

# Recurrence of Lower Eyelid Fat Pads (Herniated Fat) after Blepharoplasty: An Analysis of Different Operative Techniques

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**How to cite this paper:** Al Ashkar, R., Alboudi, S. and Alhassanieh, A. (2021) Recurrence of Lower Eyelid Fat Pads (Herniated Fat) after Blepharoplasty: An Analysis of Different Operative Techniques. *Modern Plastic Surgery*, 11, 63-69.  
<https://doi.org/10.4236/mps.2021.113008>

**Received:** June 9, 2021

**Accepted:** July 6, 2021

**Published:** July 9, 2021

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## Abstract

**Background:** Aging changes to the lower eyelids and midface include all but not only these changes: pseudoherniated orbital fat, tear trough deformity, lid laxity, and dermatochalasis. Surgical repair often aims at treating redundant skin or orbital fat malposition with a lower eyelid blepharoplasty. In manipulating the inferior orbital fat pads, a surgeon has many options including excision, repositioning, or augmentation with synthetic dermal filler, autologous fat grafts, or acellular dermal allografts [1]. The aim of this study is to find the best approach in preventing fat herniation recurrence in lower lid blepharoplasty. **Methods:** The patients in study were classified into three groups depending on the used surgical technique, to test the most effective technique associated with minimal rate of lower fat pad recurrence after surgery. Two of these techniques include a muscular flap suspension from the orbicularis oculae muscle. **Results:** The two surgical techniques that include orbicularis oculi muscle suspension are associated with no recurrence of lower herniated fat pads after blepharoplasty. **Conclusions:** The suspension of orbicularis oculi muscle has an important role in enhancing the lower orbital septum and prevents the recurrence of the lower herniated fat pads.

## Keywords

Infraorbital Fat, Lower Lid Blepharoplasty, Lower Fat Pads, Orbicularis Oculi Muscle Suspension

## 1. Introduction

Lower lid bulge is known as a part of the aging process. Lower lid bulge can be produced by one of 2 major mechanisms or a combination of them: herniated

excessive intraorbital fat and/or weakening of supporting components of the lower eyelid, including skin, orbicularis oculi muscle, orbital septum, capsulopalpebral fascia, Lockwood ligament, and lateral canthus [2] [3] [4] [5]. Lee *et al.* [6] reported that total orbital fat (OF) volume and fat volume of anterior to the inferior orbital rim (IORF) increased significantly after 40 s in both male and female groups compared with that of the 20 s. The ratio of IORF to OF showed significant differences after 60 s compared with that of 20 s.

Therefore treating these anatomic changes and avoiding their recurrence is an important part of periorbital rejuvenation surgery.

Many techniques have been described to treat this fat compartment bulging, with different results and different recurrence average was reported in medical records.

We used 3 different techniques here concentrating on recurrences after fat pads removal.

## 2. Materials and Methods

110 patients are undergoing aesthetic upper and lower blepharoplasty in our Plastic and Reconstructive division in Almowasat Hospital in Damascus from 2018 to 2021.

46 patients who were well followed up were retrospectively reviewed and categorized into three groups according to the surgical techniques employed.

All patients have undergone upper and lower blepharoplasty surgery, without any other associated procedures like face lifting, brow lifting, midface lift, or fat injection in face.

All patients with previous periocular surgery were excluded from the study, also we did exclude patients with periocular diseases (such as blepharoptosis, dry eye syndrome, ...)

It happened to be that all patients were females in the study but that was no inclusion criteria.

### 2.1. Group 1 (15 Patients)

Upper and lower blepharoplasty with dissection of central and lateral part of lower eyelid orbicularis oculi muscle as flap (2 cm length, 0.5 cm width) from lower eyelid skin flap and suspension it on lateral orbital margin periosteum 2 mm above the level of the medial canthus via passing this muscle flap through a tunnel that was dissected beneath the skin flap lateral the lateral canthus and between the upper and lower blepharoplasty incisions (**Figure 1**).

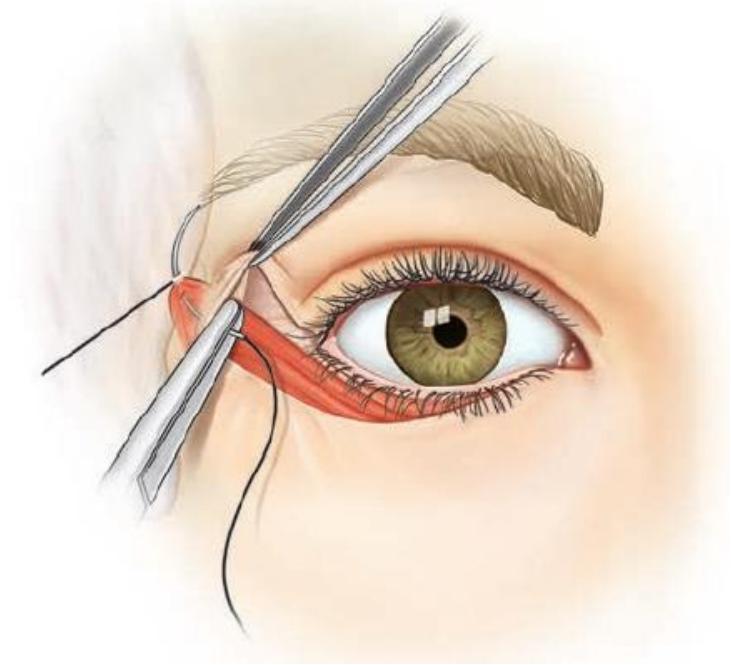
This fixation of muscle flap was performed using 5/0 Nylon suture one mattress stitch (n = 15).

