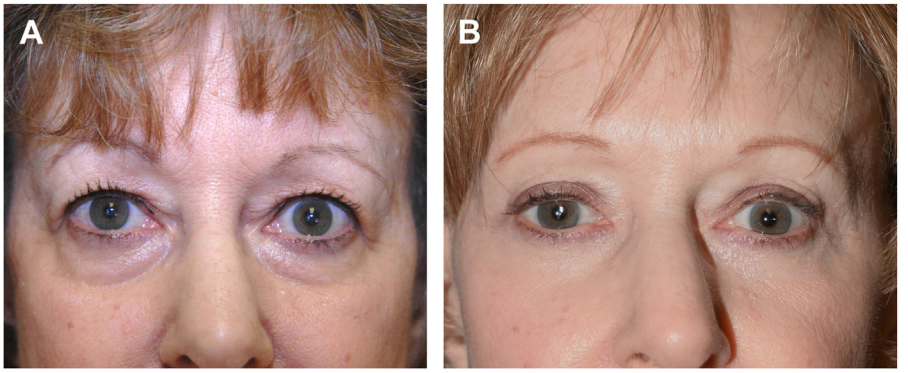

Fig. 6. (*A*) 64 year old woman prepinch with scleral show. (*B*) Post 3 years blepharoplasty with corrected posture.

transconjunctival incision should be conducted in line with the second horizontal row of perforators, usually about 1 cm or more inferior to the lid margin.

b. *Stitch canthopexy*: This now integral step in *all* blepharoplasties is conducted with a uniquely thin-tipped "ophthalmic" curved mosquito that is meant to capture whatever ensures a visibly definitive translation of tightening of the eyelid. After experiencing issues with visible knots in the thin patient—with clear nylon—and stitch abscesses—with braided suture—I have landed upon the presently most reliable option of a 5-0 polydioxanone (PDS) suture (Video 2 stitch canthopexy).

c. *Pinch skinplasty*: The eponymous seminal step of creating a skin pinch wall of excess skin is now conducted with 2 Brown–Adson forceps. The path of the pinch follows strategic coordinates to recruit the maximum of skin excess while also "treating" the grooves. So the pinch is purposefully placed *within* the sea of the excess, thus often well below the eyelid margin and *parallel* to the orbital and nasojugal grooves, and hence, in a hockey stick-shaped fashion (Video 3 big pinch and Video 4 j pinch).

5. *Skin closure*: A running 7-0 nylon suture is utilized to close the lower eyelid wound. And the wider the pinch wound, the more important it is to take a commensurately wider bite on the inferior margin to successfully preclude a dog ear.
6. *Conjunctival care*: Should a potentially blossoming chemosis be evident during the surgery, then phenylephrine 2.5% drops are applied. If little effect is noted and/or chemosis is otherwise significant, then a conjunctivotomy is conducted along with a postoperative prescription for steroid/antibiotic drops.[20]

Adjunctive procedures

The "pinch-pexy" strategy does indeed gratifyingly deliver the primary aspirations of a superior esthetic result, but there is one potential adjunctive procedure that rounds out the necessary armamentarium:

- *Diluted hyaluronic acid*: As has been demonstrated, a lower, robust pinch can reliably address, if not entirely, the majority of the periorbital/nasojugal groove. However, in patients

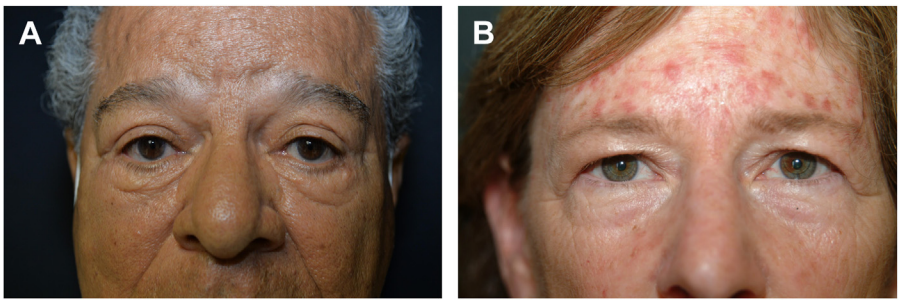

Fig. 7. (*A* & *B*) Thick or sun-damaged skin.

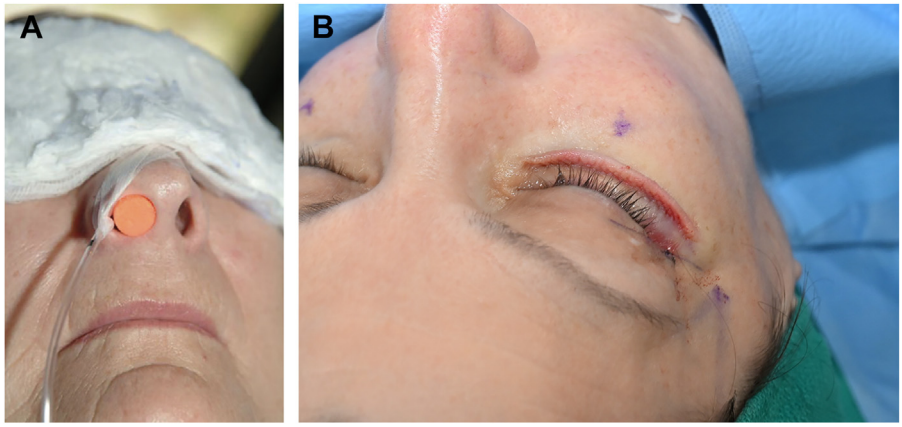

Fig. 8. (*A*) Intraoperative nasal plug. (*B*) Intraoperative pinch wall with hyal.

presenting with a naturally deep-set but now too hollow superior orbit, then it may be treated with a diluted hyaluronic acid as originally so elegantly described by Lambros.[21,22] This strategy, like the pinch, is both simple and effective. And unlike the alternative, autologous fat grafting, it is easily adjustable and reversible. And rarely, should the lower, hardy pinch not fully efface the more advanced periorbital groove, then this author has repurposed the Lambros "dilution solution" elixir filler injection strategy postoperatively to efficaciously clean up the remaining deformity[22] (**Fig. 9**A, B).

- *Note*: As for the traditionally applied modality of laser resurfacing/chemical peeling, although once an integral strategic component of the pinch-pexy is mentioned only to declare it as expendable now that the pinch-pexy has so thoroughly addressed the skin itself. And doing so has avoided the additional risks of depigmentation and reduced the additional odds of scleral show.

Postoperative care

1. *Nursing*: Most often, and always if in conjunction with a facelift, the patient is recovered at least overnight, at a nearby facility with 24 hour nursing care. Beside the immediate and consistent delivery of the best care, it vanquishes any and all anxiety on the part of not only the patient but that of the designated caregiver.
2. *Icing*: Swathes of iced-chipped cotton are applied to the eyelids around the clock for at least 48 hours along with natural tears throughout the day and lubricating ointment at night.
3. *Stitches*: At 1 week postoperative, all the sutures are usually removed and otherwise clipped at intervals if there is still significant edema with complete extraction some 3 or 4 days later.
4. *Conjunctiva*: If there is even a hint of conjunctivitis and/or chemosis, steroid/antibiotic drops are swiftly prescribed and continued for between 7 and 10 days. And if the patient presents with obvious chemosis, beyond the medicinal drops, the affected eye is often fully patched shut for up to 48 hours, a strategy that has been impressively effective. Ultimately, should the patient return with persistent and/or worsening signs beyond 2 weeks or so, they are seen the same day by a local ophthalmologist—at my expense—to ensure that the most

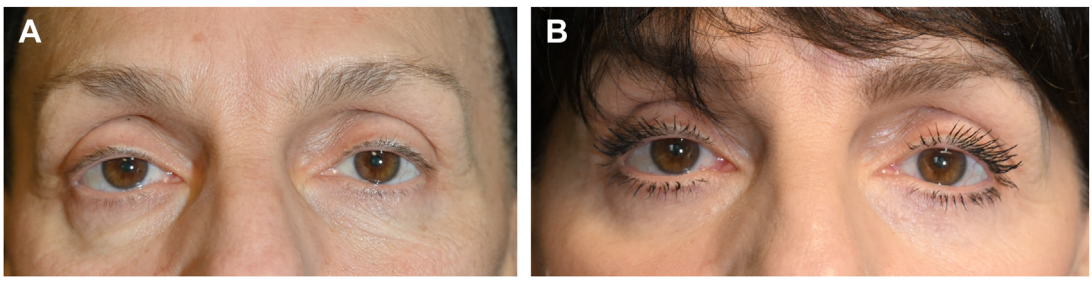

Fig. 9. (*A*) 62 year old woman prepinch. (*B*) Postoperative 16 mo and diluted hyaluronic acid filler to lower periorbital.

efficacious therapeutic strategies are in place. Rarely, if the chemosis is truly "malignant" in character, then a Frost suture is placed for several days, a stratagem that has also been faithfully victorious.

