Aesth Plast Surg (2020) 44:799–807
https://doi.org/10.1007/s00266-020-01647-9

Comparison of Palpebral Marginal and Traditional Incision Techniques for Double-Eyelid Surgery

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Received: 16 December 2019 / Accepted: 12 February 2020 / Published online: 24 February 2020

Abstract

Background The palpebral marginal incision technique is a novel method for double-eyelid surgery. However, studies comparing palpebral marginal and traditional incisions are scarce. We aimed to compare the two techniques with respect to post-operative patient satisfaction and complications.

Methods This retrospective analysis included 422 patients who underwent double-eyelid surgery with either the palpebral marginal incision or traditional incision at the Medical Cosmetology Department of Tianjin Eye Hospital from February 2015 to September 2018. Patients were divided into the palpebral marginal (n = 280, 66.4%) and traditional incision (n = 142, 33.6%) groups. Patient satisfaction at 3 and 6 months post-operatively and incidence of complications were compared between the groups. The average post-operative follow-up duration was 6.75 months.

Results The palpebral marginal incision group was younger than the traditional incision. There were no significant differences in sexes between the groups. Compared with the traditional incision group, the palpebral marginal incision group had greater patient satisfaction at 3 months post-operatively. Patient satisfaction at 6 months post-operatively and total incidence of complications were similar between the groups. Incidence of hypertrophic scar formation was lower in the palpebral marginal incision group. Other complications showed no significant between-group differences.

Conclusions The palpebral marginal incision technique has similar surgical outcomes to the traditional incision technique. Our findings confirm that the advantages of the palpebral marginal incision technique include almost indiscernible surgical scarring and faster post-operative recovery, which may result in increasing popularity among young people. Therefore, we suggest that the palpebral marginal incision technique is reliable and worthy of recommendation.

Level of Evidence IV This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Keywords Double-eyelid surgery · Palpebral marginal incision · Traditional incision · Post-operative patient satisfaction · Complication

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Introduction

The aesthetic surgery for creating an upper eyelid crease is called "double-eyelid surgery" by Asian laypersons. To refer more accurately to this kind of surgery in Asians, it is also named "Asian blepharoplasty" [1]. Approximately, 50% of Asians do not have upper eyelid creases. Some of them may seek double-eyelid surgery to make their eyes appear more attractive [2–4]. Thus, double-eyelid surgery is among the most common aesthetic surgeries, especially in China [2]. Various techniques for double-eyelid surgery can be generally classified into non-incision and incision methods [1, 3, 5–7]. Non-incision methods, such as the buried suture technique, are not suitable for patients who require excision of the redundant soft tissue of the eyelids. More importantly, creases made by non-incision methods may fade over time even though these methods have no post-operative scars [1, 3, 8, 9]. Therefore, incision methods still play important roles because of the more stable crease and wider indications. The traditional incision technique has been performed for many years. This technique can provide a prominent and durable crease through the formation of a cicatricial adhesion from the skin to the upper tarsus or aponeurosis. In particular, the technique is preferable for patients with thick tissue and redundant skin of the eyelid [1, 3, 7]. However, the surgical scarring on the eyelids is discernible especially when the eyes are closed. With the trends and demands for minimal surgical scarring, partial-incision methods, such as the "three-point" small-incision technique, were reported by plastic surgeons [10]. However, removing the redundant soft tissue of the eyelids is difficult when using these methods [3]. Then, the palpebral marginal incision technique emerged as a new method for double-eyelid surgery. A study indicates that its surgical scarring is concealed and indiscernible even when the eyes are closed [3]. Furthermore, this new method allows the removal of the redundant soft tissue of the eyelids. Thus, it can create a stable crease and is suitable for a wide range of patients, similar to the traditional incision technique [3]. However, comparative studies between palpebral marginal incision and traditional incision techniques are scarce. In this study, this retrospective analysis aimed to compare patient satisfaction after surgery and incidence of complications between palpebral marginal incision and traditional incision techniques.

Patients and Methods

Study Population

The study was approved by the ethics committee of Tianjin Eye Hospital and adhered to the tenets set forth by the Declaration of Helsinki. During the preoperative outpatient visits, the same group of surgeons recommended the two techniques to the patients if they were born without an upper eyelid crease or with a partial crease. Meanwhile, patients were refused based on the following 5 criteria.

(1) Patients had undergone prior surgery on the eyelids;
(2) Patients were diagnosed with ptosis based on a preoperative examination;
(3) Patient eyelid skin was too loose, which could make thicker skin from the preseptal region move into the pretarsal area after removal of the redundant skin;
(4) Patients were more suitable for non-incision or partial-incision methods;
(5) Patients desired a high crease line (the height of the crease line was above the height of the tarsus) after measuring the height of the tarsus.