### 2.2. Group 2 (15 Patients)

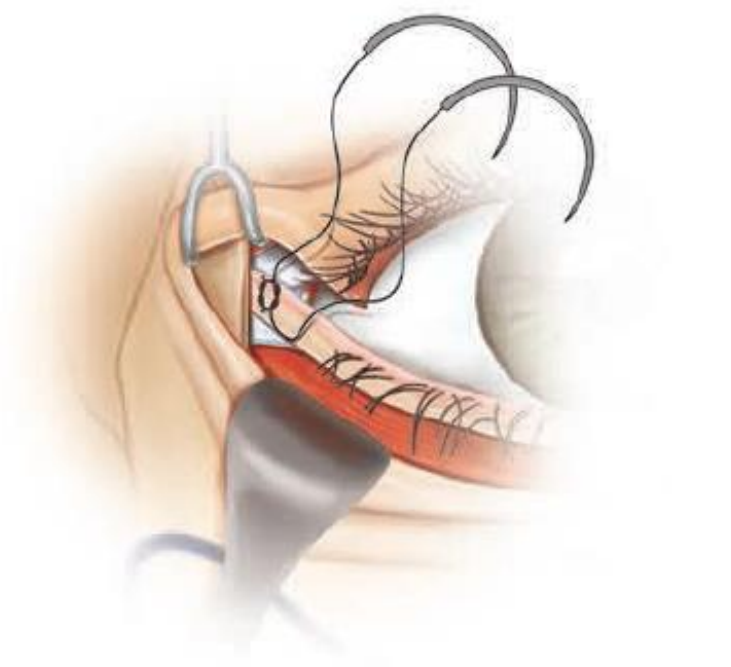
Upper and lower blepharoplasty were done with lateral lower eyelid tarsal plate suspension on lateral orbital margin periosteum 2 mm above medial canthus

level without creating previous lateral tunnel (**Figure 2**).

This fixation of lateral lower eyelid tarsal plate was also performed with 5/0 Nylon suture one mattress stitch (n = 15).



**Figure 1.** Group 1 orbicularis oculae flap suspension.



**Figure 2.** Group 2 tarsal plate suspension.

### 2.3. Group 3 (16 Patients)

Upper and lower blepharoplasty with suspension of both lower eyelid orbicularis oculi muscle dissected flap and lateral lower eyelid tarsal plate on the lateral orbital margin periosteum 2 mm above medial canthus level via passing these structures through the tunnel that was dissected beneath the skin flap lateral the lateral canthus and between the upper and lower blepharoplasty incisions.

This fixation of these two anatomic structures was performed with one Nylon Mattress stitch for each of them (n = 16).

The mean age was between 40 - 70 years at surgery; the mean follow-up period was 1 year.

Clinical examination and Photographs were used to follow-up the patients.

The herniated fat pads were treated in all patients with using partial surgical excision or bipolar cauterizing, without using the repositioning technique, and without resuturing of lower incised septum (Table 1).

### 3. Results

The recurrence of lower eyelid pads occur in 4 patients in group 2, 4/15 (26.66%) patients:

- 1 patient unilateral.
- 3 patients bilateral.

There is no recurrence in the whole patient groups 1 + 3.

The recurrent fat pads in two patients were big, apparent, and have the same size before surgery.

In the other two patients the recurrent fat pads were moderate in size and appearance (Figure 3, Figure 4).

After more than 1 year of follow up no patients in groups 1 or 3 have any complaints about fat pad bulging relapse.

And the recurrence was determined by both the patient and the surgeon and according to previous pictures of the patient.

Recurrence patients requested another operation for fat pads more than 1 year after the first operation.

**Table 1.** Patients groups characteristics, OO = orbicularis oculae.

Group number	1	2	3
Number of Patients	15	15	16
Mean age (year)	51	50.9	53
Female percentage (%)	100	100	100
Technique	OO flap	Tarsal suspension	Oo flap + tarsal suspension
Mean follow up (month)	19.5	18	20.5
Fat bad recurrence (%)	0	26.6	0



**Figure 3.** Patient before upper and lower blepharoplasty.



**Figure 4.** Patient after 1 year of upper and lower blepharoplasty with recurrent lower eyelid fat herniation.

#### 4. Discussion

Different problems can be encountered when planning a lower blepharoplasty, such as festoons, prominent fat bags, and a conspicuous transition from eyelid to cheek. Frequently, they occur simultaneously. In such cases, a larger amount of skin excision is needed to achieve an adequate correction. This carries an increased risk of eyelid retraction when dealing with hypotonic eyelids. Orbicularis muscle suspension can provide vertical support to the eyelid and so achieve a safer, more effective correction.

Several techniques have been reported to obtain this effect. We have found a laterally based transposition orbicularis flap to be a safe and effective method to transmit a controlled amount of traction to the lower lid [7].

In our study we have found that suspension of the orbicularis oculi muscle has also an important role in supporting the lower orbital septum and prevent the recurrence of the lower herniated fat pads.

And our results are familiar to another international study which includes the following.

While the incision of the orbicularis oculi muscle with lateral suspension of this muscle has been used by many authors to improve the tension of the lower eyelid [8]-[15]. They considered that the suspension of the orbicularis oculi muscle on the lateral orbital margin (with or without a true lateral canthus suspension) not only suspend the lower eyelid, but also improve the contour of the lower eyelid by redraping the skin and muscle, and by strengthening the orbital septum and consequently enhancing posterior placement of the herniated fat [16] [17] [18].

## 5. Conclusions

Suspension of the orbicularis oculi muscle in patients group 1 + 3 has a significant role in preventing recurrence of the herniated fat pads after upper and lower blepharoplasty.

This study suggests that the anchorage of the orbicularis muscle flap to the upper lateral orbital rim prevents the recurrence of the lower fat pads after blepharoplasty, independent of lateral canthopexy or plasty.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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