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Research Article

The Effect of Vault on Conjunctiva Combined with Fascia Sheath Suspension on the Mobility and Aesthetics of Eyelid in Patients with Ptosis

Liang Gao*, Shuang Xu, Jun Liu, Wei Luo, Jing Chen

Chengdu Wuhou Chinese Medical Union Liyuan Meidcal Cosmetology Outpatient Department Co., Ltd., Chengdu 610000, Sichuan Province, China

Abstract: ***Objective:*** To investigate the effect of vault on conjunctiva combined with fascia sheath suspension on the mobility and aesthetics of eyelid in patients with ptosis. ***Methods:*** A total of 80 patients with ptosis who were admitted to our hospital from January 2017 to January 2019 were selected as the subjects. They were divided into 2 groups with random number table method, 40 cases each. The control group was treated with modified single-incision frontalis fascia flap suspension, and the observation group was treated with vault on conjunctiva combined with fascia sheath suspension. The eyelid margin activity, aesthetics and complications were compared between the two groups. ***Results:*** The eyelid margin activity of the observation group after treatment was higher than that of the control group, the difference was statistically significant (P<0.05); the aesthetic satisfaction of the observation group after treatment was 95.00% (38/40) higher than that of the control group 70.00% (28/40) The difference was statistically significant (P<0.05); the incidence of complications in the observation group was 2.50% (1/40) lower than that in the control group 20.00% (8/40), and the difference was statistically significant (P<0.05). ***Conclusion:*** Patients with ptosis are treated with superior conjunctival fornix combined with fascia sheath suspension, which can improve the mobility of eyelid margin, and it is more beautiful and has less complications.

Keywords: Ptosis; vault on conjunctiva combined with fascia sheath suspension; Eyelid mobility; Aesthetics

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***Corresponding author:** Liang Gao, 68513002@qq.com

Ptosis is a clinically common eye deformity with a high incidence. It can be divided into neurogenic, myogenic, aponeurotic, and mechanical according to its etiology[1]. Patients with mild ptosis only affect the appearance of the eye, while severe ptosis affects the patient's normal vision and has a serious impact on the patient's daily life and work, so the ptosis should be treated as soon as possible[2]. Clinical treatment of ptosis is mainly surgery, but most of them have certain limitations. Frontalis muscle fascia flap suspension is a common surgical method in the past, but it exposes many shortcomings during surgery and is not suitable for all patients with ptosis[3]. The conjunctival fornix combined with fascia sheath suspension is a new technique for clinical treatment of ptosis, and it has achieved certain results in the treatment of patients with ptosis. In view of this, the purpose of this study was to investigate the effect of vault on conjunctiva combined with fascia sheath suspension on mobility and aesthetics of eyelid in patients with ptosis. Now reported as follows.

1 Materials and methods

1.1 Baseline data

This study was approved by the Medical Ethics Committee of our hospital. 80 patients with ptosis

who were admitted to our hospital from January 2017 to January 2019 were selected as the subjects. They were divided into 2 groups by using random number table method, 40 cases each. In the control group, there were 11 males and 29 females; aged 10-46 years, with an average age of (25.23±7.48) years; 25 unilateral and 15 bilateral. The observation group included 10 males and 30 females; aged 8-45 years, with an average age of (25.46±7.74) years; 23 unilateral and 17 bilateral cases. Comparing the general data of the two groups, the difference was not statistically significant (P>0.05), and the study was comparable.

1.2 Inclusion criteria

1.2.1 Inclusion criteria

(1)Frontal muscle function is normal; (2) Sagging≥3mm; (3) Patients and their families voluntarily sign an informed consent form.

1.2.2 Exclusion criteria:

(1) Accompanied by strabismus and diplopia; (2) Severe liver and kidney dysfunction; (3) Myasthenia jaw blink sign.

1.3 Method

1.3.1 Control group

The control group used modified single incisional frontalis fascia flap suspension: After local infiltration anesthesia along with design of double eyelid line, patients with unilateral ptosis according to the healthy side were designed double eyelid line, using methylene blue to peel off Range. The skin of the upper eyelid was cut, and 1-2 orbicularis oculi muscles were removed, until fully exposing the tarsal plate. The orbicularis oculi muscle and the fat in front of the orbital septum were sharply peeled until the orbital rim separates from the deep side of the muscle at the junction of the orbicularis oculi muscle and the frontalis muscle. The shallow and deep sides of the frontalis muscle are sharply separated upwards to 1 cm of the upper edge of the eyebrows. It is loosened inside and outside the peeled frontalis muscle fascia flap to form a T-shaped fascia flap which was pulled down into the double eyelid incision. 3-0 silk thread was fixed to the 1/3 horizontal line of the tarsal plate. Bilateral upper eyelid margin was at the upper edge of the cornea. The double eyelid was formed by Park suture. And the lower eyelid was fixed by Frost suture.