The details of the two techniques were explained to the suitable patients. The exact technique for double-eyelid surgery was decided according to the patient's preference. For data collection, the patients who underwent double-eyelid surgery with either the palpebral marginal incision or the traditional incision technique for both eyes were firstly selected out. Then, the selected patients were picked out using the further criteria as follows:

(1) Surgery was performed by the same group of surgeons;
(2) Follow-up was conducted by the same team;
(3) Follow-up lasted for at least 6 months;
(4) Patients were mentally healthy and cooperated well.

The retrospective review identified 422 patients (female: 400, 94.8%; male: 22, 5.2%) at the Medical Cosmetology Department of Tianjin Eye Hospital between February 2015 and September 2018. The age of the patients ranged from 18 to 62 years, with an average age of 24.7 years. Patients were divided into the palpebral marginal (n = 280, 66.4%) and traditional incision (n = 142, 33.6%) groups according to the different techniques. The follow-up ranged from 6 to 12 months, with a mean period of 6.75 months. Details of personal information, surgical procedures, and outcomes were collected with patients' consent.

Preoperative Preparation

The patient's final decision on the techniques was checked. And written informed consent was then obtained from all the patients or their guardians. The shape and height of the palpebral crease line were determined according to the patient's desire and condition, usually measuring 6.0–8.0 mm above the lash line. Photos of the eyelids were taken, and preoperative tests were performed to exclude surgical contraindications.

Surgical Procedures

Palpebral Marginal Incision Technique

The eyelid crease line (line D) was confirmed and marked with the patient. Then, the incision (line E) was also marked from the lacrimal point. It was located 1.0 mm above the lash line and was about the same width of the palpebral margin (Fig. 1). Surgery was performed under local anaesthesia. After that, the incision was made along line E from the lacrimal point to the lateral canthus. From the position of the incision, the detachment was carried out along the inferior surface of the orbicularis muscle to the site of line D (Fig. 2a). During the detachment, a proper amount of the orbicularis muscle was removed (Fig. 2b). The excised amount of pretarsal tissue depended on how thick the tissue was. Sometimes the orbital septum could be breached to remove the excess subseptal fat [3, 11, 12]. Then, the projection on the tarsal plate vertically from the skin mark (line D) was confirmed and the height of the projection was measured to ensure the correct shape and height. The patients were told to open their eyes to recheck the creases. To achieve a durable crease and correct curve, the following steps were performed: small incisions a, b, and c (length: 0.5 mm; depth: to subcutaneous tissue) were created along line D using a size 11 blade (Fig. 3); one absorbable 6–0 polyglactin 910 suture was placed vertically and upwards through the projection on the tarsal plate, vertically through the orbicularis muscle, and then through incision b (Fig. 4a); at the exact point where the needle came out of the incision b, the needle came in again (Fig. 4b); the suture was then placed vertically and downwards through the subcutaneous tissue (1 mm), vertically through the orbicularis muscle (Fig. 4b, c), and it was firmly tied down with 4–5 square knots (Fig. 4d); incisions a and c were sequentially treated by the same method if the curve was satisfactory. After the confirmation of the creases with the patient, a proper amount of the skin was excised above the incision to achieve perfect alignment and smoothness if the skin was loose. Finally, the incision was closed with running 7–0 nylon sutures.

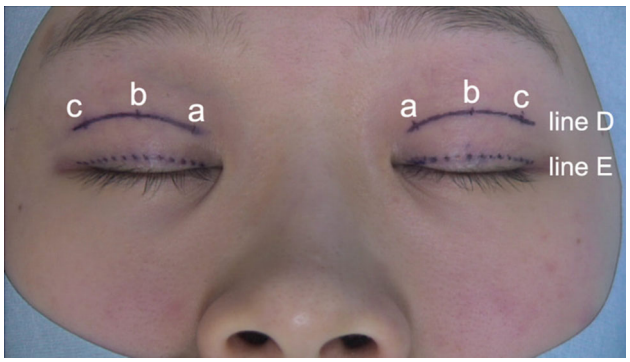

Fig. 1 Marks of the proper palpebral crease line (line D), the incision (line E) and three small incisions (a–c)

It is noteworthy that small incisions are used here to ensure that the suture goes through the whole layer of the subcutaneous tissue and the needle comes in and out of the subcutaneous tissue at the same point to avoid the hypertrophic skin scar formation caused by the suture. With the fixation from the subcutaneous tissue to the tarsus created by the suture, an almost full-layer (full layer: skin to tarsus) cicatricial adhesion can be finally achieved, which can result in a long-lasting eyelid crease. In addition, small incisions guarantee that the cicatricial adhesion from the subcutaneous tissue to tarsus is in a vertical line precisely under the eyelid crease line, which can lead to the correct curve of the eyelid crease.

