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Patient satisfaction and surgical outcomes after upper eyelid blepharoplasty in Turkish population

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Abstract

This retrospective study was conducted to review the patient satisfaction and surgical outcomes in Turkish patients with dermatochalasis who underwent upper eyelid blepharoplasty alone or in combination with orbital fat pads removal or browpexy, by comparing them with the outcomes of the previous landmark studies on upper eyelid blepharoplasty. One hundred and sixteen eyes of 58 patients were included in this study. The mean age and the mean follow-up time were 60.1 ± 10.4 (38-77) years and 2.4 ± 1.8 (1-6) months, respectively. Of 58 patients, 27 had blepharoplasty alone, 18 had blepharoplasty with orbital fat pads removal, and the remaining 13 had combined blepharoplasty and browpexy surgery. The female ratio (88.9%) was significantly higher in the upper eyelid blepharoplasty with orbital fat pad removal group compared to the other groups ($p=.024$). From baseline to final visit, margin-reflex distance increased from 2.1 ± 0.8 mm to 3.7 ± 0.8 mm, and blepharoplasty outcomes evaluation (BOE) score from 28.9 ± 6.2 to 76.8 ± 14.1 (both $p < .001$). Change in BOE score between pre- and post-surgery was significantly higher in patients undergoing combined blepharoplasty and browpexy surgery compared to the other groups. The mean final pretarsal skin height and brow-lid crease distance were 6.8 ± 1.2 mm and 11.1 ± 1.3 mm, respectively. In conclusion, upper eyelid blepharoplasty had favorable anatomical outcomes when performed as single procedure or in combination with other procedures. However, patients became more satisfied after combined blepharoplasty and browpexy compared to the other surgical procedures.

Keywords: Anatomical outcomes, browpexy, orbital fat pads removal, patient satisfaction, upper eyelid blepharoplasty

Introduction

Blepharoplasty is one of the most frequently performed cosmetic surgeries in recent years. Prolongation of life expectancy, more attention to facial appearance, and recent innovations in cosmetic surgery lead to blepharoplasty to be performed more and more frequently [1]. Although the main expectation of blepharoplasty candidates is to look younger, some people also need this surgery due to narrowing of the visual field, pain in the periocular or frontal area, and fatigue in the eyelids [2].

Eyelid structure may vary anatomically in different races. For example, epicanthal folds and low-set eyelid crease are prominent in Asians, whereas double eyelid crease appearance is more common in Caucasians [3,4]. Variations in the structure of the eyelids also play an important role in the selection of the appropriate

surgical method. Blepharoplasty can be combined with levator muscle surgery, orbital fat pad removal, and browpexy, depending on the presence of orbital fat prolapse, ptosis, or brow ptosis [5].

Anatomical outcomes after upper eyelid blepharoplasty were previously reported in numerous studies. However, in cosmetic surgeries such as upper eyelid blepharoplasty, it is important to meet the patient's expectations as well as to achieve favorable anatomical outcomes. Previous studies on upper eyelid blepharoplasty mostly focused on anatomical outcomes and rarely reported the outcomes associated with patient satisfaction level. [6,7] Hence, outcomes of upper eyelid blepharoplasty remained limited to anatomical results, and thereby, the data related to patient satisfaction are insufficient [8]. Alsarraf et al [9]. defined a questionnaire called as "Blepharoplasty outcome evaluation" (BOE) to evaluate patient symptoms before and after blepharoplasty. The questionnaire includes the scoring of the functional, cosmetic and social outcomes of blepharoplasty by patients.

In this study, we aim to review patient satisfaction and surgical outcomes in Turkish people who underwent upper eyelid blepharoplasty by comparing them with the outcomes of the

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previous landmark studies on upper eyelid blepharoplasty.

Materials and Methods

This retrospective comparative study was approved by the Ahi Evran University Ethical Committee and Review Board (approval no:2022-07/72), and was conducted in accordance with the declaration of Helsinki.

