

Improved Epicanthus Correction Combined with Double Eyelid Surgery

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Abstract: Objective: To explore the clinical effect of improved epicanthus correction combined with double eyelid surgery.

Methods: From February 2019 to February 2020, 70 patients with epicanthus who underwent surgical treatment were treated as study participants. The computer 1:1 grouping method was adopted. Thirty-five patients in the reference group were treated with epicanthus correction, and 35 patients in the experimental group were treated with improved epicanthus correction combined with double eyelid surgery. The operation effect was compared. **Results:** The satisfaction scores of morphological aesthetics and prognosis recovery in the experimental group were higher than those in the reference group ($P < 0.05$). The recurrence rate of scar hyperplasia and epicanthus in the experimental group was lower than that in the control group ($P < 0.05$). **Conclusion:** The improved epicanthus correction combined with double eyelid surgery can engender ideal correction effect and reduce postoperative adverse outcomes. Therefore, the combined operation scheme is feasible.

Keywords: Improved epicanthus correction; Blepharoplasty: Primary blepharoplasty; Epicanthus; Surgical effect

Publication date: September 2021; **Online publication:** September 30, 2021

1. Introduction

Epicanthus is a common eye feature of Asians, referring to the longitudinal arc skin folds at the inner canthus, with an incidence of more than 50% in Asian population and more than 70% in single eyelid population. Due to the particularity of the physiological structure of Asian eyelid plate, the connection between orbicularis oculi muscle and tendon membrane is missing, the aponeurosis junction of levator palpebrae muscle moves downward, and the fat in front of eyelid plate is prominent; these contribute to the single eyelid phenotype in Asians. When the eyes are opened, the inner canthus is covered by the epicanthus, forming a special eye shape ^[1]. In recent years, with the continuous improvement of living standards and the pursuit of improvement of eye aesthetics, the proportion of patients undergoing epicanthus correction in clinic has gradually increased in recent years. Epicanthus correction can effectively improve the epicanthus and reshape eye aesthetics, which is in line with the aesthetics of the public in today's society. With the continuous optimization of medical technology and the optimization of double eyelid surgery, the improved techniques can enlarge the eye according to the anatomical characteristics of the eye by prolonging the eye fissure, which is a common surgical treatment scheme for eye beauty ^[2]. In this study, the effectiveness of improved epicanthus correction combined with double eyelid surgery was evaluated.

2. Data and methods

2.1. General information

From February 2019 to February 2020, 70 patients with epicanthus who underwent surgical treatment were treated as study participants. The computer 1:1 grouping method was adopted. There were 35 patients in the reference group, comprising of 15 males and 20 females with an age range of 18-35 years and an average

age of 26.34 ± 3.62 years. The reference group consists of 28 patients with mild epicanthus and 7 patients with severe epicanthus. There were 35 cases in the experimental group, comprising of 12 males and 23 females with an age range of 18-37 years and an average age of 26.31 ± 3.59 years. The experimental group consists of 29 patients with mild epicanthus and 6 patients with severe epicanthus. The baseline data of epicanthus patients in the two groups were statistically compared, and the difference was comparable ($P > 0.05$).

The inclusion criteria of this study are as follows: (i) all patients were informed of the research project and signed on the authorization consent forms; and (ii) all patients received epicanthus correction, double eyelid surgery and phase I plastic surgery according to the doctor's advice. The patients had good cognitive function and could cooperate with the operation independently.

The exclusion criteria of this study are as follows: (i) patients with previous eye surgery; (ii) patients with poor surgical compliance or contraindications; (iii) patients who refuse to participate in the study or fall off halfway due to subjective factors.

2.2. Methods

In order to ensure the objectivity of the study, the surgical operations of the selected patients were completed by the same surgical team. In the experimental group, 35 patients underwent improved epicanthus correction combined with double eyelid surgery. Before operation, a targeted operation plan was formulated according to the situation of the patient's epicanthus, the surgical incision was established according to the direction and severity of the patient's epicanthus, and the patient was given local invasive anesthesia. 5 ml of 2% lidocaine was mixed with 2 drops of 0.1% adrenaline injection as local anesthetic, 0.5 ml of local anesthetic was taken into bilateral inner canthus. The operation was performed after ensuring the anesthetic effect of the operation. The patient was guided to assume the supine position. The patient was told to open his/her eyes to observe the position of inner canthus and set the turning point. The shape of double eyelid was designed according to the patient's facial contour and the patient's beauty needs. The surgical incision line was established, and No. 11 scalpel was used to cut the flap and surrounding tissue along the operation line. The fascia tissue was cut off in the same direction of the epicanthus. The flap was released so that it transposed by itself. After the epicanthus disappears or reduces, the exposure of the lacrimal caruncle was increased, and the exposure effect was observed. If it is not ideal, the angle can be adjusted appropriately to promote the disappearance of the epicanthus, and the inner canthus should be horseshoe-shaped. After the operation, absorbable suture was applied. Attention should be paid to avoid muscle tension during suture. After surgical suture, the double eyelid line and the flap may not be in the same arc. Combined with double eyelid surgery, the lower eyelid and orbicularis oculi muscle were removed, starting from the medial side and extends to the inner canthus. The epicanthus, subcutaneous fascia tissue and orbicularis oculi muscle at the inner canthus were removed. After the operation, the local part was gently pressed with sterile gauze for one day, Appropriate antibiotics were selected for anti-infection treatment 5 days after operation to reduce the incidence of postoperative infection.

