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Efficacy and Safety Analysis of Mini-incision Degreasing and Minimally Invasive Double Eyelid Surgery with Partial Thread Embedding in the Treatment of Patients with Asymmetric Double Eyelid

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Abstract: *Objective: To analyze the effect of mini-incision degreasing and minimally invasive double eyelid surgery with partial thread embedding in the treatment of patients with asymmetric double eyelid. Methods: A total of 122 patients with asymmetric double eyelid treated in our hospital from February 2020 to February 2021 were selected as the research objects, and divided into a study group and a control group according to the Excel random function method, with 61 cases in each group. The control group received traditional blepharoplasty by incision method, and the study group received mini-incision degreasing and minimally invasive double eyelid surgery with partial thread embedding. The surgical indicators (operation time, postoperative healing time, intraoperative blood loss), complications and aesthetic satisfaction were statistically compared between the two groups. Results: The postoperative healing time of the study group was shorter than that of the control group, and the intraoperative blood loss was less than that of the control group (P<0.05). The aesthetic satisfaction of the research group was 98.36% higher than that of the control group 86.89% (P<0.05). Conclusion: Mini-incision degreasing and minimally invasive double eyelid surgery with partial thread embedding in the treatment of patients with asymmetric double eyelid can improve the healing time and intraoperative blood loss, improve aesthetic satisfaction, and reduce the incidence of complications.*

Keywords: *Mini-Incision Degreasing, Partial Thread Embedding, Minimally Invasive Double Eyelid Surgery, Asymmetric Double Eyelid, Safety*

1. Introduction

In recent years, with the development of social economy and the improvement of living standards, people's attention to appearance has gradually increased, and plastic surgery has gradually become more widespread[1-2]. People with asymmetric double eyelids are relatively less satisfied with their own facial appearance, and more expect to undergo facial cosmetic surgery to mobilize their facial appearance to improve their appearance[3-4]. Double eyelid surgery is a commonly used plastic repair surgery, which forms beautiful, harmonious and symmetrical eyes by adjusting the structure of the upper eyelid skin and subcutaneous tissue. However, the traditional blepharoplasty by incision method will cause great damage to the subcutaneous tissue and upper eyelid, and it is easy to cut off the vein after the operation, which will lead to the obstruction of lymphatic drainage and the occurrence of multiple complications such as swelling of the upper eyelid[5-6]. Therefore, there is still a need to find more effective treatment options. In this study, 122 patients with asymmetric double eyelid admitted to our hospital were selected as the research objects, and the purpose of this study was to analyze the therapeutic effect of mini-incision degreasing and minimally invasive double eyelid surgery with partial thread embedding in the treatment of patients with asymmetric double eyelid. The report is as follows.

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2. Data and Methods

2.1. Normal Information

A total of 122 patients with asymmetric double eyelid treated in our hospital from February 2020 to February 2021 were selected as the research objects, and divided into a study group and a control group according to the Excel random function method, with 61 cases in each group. The general data such as gender, age, and operation side of the two groups were balanced and comparable (P>0.05) (see the Table 1). In addition, this study has been approved by the ethics committee and academic committee of our hospital.

Table 1: Comparison of two groups of general data.

group	Number of cases	gender [n(%)]		age ($\bar{x}$ ±s,age)	surgical side [n(%)]	
		female	male		bilateral	unilateral
study group	61	51(83.61)		21~37(28.94±3.73)	41(67.21)	20(32.79)
control group	61	49(80.33)	10(16.39)	21~37(29.11±3.90)	44(72.13)	17(27.87)
t/χ2		0.222		0.246	0.349	
P		0.638		0.806	0.555	

2.2. Inclusion and Exclusion Criteria

Inclusion criteria: Those who were diagnosed with asymmetric double eyelid by vernier caliper eye measurement; those who met the indications for surgery and agreed to undergo surgical treatment; those who voluntarily participated in this study and signed a consent agreement.