Traditional Incision Technique Procedure

The eyelid crease line was confirmed and marked with the patient. Local anaesthesia injection was performed and the skin incision was then made. Afterwards, the premarked strip of the excess skin was excised. As mentioned above, a proper amount of pretarsal tissue was excised according to how thick the upper eyelid was. Then, the creases were checked after the patients opened their eyes. In 3–5 equidistant positions, absorbable 6–0 polyglactin 910 sutures were placed sequentially through the orbicularis muscle and tarsal plate. Again, the patients were asked to open their eyes to recheck the creases. Perfect alignment and smoothness of the skin around the incision must be confirmed. Finally, the incision was closed with running 7–0 nylon sutures.

Post-operative Care and Evaluation

The eyelids were left exposed. Erythromycin eye ointment was applied to the incision for 5 days to prevent infection, and the skin sutures were removed on the 5th day postoperatively.

Patients in this study were followed up from 6 to 12 months. Patient information (age, sex, type of surgery)

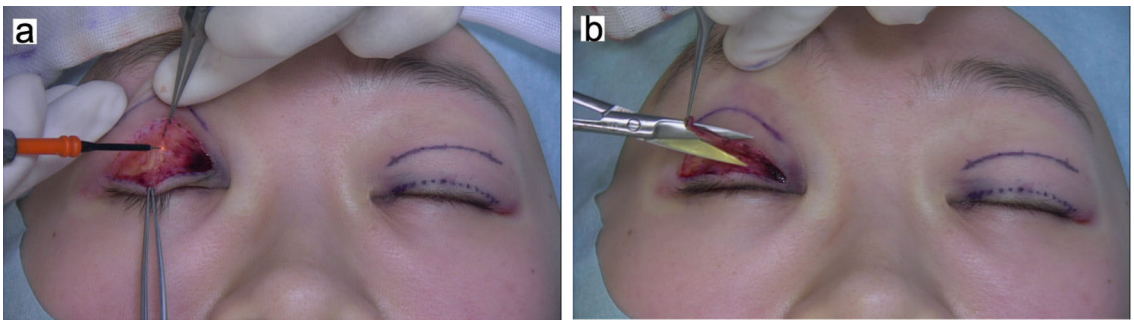

Fig. 2 **a** Detachment along the inferior surface of the orbicularis muscle. **b** Removal of the proper amount of the orbicularis muscle

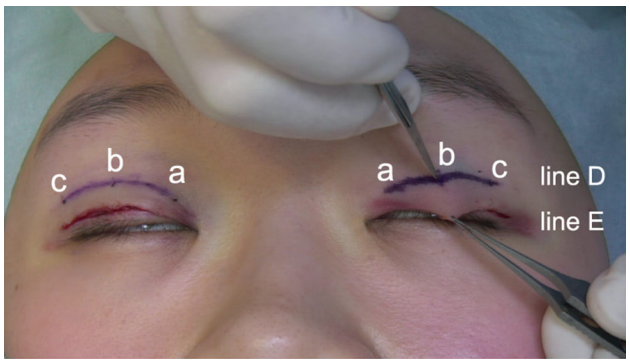

Fig. 3 A size 11 blade is used to create small incisions a, b, and c (length: 0.5 mm, depth: to subcutaneous tissue) along line D

was obtained from the surgical records. All patients participated in a telephone interview, which was administered by the same nurse at 3 and 6 months post-operatively. Post-operative patient satisfaction (satisfied, somewhat satisfied, unsatisfied) was determined during the interview. Both of the "satisfied" and "somewhat satisfied" items were graded as satisfied, and the "unsatisfied" item was graded as unsatisfied. Unsatisfied patients were invited to the hospital. Then, the same group of surgeons took photos of the eyelids and recorded the unsatisfied surgical outcome. The follow-up would be continued if the patients had unsatisfied surgical outcome at 6 months post-operatively. If the unsatisfied surgical outcome lasted for more than 1 year, it was defined as a complication.

Statistical Analysis

Statistical analysis was conducted using the SPSS 20.0 software. The Chi-squared test, Student's t test, and Fisher's exact test were used as indicated. Quantitative variables were presented as the mean ± standard deviation. A p value of < 0.05 was considered statistically significant.

Results

Among the 422 patients selected for inclusion in the study, 400 (94.8%) were female and 22 (5.2%) were male. The age of the patients ranged from 18 to 62 years, with an average age of 24.7 years at the time of surgery. The proportion of patients who had palpebral marginal and traditional incisions was 66.4% (280/422) and 33.6% (142/422), respectively. The follow-up ranged from 6 to 12 months. The average length of follow-up was 6.75 months. General data of the patients are summarised in Table 1. The palpebral marginal incision group was younger than the traditional incision group (23.3 ± 4.8 vs 27.4 ± 11.2 years, $p < 0.001$). There were no significant differences in the male–female ratio (11/269 vs 11/131, $p = 0.095$) between the groups.

