

Frontalis suspension surgery for blepharospasm with apraxia of eyelid opening: a case report

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Abstract

An 86-year-old man presented with benign essential blepharospasm with apraxia of eyelid opening unresponsive to botulinum toxin type A treatment. He was successfully treated with bilateral frontalis suspension with upper blepharoplasty. Postoperatively, he was able to open his eyes without difficulty and resume his daily activities.

Introduction

Benign essential blepharospasm (BEB) is characterized by repeated, involuntary, and intermittent forceful closure of eyelids without any ocular irritation. BEB can usually be controlled by repeat injections of botulinum toxin type A. Among patients with BEB, 7% have associated apraxia of eyelid opening (AEO). Rarely, some patients have pure AEO and were unresponsive to botulinum toxin therapy.^{1,2} Surgical treatments such as blepharoplasty, limited myectomy, aponeurosis repair, and frontalis suspension operation can be considered.³ We report on a patient who had refractory BEB with AEO and dermatochalasis and was successfully treated with frontalis suspension and blepharoplasty.

Case presentation

In September 2015, an 86-year-old man presented with a 3-year history of difficulty in opening his eyes with involuntary eyelids closure. His eyes were closed for most of

the time and could only be opened mechanically by fingers. His daily activities were greatly affected. The patient had undergone bilateral cataract surgeries. He had medically controlled glaucoma, hypertension (with Norvasc), dementia (with Exelon), iron deficiency anemia (with iron supplements) and hearing impairment (with hearing aids).

On examination, his eyes were forcefully closed with bilateral dermatochalasis (**Figure a**). His cornea, tear film, and eyelid margins were unremarkable. His intraocular pressure was within normal limits, and fundi were unremarkable. The patient was not able to follow instructions for examinations owing to dementia and eyelid spasm. Therefore, the levator function and marginal reflex distance could not be properly measured. He was initially diagnosed with BEB and was treated with repeat injections of botulinum toxin type A (17.5 units per eye per session). The botulinum toxin was injected at seven points into the orbital parts and palpebral parts (preseptal / pretarsal regions) of orbicularis oculi (four points in the upper eyelid laterally and medially, two points in the lower eyelid laterally and medially, and one at the lateral canthus). However, 3 months later, the patient still could not open his eyes. AEO was suspected, and he was referred to the oculoplastic clinic for surgical management. Frontalis suspension and upper eyelid blepharoplasty were discussed. Surgeries were performed at the left side first and then the right side. About 12 mm of skin was excised on both sides. A silicone rod was sutured directly to the tarsal plate with 6-O dermalon, and it was retrieved onto the forehead using Fascia Wright needle. Skin wounds were closed with 6-O vicryl and silk.

Postoperatively, the ptosis and dermatochalasis were corrected without any complications (**Figure b**). The patient



Figure. (a) A patient presented with bilateral benign essential blepharospasm, dermatochalasis, and apraxia of eyelid opening. (b) The patient could open his eyes after bilateral frontalis suspension with blepharoplasty.

had no lagophthalmos nor dry eyes symptoms. He was able to rapidly open his eyes and resume normal daily activities. Two more botulinum toxin treatments were given to improve blepharospasm. He was satisfied with the improvement and declined further botulinum toxin treatment.

Discussion

Frontalis suspension is a minimally invasive surgical option for blepharospasm and AEO (the latter is known to unresponsive to botulinum toxin treatment).²⁻⁷ The traction of the frontalis muscles is directed to the upper eyelids by non-elastic materials (eg, silicone rod, Gore-Tex thread).⁵ Frontalis suspension has good long-term effects and is well-accepted by patients.^{5,7} Most patients receive continued botulinum therapy to alleviate the orbicularis oculi contraction.⁵ Frontalis suspension with concomitant upper blepharoplasty achieves good cosmetic and functional results in patients with dermatochalasis.⁴

Other surgical techniques have been suggested as treatment for BEB. Selective peripheral facial nerve avulsion showed high recurrence rate and risk of facial nerve palsy.⁸ Orbicularis muscle resection (orbicularis stripping) was more effective. It involves resecting muscles for eyelid closure (the orbicularis, procerus, and corrugator muscle), but recurrence may occur

owing to incomplete removal of all orbicularis oculi.⁸⁻¹⁰

Botulinum toxin therapy is most commonly used for blepharospasm. Five type A formulations and one type B formulation are commercially available.¹¹ Various botulinum toxin type A show similar safety and efficacy, but they are not interchangeable. Botulinum toxin type B is approved by US Food and Drug Administration for cervical dystonia only.

In addition, FL-41 tinted lenses were helpful for BEB. They are rose-tinted lens that can improve light sensitivity and blepharospasm, and also reduce the mean blink rate.¹² Nevertheless, there is little information regarding the use of FL-41 tinted lenses for AEO.

In conclusion, frontalis suspension can be a treatment option for patients with BEB with AEO, especially in those who failed botulinum toxin therapy. In the presence of coexisting dermatochalasis, frontalis suspension can be combined with blepharoplasty with direct fixation of silicone rod onto the tarsal plate.

Author contributions

Concept or design: HKLY.
Acquisition of data: HKLY.
Analysis or interpretation of data: JCKC.
Drafting of the article: JCKC.
Critical revision for important intellectual content: HKLY.

The authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

As an Editor of the Journal, HKLY was not involved in the peer review process for this article. All authors have no conflicts of interest to disclose.

Funding/support

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics approval

The patient was treated in accordance with the Declaration of Helsinki. Informed consent was obtained from the patient for the operations and the publication of clinical photos.

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