1.3.2 Observation group

Observation group used vault on conjunctiva combined with fascia sheath suspension: the incisional design and anesthesia method were the same as the control group. The upper eyelid skin was cut open, and one orbicularis oculi muscle was removed. The front of the eyelid was exposed and orbital septum opened to remove excess fat from the orbital septum, and the levator aponeurosis of the upper eyelid behind the orbital septum was exposed. Anesthesia drugs were injected deep in the aponeurosis, and then the aponeurosis and Miller muscle were cut off. A sharp separation of the conjunctiva and the Miller muscle reveals a brass-colored fascia sheath. A 3-0 silk thread is used to pass in the middle, inner and outer 1/3 of the meibomian plate, and pass out from the lower edge of the fascia sheath. It returns to the aponeurosis surface to excise the excessive Miller muscle and aponeurosis complex. The upper eyelid margin was adjusted to 1 mm below the corneal limbus, and the double eyelid incision was intermittently closed with 6-0 silk thread. The front end of the fascia sheath was pulled down, and the lower eyelid was fixed by frost suture.

1.4 Evaluation index

(1) One month after operation, the treatment of eyelid margin activity was compared between the two groups. (2) One month after surgery, the aesthetics of the two groups were compared, and the height of the eyelid fissure was evaluated. Among them, the satisfaction was head-up height <1mm, then the general satisfaction was head-up height 1-2mm, and the head-up height> 2mm was unsatisfactory. Total satisfaction = satisfaction + general satisfaction. (3) The occurrence of complications were compared between the two groups, including poor eyelid closure, poor upper eyelid morphology, and delayed upper eyelid.

1.5 Statistical methods

SPSS22.0 software was used for data processing. represents measurement data. Independent sample t test was used between groups. Count data was expressed as percentage. χ^2 test was used. Rank data was tested by rank sum test. P<0.05 was considered statistically significant.

2 Results

2.1 Activity of eyelid margin

The post-operation eyelid margin activity of the observation group was (4.82±1.42) mm, which was higher than that of the control group (4.20±1.02) mm. The difference was statistically significant (t=2.243, P=0.028).

2.2 Degree of aesthetic

The aesthetic satisfaction of the observation group was higher than that of the control group, and the difference was statistically significant (P<0.05). See Table 1.

Table 1. Comparison of aesthetic between two groups

Group	Satisfied	Ordinary	Unsatisfied	Total Satisfaction
Control group (n=40)	18(45.00)	13(32.50)	9(22.50)	31(77.50)
Observation group (n=40)	28(70.00)	10(25.00)	2(5.00)	38(95.00)
Z/χ^2		Z=2.522		χ^2=5.165
P		0.012		0.023

2.3 Complications

The total incidence of complications of the observation group is lower than that of the control group. The difference is statistically significant (P<0.05). See Table 2.

Table 2. Comparison of complication between two groups (%)

Group	Poor eyelid closure	Poor morphology of upper eyelid	Delayed upper eyelid	Total incidence
Control group(n=40)	2(5.00)	2(5.00)	4(10.00)	8(20.00)
Observation group(n=40)	0(0.00)	1(2.50)	0(0.00)	1(2.50)
χ^2				4.507
P				0.034

3 Discussion

Ptosis has a certain impact on the patient's facial aesthetics and also affects the patient's visual function, so clinically advocates early surgical correction of patients[4-5]. Frontalis muscle fascia flap suspension is a common surgical method in the past. It uses the natural contractile force of the frontal muscles for dynamic suspension, and the suspension force is more durable and safe, which can effectively improve the degree of beauty[6]. Related studies have pointed out that lifting the upper eyelid by the power of the frontal muscles is particularly suitable for patients with severe defects of the upper eyelid muscle function, but its clinical application still has certain limitations[7]. The operation of modified single-incision frontalis fascia flap suspension is more complicated. In the process of preventing the frontalis muscle flap, a large-scale dissection is required to damage the adjacent tissue blood vessels and increase the incidence of complications.

The results of this study showed that the eyelid margin activity of the observation group was higher than that of the control group, and the aesthetic satisfaction was higher than that of the control group. The incidence of complications was lower than that of the control group, indicating that The effect of hanging surgery is better for patients with ptosis used upper conjunctival fornix combined with fascia sheath suspension. It can improve the mobility of the eyelid margin, and it is more beautiful and has fewer complications. The fascia sheath is located in the anterior 1/3 space between the superior rectus muscle and the levator palpebrae superioris. The shape is an isosceles trapezoid with a long base. It consists of elastic fibers, collagen, and smooth muscle fiber tissue. Its elastic fiber content and direction of movement are relatively close to levator palpebrae superioris and can effectively replace it[8]. The vault on conjunctiva combined with fascia sheath suspension can retain the original innervation, and the vault on conjunctiva is a musculofascia composed of levator palpebrae superioris and superior rectus muscle, which is still innervated by the oculomotor nerve. It can effectively avoid the occurrence of coordinated disorder of innervation of the affected eye. At the same time, the conjunctival fornix combined with fascia sheath suspension has a small anatomical range, which can effectively avoid complications

such as supraorbital nerve and upper eyelid delay[9]; keeping the original physiological structure of the eyelid plate is beneficial to the patient's postoperative recovery. In addition, the vault on conjunctiva combined with fascia sheath suspension recover the function of the upper eyelid muscle, which makes the eyelid curvature more natural, as well as effectively improves the appearance, and its repeatable operation can effectively avoid conjunctival prolapse.

In summary, the treatment of vault on conjunctiva combined with fascia sheath suspension can improve the mobility of eyelid margin in patients with ptosis, and it is more beautiful and has fewer complications.

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