Patients

Consecutive patients with dermatochalasis who underwent upper eyelid blepharoplasty from September 2021 to January 2022 were retrospectively analyzed. Preoperatively, levator muscle function, margin-reflex distance and margin-crease distance were evaluated in all patients to differentiate pseudoptosis from actual ptosis. Patients with dermatochalasis alone or in combination with prominent orbital fat pads or brow ptosis were included into the study, and then upper eyelid blepharoplasty surgery was performed to all patients as a single procedure or in combination with orbital fat pad removal or browpexy. Patients with prior history of blepharoplasty, actual ptosis, a follow-up less than one month, and who were on anticoagulant therapy and not able to quit treatment, were excluded from the study. All procedures were performed bilaterally by a single-ophthalmic surgeon (R.K.Ü). Written and oral informed consent were obtained from all participants. Patients separated into three groups based on the type of surgery performed as follows: Upper eyelid blepharoplasty alone, upper eyelid blepharoplasty in combination with orbital fat pad removal, and upper eyelid blepharoplasty in combination with browpexy.

Surgical Technique

All procedure were performed under local anesthesia. In cases accompanied by brow ptosis, external browpexy was performed prior to upper eyelid blepharoplasty. In brief, general surgical steps for upper eyelid blepharoplasty were as follows: [1] Bilateral upper eyelids crease were outlined, using surgical marking pen to depict the inferior border of the excision, approximately 7–8 mm above the upper eyelid margin [2]. The superior border of the excision was outlined at least 10 mm below the inferior edge of eyebrow. [3]. The marked lines were then connected to define the boundaries of the surgical excision area, adjusted so that the medial part of the excision was thinner and the lateral part thicker [4] The pinch test was performed using a microforceps to avoid inadvertent overresection [5] A 0.5% lidocaine with 1:100,000 epinephrine was used for the anesthesia of each upper eyelid. [6]. Skin-deep incisions were made using a 15-blade scalpel, following the previously marked lines, and the surplus skin flap was gently dissected from the underlying orbicularis oculi muscle using blunted micro-scissors [7]. Afterwards, orbital fat pads were removed at medial and central areas in cases where needed [8]. An electrocautery was used to achieve hemostasis [9] Finally, the remaining skin defect was closed with interrupted 6-0 vicryl sutures. During the skin closure, the needle passed the lower incision skin edge, levator aponeurosis at the level of the eyelid crease, orbicularis muscle, and the upper incision skin edge to form a natural eyelid crease appearance. On the postoperative 10th day of follow-up, all sutures were removed.

Postoperatively, ice pack cooling therapy was commenced for

48 hours, and topical oxytetracycline hydrochloride (Terramycin ointment, Pfizer) four times a day for one week.

Main outcome measures

At baseline and each postoperative visit, all patients had a comprehensive external eye examination. Pretarsal skin height (distance between upper eyelid margin and upper eyelid skin fold), margin-reflex distance (MRD, between pupillary axis and upper eyelid skin fold), and brow-lid crease distance (BCD, distance between upper eyelid crease and lower border of eyebrow) were noted. Furthermore, all patients were participated in the questionnaire of BOE pre- and postoperatively. The BOE questionnaire contains six questions with five choices each. Zero point indicates least satisfaction and 4 points most satisfaction. The total score is calculated by dividing the total points by 24 and multiplying by 100. The total score obtained from the questionnaire was recorded for each patient. This questionnaire is shown in Figure 1.

