



## Oculoplastic Surgery

## Preliminary Report

# The Role of Nasal Fat Preservation in Upper Lid Surgery and Assessment With the Face-Q Questionnaire: Innovations in Upper Blepharoplasty

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## Abstract

**Background:** Upper blepharoplasty is a common procedure in aesthetic plastic surgery. Numerous techniques focus on removing excessive tissues, including skin, muscle, and fat. However, aging insights suggest tissues mainly undergo depletion rather than increase. Removing significant eyelid fat tissue can boost aesthetics but might result in a gaunt appearance with a recessed superior sulcus. Adjusting this can be achieved by moving a prominent nasal fat pad to the eyelid's center.

**Objectives:** We introduce a new surgical method combining the removal of excess skin, minimal resection of the orbicularis muscle, and redistribution of the orbital bags while preserving nasal fat. This method involves minimal detachment, with the medial bag anchored centrally.

**Methods:** We conducted a retrospective study on 11 patients eligible for this surgical technique between 2019 and 2023 who underwent preservation upper blepharoplasty. The Face-Q Upper Lid questionnaire was administered both before and 6 months postoperation, with the Face-Q Outcome assessed 6 months after the surgical procedure.

**Results:** All participants were females aged between 43 and 68 years. Fat necrosis was absent in all cases. The volume augmentation remained consistent over an average follow-up of 1 year. We recorded zero complications. There was an increase of 25 points in the Face-Q Upper Eyelids score between the preoperative and postoperative stages. The average score for Face-Q Outcome stood at 81.7.

**Conclusions:** Our preservation blepharoplasty approach reliably achieves upper lateral eyelid fullness, offering a naturally rejuvenated appearance.

## Level of Evidence: 5

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Blepharoplasty ranks as the third most requested surgical technique in the field of cosmetic surgery worldwide, accounting for ~10% of all surgical procedures in 2022.<sup>1</sup> It is well known that the periorbital region is one of the first facial areas to exhibit signs of aging. In this context, when there are no upper eyelid pathologies requiring surgery for functional reasons rather than purely aesthetic ones, it is vital to explore age-related changes to achieve the best custom-made aesthetic result for the patient.

Aging affects every structure that constitutes the eyelid: the skin, muscles, fatty tissue, and even the orbit.<sup>2,3</sup> Facial aging is a multifactorial process, resulting from changes in bone structure, soft-tissue deflation (volume loss), tissue descent, and skin alterations. As part of the aging process, dermatochalasis, upper eyelid and brow ptosis, lacrimal gland prolapse, obliteration of the upper eyelid crease, and steatoblepharon can all occur.<sup>4,5</sup>

Upper blepharoplasty surgery seeks to address dermatochalasis and provides a more youthful appearance to the periorbital area by rectifying the typical age-related changes. Over time, the techniques employed in upper blepharoplasty surgery have evolved, with various procedures available depending on the objective and the final desired appearance. Surgical techniques described include skin-only resection,<sup>6,7</sup> resection of a portion of the orbicularis muscle,<sup>8</sup> excision of orbital fat (central, nasal, or both),<sup>9-11</sup> transposition of the central preaponeurotic fat with full brow ligament release<sup>12</sup> and orbital fat transposition flap technique.<sup>13</sup>

It is crucial to understand that upper eyelid surgery is bespoke to each patient. Most described techniques focus on tissue excision and reduction rather than reshaping. Recent studies on facial aging reveal that as age increases, there is a nonuniform volume loss in the facial fat pads. For the upper eyelid, it has been shown that starting at age 43, there is a progressive reduction in the central fat pad's volume, whereas the nasal fat pad's volume remains unchanged.<sup>14</sup>

Considering this, for a specific group of patients above 43 years old, desiring aesthetic improvement of the upper eyelid, exhibiting dermatochalasis, without any functional alterations in the upper eyelid, pseudohypertrophy of the medial eyelid bag, and a decrease in lateral fullness, we utilized a technique that preserves the nasal orbital fat and repositions it centrally. This approach corrects aging changes, restoring a natural youthful look to the periocular region and also reducing the invasiveness of the surgical technique and, consequently, the potential complications related to the procedure.