Post-operative patient satisfaction and complications are summarised in Tables 2, 3, and 4. In the palpebral marginal incision group, 138, 72, and 70 patients were satisfied, somewhat satisfied, and unsatisfied with the outcome, respectively, at 3 months after surgery. In the traditional incision group, 56, 31, and 55 patients were satisfied, somewhat satisfied, and unsatisfied with the outcome, respectively, at 3 months after surgery (Table 2). Compared with the traditional incision group, the palpebral marginal incision group had higher patient satisfaction at 3 months after surgery (75% vs 61.3%, $p = 0.004$) (Table 3). At 6 months after surgery, 204, 65, and 11 patients in the palpebral marginal incision group were satisfied, somewhat satisfied, and unsatisfied with the outcome, respectively. In the traditional incision group at 6 months after the surgery, 106, 24, and 12 patients were satisfied, somewhat satisfied, and unsatisfied with the outcome, respectively. Moreover, the total number of the complications was 11 and 12 in the palpebral marginal and traditional incision groups, respectively (Table 2). Patient satisfaction at 6 months after surgery (96.1% vs 91.5%, $p = 0.053$) and total incidence of complications (3.9% vs 8.5%, $p = 0.053$) were similar between the two groups (Table 3).

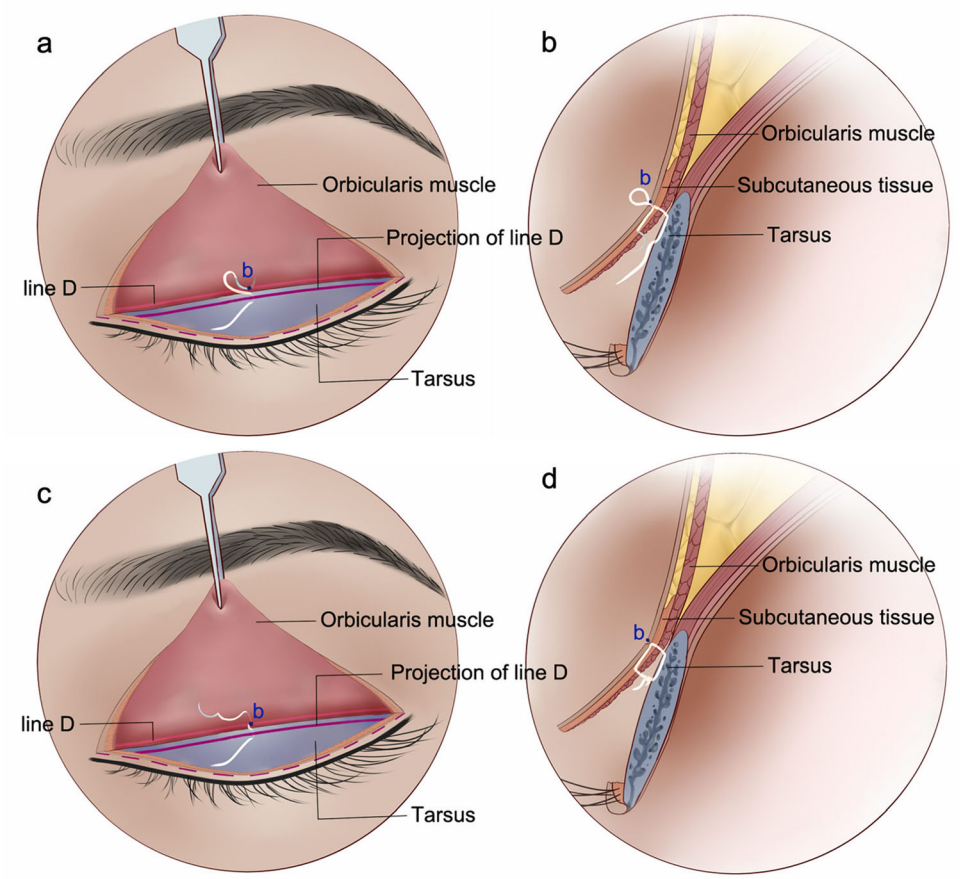

Fig. 4 **a** The suture is placed vertically and upwards through the projection on the tarsal plate, vertically through the orbicularis muscle, and then through incision **b**. **b**, **c** At the exact point where the needle comes out, the needle comes in again and the suture is placed vertically and downwards through the subcutaneous tissue (1 mm), vertically through the orbicularis muscle. **d** The path of the suture is shown from the sagittal plane

Table 1 General data of the patients

Characteristics	Palpebral marginal incision (n = 280)	Traditional incision (n = 142)	P value
Age (mean ± SD)	23.3 ± 4.8	27.4 ± 11.2	< 0.001
Sex (male/female ratio)	11/269	11/131	0.095

SD standard deviation

Table 2 Post-operative patient satisfaction and complication

Technique	3 months after surgery			6 months after surgery			Complication
	Satisfied	Somewhat satisfied	Unsatisfied	Satisfied	Somewhat satisfied	Unsatisfied	
Palpebral marginal incision	138	72	70	204	65	11	11
Traditional incision	56	31	55	106	24	12	12

