Brow Ptosis after Upper Blepharoplasty: Findings in 70 Patients

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ABSTRACT

BACKGROUND
Brow ptosis is a potential complication after upper eyelid blepharoplasty. The aim of this study was to analyze the effect of upper blepharoplasty on eyebrow position.

METHODS
In this Between April 2011 and March 2013, eighty three patients (166 eyes with mean age of 49.7 years) underwent upper eyelid blepharoplasty. The patients were assessed using pre- and post-operatively digital photographs, in the primary position of the eye while the distance between the upper lid margin and the brow were measured before surgery. The postoperative degree of brow ptosis was evaluated as being mild (<2 mm), moderate (2-4 mm), and marked (>4 mm).

RESULTS
The postoperative brow position was unchanged in 46 cases (65.8%), and brow depression was noted in 24 cases (34.2%), including 7 males (58.3%) , and 17 females (29.3%).

CONCLUSION
Our study shows that postoperative brow position should be explained to patients before surgery, particularly in male and senile patients as concomitant brow lift or internal brow fixation through the blepharoplasty incision can help to stabilize the eyebrow in the proper position and to prevent this complication.

KEYWORDS
Upper blepharoplasty; Brow ptosis; Complication

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range from skin changes to vision-threaten
ing emergencies while some of complications are
seen early in the postoperative period including
infection, retrobulbar hemorrhage, and eyelid
hematoma. Other complications happen later
in the postoperative period, such as eyelid
malposition, over-and-under resection of skin
or orbital fat.5–7 The findings on brow after
upper blepharoplasty is still controversial.8
Some authors insist that brow position remains
unchanged after surgery. On the other hand, there
is also an opinion that brow position changes
after surgery.9,10 The aim of this study was to
assess the influence of upper blepharoplasty on
brow position and to analyze the effect of major
risk factors on eyebrow to move down.

MATERIALS AND METHODS

Between April 2011 and March 2013, eighty
three patients (166 eyes) underwent upper eyelid
blepharoplasty. Thirteen cases were excluded
because of incomplete follow up referrals.
Finally, 70 patients (140 eyes) were included in
this study. There were 58 women and 12 men
and the mean age of patients was 49.7 years (48.9
years in females and 53.7 years in males).

Individuals who had undergone lid surgery
had eyebrow, previous eyebrow surgery while
those with eyelid ptosis were excluded. Patient
age, sex, indications, complications and changes
in brow position after upper blepharoplasty
were recorded. Photographic documentation
was performed by a professional medical
photographer in a standardized manner using a
Nikon D 300 camera. Preoperatively, surgical
landmarks and planned skin excisions were
marked on the patients. All operations were
performed through a traditional blepharoplasty
incision. Immediately after the surgery, an
antibiotic ophthalmic ointment was placed over
the skin incision. Ice compresses were used for
48 hours, 20 minutes per hour while awake,
following the procedure.

Acetaminophen was routinely prescribed,
and showering was permitted the day following
the procedure. The hospital stay was one day.
Patients were then seen 5–7 days after operation
to remove the sutures. Patients, were followed
for at least 6 months after surgery to monitor
surgical results, so these patients underwent no
other procedures, either before or during the
time span between the photographs that could

affect eyebrow position.

The patients were assessed by means of a
comparative analysis using pre– and post–
operative digital photographs, in the primary
position of the eye. The images were processed
using Image J “software”, transferred to a
computer, to an electronic Microsoft Excel
2002® worksheet. Distance measurements were
used, taking the brow–lid margin distance (BMD),
brow-pupil distance (BPD), lid margin–pupil
distance (MPD), brow–lateral canthal distance
(BLCD), brow–medial canthal distance (BMCD),
as anatomical reference points (Figure 1).

The difference between the pre–operative
and 6 months post–operative measurements were
analyzed statistically using the student’s t – test
for paired samples and the distance variation was
compared with their corresponding contralateral
sample using Wilcoxon’s non-parametric test.
The post-operative degree of brow ptosis was
assessed as being mild (<2 mm), moderate (2–4 mm), and marked (>4 mm).