To bring the earlier algorithm alive, it has been transmuted into a visual algorithm to proffer additional clarity (**Fig. 10**).

OUTCOMES

The Road to the Pinch Blepharoplasty Result

Bumps on the road

When speaking of blepharoplasty, I often elucidate the differences between various competing surgical strategies by adapting an old adage: "All roads may lead to Rome—but some roads are less bumpy than others." This is meant to highlight an all-too-common conundrum: Although end results presented may indeed be similarly gratifying, by themselves they do not proffer enough data to pronounce any one technique truly "better" than another. And this challenge is more than just academic; for either a patient or a colleague to respectively choose or adopt a particular surgery, they should be proffered a *surgeon-specific* informed consent, beyond the generic, "community standard of care" disclosure. Instead, the surgeon enunciates all the bumps, big and small, on the road to the result—when conducting *their* technique, in *their* facility.

So, what are these potential "bumps" in the road?

- How many hours is the surgery?
- How long is early recovery?
- Which complications are still experienced, and which are successfully avoided?
- Which esthetic goals are successfully achieved, and which are not?
- How often are revisions necessary?

When these metrics are actually measured and compared, the pinch blepharoplasty truly shines, for its clinical pathway, it is legitimately paved with both *fewer* and *lesser* bumps in the road!

Allow me to enumerate and expand upon each:

- *Length of surgery*—The average time to completion is about 45 min—1 hour, depending upon whether the upper eyelids are included in the plan. The surgery is perforce singularly efficient because no ancillary interventions must be accomplished—such as autologous fat grafting or fat transposition, laser resurfacing, or chemical peeling.

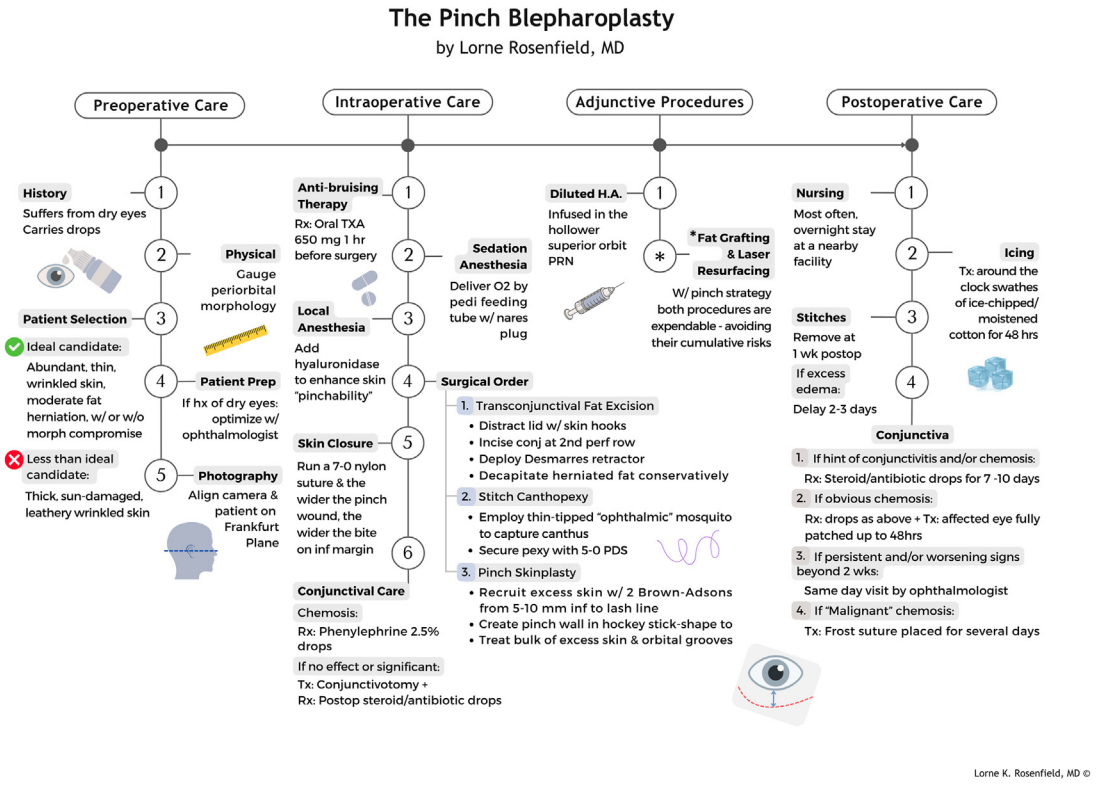

Fig. 10. Pinch blepharoplasty algorithm.

- *Length of early recovery*—The average length of the "early" recovery is about 10 days to 2 weeks. Again, on account of the purposefully attenuated extent of dissection and disruption, there is a commensurate lessening of bruising and swelling. And the procedure's deliberate control of the eyelid posture essentially vanquishes the need for the "usual and customary" postoperative lid massage and taping.
- *Type and number of complications*—Since the core DNA of the pinch blepharoplasty is its "no-touch" mien—an apt appellation thanks to Jelks[23]—the number of notable untoward events has been gratifyingly forestalled.
  a. *Over resection of pinched skin*: Incidence of less than 1 out of 1000. I have personally experienced 2 instances of excess skin pinch resection. The first time could be chalked up to it being at an early time stamp on my learning curve! I simply replaced the skin on this 80 some years old patient as a skin graft and the tissues healed blessedly well. Being entirely consumed with fixing this novel problem, I do not have a documentary photograph. Then decades later, a similarly aged patient sustained a similar excessive pinch. I mistakenly pinched when the patient, under sedation, squinched. The skin was similarly returned to its bed, and the misstep was again remarkably imperceptible. And since then, whenever working under sedation, I now time my pinch with the anesthesiologist proactively in the loop! (**Fig. 11**A, B).
  b. *Chronic chemosis*: Incidence 3 out of 100. Slower to resolve, more robust postoperative chemosis. This problem represents a true nemesis in the practice of blepharoplasty. As has been the experience of so many others, it can simply sporadically blossom when one least suspects it. My relatively feckless but earnest preventative strategy has remained to be as "no touch" as possible when conducting every part of the procedure (**Fig. 12**).
  c. *Subdermal nodules*: Incidence of 1 out of 100. Small, firm subcutaneous nodule or nodules can appear at the mid-section of the lower eyelid. Most often they are only palpable, but sometimes visible. One can only divine what these represent—from fat necrosis to chalazion to hematoma—but thankfully they have always resolved spontaneously—and without intervention—within weeks, but sometimes months. The only prophylactic measure I have invoked is to try to abridge the otherwise perilously effective electrocautery-induced fat shrinkage (**Fig. 13**A, B).
  d. *Persistent red scars*: Incidence of less than 1 out of 1000. We have only witnessed a couple of instances of a longer lasting erythematous pinch scar. All have delimited to the otherwise predictably imperceptible white line by a further 6 to 9 months (**Fig. 14**A, B).
  e. *Scleral show*: Incidence of less than 1 out of 1000. Significant iatrogenic eyelid malposition mandating early taping and massage or later revision should be and is indeed a very rare occurrence. In the average patient—the "aged eyelid"—this affliction is otherwise usually a "subclinical" finding in that it is most often a *nominal* expression (**Fig. 15**A, B). And in the morphologically compromised patient, it is often simply a persistence of *preexisting* show. The goal, in these kinds of patients, should always be to try to improve the posture but otherwise to at least maintain it no worse than before (**Fig. 16**A, B). So both of these outcomes are reliably without wont of a re-repair. This "performance" of the stitch canthopexy or sometimes lack

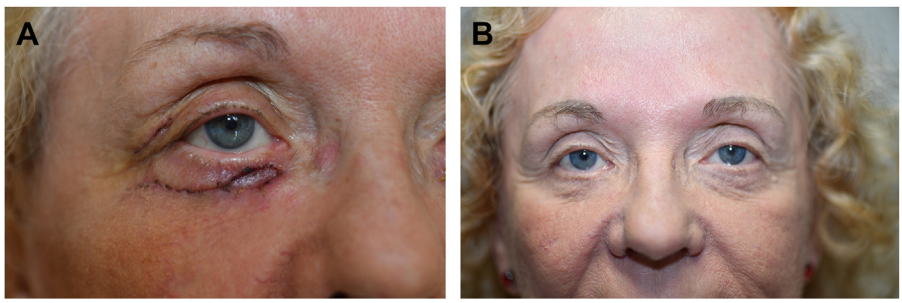

Fig. 11. (*A*) 79 year old woman postoperative 1 wk excess pinch. (*B*) Postoperative 1 year.