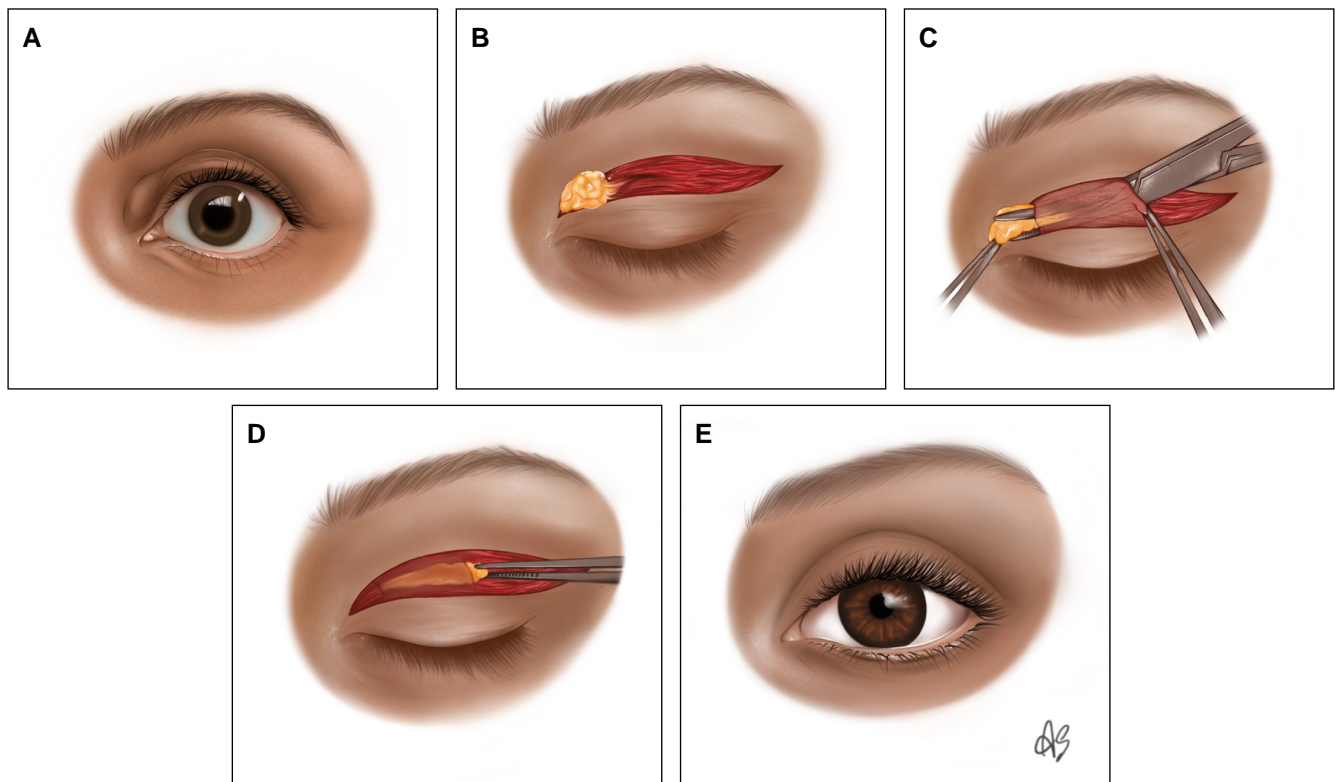
## METHODS

During a comprehensive 4-year retrospective examination (between March 2019 and March 2023), records of patients from our institution who underwent cosmetic upper eyelid blepharoplasty with nasal fat repositioning were meticulously reviewed. All procedures and data collection in this study



**Video.** Watch now at <http://academic.oup.com/asjopenforum/article-lookup/doi/10.1093/asjof/ojae051>

were conducted in compliance with the ethical principles of the 1964 Declaration of Helsinki, and written informed consent was secured from all patients involved. From the total cohort subjected to this surgical intervention, a specific group of 11 patients was selected for detailed scrutiny based on precise inclusion criteria. Exclusion criteria were methodically applied: those with previous upper eyelid surgical interventions, individuals with documented trauma to the upper eyelids, cases presenting with concurrent upper eyelid ptosis, individuals with a known history of thyroid, orbital, or other eyelid afflictions, and those who did not display a prominent nasal fat pad intraoperatively were not considered. Postsurgical evaluations were systematically scheduled at intervals of 1 week, 3 weeks, 2 months, and 6 months. Furthermore, attempts were made to follow-up with patients at the 1- and 2-year postoperative marks, albeit not uniformly for all participants. Each evaluation included an exhaustive assessment of wound healing, indicators of potential infections, any observable swelling, and pain levels. Concurrently, a thorough appraisal of eyelid position and its operational functionality was conducted. Comprehensive ocular examinations were consistently performed, with the fundus evaluation being the sole exception. Any deviations from anticipated outcomes or the emergence of complications were diligently documented. The primary objective of these structured evaluations was to affirm the safety of the procedure and to vigilantly monitor the surgical intervention's outcomes in both the short and extended terms. To gain a nuanced understanding of the postoperative aesthetic outcomes of the upper eyelid, the Face-Q Upper Lid questionnaire was administered preoperatively and at the 6-month postoperative juncture. Additionally, the Face-Q Outcome questionnaire was employed 6 months postsurgery to further assess patient satisfaction and results. The objective of this study is to evaluate the outcomes obtained with the use of our blepharoplasty surgical technique in a specific category of patients.



