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CASE REPORT
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Pediatric-acquired Idiopathic Blepharoptosis with the Eyelids Being Habitually Opened Using the Frontalis Muscle

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Summary: Pediatric-acquired idiopathic blepharoptosis is rare, and no studies on surgery for the disease have been reported. We present a case of the disease with an atypical postoperative course. The patient initially underwent levator aponeurosis advancement. However, she cannot sufficiently open the affected eyelid without conscious effort and has developed a habit of opening the eyelids using the frontalis muscle. She underwent secondary frontalis suspension with the fascia latae, and then she was able to open her eyelids well all the time. When the disease duration in pediatric-acquired blepharoptosis is long, the habit of opening the eyelids using the frontalis muscle may be difficult to break. In such cases, we believe that frontalis suspension is the best operation. *(Plast Reconstr Surg Glob Open 2023; 11:e5411; doi: 10.1097/GOX.0000000000005411; Published online 17 November 2023.)*

Blepharoptosis is one of the most common pediatric congenital eyelid deformities. Pediatric-acquired blepharoptosis is rare, and its incidence is much lower than that of pediatric congenital blepharoptosis.[1,2] The causes of pediatric-acquired blepharoptosis vary. Mechanical ptosis (over volume of upper eyelid) and neurogenic ptosis (disorder of oculomotor or sympathetic nerve) were initially more prevalent. Additionally, there were more cases of traumatic ptosis (injury of levator muscle or Muller muscle, oculomotor nerve, or sympathetic nerve) and myopathic ptosis (disorder of levator muscle or Muller muscle). Aponeurotic ptosis (mechanical stretching or disruption of the levator aponeurosis) is a common cause of adult-acquired blepharoptosis; however, it is a rare cause of pediatric-acquired blepharoptosis. Some cases are diagnosed as idiopathic ptosis because no specific cause could be determined.[1–3] In previous reports, 0%–15.7% and 12.4% of cases of acquired blepharoptosis in children and youths, respectively, were diagnosed with idiopathic ptosis.[1–4]

A large-scale study of surgery for pediatric blepharoptosis has been reported.[2] However, no case series study of surgery, especially for pediatric-acquired blepharoptosis, has been reported; no studies on surgery for pediatric patients with acquired and idiopathic blepharoptosis have been reported either. In view of surgical stress, levator surgery (resection or advancement of the levator aponeurosis) may be considered first for pediatric-acquired blepharoptosis. Secondary frontalis suspension is usually performed in patients who cannot open their eyelids sufficiently after levator operation because of levator dysfunction. Secondary frontalis suspension may be rarely performed for reasons other than that mentioned above.

Herein, we present a case of pediatric-acquired idiopathic blepharoptosis with an atypical postoperative course. The patient required secondary frontalis suspension by fascia latae because she had a strong habit of opening the eyelids using the frontalis muscle and could not sufficiently open the affected eyelid without conscious effort, despite having undergone levator aponeurosis advancement.

CASE REPORT

A 9-year-old girl presented to our outpatient clinic with right-sided blepharoptosis. She initially did not have blepharoptosis, but it appeared when she was 5 years old. She had a history of asthma and infectious mononucleosis but had no family history of any particular disease. A

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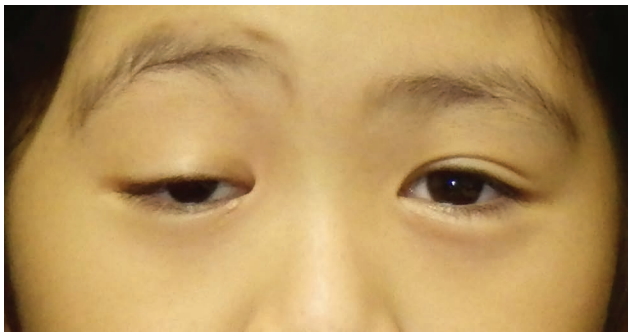

Fig. 1. A preoperative photograph of opening the eyelids (margin reflex distance: right, 0 mm; left, 4 mm).

pediatric ophthalmology specialist examined the patient and diagnosed her with acquired unilateral blepharoptosis. She was able to elevate the affected upper eyelid while viewing upward, and no daily variation in symptoms was found. No abnormal findings were detected in eyesight, eye position, or eye movement, and the patient did not have double vision. Acetylcholine receptor antibody tests were performed twice, and the results were negative; thus, ocular myasthenia gravis was ruled out. Thymoma was not detected on radiography. Therefore, pediatric ophthalmology specialists diagnosed the patient with idiopathic ptosis. Furthermore, a pediatric neurology specialist examined her because she had a chronic headache that started when she was 4 years old. Magnetic resonance imaging revealed no abnormal findings, and no reasons for the headache were revealed. The blepharoptosis symptoms remained unchanged and stable; therefore, she was referred to our department for ptosis surgery.

The preoperative images are shown in Figure 1. The levator function values were 12 mm (right) and 13 mm (left). The eyebrow on the affected side was elevated, and the patient had no Marcus Gunn phenomenon. The affected palpebral fissure did not widen while viewing downward, proving her blepharoptosis was acquired, considering her photographs before and after the appearance of blepharoptosis (at 0–4 years of age without blepharoptosis and at 5 years of age with blepharoptosis), although an overlooked diagnosis of congenital blepharoptosis with ptotic morphologic condition worsening over the years may sometimes be mistaken for acquired blepharoptosis. The patient underwent advancement of the levator aponeurosis under general anesthesia. Hypoplasia of the levator or Muller muscles was not observed, and there was no clear detachment between the levator aponeurosis and the tarsus. Based on these findings, we finally diagnosed her disease as idiopathic ptosis. It was assumed that she would be able to open the eyelids firmly using the levator muscle; hence, the levator aponeurosis was advanced and fixed to the tarsus at three points by elevating the edge of the affected upper eyelid to the height of the center of the iris under anesthesia. However, during the first year of follow-up, the degree of the affected palpebral fissure fluctuated, and her blepharoptosis did not improve sufficiently (Fig. 2).