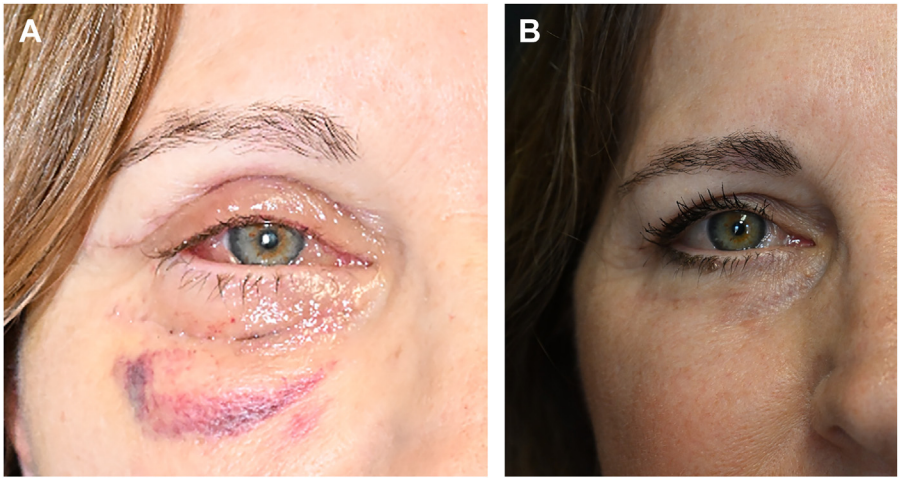

Fig. 12. (*A*) Severe chemosis at 2 weeks. (*B*) Chemosis resolved at 6 weeks.

thereof should not be entirely surprising. Akin to our realistic expectations working on an aged neck, when conducting a canthopexy, we are trying to harness tissues that are equally collagen damaged and deprived.

f. *Resistant dry eye*: Incidence of 1 out of 1000. As much as some dry eye is to be expected post any blepharoplasty, these more minor cases predictably resolve within a couple of weeks of supportive care. On the other hand, there have been a couple of cases in the series where said dryness/irritation has taken close to a year to resolve. The supposition is these same patients most likely harbored a cryptic propensity to the problem that was triggered by the surgery.

- *Rate of revision*: Incidence of less than 1 out of 100. No matter the reason, the need or desire for a "touch-up" is now rare. The revision fare remains the same as in the past—just far less common: a re-pinch of skin, the retrieval of more fat, and a re-pexy of the canthus.

Esthetic and Functional Goals

And now, in anticipation of exhibiting the outcomes, it is essential that the surgeon's abiding esthetic and functional goals be explicitly defined, if the challenge of injecting a measure of "objectivity" is to be authentically honored. The goals to a "best result" in any blepharoplasty could be delineated as the following outcome attributes that *as a whole* would honor the aforementioned objectives:

- The comprehensive treatment of the excess skin, prominent fat, and obvious grooves
- A significant improvement in malar bags and festoons
- An imperceptible scar within weeks
- A corrected or at least maintained eyelid posture

So, if we challenge these same targets with the lower blepharoplasty procedure harnessing the pinch strategy, the surgeon can expect, with relative consistency, the following outcomes:

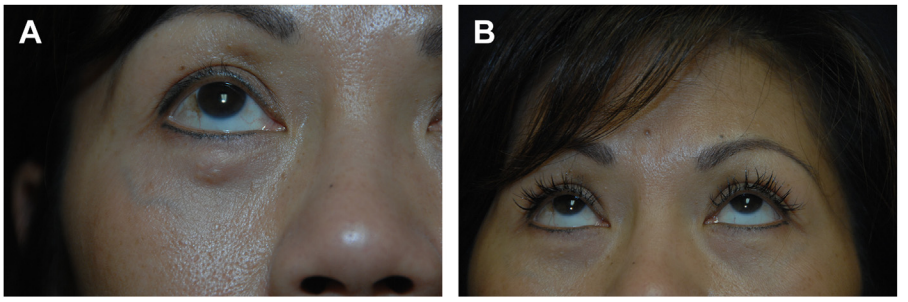

Fig. 13. (*A*) 48 year old woman postoperative 3 mo w_nodule.(*B*) Postoperative 6 mo.

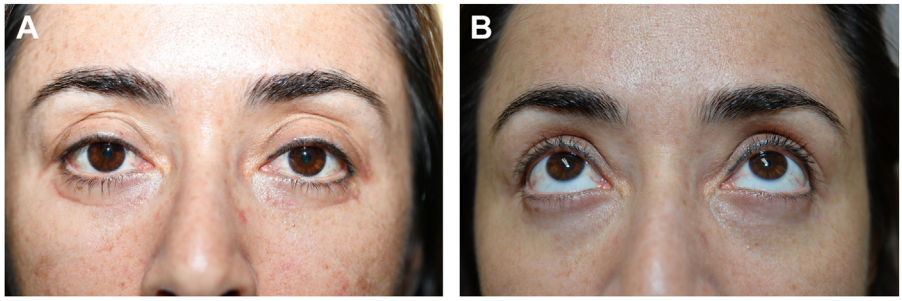

Fig. 14. (*A*) 52 year old woman 6 weeks postpinch with red scar. (*B*) Postoperative 9 months.

- Skin excess—the bulk is removed successfully
- *Fat protuberance*—most is addressed consistently
- *Malar bags/festoons*—can address most, if not all
- *Periorbital groove*—primarily obliterated, albeit, collaterally
- *Eyelid posture*—almost consistently esthetic or normalized
- *Residual scar*—reliably insignificant (**Fig. 17**A, B).

"The Pinch" versus "the Others"

And in an effort to further explore the merits of this strategy, it is particularly illustrative, and frankly optimally transparent, to now discuss how the pinch blepharoplasty compares to our other contemporary techniques. So let us review the pros and cons of each approach.

The skin–muscle flap blepharoplasty

This procedure has been a time-tested procedure for over 100 years.[24] This strategy's original attraction was its simplicity as compared to what was an otherwise prevailing alternative, the far more tedious skin flap-only technique.[25] And together, these tactics were all well intentioned in their valiant attempt to at once gain access to and treat pro re nata (PRN) all the "diseased" components: the fat, muscle, and skin. However, time did ultimately test these strategies. As much as results can be reliably decent, on account of its fated tissue trauma, orbicularis denervation, and requisite skin excess guestimate, the risk of a permanent scleral show and/or residua of untreated excess skin is my estimation not an uncommon occurrence. Besides the many publications recording its risks of complication, even a review of many of the seminal articles professing success with this procedure confirms the presence of either frank scleral show and/or untreated skin.[26–31] And frankly, these outcomes can be explained on account of this technique mandating an antipodal strategy to the proverbial carpenter credo: "Measure twice, Cut one!". It is just these kinds of shortcomings that led me and many others to seek a better solution.[29,30,32–34]

Fat transposition/grafting

As I have been flight-testing and fine-tuning the pinch maneuver, others have been endeavoring eyelid correction by way of autologous grafting and/or translocation of fat in conjunction with the release of the orbicularis retaining ligaments and arcus marginalis, allowing for repositioning and redraping of fat.[11–13] And at the same time, this tactic either eschews the skin incision altogether[35–37] or conducts an adjuctive skin laser resurfacing or chemical peel.[7,38,39] On the one hand, this head-

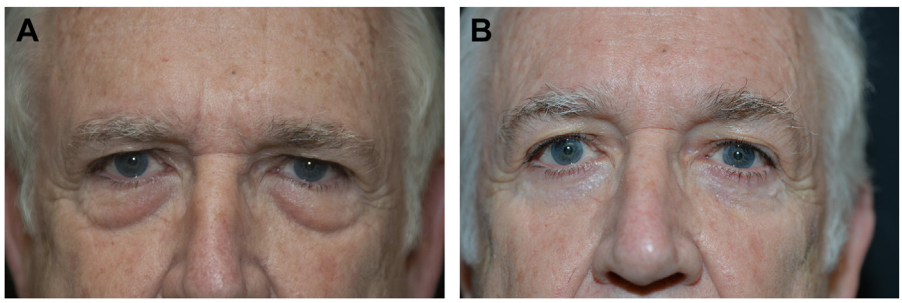

Fig. 15. (*A*) 70 year old man prepinch. (*B*) Post 1 y pinch.

