Müller's muscle-conjunctival resection for correction of recurrent congenital ptosis. Report of three cases

Conjuntivo-müllerectomía para la corrección de ptosis congénita recurrente, presentación de tres casos

Carlos Fleitman-Broder*

Instituto de Oftalmología Conde de Valenciana-Centro médico ABC, Mexico City, Mexico

Abstract

Müller's muscle-conjunctival resection is a procedure for the correction of up to 3 mm of eyelid ptosis with short surgical and recovery times, and with a highly predictable outcome in patients with a positive phenylephrine test. Currently there are no reports on the literature about its use on patients with recurrent ptosis. We present three cases of recurrent congenital ptosis and fair levator function that underwent a successful Müller's muscle-conjunctival resection. One of the main concerns of using such technique in previously operated patients is the risk of existing disruption of normal anatomy that may interfere with an adequate levator aponeurosis plication, an essential part of this surgery. These cases demonstrate that it is possible to perform a successful Müller's muscle-conjunctival resection in patients with previous ptosis surgery and a positive phenylephrine test.

Key words: Congenital ptosis. Müller's muscle-conjunctival resection. Recurrent congenital ptosis. Eyelid ptosis. Blepharoptosis.

Resumen

La conjuntivo-müllerectomía es un procedimiento para la corrección de ptosis iguales o menores a 3 milímetros con un tiempo quirúrgico y de recuperación cortos y un resultado altamente predecible en pacientes con una prueba de fenilefrina positiva. Sin embargo, no existen casos reportados sobre el uso de esta técnica quirúrgica en casos de ptosis recurrente. En el presente artículo reportamos tres casos de ptosis congénita recurrente y buena función del músculo elevador, que fueron intervenidos de conjuntivo-müllerectomía y se obtuvieron resultados favorables. Una de las principales preocupaciones de utilizar esta técnica en pacientes previamente operados es que exista una disrupción de la anatomía normal que pueda interferir con el efecto de plegamiento del músculo elevador en el que se basa la técnica. Los casos presentados demuestran que es factible utilizar la conjuntivo-müllerectomía en pacientes con cirugía de corrección de ptosis previa y una prueba de fenilefrina positiva.

Palabras clave: Ptosis congénita. Conjuntivo-müllerectomía. Ptosis congénita recurrente. Ptosis palpebral. Blefaroptosis.

Correspondence:

*Carlos Fleitman-Broder

Av. Vasco de Quiroga, 4001, Torre A, 5.o piso,
consultorio 2

Col. Santa Fe, Del. Cuajimalpa, Mexico City, Mexico

E-mail: cfleitman@gmail.com

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Introduction

Congenital blepharoptosis is defined as a malposition of the upper eyelid, which is in a lower position than normal, and occurs during the first year of life. This disorder is characterized by an abnormal development of the levator muscle, with a decrease of its function¹.

The function of the levator muscle is determined by measuring the excursion of the upper eyelid from infrauction to supraduction, and is expressed in millimeters (mm). This measure is of vital importance for the treatment since it is the basis for the appropriate surgical technique in an individual basis.

Levator function was classified by Beard as poor (4 mm or less), fair (5-7 mm), good (8-16 mm), and normal (> 16 mm)^{2,3}. Patients with poor levator muscle function are usually candidates for frontal fixation surgeries, whereas an advance or resection of the levator muscle is used for cases with fair function. In cases with good function, levator advancement procedures or a Müller's muscle-conjunctival resection are indicated.

The Müller's muscle-conjunctival resection technique was described in 1975 by Putterman and Urist for the treatment of moderate ptosis with a positive response to the phenylephrine (2.5%) test⁴. This technique has more predictable and reproducible results, as well as shorter surgical times and better results in terms of eyelid contour^{5,6}.

There are articles that report good results with Müller's muscle-conjunctival resection as primary treatment for congenital ptosis; however, there are no reports in the literature regarding the use of this technique in patients with previous surgery and ptosis recurrence. In this article we present three patients with a history of surgical correction for congenital ptosis by anterior approach and with a positive phenylephrine test, who underwent Müller's muscle-conjunctival resection with good results.