The patients in the control group were treated with epicanthus correction.

2.3. Evaluation criteria

The self-made satisfaction score scale was used to quantitatively score the satisfaction of epicanthus correction, and the "yes-and-no" methods were used to evaluate the morphological aesthetics and prognostic recovery effect. The total score was 100 points. The higher the score, the higher the satisfaction. Cronbach's alpha of this study is 0.76, indicating high reliability. The adverse surgical outcomes such as scar hyperplasia and epicanthus recurrence were observed in the two groups.

2.4. Statistical analysis

The statistical software SPSS version 24.0 was used for hypothesis verification. The count data was expressed in percentages (%) and analyzed by Chi-squared test. The measurement data was expressed in mean \pm standard deviation and analyzed by *t*-test. $P < 0.05$ was set as the basic expression of statistical difference.

3. Results

3.1. Satisfaction score of epicanthus correction in two groups

As shown in **Table 1**, The satisfactory scores of patients in the experimental group on morphological aesthetics and prognosis recovery were significantly higher than those in the reference group ($P < 0.05$).

Table 1. Satisfaction score of epicanthus correction in two groups

Group	N	Morphological aesthetics	Prognostic recovery effect
Reference group	35	76.25 \pm 8.06	72.15 \pm 7.96
Test group	35	92.15 \pm 10.14	90.63 \pm 9.87
T value		7.262	8.622
P value		0.000	0.000

3.2. Statistics of postoperative adverse outcomes in two groups

As shown in **Table 2**, the rate of postoperative scar hyperplasia and epicanthus recurrence in the experimental group was significantly lower than that in the reference group ($P < 0.05$).

Table 2. Statistics of postoperative adverse outcomes of patients in two groups

Group	N	Scar hyperplasia	Epicanthus recurrence
Reference group	35	6 (17.14%)	5 (14.29%)
Test group	35	1 (2.86%)	0
X ²		5.117	4.826
P value		0.008	0.27

4. Discussion

Epicanthus, as a common eye surgery in Asia, can effectively alleviate the condition of epicanthus through the rearrangement of local skin tissue. In recent years, with the continuous improvement of medical technology and surgical methods, the curative effects of these methods have also shown improvement in the application of epicanthus. At the end of the 20th century, clinical scholars used the combination of epicanthus correction and double eyelid surgery. During the operation, personalized skin incision was set to reduce the scar of inner canthus, correct the misshapen tissue, expose the lacrimal caruncle, and improve the quality of operation. The concealment of postoperative scar is effective, and this method can effectively deal with the skin tension of inner canthus. Thus, this is conducive to the early healing of postoperative incision and aesthetics.

According to the latest research, the occurrence of epicanthus is mainly due to the dense connective tissue cellulose and muscle fibers in the eyes. When it tilts into the fold of epicanthus, the inner orbicularis oculi muscle and superficial fibers of the inner canthus ligament would slide into the inner canthus fold since the orbicularis oculi muscle originates from the inner canthus ligament. The lack of skin leads to the increase of muscle tension and skin tension, which result in epicanthus eventually. The surgical measures

can effectively correct the wrong structure, dislocation and abnormal connective fiber tissue, restore the orbicularis oculi muscle to the normal physiological structure, effectively prolong the vertical skin, deal with the local shear force to the greatest extent, effectively avoid the occurrence of postoperative scar, effectively reduce postoperative recurrence, and obtain the best eyelid appearance^[3]. Z-plasty was performed on the surgical incision, rearranged according to the arrangement of the patient's epicanthus skin. This technique extends the vertical skin, sets the surgical tangent, ensures that the lacrimal caruncle is fully exposed, releases the subcutaneous fascia tissue after fully loosening the subcutaneous tissue, improves the adhesion of orbicularis oculi muscle, promotes the re-healing of subcutaneous tissue and orbicularis oculi muscle under normal structure, improves the healing effect of postoperative incision, and effectively reduces postoperative scar^[4]. The subcutaneous fascia tissue and orbicularis oculi muscle with epicanthus displacement at the inner canthus can be removed through the improved epicanthus correction combined with primary blepharoplasty, so as to promote the upward movement of the double eyelid radian, the position of orbicularis oculi muscle and the double eyelid line formed at the inner canthus, thereby effectively alleviating the situation of epicanthus and improving the correction effect. Thus, it has significant advantages in clinical application^[5]. According to the research and analysis of the data, the patients in the experimental group were more satisfied with the morphological aesthetics and prognostic recovery effect than those in the reference group. The improved epicanthus correction can ensure the pertinence of the operation by designing a reasonable surgical incision and planning the surgical tangent according to the epicanthus situation and patients' beauty needs. The operation was combined with double eyelid surgery and phase I plasty. Suturing under tension-free condition can significantly reduce tissue adhesion, reduce tension, reduce postoperative scar hyperplasia, restore nature after operation, and obtain better aesthetics. Besides, the degree of acceptance among the patients is high. According to the statistics of adverse outcomes, the rates of postoperative scar hyperplasia and epicanthus recurrence in the experimental group were significantly higher than those in the reference group ($P < 0.05$).

In conclusion, the improved epicanthus correction combined with double eyelid surgery can obtain ideal correction effect and reduce postoperative adverse outcomes. Therefore, the combined operation scheme is feasible.

Disclosure statement

The author declares no conflict of interest.

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