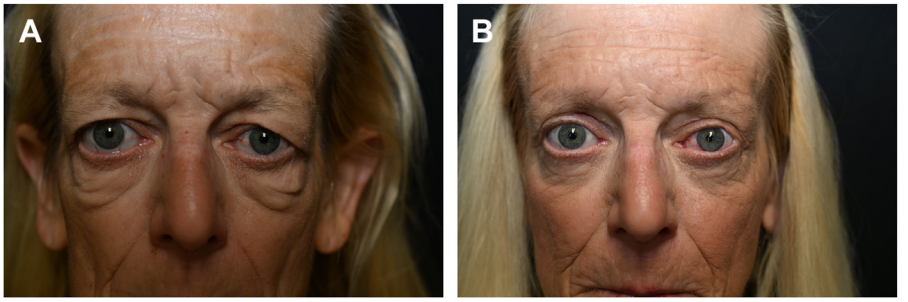

Fig. 16. (*A*) 63 year old woman with morphologically compromised presentation, prepinch. (*B*) Postoperative 3 mos.

on treatment of the nasojugal/periorbital groove can realize its full address more than its indirect effacement by the pinch skinplasty. But contrary to the pinch, where the worst outcome is simply an incomplete correction, there is an inherent unpredictability to fat grafting/manipulation that can result in from no or little change, to irreparable nodularity and asymmetry, and even embolism.[40,41] As Val Lambros once intoned: "Fat grafting is plumb unreliable (Lambros V. personal communication, 2017)." Thus, it is fair to say that there is likely a higher revision rate than is desired—some operators admitting to a revision rate of 25% to 30%.[42] And this says nothing of the augmented bruising and swelling that perforce comes with these more invasive dissections.

Pinch blepharoplasty

As compared to the earlier techniques, the pinch blepharoplasty's core attribute is its *consistency* both in terms of outcomes and safety. And the centerpiece lever to this end is its "kinder and gentler" tactic of the pinch—what Jelks has dubbed as "the no-touch technique"—where the orbicularis muscle is not violated. But the pinch offers up an additional, equally powerful strategic advantage of more accurately "measuring twice and cutting once" when we are challenged by the excess skin!

Rendered by the author, the reader has every right to be suspicious of this encomium. Thus, I think it would be most compelling to boldly still question this strategy with the invocation of a few, entirely legitimate, pointed reservations that I have been challenged by and responded to over the years:

- "Your low placement of the incision frankly scares me for fear of an obvious, problematic scar postoperatively."

This concern is by far the most common and not surprisingly so considering the historic mantra to always "hide" the lower eyelid incision at the subciliary margin. This admonition is admittedly a well-worn tenant but it becomes less relevant in the face of the equally age-old principle that *any* incision, as long as it is within the periorbital skin, will resolve equally imperceptibly. In fact, it was just this truism—as it originally applied to the exposure of orbital fractures—that emboldened me to "eat the first oyster" and pinch at the midsection of the eyelid! (**Fig. 18**A, B). And as it has been borne out after thousands of cases, I have never once revised a lower eyelid pinch scar (**Fig. 19**A–F). This includes outcomes in men when scars can be potentially more discernible (**Fig. 20**A, B). And it is worth emphasizing the fact that this pronouncement encompasses those patients with even the darkest pigmentation (**Fig. 21**A–D).

- "And even if the skin is pinched as described, how can it possibly treat all of the wrinkled, excess skin without the traditional adjuvant

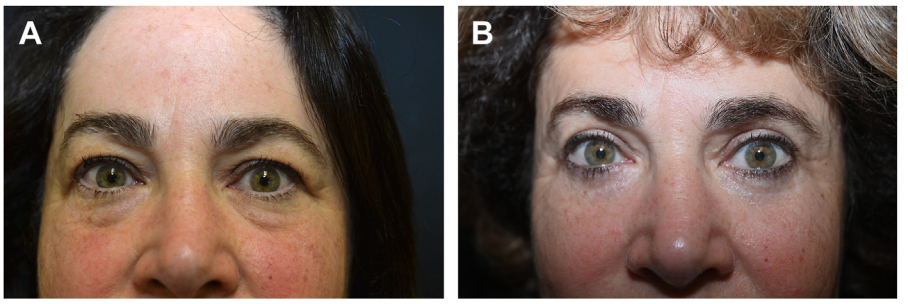

Fig. 17. (*A*) 61 year old woman prepinch. (*B*) Postpinch 9 months.

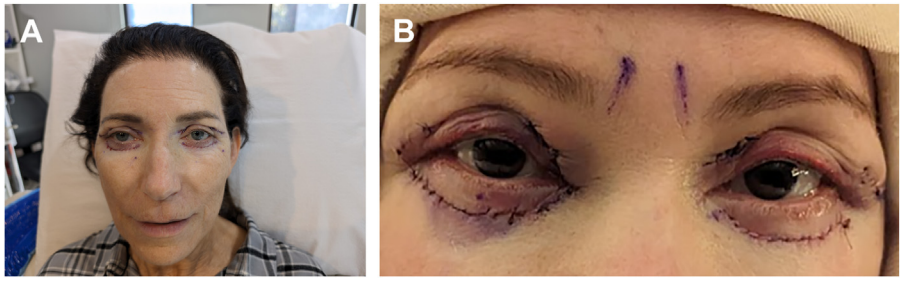

Fig. 18. (*A*) Low pinch closure example 1. (*B*) Low pinch closure example 2.

treatments of either laser resurfacing or chemical peeling?"

I too was skeptical at first having spent decades routinely lasering or peeling the lower eyelids at the time of my original skin–muscle flap blepharoplasty. However, as I started pushing the powers of the pinch, it became clear that the lower the pinch that was attempted, the taller the "wall" that was possible (**Fig. 22**A, B). I also learned that to follow through with this stratagem confidently, it must be married to a robust stitch canthopexy. And so was borne the comprehensive treatment of the entire field of redundant skin reflected by the commensurately, ever-enlarging—but persistently safe—pinch wounds (**Fig. 23**A–C):

- "You should not remove fat from the lower eyelid lest you create a hollow, "nursing home" appearance—and instead should invoke fat grafting/transposition."

Admittedly, as is often the case, despite these kinds of admonitions' overly pedantic nature, at the very least they have prodded me to rethink my strategies. For it is a sad truism that in days of yore, the teaching was to summarily evacuate the fat from all compartments, which ultimately created a generation of overly treated patients—particularly in the ectomorphic faces. These esthetic "deformities" realigned all of us to be more conservative—more fat preservative—and in doing so has indeed, in my experience, eluded this unnatural fate. And this same observation supports the well-proven fact that most patients do not present with periorbital fat atrophy and instead suffer from legitimate fat hypertrophy[43] with herniation[44–46] that is frankly begging for a tried and true reduction (**Fig. 24**A, B).

- "Your routine invocation of a canthopexy seems unnecessary, particularly when there is no obvious laxity or show preoperatively."

I too used to abide by the same premise, since I had not seen the postoperative scleral show, particularly in the younger patients … until I did! As a seasoned surgeon/mentor used to intone: "A surgeon should never say "I got away with it"

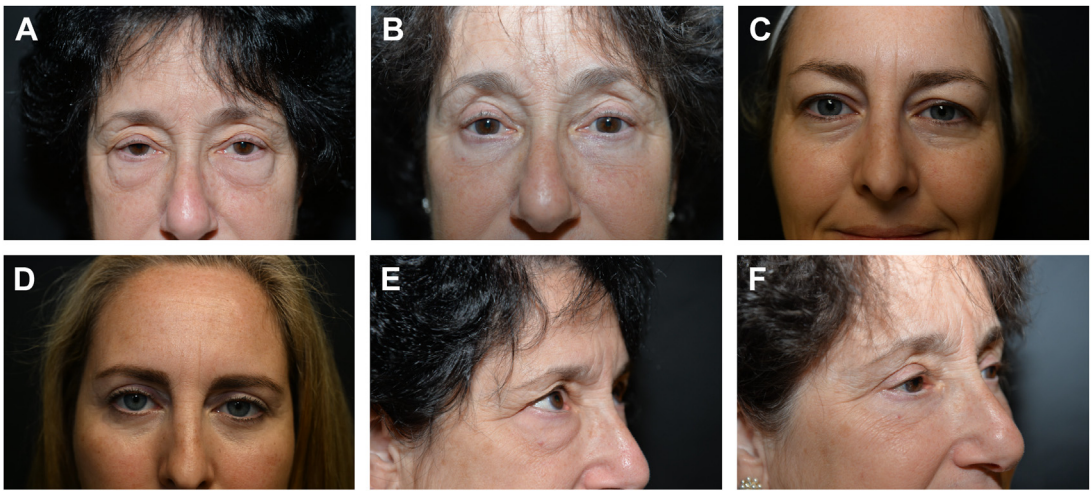

Fig. 19. (*A*) 67 year old prepinch JPG. (*B*) 6 months postpinch scar. (*C*) A 43 year old woman prepinch. (*D*) Post 12 mo pinch. (*E*) 67 year old prepinch. (*F*) Postpinch scar at 1 year.

