

AN OPTIMIZED APPROACH TO THE FORMATION OF THE UPPER EYELID AMONG EUROASIANS

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Abstract

Background. Blepharoplasty of the Asian eyelid is a variant of operation in which a fold of the eyelid is created. The Asian upper eyelid is characterized by a low, absent, or variable skin fold, a fuller eyelid with a smaller orbit, and a medial epicanthal fold. The presence of this fold is explained by a different attachment of the muscle that raises the upper eyelid.

Material and methods. In the conditions of the NSCS named after Syzganov, between 2020-2024, we operated on 127 patients. In 101 cases, blepharoplasty was performed separately, in 26 cases in combination with other operations.

Results. In the postoperative period, no general surgical complications were observed in patients, in 2 cases there was an inconsistency of the formed fold.

Conclusions. Our method is a proven choice for the Europeanization of Asian eyelids, in which the postoperative scar does not extend beyond the cutout of the eyes. Low injury rate of the operation. Indirect epicanthoplasty is the method of choice for oriental blepharoplasty, since this method does not require additional incisions, therefore, the duration of rehabilitation, the number of possible complications, and the time of surgery are reduced. Only 2% of patients had an unsatisfactory result. The economic validity of this methodology: no need to stay in the hospital for a long time. This minimizes the costs of the medical facility and reduces the burden on medical staff.

Introduction

Blepharoplasty of the Asian eyelid is a variant of blepharoplasty of the upper eyelids, in which a fold of the eyelid is created, often absent or poorly expressed in representatives of the Asian eyelids. The Asian upper eyelid is characterized by a low, absent, or variable skin fold, a fuller eyelid with a smaller orbit, and a medial epicanthal fold.^{1,2} The upper eyelid looks a little "swollen" due to ethnically conditioned, innate subcutaneous fat and retrobulbar fiber, the fold on it is absent or poorly visualized. In addition, Asian eyelids have a skin fold that connects the upper eyelid with the lower one, passing through the bridge of the nose (the so-called epicanthus). The presence of this fold is explained by a different attachment of the muscle that raises the upper eyelid. Therefore, the main focus of blepharoplasty of Asian eyelids is to form the eyelid fold of vary-

ing degrees of severity and depth, according to the anatomical features and desires of the patient.

The eyelids can be divided into the following 7 structural layers: • skin and subcutaneous connective tissue • muscles of protraction • orbital septum • orbital fat • muscles of retraction • tarsus • conjunctiva.³

The fold of the upper eyelid is an anatomical invagination of the eyelid skin along the upper border of the tarsal plate and is formed due to the attachment of the aponeurosis of the levator to the skin of the tarsal plate and the m.orbicularis oculi.² The absence of a crease in the upper eyelid gives a smooth eyelid from the eyebrows to the lash line.

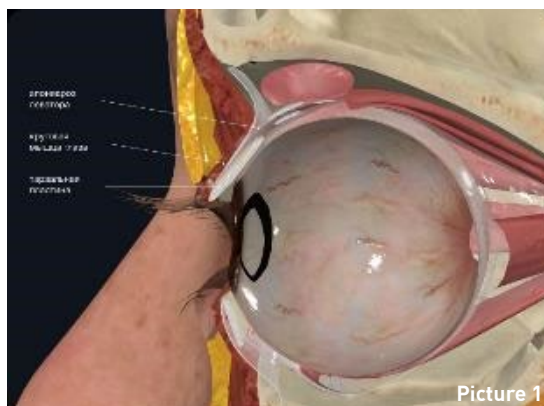
The crease of the upper eyelid should not be surgically formed "above" one-third of the distance between the pupil and the eyebrow. Approximately 50% of Southeast Asians have natural (albeit

small) folds, while a distinctive feature of Asian blepharoplasty is a change in this fold and the often associated epicanthus.³

The anatomical structure of the Asian upper eyelid has its own characteristics that significantly affect the surgical technique during surgery.⁴

Picture 1.

Features of the anatomical structure of the Asian century: low or variable skin fold of the upper eyelid (supratarsal fold); the presence of a medial epicanthic fold; fuller eyelid with pronounced anterior orbital fat packs; a smaller orbit; a shorter tarsal plate; almond-shaped shape with varying degrees of inclination; lowered eyelashes.



Picture 1

The epicanthus (epicanthal fold) is a skin flap in the medial part of the upper eyelid that runs down the side of the nose and may hide the medial part of the eyeball, making the pupils appear closer to the midline.

There have been many theories of the formation of wrinkles on the eyelids, but none of them has been scientifically proven, as several factors may be involved.

The above anatomical features, combined with classical external characteristics, create the so-called Asian eyelid.

In the conditions of the NSCS named after Syzganov, between 2020-2024, we operated on 127 patients, 124 of them women and 3 men. In 101 cases, blepharoplasty was performed separately, in 26 cases in combination with other operations.

Patients are selected based on their availability for an appointment with a plastic surgeon.