Complications in the palpebral marginal incision group were as follows: 3 (1.1%) cases of asymmetry of double creases, 3 (1.1%) cases of narrower/wider crease, 2 (0.7%) cases of unsatisfied arc of crease, 2 (0.7%) cases of skin redundancy and 1 (0.4%) case of unsatisfied connection between the crease and the epicanthus. Complications in the traditional incision group were as follows: 2 (1.4%) cases of asymmetry of double creases, 1 (0.7%) case of narrower/wider crease, 1 (0.7%) case of unsatisfied arc of crease, 1 (0.7%) case of change of the eyelash growth direction, 4 (2.8%) cases of hypertrophic scar formation, 2 (1.4%) cases of sausage-shaped lower crease margin, and 1 (0.7%) case of upper eyelid depression with multiple creases. The incidence of hypertrophic scar formation was

Table 3 Surgical outcomes of the patients

Surgical outcomes	Palpebral marginal incision (%)	Traditional incision (%)	*p* value
The patient satisfaction at 3 months after surgery	75.0	61.3	0.004
The patient satisfaction at 6 months after surgery	96.1	91.5	0.053
The total incidence of complications	3.9	8.5	0.053

Table 4 Complications according to operative technique

Complication	Palpebral marginal incision (A) (n_1 = 280)	Traditional incision (B) (n_2 = 142)	Percentage (%) $A/n_1 \times 100$	Percentage (%) $B/n_2 \times 100$	*p* value
Asymmetry of double creases	3	2	1.1	1.4	1.000
Narrower/wider crease	3	1	1.1	0.7	1.000
Unsatisfied arc of crease	2	1	0.7	0.7	1.000
Skin redundancy	2	0	0.7	0	0.552
Change of the eyelash growth direction	0	1	0	0.7	0.336
Unsatisfied connection between the crease and the epicanthus	1	0	0.4	0	1.000
Hypertrophic scar formation	0	4	0	2.8	0.012
Sausage-shaped lower crease margin	0	2	0	1.4	0.113
Upper eyelid depression with multiple creases	0	1	0	0.7	0.336

lower in the palpebral marginal incision group than that in the traditional incision group (p = 0.012). The difference was not statistically significant in the following complications: asymmetry of double creases (p = 1.000), narrower/wider crease (p = 1.000), unsatisfied arc of crease (p = 1.000), skin redundancy (p = 0.552), change of the eyelash growth direction (p = 0.336), unsatisfied connection between the crease and the epicanthus (p = 1.000), sausage-shaped lower crease margin (p = 0.113), and upper eyelid depression with multiple creases (p = 0.336) (Table 4).

Case Report

The clinical cases of the two techniques are provided here. Preoperative, one-week post-operative, 3-month post-operative and 6-month post-operative images (A–E) of two patients are shown in Figs. 5 and 6.

Case 1 A 32-year-old female received double-eyelid surgery with the palpebral marginal incision and further underwent epicanthoplasty. The preoperative and post-operative images are shown in Fig. 5

Case 2 A 23-year-old female received double-eyelid surgery with the traditional incision. The preoperative and post-operative images are shown in Fig. 6

Discussion

For a more beautiful appearance of the eyes and easier expression of feelings through the eyes, "double-eyelid surgery" is quite popular among Asians worldwide [13–15]. There are many methods and variations for this surgery. The main advantages as well as limitations of the non-incision and incision methods have been mentioned previously. Despite the discernible surgical scarring, the traditional incision technique has been performed for many years due to its own advantages. With the increasing demands for beauty, the palpebral marginal incision technique emerged as a new method for double-eyelid surgery. Although it has already been reported that the palpebral marginal incision technique can create stable eyelid creases with nearly indiscernible surgical scarring and broader indications [3], there is no dedicated comparison between this technique and the traditional incision technique. Given the paucity of such comparative studies in the literature, we