Exclusion criteria: Patients with ocular inflammatory infection; patients with coagulation dysfunction; patients with immune system dysfunction; eyelid retraction and hypertrophy or concave; Patients with intraocular and extraocular with acute and chronic lesions; myasthenia gravis.

2.3. Method

2.3.1 Preoperative Design

Comprehensive consideration of the operator's age, facial contour, occupation, eye shape, personality, facial features ratio, etc., the design is more coordinated double eyelid shape. At this time, pay attention to the axis, width and symmetry of the eye fissure, and confirm the course of the double eyelid and the width of the eyelid according to the individual situation. The operator is required to close his eyes slightly, gently pull up the upper eyelid skin, taut the skin near the eyelid margin, vaguely reveal the upper edge of the tarsal plate, and draw an incision line along the upper edge of the tarsal plate. The probe will lift the skin out of the line upwards to create the upper eyelid fold. The surgeon confirmed the satisfaction of the double eyelid state with the mirror, and after the surgeon was satisfied, it was marked with methylene blue to prepare for surgery.

2.3.2 Control Group

Treated with traditional incisional blepharoplasty. The eye shape of the operator was compared, and the double eyelid line was designed by the natural positioning method. After marking with methylene blue, the operation area was sterilized and covered with towels after facial cleaning. After 2% lidocaine (Xi'an Hanfeng Pharmaceutical Co., Ltd., NMPN: H61023720) 2 ml and 1% epinephrine (Shanghai Liuhetang Biotechnology Xiangcheng Pharmaceutical Co., Ltd., NMPN: H41022052, specification: 1 ml: 1 mg) 3 drops of subcutaneous infiltration anesthesia. After the onset of anesthesia, a small incision was opened at the position of the lateral canthal and double eyelid design line with a sharp blade, and the eye skin was cut along the line with ophthalmic scissors until it stopped at about 3 mm from the medial canthus. The subcutaneous tissue was incised to expose the pretarsal fat and the orbicularis oculi muscle, and 1~2 subcutaneous orbicularis oculi muscles were cut off at the lower edge of the incision to repair the tarsal plate tissue. If the upper eyelid of the surgeon is swollen, a proper amount of subcutaneous fat should be removed after opening the orbital septum. During the operation, attention should be paid to protecting the skin and hemostasis to avoid serious external damage. Observe the symmetry of the eyes, and after confirming that the effect is satisfactory, the incision is sutured with 6-0 or 7-0 sutures. The levator palpebrae aponeurosis was hung after the needle was inserted from the

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skin of the lower lip on one side of the incision. The needle is drawn from the skin of the upper lip of the incision and knotted. Postoperatively, the incision was bandaged with pressure to prevent bleeding from the incision. The sterile gauze was removed the next day, and the sutures were removed 1 week after surgery.

2.3.3 Study Group

Accepted mini-incision degreasing and minimally invasive double eyelid surgery. Before surgery, the surgeon was told to close his eyes naturally to confirm the asymmetric part. The middle eyelid and inner canthal skin of the tarsal plate were pressed down with an ophthalmic pressure plate, and the operator was told to open his eyes, record the appearance of the double eyelid when the eyes were opened, and mark the operation area with methylene blue. Subcutaneous infiltration anesthesia, the specific method is the same as that of the control group, and local anesthesia is applied to the orbital fat area. Referring to the marked line of the operation area, cut the skin to the orbicularis oculi muscle. After the orbicularis oculi muscle is lifted, part of the tissue is excised. Understand the symmetry of the double eyelid fissure. If the effect is not good, repeat the excision until a good symmetrical effect is obtained. Pay attention to compression and hemostasis. The orbital septum was clamped with microvascular forceps and then cut to enter and confirm the fat pad in the orbital septum. At the same time, a small amount of fat pad was peeled off, the excess orbital septal fat was excised, and electrocoagulation was performed to stop bleeding. After the fat was removed, the orbital septal fat film was preserved. Precise reduction also incorporates remaining tissue. Inform the operator to open his eyes slowly and naturally, and reconfirm the symmetry of the palpebral fissure. If the palpebral fissure is still not symmetrical, separate the orbicularis subcutaneous muscle and the orbicularis oculi muscle at the position of the small incision until the symmetry is good. After the double eyelid line is smooth and symmetrical, the small incision is sutured. Understand the curvature and height symmetry of the upper eyelid folds on both sides to ensure that the stitches are delicate and even, and the suture surface is flat. After the suture effect is satisfactory, the suture treatment will be carried out. The suture needle will be inserted vertically at the lateral canthus and the suture will be embedded in the needle hole. After operation, erythromycin eye ointment was applied under the eyelid, and no incision dressing was required, and no suture removal was required. Apply a cold eye patch to the swollen area.

