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Evaluation of the Effect of the Modified Myocutaneous Flap Method Combined with Orbital Septum Fixation in Blepharoplasty

Jie Wang*, Longxu Zhou

Chongqing Zicheng Medical Plastic Surgery Clinic, Chongqing 400000, China

***Corresponding author:** Jie Wang, wjzc44323882@Sina.com

Abstract: *Objective:* To explore the clinical efficacy of modified myocutaneous flap method combined with orbital septum fixation in treating patients with eye bags. *Methods:* The selected surgical plan divided 60 patients with eye bags into two groups. One group served as the control group and adopted the traditional myocutaneous flap method, while the other group was the observation group that implemented the modified myocutaneous flap method combined with orbital septum fixation. The general clinical observation indicators, treatment effect-related observation indicators, postoperative complication rates, and disease recurrence rates were compared between the two groups. *Results:* The total treatment time and postoperative recovery time of the observation group were significantly shorter than those of the control group. The degree of postoperative eye bag ptosis and lower eyelid skin wrinkle scores of the observation group were significantly lower than those of the control group. The nasolacrimal groove, skin glossiness, and White Aesthetics Score (WES) of the observation group were significantly higher than those of the control group. The total incidence of complications and disease recurrence rate in the observation group were significantly lower than those in the control group ($P < 0.05$). *Conclusion:* The modified myocutaneous flap method combined with orbital septum fixation for patients with eye bags can shorten the treatment and postoperative recovery time, improve the aesthetics of the eyes and face, and reduce the occurrence and recurrence rates of postoperative complications, thus it is worthy of promotion.

Keywords: Modified myocutaneous flap method; Orbital septum fixation; Eye bags; Plastic surgery effect

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1. Introduction

Blepharoplasty is a common facial rejuvenation surgery in clinical practice. The more common type of surgery in the past was the myocutaneous flap method, which involves stretching the myocutaneous flap to completely remove excess skin and fat tissue. This surgery is optimal for a certain period and can improve the sagging skin of the eye to a certain extent. However, since it does not preserve the pretarsal orbicularis oculi muscle to a high degree, it has a high probability of causing post-surgery complications such as lax eyelid ectropion, conjunctivitis, etc. The disease will also recur, thus other plastic surgeries with long-term clinical effects must

be considered [1,2]. Through many clinical trials, it has been found that improving the traditional myocutaneous flap method and combining it with orbital septum fixation can achieve ideal blepharoplasty outcomes. This may be mainly due to the surgical method can preserve as much of the orbicularis oculi muscle as possible. During the surgical procedure, emphasis is put on lifting the myocutaneous flap properly to ensure the beauty and naturalness of the face [3]. This study explores the clinical effects of implementing the modified myocutaneous flap method combined with orbital septum fixation in patients with eye bags indicated for cosmetic plastic surgery.

2. Materials and methods

2.1. Materials

60 blepharoplasty cases admitted from October 2021 to October 2022 were selected. The patients were divided into 30 cases/group based on their chosen surgical plan. There were 1 male and 29 female patients in the control group; the age range was 30–68 years old, with an average of 49.52 ± 3.99 years; the duration of the disease ranged from 1 week to 36 months, with an average of 18.11 ± 2.98 months. There were 2 males and 28 females in the observation group; their age ranged from 32 to 68 years old, with an average age of 49.96 ± 4.08 years; the duration of the disease ranged from 2 weeks to 35 months, with an average of 17.74 ± 2.71 months. There was no difference after normative comparison of data between the groups ($P < 0.05$).

Inclusion criteria included patients receiving blepharoplasty for the first time and complying with the operating indications of the relevant surgery; patients with no missing information in the medical records; patients with normal communication skills and no history of mental, cognitive, or psychological diseases; patients who are informed and voluntarily signed relevant documents. Exclusion criteria were patients with contraindications related to surgical treatment; patients with previous history of lower eyelid surgery; patients with extremely low medical compliance behavior; patients who are unable to accept long-term follow-up; patients who dropped out of the study midway.