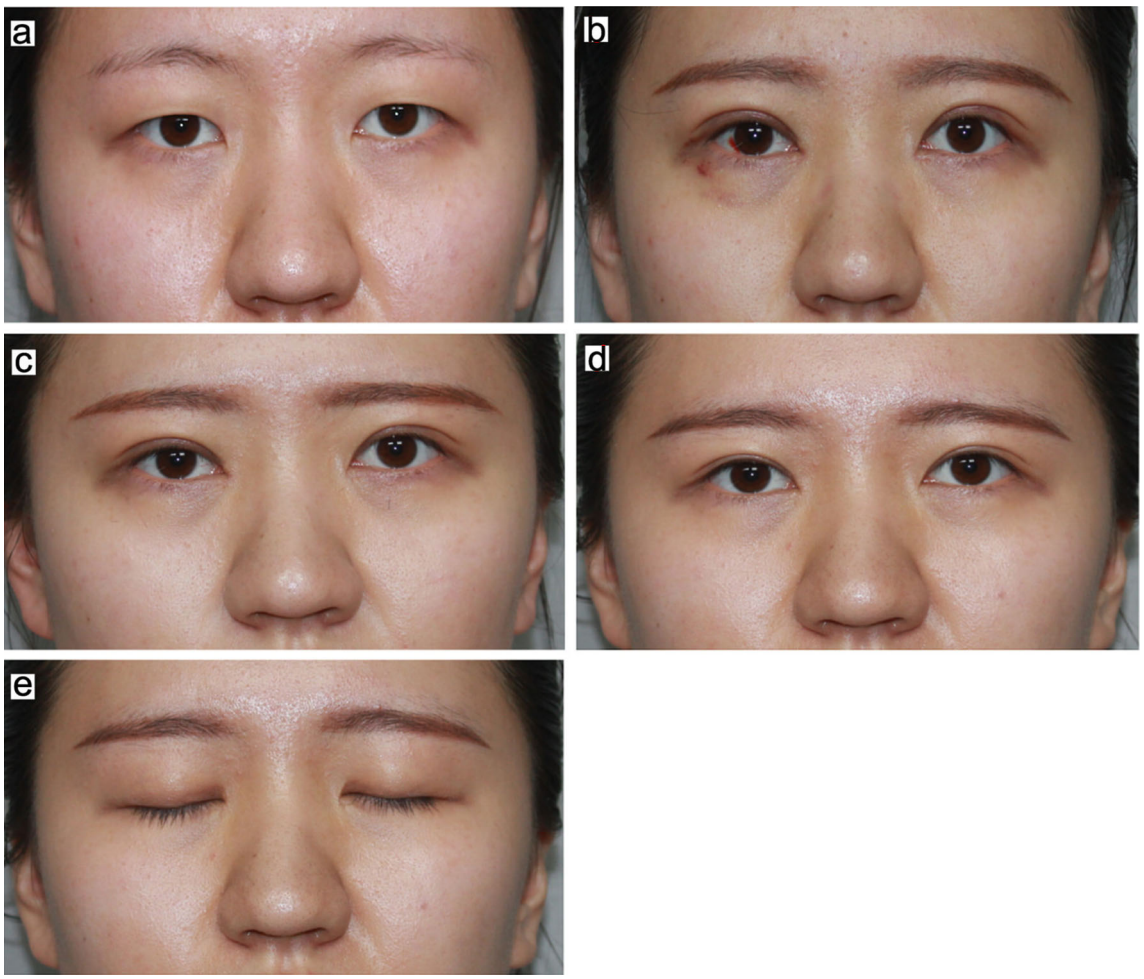

Fig. 5 Case 1: The preoperative and post-operative images of a 32-year-old female who received double-eyelid surgery with the palpebral marginal incision and further underwent epicanthoplasty. Preoperative (**a**), 1-week post-operative (**b**), 3-month post-operative (**c**) and 6-month post-operative (**d**, **e**) images are shown in order

conducted a retrospective review between the two techniques regarding patient satisfaction after surgery and incidence of complications.

The post-operative result is relatively stable at 6 months after surgery. Moreover, the total incidence of complications is often used to judge the safety of the surgery. Thus, both indexes were compared in our study to evaluate the surgical outcomes of the two techniques. In this study, patient satisfaction at 6 months after surgery in the palpebral marginal and the traditional incision groups was 96.1% and 91.5%, respectively, without significant between-group differences. The result implies that the two techniques can finally achieve similar post-operative results. In addition, there was no significant difference in the total incidence of complications between the palpebral marginal (3.9%) and traditional incision (8.5%) groups. The result indicates that the palpebral marginal incision technique is as safe as the traditional incision technique. Through the comparison of the above indexes, we can conclude that palpebral marginal incision technique can finally achieve surgical outcomes parallel with those of the traditional incision technique.

In our study, the palpebral marginal incision group had higher patient satisfaction than the traditional incision group at 3 months after surgery. The result indicates that the palpebral marginal incision group has better post-operative results at 3 months after surgery. Additionally, the better post-operative result at 3 months after surgery confirms the quicker post-operative recovery of the patients in the palpebral marginal incision group, which has already been reported in a previous study [3]. One reason for the quicker post-operative recovery has already been discussed. Fang et al. consider that the palpebral marginal incision technique keeps the upper eyelid skin complete and protects the subcutaneous vascular network, which thereby benefits post-operative recovery by inducing minimal injury and reducing swelling. They also believe that the traditional incision technique always damages the main arterial arch, thereby, resulting in swelling of the upper lids