2.3.4 Postoperative Intervention

The two groups continued to take 3D antibiotics after surgery, and erythromycin ointment was applied externally every day to avoid infection. Ice the incision within 48 hours to avoid hematoma and blood stasis. Make sure the skin adjacent to the surgery area is clean and dry. During daily life, to avoid impact on the surgical area, and use a sterile cotton ball dipped in alcohol to gently wipe the secretions and blood scabs. The surgeon is instructed to avoid ingestion of irritating and spicy food, eat more vegetables and fruits, and consume high-quality protein at the same time, to ensure the combination of work and rest, and to avoid overuse of the eyes. Strictly follow the doctor's prescription for medication, and return to the doctor after 1 week. Afterwards, perform eye muscle rehabilitation exercises to optimize blood circulation and accelerate the absorption of bruises.

2.4. Observation Indicators

Statistical comparison of two groups of surgical indicators, namely operation time, postoperative healing time, intraoperative blood loss.

The aesthetic satisfaction of the two groups was statistically compared, and the evaluation criteria were as follows[7]: the natural opening and closing of the eyes produced a smooth double eyelid curvature and the difference between the heights of the two eyelids < 0.5 mm, the shape was normal, and the epicanthus had no signs of traction. It is difficult to find the surgical incision with the naked eye, and the palpebral fissure is naturally symmetrical as a whole, which is satisfactory. When the eyes are opened, the curvature of the double eyelid is smooth, and the epicanthus is slightly stretched. Irregular incision lines or slight surgical scars can be seen when the eyes are closed, and the height difference between the two eyelid fissures is about 0.5-1 mm, which is basically satisfactory. Most of the double eyelid lines disappear or are not obvious, the epicanthus is severely stretched when the eyes are opened, the surgical scar is prominent when the eyes are closed, the bilateral palpebral fissures are asymmetric, the height difference between the two palpebral fissures has no obvious change or no double eyelid is formed, requiring a second time Operation. The aesthetic satisfaction is the sum of the basic satisfaction rate and the satisfaction rate.

The complications of the two groups were compared statistically. That is, ecchymosis, double eyelid

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asymmetry, infection, swelling and so on.

2.5. Statistical Methods

SPSS22.0 statistical software was used to process data, measurement data were expressed as ($\bar{x}$ ±s), t test was performed, and count data was expressed as n(%), and $\chi 2$ test was performed. P<0.05 indicated that the difference was statistically significant.

3. Result

3.1 Surgical Index

There was no significant difference in the operation time between the two groups (P>0.05); the postoperative healing time of the study group was shorter than that of the control group, and the intraoperative blood loss was less than that of the control group (P<0.05) (see the Table 2).

Table 2: Comparison of surgical indicators between the two groups ($\bar{x}$ ±s)ata.

group	Number of cases	Postoperative healing time(d)	Intraoperative blood loss(ml)	operation time(min)
study group	61	7.10±1.83	30.52±5.26	30.72±4.38
control group	61	10.45±2.10	46.18±4.68	31.23±4.32
t		9.393	17.372	0.648
P		<0.001	<0.001	0.519

3.2 Aesthetic Satisfaction

The aesthetic satisfaction of the research group was 98.36% higher than that of the control group 86.89% (P<0.05) (see the Table 3).