Case 1

A 35-year-old male with a history of congenital ptosis and exotropia in the right eye, who underwent a levator advancement at 9 years old.

Physical examination revealed a margin-reflex distance (MRD) of 2 mm in the right eye (OD) and 4 mm in the left eye (OS), with a levator function of 12 and 16 mm, respectively. After topical instillation of 5% phenylephrine, an elevation of 2 mm was observed in the

Figure 1. Clinical photographs of case 1. Upper image: preoperative appearance with right eyelid ptosis. Central image: appearance after instillation of 2.5% topical phenylephrine (positive phenylephrine test). Lower image: appearance 1 month after right Müller's muscle-conjunctival resection.

upper eyelid; therefore, an 8-mm Müller's muscle-conjunctival resection was performed in the OD, with satisfactory results and a MRD of 4 mm in both eyes (Fig. 1).

Case 2

A 56-year-old male, with a history of bilateral congenital ptosis. At 7 years old, he underwent surgery for ptosis correction by anterior approach, with satisfactory results and progressive recurrence of ptosis over the past 5 years in both eyes.

Physical examination revealed a 1-mm MRD and a 10-mm levator function in both eyes, as well as bilateral dermatochalasis and eyebrow ptosis. Upon instillation of 5% topical phenylephrine, an elevation of both eyelids greater than 3 mm was observed.

The patient underwent a 12-mm Müller's muscle-conjunctival resection. In the same surgery, a direct elevation of the eyebrows and bilateral upper blepharoplasty were also performed. Satisfactory results were obtained with a bilateral MRD of 4 mm (Fig. 2).

Case 3

A 57-year-old male, with a history of congenital ptosis in the OD. He underwent levator advancement at

Figure 2. Clinical photographs of case 2: preoperative (upper), note blepharoptosis, dermatochalasis and bilateral eyebrow ptosis, and postoperative (lower).

Figure 3. Clinical photographs of case number 3. Upper image: preoperative appearance with right eyelid ptosis and left eyelid retraction. Lower image: appearance one month after surgery.

8 years old, with satisfactory results. He refers progressive ptosis recurrence over the past 10 years. Physical examination revealed ptosis in the OD and eyelid retraction in the OS, with a MRD of 1 and 6 mm, and a levator function of 13 and 16 mm, respectively, as well as a 1-mm decrease in left eyelid retraction

when elevating the right eyelid, confirming that the retraction is secondary to an overstimulation of the levator muscle of the left eyelid due to Hering's law of equal innervation⁷.

A 12-mm right Müller's muscle-conjunctival resection plus bilateral superior and inferior blepharoplasty was performed with satisfactory results, achieving a MRD of 4 mm in the right eye and 5 mm in the left eye (Fig. 3).

Discussion

There is a large body of scientific evidence to support the use of Müller's muscle-conjunctival resection in cases of congenital ptosis with good levator function. In 1986, Putterman, et al. conducted a retrospective study of 232 cases of ptosis, including 19 cases of congenital ptosis. In this subgroup of patients, they reported a surgical success of 100%, defined as a difference in MRD of less than 1.5 mm between eyes.⁸ In 2011, Mazow, et al. reported eight cases of unilateral congenital ptosis successfully treated with this technique, with a difference of less than 1 mm in MRD between eyes in all cases⁹.

The main advantages of Müller's muscle-conjunctival resection are the absence of a skin scar, the greater predictability of the procedure, shorter surgical times and the fact that intraoperative adjustments that require patient cooperation are not needed.

Despite all of the above, there are no reports in the literature regarding the use of this technique in patients with recurrent ptosis. One of the concerns when performing this procedure in patients with previous surgery is that the anatomical relationship between the Müller muscle and the levator muscle may have been lost, because this surgery bases its results on levator folding, as demonstrated by Marcet¹⁰, and since it is a closed technique, it is impossible to visualize these structures intraoperatively.

Conclusions

The three cases reported here demonstrate that it is feasible to perform this surgery in patients who have previous surgery for congenital ptosis correction by anterior approach and a positive phenylephrine test. However, subsequent studies with larger samples are necessary to establish the effectiveness and safety of the procedure in this type of patients.

Conflicts of interest

The author declares no conflict of interests with any of the contents or medications mentioned in this article.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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