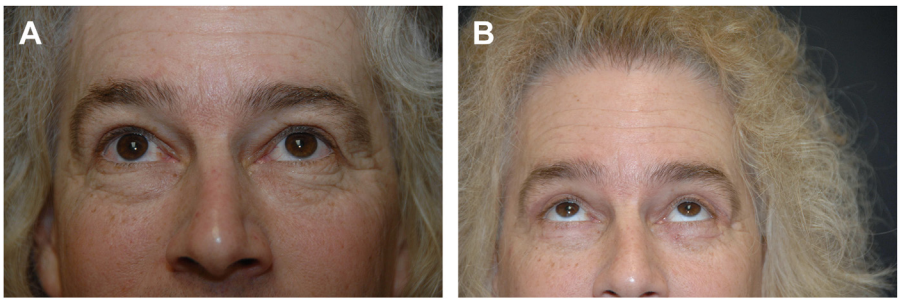

Fig. 20. (*A*) 50 year old man prepinch. (*B*) Post 14 mo pinch scar.

- for that is exactly what one is doing when *not* conducting a prophylactic canthopexy." And at worst, the patient will sustain the indelible stigmata of the telltale operative stigmata of scleral show (**Fig. 24**C, D). So if a patient is a candidate for a blepharoplasty, he/she by definition harbors compromised collagen–not only in the eyelid skin but the retinacular sling as well! (see **Fig. 24**E and F).

- "Your technique does not directly treat the orbicularis, particularly in those patients with malar bags/festoon-like deformities."

This technical challenge is entirely reasonable considering that the pinch does indeed not *directly* address muscle hypertrophy. And this premise is well supported by the clinical and histologic observation that the underlying muscle is indeed primarily left intact.[47] But interestingly, it is the experience of this author that a robust skin pinchplasty along with an equally brawny canthopexy most often realizes a commensurately significant amelioration of the clinical manifestations of hypertonic/festooned muscle. Perhaps this effect is because of the conspiring of 2 forces: a powerful "compression" of the underlying muscle by this wider pinch closure and a tautening effect of the brawny pexy of the canthus.

And of course, accomplishing this effect without disrupting the muscle in any fashion exorcises any chance of denervation-driven dysfunction or laxity and trauma-induced edema or scarring (**Fig. 25**A–D).

- "You are not expressly addressing the periorbital groove deformity or shortening the eyelid toward a more youthful appearance and proportion, respectively."

As described earlier, the palpebromalar/nasojugal grooves are in fact effectively treated by their *indirect* effacement with the closure of the strategically placed, robust pinch skinplasty. This coincidental effect could be analogized to the taut drawing of a bed sheet efficaciously camouflaging a hole in the mattress.

Clinical Examples—Full Spectrum

As an antidote to the usual curated disclosure of a constrained set of gingerly chosen results, a deliberately diverse array of presentations is offered up:

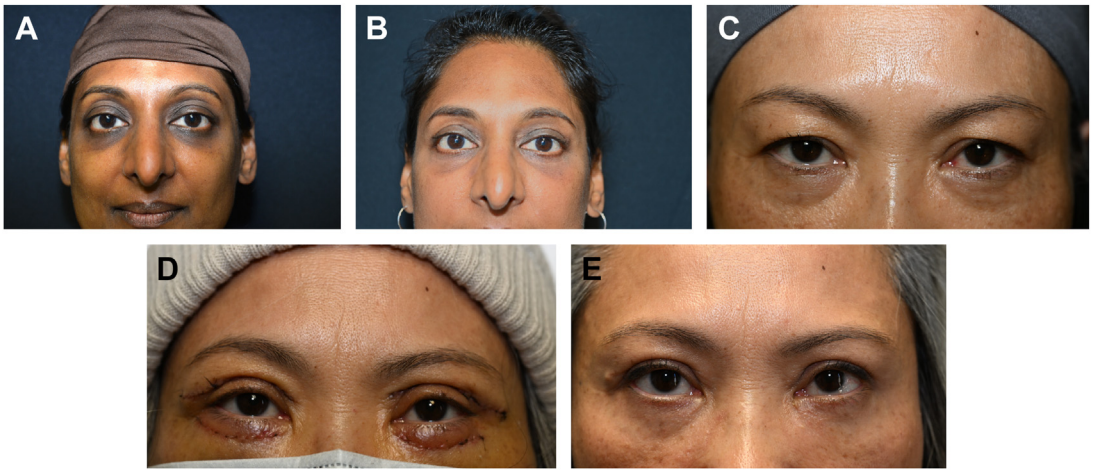

Fig. 21. (*A*) 48 year old woman prepinch. (*B*) Post 12 mo pinch scar. (*C*) A 54 year old woman prepinch. (*D*) Postoperative 7 days. (*E*) Postoperative 4 mo.

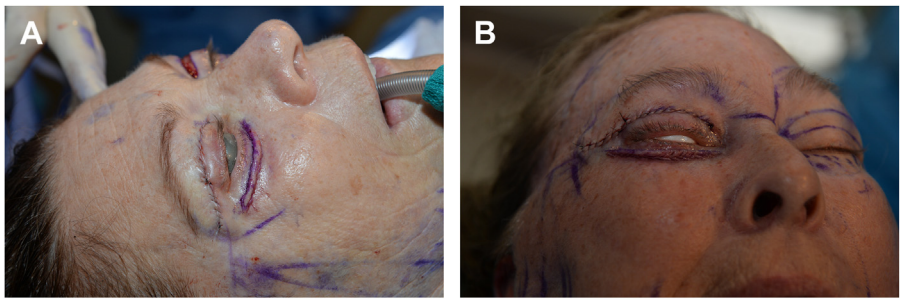

Fig. 22. (*A*) Intraoperative pinch wound. (B) Intraoperative pinch wound.

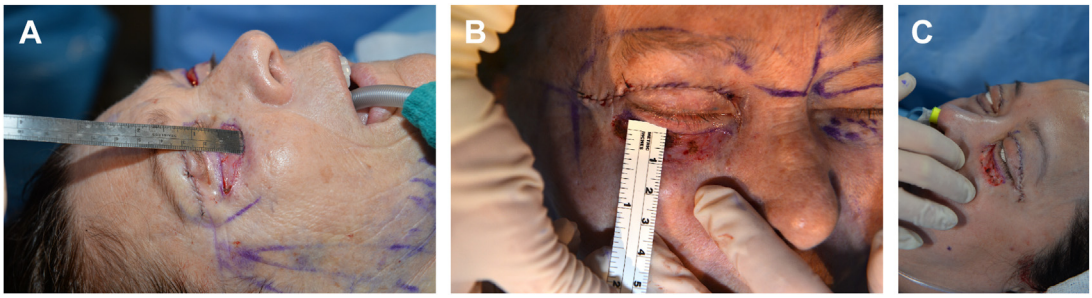

Fig. 23. (*A*) Intraoperative pinch wound. (*B*) Intraoperative pinch wound. (*C*) Intraoperative pinch wound.

Fig. 24. (*A*) 59 year old woman w_fat herniation. (*B*) Postoperative 1 year. (*C*) 71 year old woman prepinch and pexy. (*D*) Post 1 year with scleral show present. (*E*) 64 year old woman prepinch. (*F*) post 9 months.

