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Lateral Scar Dehiscence After Upper Blepharoplasty: Incidence and the Impact of Additional Tension-Relieving Sutures

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ABSTRACT

Purpose: To evaluate the incidence of lateral scar dehiscence following upper eyelid blepharoplasty and to determine whether the addition of lateral subcutaneous tension-relieving sutures reduces the occurrence of this complication.

Methods: A retrospective comparative study was conducted including female patients who underwent primary upper blepharoplasty during two consecutive periods. Group 1 (2022–2023; n = 404) underwent standard wound closure. Group 2 (2023–2024; n = 396) received additional buried subcutaneous tension-relieving sutures placed in the lateral third of the incision. All procedures were performed by the same surgeon using an identical technique and suture material (Vicryl 6-0). The primary outcome was the incidence of clinically diagnosed lateral scar dehiscence. Statistical analysis was performed using Fisher's exact test.

Results: Lateral scar dehiscence occurred in 5 of 404 cases (1.24%) in Group 1 and in 1 of 396 cases (0.25%) in Group 2. The reduction was statistically significant (p = 0.048). The absolute risk reduction was 0.99% (95% CI: 0.02%–1.96%), corresponding to a relative risk reduction of 80%. . Dehiscence occurred predominantly in younger patients (mean age 36 ± 4 years in Group 1; 33 years in Group 2).

Conclusions: Lateral scar dehiscence is an infrequent but clinically relevant complication following upper blepharoplasty, particularly in younger female patients. The addition of lateral buried subcutaneous sutures significantly reduces its incidence and may improve postoperative wound stability.

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Introduction

Upper eyelid blepharoplasty is one of the most commonly performed aesthetic surgical procedures worldwide. It is indicated for dermatochalasis, visual field impairment, and periocular rejuvenation. Although regarded as a safe and predictable operation, complications can occur, including hematoma, infection, asymmetry, hypertrophic scarring, and wound dehiscence.

Lateral scar dehiscence-defined as partial or complete separation of the lateral portion of the blepharoplasty incision-is relatively uncommon but may compromise aesthetic outcomes and necessitate revision surgery. Reported overall wound complication rates range between 1–2%, though lateral dehiscence is rarely analyzed as a distinct entity.

The lateral eyelid represents a dynamic region exposed to significant mechanical stress from orbicularis oculi muscle activity and facial expression. Wound tension, patient age, tissue elasticity, and surgical technique may all influence healing integrity.

This study aims to evaluate the frequency of lateral scar dehiscence and to determine whether the addition of lateral buried subcutaneous sutures reduces its occurrence.

Materials and Methods

Study Design

This retrospective, single-surgeon comparative study was conducted at a private ophthalmic surgical center. The study adhered to the principles of the Declaration of Helsinki.

Patient Population

Female patients undergoing primary upper eyelid blepharoplasty during two consecutive time periods were included:

- **Group 1 (2022–2023):** 404 procedures
- **Group 2 (2023–2024):** 396 procedures

Patients undergoing revision surgery, combined procedures, or with known systemic conditions affecting wound healing were excluded.

Surgical Technique

All procedures were performed by the same surgeon using a standardized approach:

- Incision placed within the natural supratarsal crease
- Conservative skin excision
- Hemostasis achieved with bipolar cautery
- Closure with interrupted 6-0 Vicryl sutures

In Group 2, additional buried subcutaneous sutures were placed in the lateral third of the wound to redistribute tension and reduce strain on the superficial closure.

Outcome Measures

The primary outcome measure was clinically diagnosed lateral scar dehiscence during postoperative follow-up. Dehiscence was

defined as visible separation of wound edges at the lateral incision requiring intervention or prolonged healing.

Statistical Analysis
Categorical data were analyzed using **Fisher's exact test**, appropriate due to the low number of complication events. A two-tailed p-value < 0.05 was considered statistically significant.

The following risk parameters were calculated:
- Absolute Risk Reduction (ARR)
- Relative Risk (RR)
- Relative Risk Reduction (RRR)
- 95% Confidence Intervals (CI)
- Number Needed to Treat (NNT)

Continuous variables (age) were compared using independent sample testing, with $p < 0.05$ considered significant.

Results
A total of 800 procedures were analyzed.

Incidence of Lateral Scar Dehiscence

Group	Dehiscence Cases	Total	Incidence
Group 1	5	404	1.24%
Group 2	1	396	0.25%

Fisher's exact test demonstrated:

$p = 0.048$

indicating a statistically significant reduction in lateral scar dehiscence with additional buried sutures.

Risk Analysis
- Absolute Risk Reduction (ARR): 0.99%
- Relative Risk (RR): 0.20
- Relative Risk Reduction (RRR): 80%
- 95% CI (ARR): 0.02%–1.96%
- Number Needed to Treat (NNT): 101

Age Distribution
Mean age of patients experiencing dehiscence:
- Group 1: 36 ± 4 years
- Group 2: 33 years

There was no statistically significant difference in age distribution between the overall groups ($p > 0.05$). Notably, no cases occurred in older age subgroups.

All dehiscence cases resolved with conservative management or minor revision, resulting in satisfactory healing.

Discussion
This study demonstrates that lateral scar dehiscence, although uncommon, occurs more frequently in younger female patients and can be significantly reduced through placement of lateral buried subcutaneous sutures.

Age-Related Biomechanical Factors
Younger patients likely exhibit:
- Greater dermal elasticity
- Stronger orbicularis muscle tone
- Increased mechanical recoil
- Higher tissue tension

These characteristics may predispose to wound separation when only superficial skin sutures are used.

Mechanism of Prevention
The addition of buried sutures likely:
- Redistributes tensile forces
- Reduces superficial suture strain
- Enhances wound stability during early healing
- Minimizes lateral tension vectors

The statistically significant reduction ($p = 0.048$) supports the clinical benefit of this modification. Although the absolute risk reduction is modest, the relative reduction of 80% is clinically meaningful in aesthetic surgery.

Clinical Implications
Given the high aesthetic sensitivity of the eyelid region, even minor wound complications can affect patient satisfaction and increase revision rates. Incorporating lateral tension-relieving sutures represents a simple, low-risk modification that may improve outcomes.

Limitations
- Retrospective design
- Single-center, single-surgeon study
- Female-only cohort
- Small number of complication events

Prospective randomized studies would strengthen validation.

Conclusions
Lateral scar dehiscence following upper blepharoplasty is an uncommon but relevant complication, particularly in younger female patients.

The addition of lateral buried subcutaneous tension-relieving sutures significantly reduces its incidence ($p = 0.048$), achieving an 80% relative risk reduction [1-5].

This simple technical refinement enhances wound stability and should be considered for routine implementation, especially in patients with increased tissue tension.

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