2.2. Methods

The traditional myocutaneous flap method was chosen for treatment in the control group. The patient was instructed to adopt a comfortable position. Methylene blue solution was used to mark the position 1 mm below the eyelashes of the lower eyelid, and 5 ml lidocaine solution (National drug approval number: H20055048; Manufacturer: Sichuan Guorui Pharmaceutical Co., Ltd.) + epinephrine [National drug approval number: H41022507; Manufacturer: Kaifeng Pharmaceutical (Group) Co., Ltd.] was administered. Mixed anesthesia was performed on both sides of the eye bags to confirm that the anesthetic effect reaches satisfactory standards. Then, incision along the eyelid marking point to under the orbicularis oculi muscle was performed, separating along the orbicularis oculi muscle to the orbital septum, opening the orbital septum and completely removing the fat tissue, and subsequently the myocutaneous flap was pulled in the lateral and superior direction. The pulling force was controlled and the excess skin and orbicularis oculi muscle were removed. Subsequently, layer by layer suture was performed to complete the operation. Local compression was applied after the operation for 30 minutes. Relevant antibiotics were used appropriately. During this period, there was close observation on the patients. If there were no complications and the patient recovered well, the sutures were removed about 5 days after surgery.

The modified myocutaneous flap method combined with orbital septum fixation was used for treatment in the observation group. The same position, marking, anesthesia, and surgical incision method were performed as the control group. After the eyelid incision, the loose skin was effectively removed. The orbicularis oculi

muscle was tightened and separated from the orbital septum, it was then pulled and fixed at both ends of the suborbital periosteum and the middle of the lower edge. After completion, the angle was adjusted, folded, and sutured. The postoperative procedure was carried out as above.

2.3. Observation indicators

(1) General clinical observation indicators

The observed total treatment time and postoperative recovery time were normatively compared between the two groups.

(2) Observation indicators related to treatment effect

Before and after the implementation of the surgical plan, the two groups were evaluated for the degree of eye bag ptosis and lower eyelid skin wrinkles. The degree of eye bag ptosis was scored as 1, 2, and 3 points for light, medium, and severe, respectively. Lower eyelid skin wrinkles were evaluated based on the Fitzpatrick wrinkle scale, and scored as 1–9 points. The score was positively correlated with the severity of wrinkles, nasolacrimal groove (the scoring range is 1–10 points, and the score corresponds to the degree of filling of the nasolacrimal groove), and skin glossiness (scoring range is 1–10 points, the higher the score, the better the skin glossiness). At the same time, facial aesthetics scores were conducted on the two groups using the White Aesthetics Score (WES), mainly for facial contour, color, shape, volume, and other dimensions, with a full score of 10 points. The score corresponds to the quality of facial aesthetics [4].

(3) Postoperative complication rates and disease recurrence rates

The postoperative complications of the two groups were counted, including infection, mild ectropion, conjunctivitis, blepharitis, etc. [5]. Additionally, the patients were followed up for 6 months to calculate the probability of disease recurrence in the two groups.

2.4. Statistical analysis

Based on SPSS25.0 for Windows software, the observed data were compared normatively. For the measurement data, it was shown as mean ± standard deviation (SD), and the *t* test was performed in parallel; for the count data, it was shown as %, and the chi-square test was performed. The *P* value was observed, and $P < 0.05$ indicated a statistically significant difference.

3. Results

3.1. Comparison of general clinical observation indicators between the two groups

As shown in **Table 1**, the total treatment time and postoperative recovery time of the observation group were significantly shorter than those of the control group, $P < 0.05$.

Table 1. Comparison of general clinical observation indicators (mean ± SD)

Group	Number of cases (n)	Total treatment time (days)	Postoperative recovery time (months)
Control group	30	9.16 ± 2.54	3.18 ± 0.96
Observation group	30	7.08 ± 1.87	0.91 ± 0.36
t	-	3.612	12.127
P	-	0.001	0.001

3.2. Comparison of observation indicators related to treatment effects between the two groups

As presented in **Table 2**, after observing the preoperative indicators between the groups, the differences were not statistically significant, $P > 0.05$; the postoperative eye bag ptosis and lower eyelid skin wrinkle scores of the observation group were lower than those of the control group, and the nasolacrimal groove, skin glossiness, and WES score were higher than those of the control group, $P < 0.05$.

