Superior rectus and medial rectus recession combined with inferior oblique muscle transposition in the treatment of congenital absence of rectus: a case report

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Absence of the inferior rectus muscle is a congenital dysplasia, which is relatively rare. It can be combined with other ocular developmental abnormalities, such as ptosis, palpebral fissure widening, epicanthus, microcornea, uveal defect, macular shift, optic nerve defect, etc.[1]. One case of inferior rectus muscle deficiency with microcornea was diagnosed and treated in our hospital. The report is as follows.

Case presentation

1.General Information

The patient, a 32 year old female, complained of esotropia with poor vision in her left eye since childhood, and had not been diagnosed and treated. Recently, she came to our hospital for treatment due to the urgent need to solve the appearance problem. The patient was in good health in the past, without history of systemic disease, premature delivery and family genetic history, denied history of trauma and eye surgery, and denied wearing glasses and allergy history.

2.Examination Information

Naked eye visual acuity: cf/1m in the right eye, LP in the left eye. Optometry: right eye -9.5d, left eye pH, visual acuity correction of both eyes does not improve. Intraocular pressure: 12.5mmhg in the right eye and 11.0mmhg in the left eye. Slit lamp: anterior segment of the right eye (-), no eyeball in the palpebral fissure area in front of the left eye, small cornea, corneal diameter is about 6mm. Eye movement: normal in all directions of the right eye; The left eye turned inward and upward, but turned outward and downward, but not to the midline. Eye position examination: od fixation 33cm reflected light, OS greater than +45 °, l/r greater than 45 °. The patient's eye position (Fig. 1).

Figure 1 eye position photo of the patient at first visit

3.Diagnosis

Initial diagnosis: left eye esotropia; Congenital microcornea of the left eye; High myopia in the right eye; Binocular amblyopia

4.Treatment

The patient had left esotropia with poor visual acuity since childhood, and his condition was stable. There were no other contraindications in the whole body. Recently, there was an urgent need to improve the appearance. On November 6, 2021, the patient underwent left eye strabismus correction under local infiltration anesthesia. Intraoperative exploration revealed that the lower sclera of the left eye was smooth, and the lower rectus muscle and its traces were not seen after the limbus to the equator, that is, congenital absence of the lower rectus muscle of the left eye, and contracture of the medial rectus muscle and the upper rectus muscle. The left medial rectus muscle recession, superior rectus muscle recession and inferior oblique muscle transposition were performed. Supplementary diagnosis: congenital absence of inferior rectus muscle

5.Treatment outcomes, follow-up, and outcomes

One day after the operation, the eye condition was reviewed: the eyelid of the left eye was swollen, the conjunctiva was congested (+ + +), the incision was flat, the suture was in place, the corneal light reflection was basically positive, and the eye movement was improved (Fig. 2). One month after surgery, the patient's appearance was significantly improved and the eye position was satisfactory (Fig. 3).

Figure 2 eye position 1 day after operation

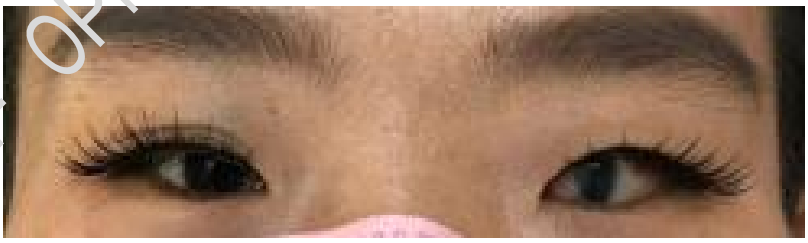

Fig. 3 eye position 1 month after operation

Discussion

This patient belongs to congenital absence of the inferior rectus muscle combined with congenital microcornea. Most of them are due to the gradual differentiation and separation of the original ocular muscle tissue when the embryo develops to 14mm, resulting in the absence or abnormality of the extraocular muscle due to the developmental disorder or poor condition at this stage [2]. In recent years, MRI, CT, B-ultrasound and other auxiliary examinations have been used to improve

the preoperative diagnosis rate. MRI examination is more reliable, but the final diagnosis is still based on intraoperative exploration of the inferior rectus muscle.

Patients with congenital absence of the inferior rectus muscle and obvious vertical strabismus and horizontal strabismus need surgery to improve their appearance. For this patient with a large number of medial and superior strabismus, consider the surgical plan: first, on the basis of the traditional surgical method of superior rectus super normal recession combined with medial and lateral rectus transfer, that is, superior rectus recession, transfer 1/2 or all tendons below the medial and lateral rectus to the attachment point of the inferior rectus muscle, and correct the vertical strabismus by changing the attachment position of the horizontal muscle. Because of the risk of anterior segment ischemia in the simultaneous operation of two extra ocular rectus muscles in a single eye, it is often necessary to perform surgery in several times clinically. In addition, the separation of anterior ciliary vein vessels under the microscope can make the operation complete at one time, but it must ensure the successful separation of ciliary vessels of two muscles, which is long and difficult; 2.Using the suture fixation of the periosteum of the inferior orbital margin, the suture can be made on the sclera at the attachment point of the inferior rectus muscle or the attachment point of the horizontal muscle to solve the upper strabismus with the periosteum of the inferior orbital margin, but there is the possibility of excessive limitation of eye movement; 3.The internal rectus and superior rectus recession combined with inferior oblique muscle transposition, intraoperative exploration of the internal rectus and superior rectus contracture, with 6-0 absorbable suture collar on the inferior oblique muscle forward displacement suture on the inferior rectus attachment point sclera in the inferior temporal quadrant, so that the role of the inferior oblique muscle changes from superior to inferior and antagonizes the excessive upward rotation of the superior rectus muscle, which can solve the large degree vertical strabismus caused by congenital absence of the inferior rectus muscle. In order to facilitate the surgical operation and eye position adjustment, the medial rectus muscle and superior rectus muscle suture recession and loose knot can be used, which is more convenient for the eye position adjustment after the inferior oblique muscle transposition. Due to the imprecise preoperative examination, the contracture of medial rectus muscle, superior rectus muscle recession and inferior oblique muscle transposition can not be accurately quantified, so the intraoperative eye position observation and suture adjustment are particularly important; Until the intraoperative correction of horizontal strabismus and vertical strabismus achieved satisfactory results. To sum up, the advantages of medial rectus and superior rectus recession combined with inferior oblique muscle transposition are as follows: 1. Reduce the risk of surgery and adjust the suture intraoperatively. 2. Try to operate once to avoid secondary surgery. The long-term eye position is stable and the appearance improvement effect is lasting. Therefore, this operation is worthy of popularization and application in clinical work [3-6].

Clinicians should consider the possibility of congenital absence of the inferior rectus muscle in patients with large degree upstropia who developed from an early age. The choice of operation plan should not only achieve the satisfactory effect of

eye position correction, but also reduce the risk of anterior segment ischemia.

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