RESULTS

In all, 140 eyes upper eyelid blepharoplasty operations were performed on 70 patients identified from the departmental database. This group of patients consisted of 58 women and 12 men with an average age of 49.7 years (range: 29-68 years). All patients underwent traditional upper eyelid blepharoplasty. The mean follow up period was 6 month. The most common chief complaint was dermatochalasis in 57 patients and dermatochalasis with visual field impairment in 13 patients. Echymosis and swelling lasting more than two weeks, were the most frequently documented complications, occurring in 12 cases. There were no complications such as wound infection, wound dehiscence or blindness (Table 1).

The postoperative degree of brow ptosis was assessed objectively by means of a comparative analysis using pre- and post-operatively digital photographs, in the primary position of the eye, as being mild (<2 mm), moderate (2-4 mm), and marked (>4 mm ) (Table 2).

The measurement obtained after the blepharoplasty, showed significant difference from those before the surgery, indicating that the correction of redundant tissues in eyelid accentuates the tendency of the eyebrow to move down. The changes were more significant in the lateral portion of the eyebrow and they occur bilaterally. This study showed that age over 55 years, particularly in male patients may influence brow position after blepharoplasty (Table 3).

### Table 1: Demographic features of patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>12 (17.2%)</td>
<td>58 (82.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>70 (140 eyes)</td>
<td></td>
</tr>
<tr>
<td>Age (mean, years, ranges)</td>
<td>53.7 (40-68)</td>
<td>48.9 (29-65)</td>
</tr>
<tr>
<td>Overall</td>
<td>49.7 year (29-68)</td>
<td></td>
</tr>
<tr>
<td>Brow depression</td>
<td>7 (58.3%)</td>
<td>17 (29.3%)</td>
</tr>
<tr>
<td>Surgical indication</td>
<td>57 (81.4%)</td>
<td>cosmetic+visual field defect</td>
</tr>
<tr>
<td></td>
<td>13 (18.6%)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2: Comparisons of objective changes of measured parameters in patients with eyebrow position change

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mild (&lt;2 mm)</th>
<th>Moderate (2-4 mm)</th>
<th>Severe (&gt;4 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>11 (64.7%)</td>
<td>4 (23.5%)</td>
<td>2 (11.7%)</td>
</tr>
<tr>
<td>Male</td>
<td>4 (57.2%)</td>
<td>2 (28.5%)</td>
<td>1 (14.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Overall: 24 cases (34.2%)

DISCUSSION

The assessment of distance measurement between the upper lid margin and the brow, obtained pre- and post-operatively, showed that there were secondary changes in the position of the eyebrow as a result of upper eyelid blepharoplasty. Our study also implies to the possibility of a change in postoperative brow position that should be explained to patients before surgery, particularly in male and senile patients.

Excessive skin in the upper eyelid may be wholly or partially attributable to ptosis of the eyebrows. In such cases, performing a blepharoplasty alone may inadequately correct the dermatochalasis. More seriously, it may produce further lowering of the eyebrow, that has a compensatory elevated position before blepharoplasty leading to an unacceptable cosmetic result.
If the patient had chronic brow strain and elevation before surgery due to the dermatochalasis and the extra skin was removed by performing the blepharoplasty, the brow no longer would need to maintain an elevated position and sank down. If brow strain is evident during preoperative evaluation, strong consideration must be given to brow lift and an upper lid blepharoplasty or ptosis repair is to be performed.

Preoperative measurements of upper eyelid heights appear useful in determining the amount of skin excision required in blepharoplasty for senile patients. Therefore, transplapebral techniques should be indicated only with special attention to the age and sex. Concomitant brow lift or internal brow fixation through the blepharoplasty incision can help to stabilize the eyebrow in the proper position and prevention of this complication.

**CONFLICT OF INTEREST**

The authors declare no conflict of interest.

**REFERENCES**