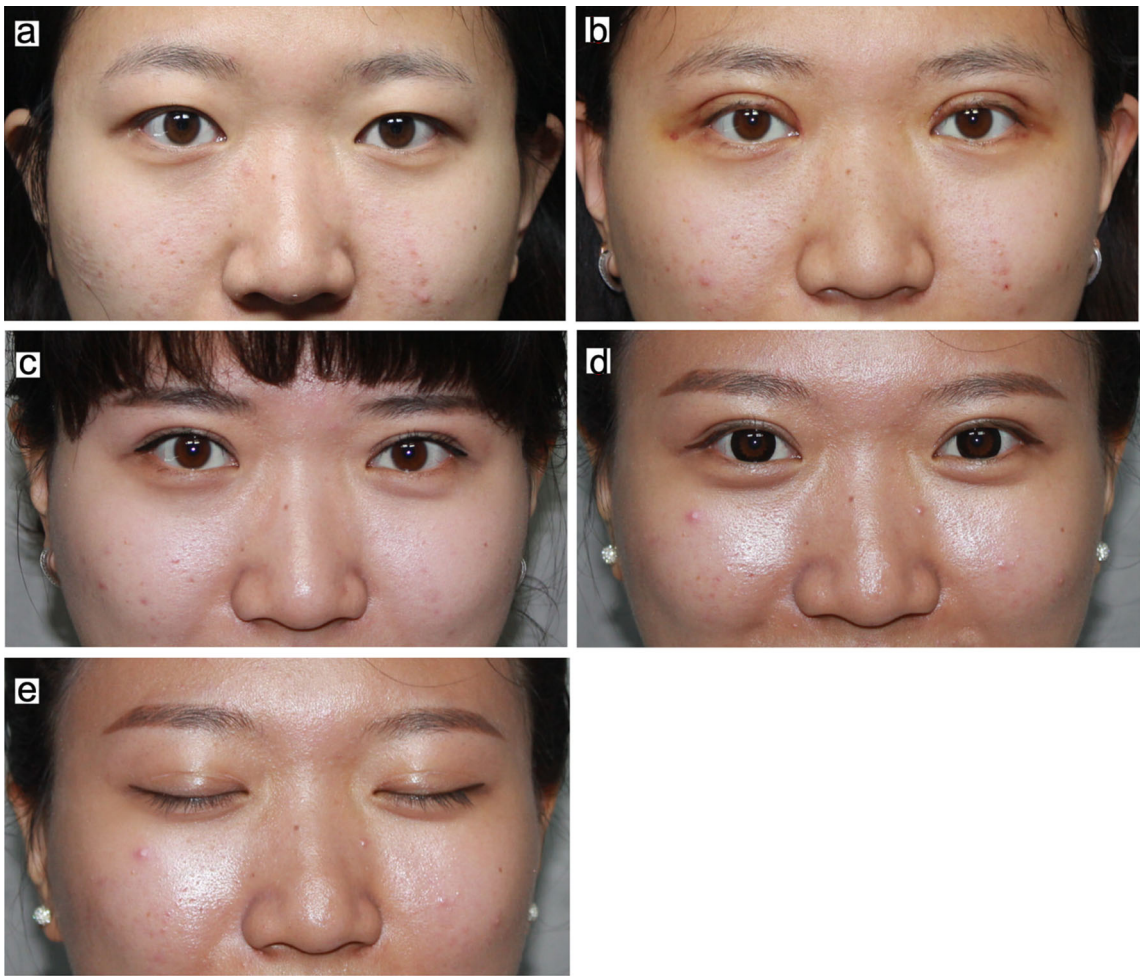

Fig. 6 Case 2: The preoperative and post-operative images of a 23-year-old female who received double-eyelid surgery with the traditional incision. Preoperative (**a**), 1-week post-operative (**b**), 3-month post-operative (**c**) and 6-month post-operative (**d**, **e**) images are shown in order

[3]. Moreover, there is another possible reason. In the palpebral marginal incision technique, the cicatricial adhesion from subcutaneous tissue to tarsus is under the eyelid crease line (line D). However, the cicatricial adhesion from skin to subcutaneous tissue is beneath the incision line (line E). Since the two lines are not at the same height above the lash line, the new technique can avoid a full-layer (skin to tarsus) cicatricial adhesion. And the full-layer cicatricial adhesion which will be created by the traditional incision technique may block the lymphatic and venous return. Thus, the palpebral marginal incision technique has the advantage of reducing swelling.

Another advantage of the palpebral marginal incision technique confirmed in this research is the almost indiscernible surgical scarring. Four patients in the traditional incision group had hypertrophic scar formation, whereas no patient in the palpebral marginal incision group had such a complication. The difference was statistically significant. Based on our observation, the scarring of the palpebral marginal incision technique is concealed and looks like the dermatoglyph, which is accordant with the principles of cosmetic surgery [16]. The reasons are as follows:

(1) The incision scarring can be masked by upturned lashes and the eyelash roots [3].
(2) The intrinsic dermatoglyph of the palpebral margin can reduce the visual perception of the incision scarring.
(3) Given the thinner skin of the palpebral margin, the incision scarring is also thinner than that of the traditional incision technique.
(4) The pigmentation of the incision scarring is similar to the makeup look of eyeliner, which is more acceptable for patients.