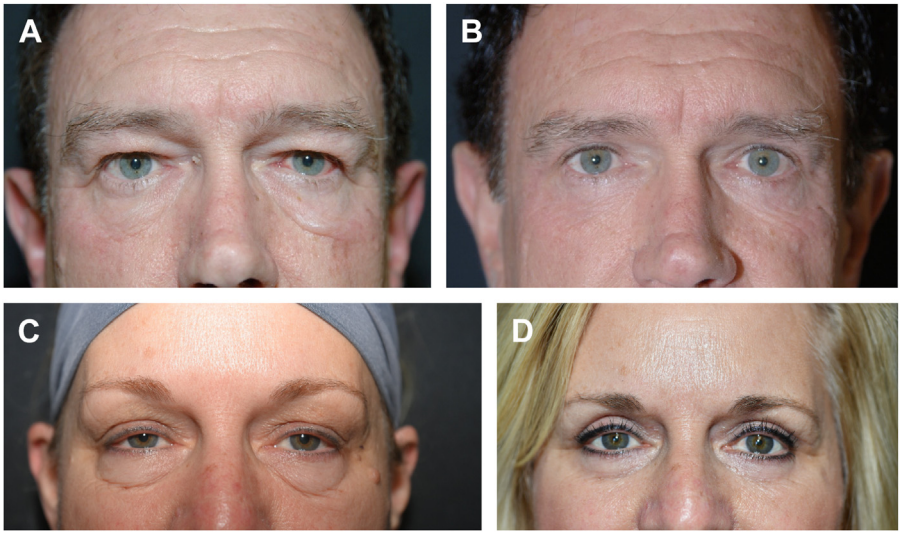

Fig. 25. (*A*) 56 year old man prepinch. (*B*) Post 1 year. (*C*) 54 year old woman prepinch. (*D*) Post 9 months.

- *Immediate postoperation*—To demonstrate the "kinder and gentler" nature of this strategy promising faster recoveries:
  a. Preop (**Fig. 26**A)
  b. Postop day 5 (**Fig. 26**B)
  c. Postop day 9 (**Fig. 26**C)
  d. Postop 2 weeks (**Fig. 26**D, E)
- Late Postop—To demonstrate "invisible" scaring that can and should be expected despite an incision in the middle ground of the eyelid:
  a. Preop (**Fig. 26**F)
  b. Postop 1 year (**Fig. 26**G)
- *A single patient series*—To demonstrate the persistence of the result despite the years
  a. Preop (**Fig. 27**A)
  b. Postop day 7 (**Fig. 27**B)
  c. Postop day 14 (**Fig. 27**C)
  d. Postop 1 year (**Fig. 27**D)
  e. Postop 3 years (**Fig. 27**E)
  f. Postop 10 years (**Fig. 27**F)
- *Best result examples*—To highlight where esthetics have been comprehensively addressed
  a. Preop and postop 1 year (**Fig. 28**A–D)
  b. Preop and postop 9 months (**Fig. 28**E, F)
- *Average result examples*—To expose the "usual and customary" results with esthetic incompletes
  a. Slight scleral show (**Fig. 29**A, B)
  b. Residual skin (**Fig. 30**A, B)
  c. *Residual fat*: One preoperation and its postoperation (**Fig. 31**A, B)
  d. Residual festoons/malar bags (**Fig. 32**A, B)

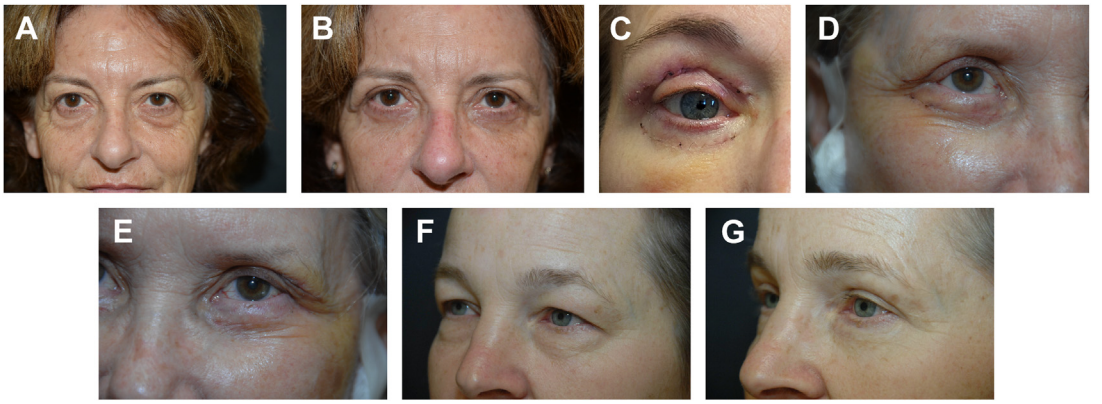

Fig. 26. (*A*) 57 year old woman prepinch. (*B*) 5 days postoperation. (*C*) 9 days postoperative pinch. (*D*) 2 weeks postoperation. (*E*) 2 weeks postoperation. (*F*) 57 year old woman preoperative pinch. (*G*) Postoperative 1 year pinch.

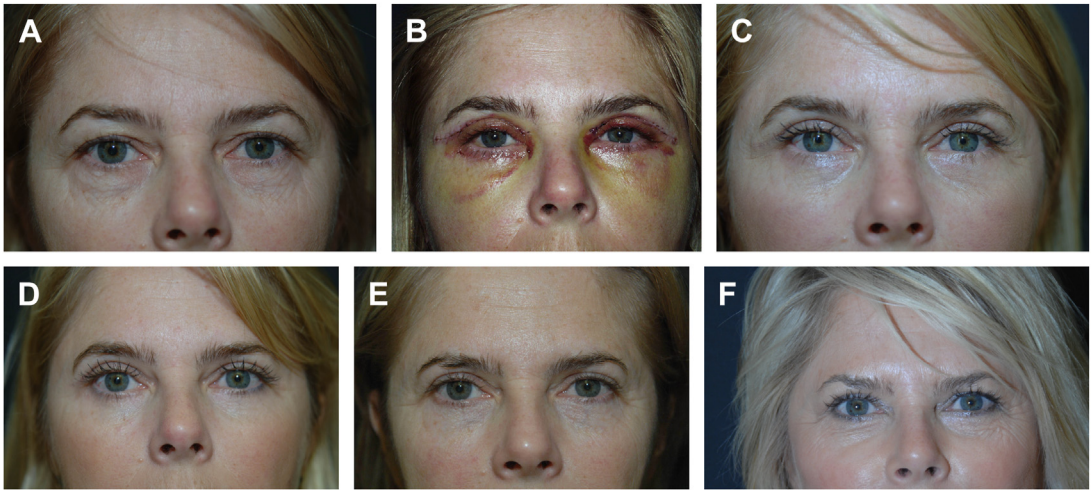

Fig. 27. (*A*) 50 year old woman prepinch. (*B*) Postoperative day 7. (*C*) Postoperative day 14. (*D*) Post 1 yr. (*E*) post 3 yrs. (*F*) post 10 yrs.

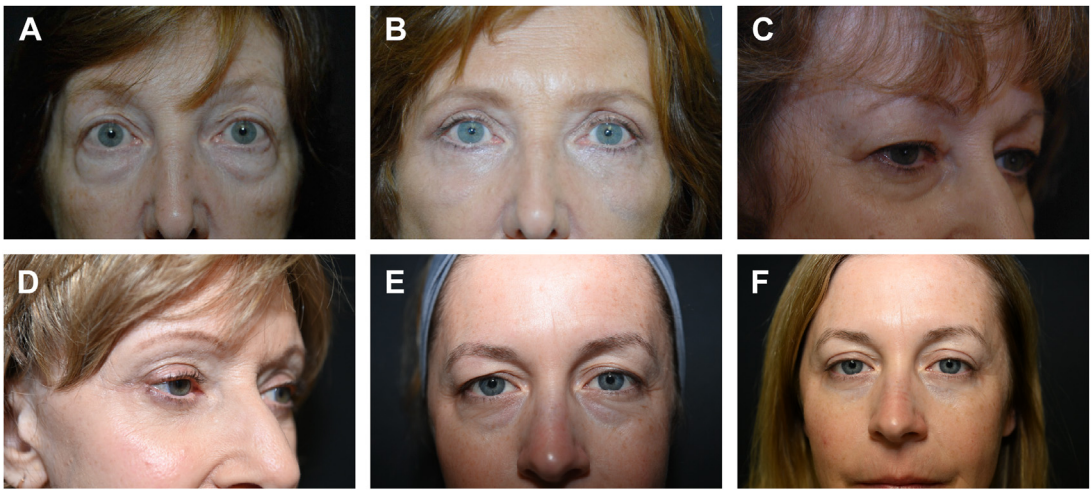

Fig. 28. (*A*) 61 year old woman prepinch. (*B*) Post 1 year. (*C*) Preoblique. (*D*) Postoblique. (*E*) 48 year old woman prepinch. (*F*) Post 9 months.