Table 3: Comparison of aesthetic satisfaction between the two groups [n(%)].

group	Number of cases	Dissatisfied	Basic Satisfied	Satisfied	Total Satisfaction
study group	61	1(1.64)	13(21.31)	47(77.05)	60(98.36)
control group	61	8(13.11)	15(24.59)	38(62.30)	53(86.89)
$\chi 2$					4.319
P					0.038

3.3 Complications

The incidence of complications in the study group was 1.64% lower than that in the control group, 18.03% (P<0.05) (see the Table 4).

Table 4: Comparison of complications between the two groups [n(%)].

group	Number of cases	ecchymosis	double eyelid asymmetry	infect	swelling	subsides Total
study group	61	0(0.00)	0(0.00)	1(1.64)	0(0.00)	1(1.64)
control group	61	1(1.64)	3(4.92)	3(4.92)	4(6.56)	11(18.03)
$\chi 2$						9.242
P						0.002

4. Discuss

Blepharoplasty is a common surgical procedure for repairing asymmetric double eyelid, including buried suture method and incision method[8]. Incision blepharoplasty was used earlier in clinical

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practice. It has the advantages of wide application range and simple operation, but it is more traumatic, increases blood loss, increases the incidence of complications, and leaves scars after surgery; as a result, the aesthetic effect cannot achieve the desired effect[9]. Patients still need to find more effective treatment options. Embedding blepharoplasty is an important method for the treatment of asymmetric double eyelid. Compared with the incision method, it has the advantages of smaller wound, better recovery effect and higher safety. It is suitable for those with thinner upper eyelid skin. However, the postoperative maintenance effect is not good, and the thread is only embedded in the subcutaneous tissue, not directly adhered to the tarsal plate, which can easily cause subcutaneous cysts, and there are certain limitations in clinical application[10]. Therefore, there is still a need to find more effective repair solutions.

In recent years, patients with asymmetric double eyelid have gradually increased the requirements for postoperative double eyelid effect. In order to further enhance the repair effect, mini-incision degreasing and minimally invasive double eyelid surgery is proposed to repair, but the specific effect still needs further analysis. mini-incision degreasing and minimally invasive double eyelid surgery removes excess orbital septal fat through small incision, thins the thickness of the orbital periphery, and avoids the disappearance of the double eyelid sulcus due to skin relaxation around the eye caused by age factors, which is convenient for surgical operations, improves the symmetry of the double eyelid line, and is suitable for large eye blisters. Moreover, the positioning of the mini-incision is more accurate, the design and operation are relatively simple, and it is easy to find and strip the orbital septal fat. Especially the mini-incision can avoid complications such as hematoma, pain and local infection as much as possible. Embedding can effectively reduce the local resistance of the orbit, and at the same time remove part of the orbicularis oculi muscle, improve the adhesion effect of the levator aponeurosis and the tarsal plate and the skin around the eye, and effectively maintain the smooth and symmetrical double eyelid line. In addition, the combined application of the two surgical methods can play a synergistic effect and complement each other's advantages. It can strengthen the scar adhesion to produce double eyelid effect, reduce the gap between the two eyelid fissures, increase cosmetic satisfaction, and minimize the trauma to eye tissue caused by surgery, and inhibit the occurrence of complications such as blepharitis and conjunctivitis[11-12]. The results of this study showed that the postoperative healing time of the study group was shorter than that of the control group, the intraoperative blood loss was less than that of the control group, the aesthetic satisfaction was 98.36% higher than that of the control group, 86.89%, and the complication rate was 1.64% lower than that of the control group 18.03% ($P<0.05$). It can be seen that mini-incision degreasing and minimally invasive double eyelid surgery can reduce the healing time and intraoperative blood loss, improve aesthetic satisfaction, and reduce the incidence of complications.

In general, mini-incision degreasing and minimally invasive double eyelid surgery for patients with asymmetric double eyelid can optimize the surgical effect, improve aesthetic satisfaction, and ensure safety.

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