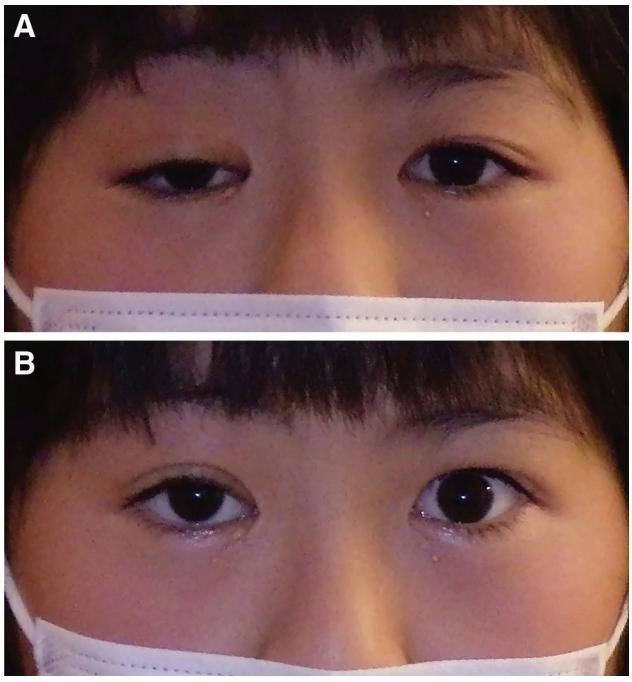

Fig. 2. Postoperative photographs 1 year after the patient underwent levator aponeurosis advancement. A, Trying to open the eyelid without conscious effort (margin reflex distance: right, 1 mm; left, 4 mm). B, Opening the eyelids using levator muscle as much as possible consciously.

We hypothesized that she developed a strong habit of opening her eyelids using the frontalis muscle. She performed the exercise to open the eyelids using the levator muscle with fixation of the frontalis using her fingers; however, she did not achieve considerable improvement. The patient then underwent secondary frontalis suspension with the fascia latae under general anesthesia. The space under the orbicularis oculi muscle and above the frontalis muscle was secured for fixation of fascia latae. The harvested fascia latae (length, 40 mm; width, 5 mm) was cut into a reverse Y shape and fixed to the frontalis muscle at one point and tarsus at two points. Under anesthesia, the edge of the affected upper eyelid was elevated 2 mm higher than the height of the center of the iris. After this operation, the patient was able to open eyelids well all the time and had no headache (Fig. 3). Two years and 9 months have passed since frontalis suspension, and these good results have been maintained.

DISCUSSION

The surgical methods for pediatric blepharoptosis mainly include levator operation and eyebrow or frontalis suspension using threads, artificial materials, or the fascia latae. The method is generally selected based on palpebral fissure width, levator function, and the function of the extraocular muscle.[2,5] Pediatric-acquired blepharoptosis may be treated when the primary disease is stable and unchanging, and the operation is expected to be promising for its improvement. Considering this point of view and surgical stress, we performed a levator operation in

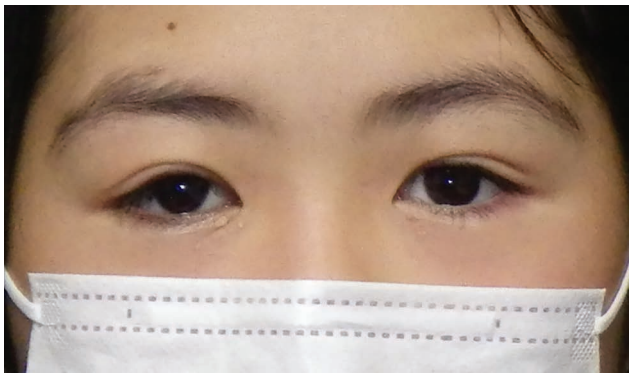

Fig. 3. An 8-month postoperative photograph of the patient opening her eyelids without conscious effort after she underwent secondary frontalis suspension (margin reflex distance: right, 3 mm; left, 3 mm).

the present case as the first choice because the levator function remained almost intact, although her symptom of palpebral fissure width was moderate.

In many cases requiring another type of secondary surgery for pediatric blepharoptosis, a suspension operation is performed following a levator operation because the levator operation cannot sufficiently improve the patient's ptosis due to levator dysfunction.[2] However, in the present case, the patient could not sufficiently open the affected eyelids without conscious effort because she developed a strong habit of opening the eyelids using the frontalis muscle, despite having undergone levator aponeurosis advancement and being able to open the affected eyelid using the levator muscle better than that before the operation. Consequently, she required secondary frontalis suspension using the fascia latae, and good aesthetic and functional results were achieved.

When the disease duration in pediatric-acquired blepharoptosis is long, the habit of opening the eyelids using the frontalis may be difficult to break in some cases, even if a levator operation is performed. In such cases, we believe that frontalis suspension is the best operation. Moreover, deactivating the frontalis muscle by botulinum toxin injection may contribute to making an effort to open the eyelids using the levator muscle more effective.

To our knowledge, no case similar to ours has been reported yet. We believe that the findings in this Case Report would assist in the therapeutic strategy decision-making for pediatric-acquired idiopathic blepharoptosis.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

PATIENT CONSENT

The patient provided written consent for the use of her image.

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