



# Upper Blepharoplasty With or Without Ptosis Correction: An Analysis of Outcomes in 533 Consecutive Procedures at an Academic Hospital

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## Background

Blepharoplasty, or eyelid surgery, is a procedure that involves the removal of redundant eyelid skin. Upper blepharoplasty (UB) refers to the removal of excess skin around the upper eyelid, also known as dermatochalasis. This procedure has gained popularity in recent years, being the 4th most common cosmetic procedures performed in 2016.<sup>1</sup> Besides cosmetic concerns, patients often undergo functional upper blepharoplasty to improve their peripheral vision. Dermatochalasis can often present with true ptosis. In this condition, eyelids droop because of a nerve or muscle lesion. The diagnosis of true ptosis in the setting of dermatochalasis is important for proper surgical management. When both conditions are present, formal ptosis correction (PC) with upper blepharoplasty is often necessary to alleviate peripheral visual field obstruction.

There is debate whether ptosis correction can be safely done in conjunction with upper blepharoplasty. For instance, while a 2018 study found no statistically significant difference in the rate of revision of ptosis correction with concurrent upper blepharoplasty,<sup>2</sup> another recent study found the greatest increase in surgically induced refractive changes (SIRC) cylinder in patients who underwent upper blepharoplasty combined with posterior approach ptosis surgery, which is a specific approach to ptosis correction.<sup>3</sup>

## Objectives

- Assess the clinical and cosmetic outcomes of upper blepharoplasty with and without concurrent ptosis correction.
- Evaluate the safety of upper blepharoplasty with concurrent ptosis correction.
- Identify predictors of revision after primary upper blepharoplasty.

## Methods

A retrospective electronic chart review of consecutive patients aged 18 years or older who underwent primary upper blepharoplasty at Mayo Clinic Rochester from November 2018 to March 2020 was performed. Patients with endocrine, autoimmune, or neurovascular disorders which may affect upper eyelid function were excluded, as well as patients who underwent a previous upper blepharoplasty or ptosis repair procedure. Congenital cases of ptosis were also excluded from the study. Patient demographics, clinical presentation, surgical management, and outcomes including revisions were recorded.

Descriptive statistics including medians, percentages, and ranges were used to present the data. Univariate and multivariable time-to-event analyses using Cox-proportional hazards model were performed to assess predictors of revision surgery. All analyses were performed using the JMP statistical software package Software (v16) (JMP. SAS Institute Inc., Cary, N.C., 1989–2022.). An alpha error of 0.05 was used, and p-values of less than 0.05 were considered statistically significant.

## Results

- Two-hundred-seventy-eight consecutive patients (190 females and 88 males) with 533 primary UB were included.
- The mean age was 67.3 years and mean follow-up was 8.3 months.
- UB with PC was performed in 109 (20.5%) cases, of which 60 (55%) involved Müller's muscle conjunctival resection and 49 (45%) were levator repairs.
- In 169 (31.7%) cases, a brow lift was performed.
- Complications:
  - There was one case of inclusion cyst which required incision and drainage.
  - New dry eye symptoms lasting ≥3 months occurred in 4 (0.9%) cases, all of which resolved.
  - A revision was performed in 3.8% after UB alone (residual skin [n=11], hypertrophic scar [n=4], Herring's law related ptosis [n=1]); versus 9.2% in the UB with PC group (overcorrection [n=4], residual skin [n=4], asymmetry [n=2]).
- The multivariable analysis demonstrated increased rate of revision when UB was combined with PC (adjusted HR: 4, 95% CI [1.8-8.8], p= 0.008). There was no difference in revision rates between the different techniques of ptosis correction.

## Table 1: Univariate time-to-event analysis assessing the predictors of having a revision surgery.

| Predictors of having a revision surgery | Hazard Ratio | 95 % CI     | p value |
|-----------------------------------------|--------------|-------------|---------|
| Age at the time of surgery <sup>a</sup> | 1            | 0.96 - 1.04 | 0.86    |
| History of smoking                      | 0.97         | N/A         | 0.99    |
| Hypertension                            | 1.04         | 0.48 - 2.25 | 0.9     |
| Dyslipidemia                            | 1.6          | 0.68 – 3.59 | 0.29    |
| Diabetes mellitus                       | 1.68         | 0.63 – 4.46 | 0.32    |
| Coronary artery disease                 | 0.94         | 0.28 – 3.12 | 0.91    |
| History of DVT/PE                       | 0            | N/A         | 0.09    |
| Bilateral surgery                       | 0.3          | 0.09 - 1.02 | 0.1     |
| Concomitant ptosis correction           | 3.8          | 1.71 – 8.4  | 0.0024* |
| Concomitant browlift                    | 1.6          | 0.74 – 3.5  | 0.23    |
| Technique of ptosis correction          |              |             |         |
| Müller's muscle conjunctival resection  | Ref          | Ref         | Ref     |
| Levator repair                          | 2.04         | 0.57 – 7.27 | 0.27    |

Abbreviations: CI, confidence interval; Ref, reference variable; DVT, deep venous thrombosis; PE, pulmonary embolism. <sup>a</sup> Ratio per 1-year increase \* Statistically significant value. p values were obtained using Cox proportional-hazards models.

## Discussion

- In patients with true ptosis and dermatochalasis, PC and UB are both necessary for optimal management of peripheral visual obstruction.
- In our study, a revision procedure was performed in 3.8% after UB alone versus 9.2% in the upper blepharoplasty with ptosis correction group, which is comparable to the literature.<sup>4</sup>
- Our study has some limitations, including its retrospective nature, which can introduce selection bias. In addition, there was no follow-up appointment after surgery in multiple instances. Therefore, there is a possibility that complication and revision rates could have been higher.

## Conclusions

Upper blepharoplasty with PC is safe regardless of which PC technique is used. The revision rate of combined UB and PC was 9.2%, which is comparable to the literature.

## References

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3. Zloto O, Matani A, Sagiv O, et al. Changes in Refraction and Visual Acuity after Upper Eyelid Blepharoplasty versus Posterior Approach Ptosis Procedures. Ophthalmic Research 2020;63(6):588–92.
4. Ben Simon GJ, Lee S, Schwarcz RM, McCann JD, Goldberg RA. External levator advancement vs Müller's muscle-conjunctival resection for correction of upper eyelid involutional ptosis. Am J Ophthalmol. 2005;140(3):426-432.

## Image 1: Upper Blepharoplasty with Concurrent Ptosis Correction.



Bilateral upper blepharoplasty with concurrent bilateral ptosis correction. **A: pre-operative; B: nine months after combined procedure was performed.**