After conducting a general medical examination and passing all tests, patients are admitted to the hospital. Photo documentation and marking of the surgical field is carried out.

Materials and methods

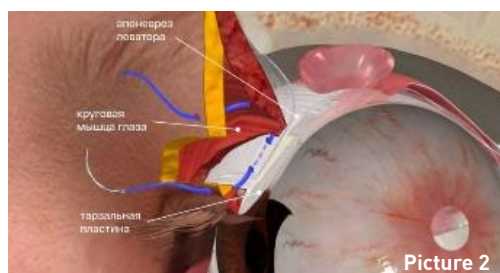
Picture 2.

Technique of operation.

Picture 3.

Preoperative marking

The selection of the height of the fold is 7 mm; Drawing a semi-oval line along the future fold, repeating the shape of the eye; Drawing an oblique longitudinal line at the outer corner of the eye towards the tip of the eyebrow; Drawing an oblique longitudinal line crossing the epicanthus at the inner corner; According to the 3:2:1 rule, the distance from the upper incision line to the eyebrow was 14 mm; Drawing lines connecting the lower and upper borders of the sections.



Picture 2



Picture 3

The operations were performed under both local anesthesia and general anesthesia. The infiltration was carried out with a solution of Klein Sol. Sodium chloride 0.9% 20ml + Sol. Lidocaini 2% 10ml + Sol. Adrenalini 0.18% 0.3ml. After the expiration of the exposure time of 15 minutes, incisions were made on the skin of the upper eyelids according to the previously applied markings. After excision of the skin flaps, excision of the subcutaneous part of the circular muscle of the eye is performed on average

from 1 to 2 mm. Fat bags are removed and coagulated. The aponeurosis of the upper eyelid lifting muscle is sutured to the skin with external nodular sutures, threaded Prolene 5.0, according to the preoperative marking. Epicanthoplasty is performed directly. An intradermal Halsted suture is applied to the length of the wound of the upper eyelid with a Prolene 6.0 thread. The eyelid sutures are removed on the 7th day after surgery.

In the period from 2020 to 2024, 127 surgical interventions were performed.

Total number of operations	127
Isolated blepharoplasty with the formation of an upper eyelid fold	101 (79.5%)
Blepharoplasty with the formation of an upper eyelid fold in combination with other operations	26 (20.5%)

Table 1.
Patients groups according to surgeries.

Age	female	male
18-25 y.o.	17 (13.4%)	-
26-33 y.o.	81 (63.8%)	2 (1.6%)
34-41 y.o.	22 (17.3%)	1 (0.8%)
42-49 y.o.	4 (3.1%)	-

Table 2.
Age and gender characteristics.

The subjective satisfaction of patients with the results after blepharoplasty was assessed using the FACE-Q question-

naire: FACE-Q™ - ADVERSE EFFECTS: EYES.⁶

FACE-Q™ - ADVERSE EFFECTS: EYES

For each question, circle only one answer. These questions ask about problems you may be experiencing. With your eyes in mind, in the past week, how much have you been bothered by:

	Not at all	A little	Moderately	Extremely
a. How your eyelid <u>scars look</u> (obvious, noticeable, uneven)?	1	2	3	4
b. Dry eyes?	1	2	3	4
c. Eye irritation (e.g. redness, itching)?	1	2	3	4
d. Excessive tearing?	1	2	3	4
e. Your eyes looking hollowed out?	1	2	3	4
f. Difficulty closing your eyes?	1	2	3	4

Figure 1.
FACE-Q™ - ADVERSE EFFECTS: EYES.⁶

The results of the assessment of patients' subjective satisfaction with the results of the operation are described in Figure 3.

Ethical approval. The study protocol was approved by the local Ethics Committee of JSC NSCS named after A.N. Syzganov" (approval No. dated 06.05.2025).

Statistical analysis. The statistical analysis included descriptive and analytical statistics where for variables with a normal distribution, parametric statistical methods were used and presented as means ± standard deviation. Numerical

variables of non-normally distributed data were presented as mean values ± standard deviation. Statistically significant difference $P \leq 0.05$

Results

In the postoperative period, no general surgical complications were observed in patients, in 2 cases there was an inconsistency of the formed fold. In 1 case, 8 months after the operation, in 2 cases after 1 year.

Postoperative photographs of patients in the intermediate and long-term rehabilitation period:



Picture 4a



Picture 4b

Picture 4(a,b).
Before and after 7 days from the moment of surgery

Picture 5(a,b).
Before and after 1 month
from the moment of surgery



Picture 5a

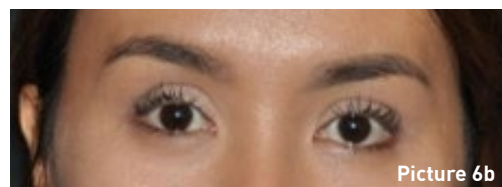


Picture 5b

Picture 6(a,b).
Before and after 3 month
from the moment of surgery



Picture 6a



Picture 6b

Picture 7(a,b).
Before and after 6 month
from the moment of surgery



Picture 7a



Picture 7b

The results of the assessment of patients' subjective satisfaction with the results of the operation are described in Table 3.