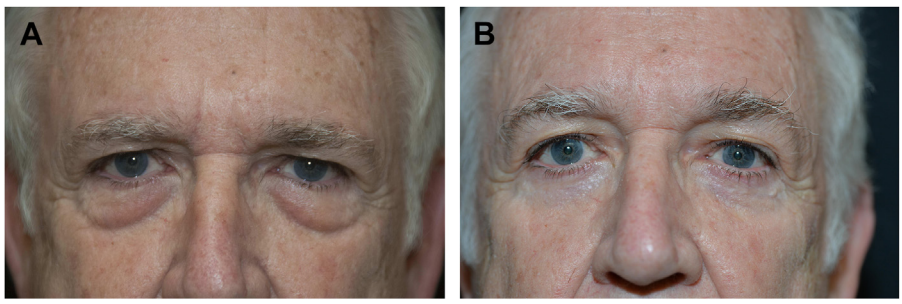

Fig. 29. (*A*) 71 year old man prepinch. (*B*) Post 9 months.

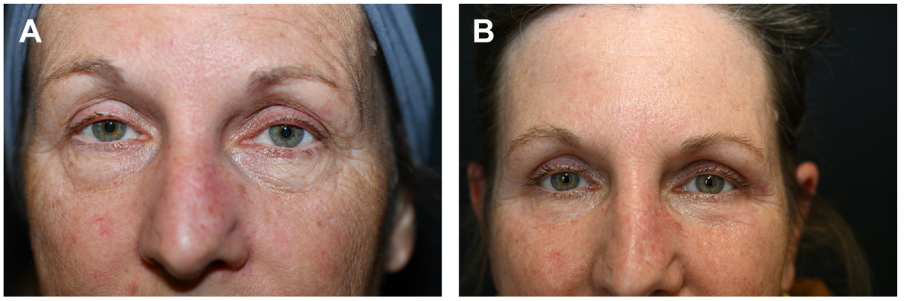

Fig. 30. (*A*) 53 year old woman prepinch. (*B*) Post 9 months.

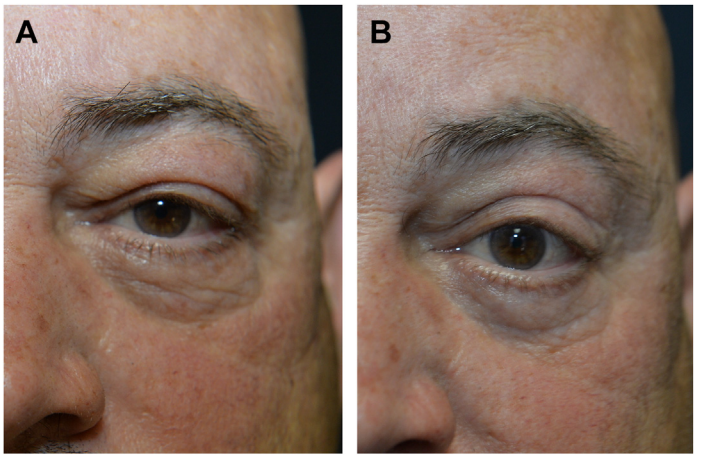

Fig. 31. (*A*) 54 year old man prepinch. (*B*) Postpinch with residual fat.

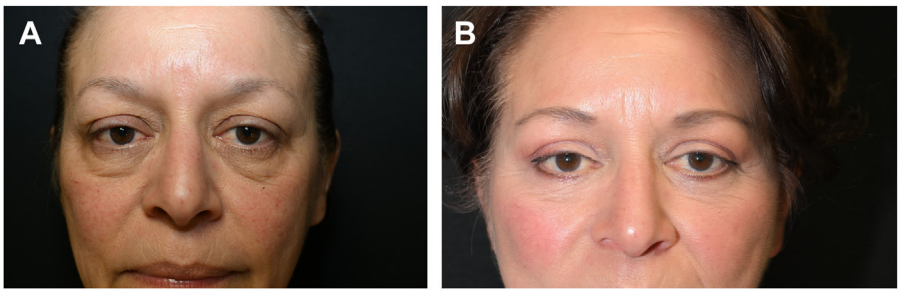

Fig. 32. (*A*) 54 year old woman prepinch. (*B*) Post 6 months.

Validation through Replication

Far too commonly, it is too easy to believe in one's own techniques and its outcomes when your staff, your patients, and your Web site all think your results are great! Ultimately, like any research product worth its weight, such approbation is not to be entirely trusted until *others* can and do replicate similar results. Well, the pinch blepharoplasty technique did make it into the consciousness—and practices—of my colleagues as proven by propitious feedback, which telegraphed the beneficence of the strategy at delivering an "esthetically safe" outcome—one that is at once maximally effective and of minimum risk.[47–52]

SUMMARY

A conclusionary section may be the proverbial "period" at the end of a scientific paper, but considering the inexorable shape-shifting that this confounding breed of a surgical procedure must endure, it is any wonder that published algorithms can ever be rightfully declared *the* definitive technical description. As I have characterized before, a quote from Mukherjee illustrates this phenomenon best: "procedures come alive in the tinkering, fussing hands of their operators … procedures are typically created, nurtured, and perfected."[53,54] So perhaps it is more honest for me to state that this study is a reflection of my seventh, eight, or more accurately, umpteenth thought about the "taming" of the lower eyelid in our noble efforts to improve its appearance while preserving its integrity. The lower eyelid dauntingly challenges the surgeon more than most any other procedure in our esthetic quiver. And in the same vein, the procedure we call a blepharoplasty is more of a high-wire act: no false moves allowed—no slip-ups possible, if the surgeon is to honor this aforementioned "balance" between esthetics and safety.

To achieve this goal, let us be inspired by Saint-Exupery's eloquent definition of the essence of this same audacious goal: "Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away." So, I offer exhibit one: the pinch blepharoplasty—for if it may be fairly stated, now, that this represents a tried-and-true answer to this challenge. It vanquishes the necessity for so many prevailing interventions—skin–muscle flap creation, muscle/fascia release, and fat grafting/translocation—and instead leaves behind only the essentials: fat reduction, canthopexy, and pinchplasty. And it is this kinder and gentler—*less is more*—surgical cry that facilitates a more efficacious outcome, with less "pain and suffering." And as the late-night TV pitchman would say—"and there is more …!" The one outcome that this technique is far less likely to deliver is … complications—including dry eye, scleral show, frank ectropion, and untreated wrinkling. And it is this attribute that should be the unnegotiable metric by which all esthetic surgeries are measured. Only then will an "observing" surgeon have been given what I like to call proper "informed consent" so they may be empowered to *intelligently* decide to adopt the procedure in question. Well, hopefully, the reader has by now been indeed so inspired by the merits of this pinch and pexy blepharoplasty.

CLINICS CARE POINTS

- *Mix an elixir:* The surgeon should infiltrate the target tissues with hyaluronidase-infused local anesthetic as early as possible in the procedure to ensure maximal control of the recruitment and amputation of the "pinch."
- *Forge a shapely pinch:* The pinch skin plasty should evoke a hockey stick shape at its medial end to efficaciously address the nasojugal groove deformity.
- *Follow the skin:* The latitude of the pinch should be decidedly removed from the eyelid margin to not only prophylax against posture distortion but also to deliberately approach and more effectively capture the bulk of the excess eyelid tissue and at the same time efface the orbital groove.
- *Conduct "the 1 to 2 punch":* The stitch canthopexy should now be considered an integral part of the surgery if the surgeon is to take full advantage of the pinch strategy.
- *Do not pinch a squinch:* Adequate anesthesia should be confirmed prior to the pinch to avoid an over-resection of nociceptive hyperfunctioning orbicularis.

DISCLOSURE

The authors have nothing to disclose.

SUPPLEMENTARY DATA

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cps.2024.07.002.