**Figure 1.** Steps of the surgical procedure. (A) Preoperative. (B) Herniation of the nasal fat pad using grasping forceps. (C) Division of the orbicularis muscle and orbital septum at the central adipose compartment, followed by tunneling beneath the orbicularis muscle. (D) Lateral repositioning of the nasal fat pad, accessed from the central compartment, with grasping forceps. (E) Postoperative result.

## Surgical Technique

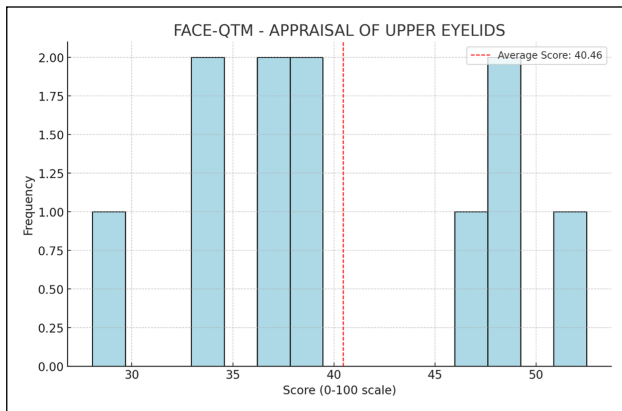
All procedures are conducted under local anesthesia with conscious sedation or general anesthesia, based on the patient's preference and the complexity of any additional surgeries. The upper eyelid crease marking is performed with the patient in a supine position after thorough surgical preparation and draping. By employing the pinch technique, the extent of skin excision is determined bilaterally. Subsequently, a subcutaneous infiltration of 1 mL of 1% Xylocaine with 1:100,000 epinephrine is administered along the outlined skin ellipse, facilitating hydrodissection and minimizing the need for multiple needle punctures for effective anesthesia.

Following a sufficient period for hemostasis and the onset of anesthetic action, a surgical blade is used to precisely delineate the skin ellipse. The skin at the temporal aspect is grasped with toothed forceps and excised from the orbicularis oculi muscle using a scalpel (Video). The nasal part of the orbicularis muscle and the orbital septum are incised to reveal the nasal fat pad. The herniation of the nasal fat pad is achieved through the application of gentle pressure with grasping forceps (Figure 1A). Further, the orbicularis muscle and orbital septum are divided at the central adipose compartment, and tunneling beneath the orbicularis

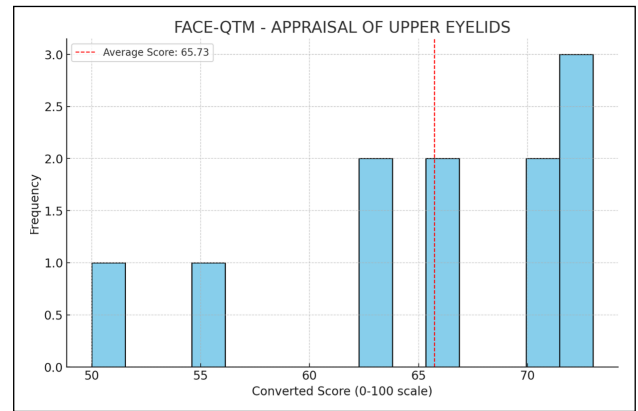
muscle is conducted (Figure 1B). Through this approach, the nasal fat pad, accessed from the central compartment, is repositioned laterally using grasping forceps (Figure 1C). Based on our experience, aggressive dissection of the fat pads is unnecessary for their repositioning. The surgical site is then meticulously closed with 6/0 nylon sutures.

## RESULTS

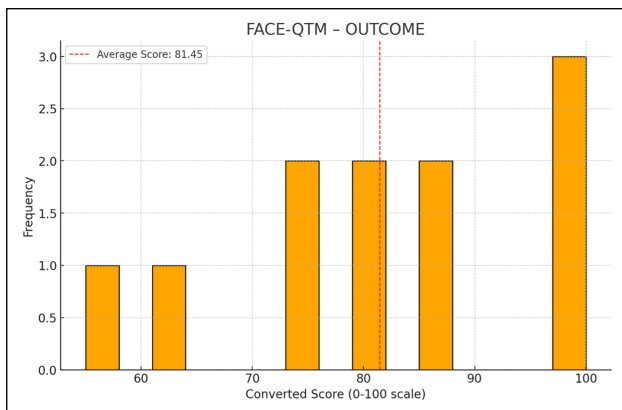
From the cohort of 47 patients who underwent blepharoplasty in our department 2019 and 2023, 11 met the criteria for inclusion in this study. Notably, all the participants were female aged between 43 and 68 years. The median age stood at 45 years. The average follow-up was 12 months, with a range from 10 to 14 months. No cases of fat necrosis were reported. Neither intraoperative nor postoperative complications were observed. There was no instance of excess skin at the upper eyelid level. The Face-Q Upper Lid questionnaire, an aesthetics patient-reported outcome measure rigorously developed for measuring outcomes for any type of surgical or minimally invasive facial aesthetic treatment, was administered preoperatively. The average preoperative score was 40.5 (Figure 2). The same questionnaire, when given 6 months postsurgery, showed an