Comparison of the general data between the two groups showed that the palpebral marginal incision group was younger than the traditional incision group, and there was no significant difference in terms of sex. In addition, we found that more young people preferred the new technique according to our clinical experience. The analytic

difference of age is consistent with our clinical experience. So we infer that the palpebral marginal incision technique is more popular among young people. Obviously, the advantages of the nearly indiscernible surgical scarring and the quicker post-operative recovery may be the reasons. The almost indiscernible surgical scarring meets patients' increasing demand for no surgical scarring. The quicker post-operative recovery may lead to shorter leave for some vocations and can increase patients' confidence at the early post-operative period.

The present study has some limitations. First, it is a retrospective review of the same group of cases. Thus, the results may be biased by the surgeon's technique. Second, this is a single-centre study. Third, the number of patients is relatively small. To better determine the surgical outcome of the palpebral marginal incision technique, a multicentre, large-scale, prospective randomized clinical trial, with a longer follow-up period, should be performed in the future. Finally, more indexes, such as operative time, total cost, and surgeon's learning curve, need to be compared between the two techniques systematically in future studies.

Conclusions

The results demonstrate that the palpebral marginal incision technique can finally achieve surgical outcomes similar to those of the traditional incision technique. The new technique has the advantages of almost indiscernible surgical scarring and faster post-operative recovery, which may result in increasing popularity among young people. Therefore, we suggest that the palpebral marginal incision technique is reliable and worthy of recommendation.

Acknowledgements The authors are grateful to Liqiu Zheng, MD for her help in drafting the figures reported in this study, and Junwen Qu, MD for discussion in preparing this paper.

Funding This study did not receive funding from any funding agency.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval The study was approved by the ethics committee of Tianjin Eye Hospital and adhered to the tenets set forth by the Declaration of Helsinki.

Patient Consent Patients provided written consent for the use of their images.

References

1. Chen WP, Park JD (2013) Asian upper lid blepharoplasty: an update on indications and technique. Fac Plast Surg 29:26–31
2. Wu S, Shi H, Yan S, Sun Y, Pan L, Wu H (2010) Combined anchor suture with external upper eyelid blepharoplasty in Asian patients. Arch Fac Plast Surg 12:230–234
3. Fang S, Zhu W, Xing X, Zhu L, Yang C (2018) Double eyelid surgery by using palpebral marginal incision technique in Asians. J Plast Reconstr Aesthet Surg 71:1481–1486
4. Hwang HS, Spiegel JH (2014) The effect of "single" vs "double" eyelids on the perceived attractiveness of Chinese women. Aesthet Surg J 34:374–382
5. Lee CK, Ahn ST, Kim N (2013) Asian upper lid blepharoplasty surgery. Clin Plast Surg 40:167–178
6. Scawn R, Joshi N, Kim YD (2010) Upper lid blepharoplasty in Asian eyes. Fac Plast Surg 26:86–92
7. Park KS, Park DD (2017) Objective outcome measurement after upper blepharoplasty: an analysis of different operative techniques. Aesthet Plast Surg 41:64–72
8. Baek JS, Ahn JH, Jang SY, Chee E, Jane JW (2015) Comparison between continuous buried suture and interrupted buried suture methods for double eyelid blepharoplasty. J Craniofac Surg 26:2174–2176
9. Mizuno T (2016) Treatment of suture-related complications of buried–suture double-eyelid blepharoplasty in Asians. Plast Reconstr Surg Glob Open 4(8):839
10. Zhang MY, Yang H, Ding SL, Li CY, Ye XD, Yu YS, Tan WQ (2013) Construction of a double eyelid: an uncut strip of orbicularis removed through three mini-incisions. Aesthet Plast Surg 37:22–28
11. Zhang MY, Yang H, Li CY, Du FY, Huang XJ, Tan WQ (2012) Removal of a large amount of pretarsal tissue through three mini incisions in the construction of a double eyelid. Aesthet Plast Surg 36:1039–1046
12. Sun W, Wang Y, Song T, Wu D, Li H, Yin N (2018) Orbicularis-tarsus fixation approach in double-eyelid blepharoplasty: a modification of Park's technique. Aesthet Plast Surg 42:1582–1590
13. Bater KL, Ishii M, Nellis JC, Joseph A, Papel ID, Kontis TC, Byrne PJ, Boahene KDO, Ishii LE (2018) A dual approach to understanding facial perception before and after blepharoplasty. JAMA Fac Plast Surg 20:43–49
14. Chen B, Song H (2017) Measuring satisfaction with appearance: validation of the FACE-Q scales for double-eyelid blepharoplasty with minor incision in young Asians- retrospective study of 200 cases. J Plast Reconstr Aesthet Surg 70:1129–1135
15. Nguyen MQ, Hsu PW, Dinh TA (2009) Asian blepharoplasty. Semin Plast Surg 23:185–197
16. Branham GH (2016) Functional and cosmetic eyelid surgery. Facial Plast Surg Clin N Am 24:9