Blepharoplasty Outcomes Evaluation

- How well do you like the appearance of your eyes?*

Not at all	Somewhat	Moderately	Very much	Completely
0	1	2	3	4
- Do you feel like the appearance of your eyes makes you look tired?*

Completely	Very much	Moderately	Somewhat	Not at all
0	1	2	3	4
- How much do you feel your friends and loved ones like the appearance of your eyes?*

Not at all	Somewhat	Moderately	Very much	Completely
0	1	2	3	4
- Do you feel the current appearance of your eyes limits your social and professional activities?*

Always	Usually	Sometimes	Rarely	Never
0	1	2	3	4
- How confident are you that the appearance of your eyes is the best that it can be?*

Not at all	Somewhat	Moderately	Very much	Completely
0	1	2	3	4
- Would you like to surgically alter the appearance of your eyes?*

Definitely	Most likely	Possibly	Probably not	No
0	1	2	3	4

Figure 1. “Blepharoplasty Outcome Evaluation” questionnaire

Audit Standards

Previous studies[2,3,10] were used to devise the following standards:

- Postoperative pretarsal skin height between 5 and 7mm
- Postoperative MRD between 3 and 4mm
- Mean change in MRD between pre- and post-surgery between 1.2 and 1.6mm
- Mean postoperative BCD between 11 and 12mm
- Mean final BOE score more than or equal to 77
- Mean change in BOE score between baseline and final visit more than or equal to 52

Table 1. Baseline clinical and demographic characteristics of the patients

	Blepharoplasty alone (n:27)	Blepharoplasty with fat removal (n:18)	Blepharoplasty and browpexy (n:13)	Total (n:58)	P
Number of eyes	54	36	26	116	N/A
Mean age (year)	58.9±11.5	59.3±10.1	63.6±8.1	60.1±10.4	0.383 ^a
Mean follow-up time (month)	3.3±1.6	3.2±1.6	3.4±1.5	3.3±1.6	0.928 ^a
Female (n, %)	15 (55.6%)	16 (88.9%)	6 (46.2%)	37 (63.8%)	0.024 ^b
Mean baseline MRD (mm)	2.1±0.8	2.0±0.8	2.1±0.9	2.1±0.8	0.974 ^a
Mean baseline BOE score	28.3±6.6	30.9±5.0	27.7±6.7	28.9±6.2	0.281 ^a

MRD, margin-reflex distance (distance between upper eyelid margin and pupillary reflex);

BOE, blepharoplasty outcome evaluation. Bold values indicate statistical significance. ^aOne-Way ANOVA test. ^bChi-Square test.

Table 2. Final clinical outcomes of the patients

	Blepharoplasty alone (n:54)	Blepharoplasty with fat removal (n:36)	Blepharoplasty and browpexy(n:26)	Total (n:116)	P*
Mean final MRD (mm)	3.7±0.7	3.7±0.8	3.7±0.8	3.7±0.8	0.983
Mean change in pre- and post-MRD (mm)	58.9±11.5	59.3±10.1	63.6±8.1	60.1±10.4	0.383 ^a
Mean final BOE score	1.6±1.2	1.7±1.4	1.6±1.2	1.6±1.2	0.993
Mean change in pre- and post-BOE score	75.6±13.9	72.9±15.8	84.7±8.5	76.8±14.1	0.058
Mean final pretarsal skin height (mm)	2.1±0.8	2.0±0.8	2.1±0.9	2.1±0.8	0.974 ^a
Mean final BCD (mm)	47.4±14.0	42.1±16.8	57.0±9.9	47.9±14.9	<u>0.020</u>
Mean final pretarsal skin height (mm)	6.7±1.2	6.8±1.1	6.9±1.3	6.8±1.2	0.796
Mean final BCD (mm)	11.1±1.3	11.1±1.4	11.2±1.3	11.1±1.3	0.995

MRD, margin-reflex distance (distance between upper eyelid margin and pupillary reflex); **BCD**, brow-crease distance (distance between lower border of eyebrow and eyelid crease);

BOE, blepharoplasty outcome evaluation. Bold values indicate statistical significance.

*One-Way ANOVA test

Statistical Analysis

Before the statistical comparisons, the powers of the analyses to be used in this study were calculated by using Gpower software, as between 0.805 and 0.913. SPSS Statistics version 22.0 software (IBM Corporation, Armonk, NY, USA) was used to analyze the data from this study. Shapiro-Wilk test was used to evaluate distribution of continuous variables. Continuous data was presented as mean ± standard deviation and categorical data as number of cases and percentages. The differences of baseline demographic and clinical characteristics among the different surgical groups were evaluated by One-Way ANOVA test or Chi-Square test, where appropriate. Bonferroni post hoc test was used for pairwise comparisons after One-Way ANOVA test. A p values less than 0.05 was considered as statistically significant.