**Figure 2.** Face-Q appraisal of upper eyelids: preoperative results.



**Figure 3.** Face-Q appraisal of upper eyelids: postoperative results.



**Figure 4.** Face-Q outcome results.

average score of 65.7 (Figure 3). The smallest increase in score was observed in a 40-year-old patient and was a difference of 15, whereas the maximum increase was seen in a 50-year-old patient, with a score difference of 30 points. Given the limited sample size, we refrained from conducting statistical correlation tests between the results and anamnestic data, though future studies might consider the Pearson correlation coefficient or Spearman's rank correlation. For the Face-Q Outcome questionnaire: the minimum score recorded was 55, the maximum score was 100, and the average score was 81.75 (Figure 4).

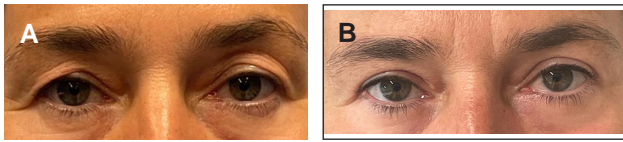
## DISCUSSION

Aging is a multifaceted, intricate process that impacts every structure within the human body. The study of facial aging has gained momentum in recent years, with researchers delving into the complex mechanisms that govern its progression. Patients above the age of 40, displaying notable pseudohypertrophy of the nasal fat, central fat pad atrophy,



**Figure 5.** A 60-year-old female patient. (A) Preoperative and (B) 6 months postoperative.

and the subsequent absence of central-lateral fullness, are the epitome of certain distinctive aspects of the periorbital aging process. The influence of aging on the dynamics of the lower eyelid and midface has been the centerpiece of myriad studies.<sup>15,16</sup> Contrary to the central fat pad, the nasal fat pad is distinctly preserved.<sup>14</sup> The regions within the orbit that are highly susceptible to resorption are the upper-inner and lower-outer sections. These modifications are paramount in the manifestations of periorbital aging, highlighted by an accentuated medial fat pad, an elevated medial eyebrow, and a prolonged lid–cheek junction.<sup>17</sup> In light of this, standard blepharoplasty techniques might not be optimal for every patient. In cases where patients' clinical features are unmistakably correlated with described aging processes, we advocate for our surgical technique of preservation blepharoplasty that emphasizes the retention of nasal fat. Techniques to preserve orbital fat have been previously documented. For instance, Sozer et al introduced a technique that encompasses the use of a central fat flap aiming to enhance lateral fullness.<sup>18</sup>



**Figure 6.** A 50-year-old female patient. (A) Preoperative and (B) 6 months postoperative.

Though this could be a viable option for a specific patient category, based on the aforementioned aging processes, we have integrated the principles of this method focusing on the nasal fat pad to cater to a wider patient demographic with varied indications. Massry, too, has documented a surgical method for nasal fat preservation, suggesting a more aggressive nasal pedicle release, with a superficial fat repositioning. This method, however, has reported a higher complication rate than what we have observed in our study.<sup>19</sup> Our surgical approach was conceptualized and executed to restore the periorbital region to its aesthetically pleasing proportions. The technique is informed by scientific evidence which highlights the primary vectors of tissue shift that occur during the natural aging process. A clear limitation of our study lies in the sample size. This study serves as the pioneering investigation introducing a new surgical technique, assessed through specific tools, such as the Face-Q Upper Eyelid questionnaire and the Face-Q Outcome questionnaire. The data showcase a marked improvement in the aesthetics of the upper eyelids postsurgery, a facet not described by any author in existing literature. At the 6-month postoperative mark, patients demonstrated sustained improvements in upper eyelid aesthetics, as depicted in Figures 5 and 6. Given the encouraging results obtained from these questionnaires, we are led with greater conviction to endorse this technique as the prime approach for treating aesthetic flaws attributed to aging. The small number of participants involved may not provide a comprehensive representation of individual variations present in a larger population, and the absence of a comparison group in which the technique was not utilized limits the ability to determine the potential benefit of their technique. Further research with a more extensive sample is required to establish meaningful correlations between our findings and those of more commonly used techniques.

## CONCLUSIONS

Our study focuses on a preservation blepharoplasty approach that aims to achieve upper central-lateral eyelid fullness, which offers a naturally rejuvenated appearance. This technique, detailed in the article, is proposed as a viable alternative for patients presenting the characteristics we have outlined, complementing the methods already documented in the literature.

## Disclosures

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