Table 3.
Results of the assessment
of subjective satisfaction of
patients with the results of
surgery

Total number of patients (n = 127)	Not at all	A little	Moderately	Extremely
a. How your eyelid scars look (obvious, noticeable, uneven)?	89 (70.08%)	87 (68.50%)	1 (0.79%)	-
b. Dry eyes?	104 (81.89%)	23 (18.11%)	-	-
c. Eye irritation (e.g. redness, itching)?	111 (87.40%)	14 (11.02%)	2 (1.57%)	-
d. Excessive tearing?	101 (79.53%)	26 (20.47%)	-	-
e. Your eyes looking hollowed out?	125 (98.43%)	1 (0.79%)	1 (0.79%)	-
f. Difficulty closing your eyes?	119 (93.70%)	5 (3.94%)	3 (2.36%)	-

To the question - How your eyelid scars look (obvious, noticeable, uneven)? - there is no statistically significant difference, $P = 0.9092$

Not at all complaints of the nature: dry eyes, eye irritation (eg, redness, itching), excessive tearing, eyes looking hollowed out, difficulty closing eyes - statistically significant was not observed, $P < 0.0001$.

Discussion

There are many different techniques for forming the palpebral groove. Globally, they can be divided into surgical and non-surgical.

Table 4.
Comparative characteristics
of methods of forming the
eye fold

Surgical		Non-surgical
Full-layer (end-to-end) methods	Minimal-incision method	Thread techniques
Park Method (Dermal-Levator Aponeurosis Fixation) - fixation of the skin to the levator of the upper eyelid without removing the muscle, which gives a more natural result. ⁷	Formation of the eyelid fold by fixation of the dermis to the aponeurosis through small incisions with or without excision of fat and muscle. Fixation of the dermis to the aponeurosis. ⁸	A fold is formed using surgical suture material. The effect is short-term (1-3 years).
The essence of the method An incision is made along the intended line of the	Several pinpoint cuts (2-4 mm) along the line of the future fold (instead of a	

future fold (usually 6–8 mm from the eyelash line). Removal of a strip of skin underlying the orbicularis oculi muscle (orbicularis oculi) and sometimes parts of the preaponeurotic fat. Fixation of the skin to the aponeurosis of the muscle that lifts the upper eyelid (levator) using sutures.	continuous cut). Partial removal/redistribution of fat through micro-accesses. Fixation of the skin to the levator or tarsal plate with absorbable or non-absorbable sutures.		
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Method	Invasiveness	Durability	Fat/skin correction
Park (Dermal-Levator Fixation)	High (full layer)	Constant	Yes
Thread method	Minimum	1-3 years	No
minimal-incision method	Moderate	Long lasting	Partially

Table 5.
Distinctive characteristics with other methods

Conclusion

Based on our experience of oriental blepharoplasty, we came to the following conclusions. Our Asian eyelid blepharoplasty method is a proven choice for the Europeanization of Asian eyelids, in which the postoperative scar does not extend beyond the cutout of the eyes. Low injury rate of the operation. Indirect epicanthoplasty is the method of choice for oriental blepharoplasty, since this method does not require additional incisions, therefore, the duration of rehabilitation, the number of possible complications, and the time of surgery are reduced. According to our statistics, only 2% of patients had an unsatisfactory result – the absence of a palpebral fold in one eye. The economic validity of this methodology. In view of all of the above, the patient does not need to stay in the hospital for a long time. This minimizes the costs of the medical facility and reduces the burden on medical staff.

Limitations. One of the key limitations of this study is that it was conducted at a single center, namely the Syzganov National Scientific Surgical Center. This may limit the generalizability of the findings, as the patient populations at other institutions could differ in terms of demographics, comorbidities, or surgi-

cal protocols. Many patients refused to give permission for their photographs to be used.

What is Known? Chosen method of oriental blepharoplasty is the most optimized technique of the formation of the upper fold among euroasians.

What is New? According to our surgery technique, we don't use absorbable threads into the wound. The aponeurosis of the upper eyelid lifting muscle is sutured to the skin with external nodular sutures, threaded Prolene 5.0, according to the preoperative marking. An intra dermal Halsted suture is applied to the length of the wound of the upper eyelid with a Prolene 6.0 thread. This ensures less inflammation and swelling.

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Authors' Contributions: Concept and design of the study, control of the research, approval of the final version of the article: M.M., A.A., M.Z., T.D.; Collection and preparation of data, primary processing of the material and their ver-

ification: A.A., M.Z.; performance of the statistical analysis: A.A., M.Z.; Writing the text of the article (introduction, discussion, conclusion): A.A., M.Z.; Writing the text of the article (methods, results): A.A., T.D. All authors reviewed, edited,

and approved the final version of the manuscript.

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