Results

One hundred and sixteen eyes of 58 patients with an average age of 60.1±10.4 (38-77) years and an average follow-up time of 2.4±1.8(1-6) months were included into the study. Overall, female ratio was 63.8%. The female ratio (88.9%) was significantly higher in the upper eyelid blepharoplasty with orbital fat pad removal group compared to the other groups (p=.024). Table 1 demonstrates the baseline clinical and demographic data of all patients.

Mean preoperative MRD was 2.1±0.8 mm and the mean preoperative BOE score was 28.9±6.2, ranged from 16 to 40.

Of 58 patients, 27 underwent upper eyelid blepharoplasty alone (Figure 2), 18 underwent upper eyelid blepharoplasty with orbital fat pad removal (Figure 3), and 13 underwent combined upper eyelid blepharoplasty and external browpexy surgery (Figure 4).



Figure 2. A 40-year-old woman who underwent blepharoplasty alone. Note that the eyelid crease has a natural and youthful appearance (A, preoperative; B, postoperative 2nd month)

BOE score and MRD improved from 28.9±6.2 to 76.8±14.1 and

from 2.1 ± 0.8 mm to 3.7 ± 0.8 mm, from baseline to final visit, respectively (both $p < .001$). The mean final pretarsal skin height and final BCD were 6.8 ± 1.2 mm and 11.1 ± 1.3 mm, respectively. Furthermore, final BOE scores in women and men were similar, at 75.2 ± 15.6 and 80.2 ± 13.0 , respectively ($p = 259$).

When it comes to subgroup analysis, final MRD, change in pre- and post MRD, final BOE score, final pretarsal skin height, and final BCD were similar among three treatment groups. However, change in pre- and post-BOE score was significantly higher in patients had combined upper eyelid blepharoplasty and external browpexy surgery compared to the other groups. Table 2 shows the detailed final outcomes in three treatment groups.

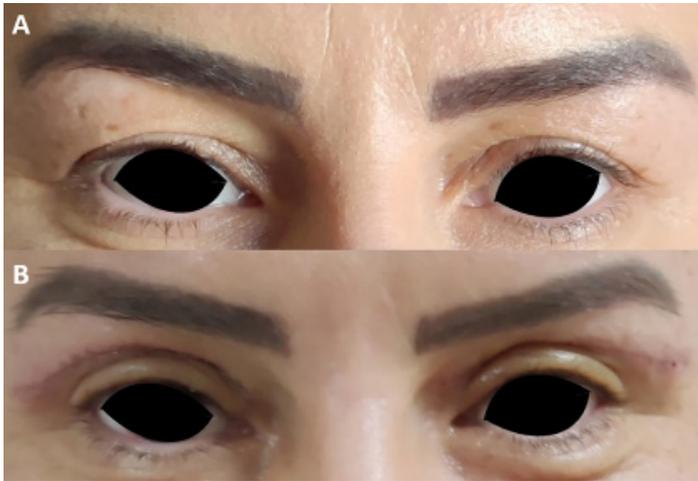


Figure 3. A 45-year-old woman who underwent combined blepharoplasty and fat pads removal surgery. Note that the prominent periocular fat pads have disappeared. (A, preoperative; B, postoperative 1st month)



Figure 4. A 65-year-old man who underwent combined blepharoplasty and browpexy surgery. Note that MRD has significantly increased and eyelid crease gained a natural appearance (A, preoperative; B, postoperative 3rd month).

No complications were observed in patients, except two ones. Two patients exhibited wound dehiscence after suture removal and thus necessitated resuturing the dehiscence area. BOE scores of these complicated patients were 64 and 72 at the end of the postoperative first month.