Table 2. Comparison of observation indicators related to treatment effects (mean ± SD, points)

Group	Time	Eye bag ptosis	Lower eyelid skin wrinkles	Nasolacrimal groove	Skin glossiness	WES
Control group (n = 30)	Preoperative	2.94 ± 1.05	6.85 ± 2.87	3.66 ± 1.45	3.79 ± 1.51	4.29 ± 1.87
	Postoperative	1.75 ± 0.74	4.41 ± 1.92	5.09 ± 2.05	5.14 ± 2.09	6.42 ± 2.96
Observation group (n = 30)	Preoperative	2.98 ± 1.08	6.88 ± 2.91	3.69 ± 1.48	3.82 ± 1.53	4.32 ± 1.92
	Postoperative	1.11 ± 0.41	3.09 ± 1.34	7.54 ± 3.62	6.88 ± 3.05	8.55 ± 4.08
t	Preoperative	0.255	0.040	0.079	0.076	0.061
	Postoperative	4.144	3.088	3.226	2.578	2.314
P	Preoperative	0.800	0.968	0.937	0.939	0.951
	Postoperative	0.001	0.003	0.002	0.013	0.024

3.3. Comparison of postoperative complication rates and disease recurrence rates between the two groups

Based on **Table 3**, the total incidence of postoperative complications and disease recurrence rate in the observation group were significantly lower than those in the control group, $P < 0.05$.

Table 3. Comparison of postoperative complications and disease recurrence rates [n (%)]

Group	Number of cases	Infection	Mild ectropion	Conjunctivitis	Blepharitis	Overall incidence	Recurrence rate
Control group	n = 30	2 (6.67)	2 (6.67)	1 (3.33)	1 (3.33)	6 (20.00)	7 (23.33)
Observation group	n = 30	1 (3.33)	0 (0.00)	0 (0.00)	0 (0.00)	1 (3.33)	1 (3.33)
χ^2	-	-	-	-	-	4.043	5.192
P	-	-	-	-	-	0.044	0.023

4. Discussion

In recent years, increasing living standards has led to a growing pursuit of enhancing the aesthetic aspects of one's appearance. Under this development trend, the cosmetic surgery industry has shown a prosperous scene. The so-called cosmetic plastic surgery refers to the use of medical techniques such as surgery, medical equipment, and drugs to help people repair and reshape their dissatisfied appearance or body parts to a certain extent to achieve the desired appearance [6]. The demand for facial plastic surgery is relatively high among plastic surgeries. Eye bags, as a prominent feature of facial aging, are often listed as one of the primary considerations for plastic surgery. They mainly occur in the lower eyelids. Local pocket bulging accompanied by skin sagging is affected by many factors, including heredity, age, long-term staying up late, inappropriate massage, etc. The main reason is the thinning of the eyelid support structure and the fat globule accumulation [7]. The long-term existence of eye bags will not cause obvious physical discomfort. However, since eye bags are located in the triangular area of the face, their presence can cause an individual to appear sluggish and old, which greatly reduces the aesthetics of the face and may also induce negative emotions such as anxiety and low self-esteem. In severe cases, they may reduce or even resist

social interaction activities. In addition, relevant surveys have found that many people with obvious bags under the eyes often experience clinical symptoms, such as foreign body sensation in the eye, lower eyelid ectropion, trichiasis, epiphora, etc. If the symptoms are not effectively intervened, patients' quality of life will be reduced, with the inability to maintain a positive physical and mental health. Therefore, it is necessary to perform plastic surgery treatment for blepharoplasty. Still, careful consideration is needed in selecting the type of surgery to prevent serious postoperative complications, which will affect the quality of patient prognosis [8-10].

The traditional myocutaneous flap method affects eye skin tightening and wrinkle improvement, but the treatment stability is relatively poor. Patients often suffer from mild eyelid ectropion, disease recurrence, and other adverse conditions after surgery. After analysis, this method is considered to not only remove fatty tissue but also damage the supporting structure of the lower eyelid margin, so postoperative complications may occur and affect the overall aesthetics of the face [11,12]. The results in this article showed that compared with the control group, the total treatment time and postoperative recovery time of the observation group were shorter, the degree of postoperative eye bag ptosis and lower eyelid skin wrinkle scores were lower, and the nasolacrimal groove, skin glossiness, and the WES score were higher. The total postoperative complication and disease recurrence rates are both 3.33%, suggesting that the modified myocutaneous flap method combined with orbital septum fixation has more application advantages. The reason may be that the modified myocutaneous flap method can effectively preserve the orbicularis oculi muscle and ensure the effective lifting of myocutaneous flap without affecting the face's overall aesthetics. Combining with orbital septum fixation, it can also effectively reduce the risk of related complications, so the patient's short-term and long-term curative effects are relatively impressive [13-15].

5. Conclusion

In summary, the modified myocutaneous flap method combined with orbital septum fixation for patients with eye bags can improve clinical symptoms, enhance facial aesthetics, and reduce postoperative complications and disease recurrence. It is recommended to be widely promoted.

Disclosure statement

The authors declare no conflict of interest.

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