REFERENCES

1. Miller CC. Folds, bags and wrinkles of the skin about the eyes. Cosmetic surgery: the correction of

featural imperfections. Chicago, IL: Oak Publishing; 1907. p. 40–2.
2. Noel A. La chirurgie esthétique : son role social. Paris: Masson et Cie Editeurs; 1926.
3. Parkes M, Fein W, Brennan HG. Pinch technique for repair of cosmetic eyelid deformities. Arch Ophthalmol 1973;89:324–8.
4. Dinner MI, Glassman H, Artz JS. The "no flap" technique for lower-lid blepharoplasty. Aesthetic Plast Surg 1992;16:155–8.
5. Rosenfield LK. The pinch blepharoplasty revisited. Plast Reconstr Surg 2005;115:1405–12. discussion 1413-1404.
6. Rosenfield LK. Pinch blepharoplasty: a safe technique with superior results. Aesthetic Surg J 2007; 27:199–203.
7. Seckel BR, Kovanda CJ, Cetrulo CL Jr, et al. Laser blepharoplasty with transconjunctival orbicularis muscle/septum tightening and periocular skin resurfacing: a safe and advantageous technique. Plast Reconstr Surg 2000;106:1127–41. discussion 1142-1125.
8. Rosenfield LK. The pinch rhytidectomy: a safe, effective, “low SMAS” variation on the theme. Aesthetic Surg J 2014;34:825–40.
9. Rosenfield LK. High tension abdominoplasty 2.0. Clin Plast Surg 2010;37:441–65, 20100608.
10. Fagien S. Algorithm for canthoplasty: the lateral retinacular suspension: a simplified suture canthopexy. Plast Reconstr Surg 1999;103:2042–53. discussion 2054-2048.
11. Trepsat F. Periorbital rejuvenation combining fat grafting and blepharoplasties. Aesthetic Plast Surg 2003;27:243–53.
12. Stutman RL, Codner MA. Tear Trough deformity: review of anatomy and treatment options. Aesthetic Surg J 2012;32:426–40.
13. Gawdat TI, Elsherif EAE, Alahmadawy YA, et al. Management of tear trough deformity with and without tear trough-orbicularis retaining ligament complex release in transconjunctival blepharoplasty: a comparative study. Int J Ophthalmol 2019;12:89–93, 20190118.
14. Massry G, Azizzadeh B. Periorbital fat grafting. Facial Plast Surg 2013;29:46–57.
15. Ugradar S, Wang Y, Patel A, et al. The management of lumps, bumps, and contour irregularities of the lower eyelid and cheek after poor outcome fat transfer. Aesthetic Surg J 2023;43:633–42.
16. Jelks GW, McCord CD. Dry eye syndrome and other tear film abnormalities. Clin Plast Surg 1981;8:803–10.
17. Alghoul M. 7 blepharoplasty: anatomy, planning, techniques, and safety. Aesthetic Surg J 2018;39: 10–28.
18. Hall BD, Graham JM, Cassidy SB, et al. Elements of morphology: standard terminology for the periorbital region. Am J Med Genet 2009;149A:29–39.
19. Fathimani K, Perenack J, Christensen BJ. The use of tranexamic acid in facial cosmetic surgery procedures: a technical note. J Oral Maxillofac Surg 2021; 79:2334–8.
20. McCord CD, Kreymerman P, Nahai F, et al. Management of postblepharoplasty chemosis. Aesthetic Surg J 2013;33:654–61.
21. Lambros V. Volumizing the brow with hyaluronic acid fillers. Aesthetic Surg J 2009;29:174–9.
22. Lambros V. A technique for filling the temples with highly diluted hyaluronic acid: the "dilution solution". Aesthetic Surg J 2011;31:89–94.
23. Jelks GW, Jelks EB. No-Touch lower blepharoplasty. Techniques in aesthetic plastic surgery series: midface surgery. Philadelphia: Saunders Elsevier; 2009. p. 59–75.
24. Kamer FM, Mikaelian AJ. Preexcision blepharoplasty. Arch Otolaryngol Head Neck Surg 1991; 117:995–9. discussion 1000.
25. Aston SJ. Skin-muscle flap lower lid blepharoplasty. Semin Ophthalmol 1989;4:238–41.
26. Spira M. Lower blepharoplasty–a clinical study. Plast Reconstr Surg 1977;59:35–8.
27. Rees TD, Tabbal N. Lower blepharoplasty with emphasis on the orbicularis muscle. Clin Plast Surg 1981;8:643–62.
28. Massiha H. Combined skin and skin-muscle flap technique in lower blepharoplasty: a 10-year experience. Ann Plast Surg 1990;25:467–76.
29. Mack WP. Blepharoplasty complications. Facial Plast Surg 2012;28:273–87, 20120621.
30. Oestreicher J, Mehta S. Complications of blepharoplasty: prevention and management. Plast Surg Int 2012;2012:252368, 20120508.
31. Sultan B, Genther DJ, Perkins SW. Measurement of change in lower eyelid position in patients undergoing transcutaneous skin-muscle flap lower eyelid blepharoplasty. JAMA Facial Plast Surg 2016;18:429–35.
32. Lowry JC, Bartley GB. Complications of blepharoplasty. Surv Ophthalmol 1994;38:327–50.
33. Schwarcz R, Fezza JP, Jacono A, et al. Stop blaming the septum. Ophthalmic Plast Reconstr Surg 2016; 32:49–52.
34. Patel RM, Putterman AM. In: Cohen AJ, Burkat CN, Oculofacial Orbital, et al, editors. Lower blepharoplasty: skin-muscle flap approach. Cham: Springer International Publishing; 2019. p. 247–50.
35. Fedok FG, Perkins SW. Transconjunctival blepharoplasty. Facial Plast Surg 1996;12:185–95.
36. Nassif PS. Lower blepharoplasty: transconjunctival fat repositioning. Facial Plast Surg Clin North Am 2005;13:553–559, vi.
37. Davison SP, Iorio ML, Oh C. Transconjunctival lower lid blepharoplasty with and without fat repositioning. Clin Plast Surg 2015;42:51–6.
38. Gilbert SE. Transconjunctival blepharoplasty with chemoexfoliation. Ann Plast Surg 1996;37:24–9.

39. Ranjit-Reeves RU, Thompson AC, Rafailov L, et al. Melanin and erythema values before and after bilateral transconjunctival lower lid blepharoplasty with ablative lower lid carbon dioxide laser (CO2) skin resurfacing. Australas J Dermatol 2021;62:e286–8, 20200818.
40. Maamari RN, Massry GG, Holds JB. Complications associated with fat grafting to the lower eyelid. Facial Plast Surg Clin North Am 2019;27:435–41, 20190830.
41. Larsson JC, Chen TY, Lao WW. Integrating fat graft with blepharoplasty to rejuvenate the Asian periorbita. Plast Reconstr Surg Glob Open 2019;7: e2365, 20191015.
42. Schiraldi L, Sapino G, Meuli J, et al. Facial fat grafting (FFG): worth the risk? a systematic review of complications and critical appraisal. J Clin Med 2022;11:4708.
43. Castanares S. Blepharoplasty for herniated intraorbital fat; anatomical basis for a new approach. Plast Reconstr Surg (1946) 1951;8:46–58.
44. Sachs ME, Bosniak SL. Correction of true periorbital fat herniation in cosmetic lower lid blepharoplasty. Aesthetic Plast Surg 1986;10:111–4.
45. Camirand A, Doucet J, Harris J. Anatomy, pathophysiology, and prevention of senile enophthalmia and associated herniated lower eyelid fat pads. Plast Reconstr Surg 1997;100:1535–46.
46. Kim J, Park SW, Choi J, et al. Ageing of the bony orbit is a major cause of age-related intraorbital fat herniation. J Plast Reconstr Aesthetic Surg 2018; 71:658–64, 20171128.
47. Roelofs KA, Soriano T, Smart C, et al. What's in a pinch: a closer look at lower eyelid pinch blepharoplasty. Am J Cosmet Surg 2023;40:181–4.
48. Kim EM, Bucky LP. Power of the pinch: pinch lower lid blepharoplasty. Ann Plast Surg 2008;60:532–7.
49. Taban M, Taban M, Perry JD. Lower eyelid position after transconjunctival lower blepharoplasty with versus without a skin pinch. Ophthalmic Plast Reconstr Surg 2008;24:7–9.
50. Bardot J, Fogli A, Malet T, et al. Chapitre 3 - les poches. In: Bardot J, Fogli A, Malet T, et al, editors. Chirurgies esthétiques des paupières. Paris: Elsevier Masson; 2008. p. 29–49.
51. Choi B, Yang S, Park J, et al. Effect of transconjunctival approach lower blepharoplasty combined with pinch skin excision technique in elderly patients. J Korean Ophthalmol Soc 2019;60:205–9. Article.
52. Choi B, Yang S, Park J, et al. Effectiveness and satisfaction degree of transconjunctival-approach lower blepharoplasty combined with pinch skin excision technique. J Craniofac Surg 2020;31:766–8.
53. Rosenfield LK. On second thought. Aesthet Surg J Open Forum 2020;2. https://doi.org/10.1093/asjof/ojz033.
54. Mukherjee S. The promise and price of cellular therapies. 2019. Available at: https://www.newyorker.com/magazine/2019/07/22/the-promise-and-price-of-cellular-therapies. Accessed May 23, 2024.