Discussion

This study achieved 5 of the 6 audit standards. Change in BOE score was found relatively lower than that of the standards. Postoperative patients' satisfaction level was similar to the satisfaction outcomes in the literature. Our anatomical outcomes met the standards. However, due to the fact that the preoperative dissatisfaction level of the patients in Turkey was not as low as in the literature, although satisfactory outcomes were reported by the patients postoperatively, the pre-post BOE score change was found to be less than the standards. The main expectation of the patients after blepharoplasty is usually to have a younger appearance. However, patients have secondary gains such as lightening of the weight on the eyelids, reduction of headache and eye fatigue as well.

Orbital fat pad removal surgery remained controversial. Some authors claim that hollowness is more likely to occur in the upper periocular region over time after fat pad removal and therefore, only skin excision is sufficient [11]. On the contrary, others claim that only skin excision is insufficient and fat removal should be routinely applied in order to fully treat dermatochalasis [3]. In our study, orbital fat removal surgery was mostly applied to female patients with prominent periocular adipose tissue. Excessive fat pad excision in the medial and central areas should be avoided against a potential periocular hollowness development in the long-term. Fat tissue should not be excised unless it is prominent, as it may lead to a feminine appearance in male patients [12].

Before deciding to perform blepharoplasty, the patient's eyebrow position should be carefully evaluated. Especially in male patients, accompanying droopy eyebrows should be first handled and treated prior to blepharoplasty. In patients whose droopy eyebrows are ignored before upper eyelid blepharoplasty, excessive skin may be excised by mistake during the surgery, and subsequent browpexy surgery may result in restriction of eyelid movement, lagophthalmos, and thus ocular surface problems. In patients with dermatochalasis, excessive skin is usually more prominent laterally, and fat pads are more prominent medially, if present [13]. Therefore, when outlining the skin strip during the surgery, it should be adjusted to be thicker laterally and thinner medially. Some authors consider that there should be a distance of 15-20 mm in men and 10-15 mm in women between the lower border of the eyebrow and the upper border of the skin excision [14]. However, in our study, a distance of 10-15 mm was maintained in both men and women, and no eyelid restriction was observed in the postoperative period. We consider that the upper skin incision should be no closer than 10 mm to the lower border of eyebrow. However, we believe that the probability of achieving satisfactory outcomes for the patient with dermatochalasis decreases when a distance of more than 15 mm is left.

Although this study has limitations such as retrospective design, small number of cases, short-term follow-up, absence of evaluation of ocular surface parameters, or absence of visual field analysis, it is the first to evaluate Turkish patients' satisfaction level via BOE questionnaire. Furthermore, this study has an advantage of the presentation of comparative anatomical and patient reported outcomes of blepharoplasty performed as alone and in combination with orbital fat pads removal or browpexy. However, further improvements can be made prior to the next blepharoplasty audit

by attempting to increase the number of patients for whom visual field data is available, and by undertaking a more detailed analysis of ocular surface changes such as tear break up time or osmolarity.

Conclusion

In conclusion, this study showed that anatomical outcomes were similar when upper eyelid blepharoplasty was performed as alone and in combination with orbital fat pads removal or browpexy. However, patients were more satisfied after combined blepharoplasty and browpexy compared to other surgical procedures.

Conflict of interests

None of the authors of this paper has a financial or personal relationship with other people or organizations that could inappropriately influence or bias the content of the paper.

It is to specifically state "No Competing interests are at stake and there is No Conflict of Interest" with other people or organizations that could inappropriately influence or bias the content of the paper.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical approval

Kırşehir Ahi Evran University local ethics committee and institutional review board approved the study protocol (Approval number: 2022-07/72).

Author Contributions

RKÜ performed all surgeries. RKÜ and AYÜ collected and analyzed the clinical data. AYÜ wrote the manuscript. RKÜ give final approval of the manuscript to publish. Both authors read and approved the final manuscript.

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