Müller Muscle Conjunctival Resection for Blepharoptosis in Patients With Poor to Fair Levator Function

Dan Georgescu, MD, PhD
Gil Epstein, MD
Tamara Fountain, MD
Michael Migliori, MD
Geva Mannor, MD
David Weinberg, MD

ABSTRACT
It has been suggested that Müller muscle conjunctival resection might not be a good procedure for the treatment of blepharoptosis in patients with less than optimal levator function. This case series includes four eyelids (three patients) that had fair preoperative levator function (4 to 8 mm) and good response to phenylephrine. The mean preoperative levator function was 6.25 mm and the mean amount of resection was 10.25 mm. The mean preoperative marginal reflex distance was -0.50 mm and the mean postoperative marginal reflex distance was 3.38 mm. Müller muscle conjunctival resection may be effective for treating patients with fair levator function and satisfactory response to phenylephrine. [Ophthalmic Surg Lasers Imaging 2009;40:597-599.]

INTRODUCTION
Müller muscle conjunctival resection, a popular surgical procedure for blepharoptosis repair, was first introduced by Putterman and Urist in 1975 and some have recommended, perhaps as an extrapolation from the original indications for the Fasanella–Servat procedure, that Müller muscle conjunctival resection should be used only in patients with good levator function. However, no studies can be found in the peer-reviewed medical literature to support this allegation. In addition, one of the authors (DW) has previously reported a case in which Müller muscle conjunctival resection was successfully used in a patient with poor levator function. We are now presenting a case series in which Müller muscle conjunctival resection was used for the treatment of blepharoptosis in three additional patients (four eyelids) with fair levator function.

REPORT
Three patients (four eyelids), two men and one woman with acquired ptosis secondary to trauma, chronic progressive external ophthalmoplegia, and unknown cause, had Müller muscle conjunctival resection performed by three different surgeons. All had good preoperative response (> 2 mm) to topical 2.5% (2 patients) or 10% (1 patient) phenylephrine hydrochloride. The total width of tissue to be resected was guided by the results of the phenylephrine test. If the amount of eyelid elevation was acceptable, an 8-mm Müller muscle conjunctival resection was performed. A larger (9 to 12 mm) Müller muscle conjunctival resection was performed if the amount of eyelid elevation with phenylephrine was less than desired, whereas a smaller (6 to 7 mm) Müller muscle conjunctival resection was performed...
when eyelid elevation was greater than desired. Müller muscle conjunctival resection was performed in a fashion similar to that described in 1975 by Putterman and Urist.

The average postoperative marginal reflex distance (MRD₁) was significantly greater than the preoperative MRD₁ (3.38 ± 0.34 mm vs -0.50 ± 0.77 mm, respectively; P < .01) (Table). The average change in MRD₁ (ΔMRD₁) was 3.88 ± 0.69 mm and the average length of muscle resection was 10.25 ± 0.67 mm. All of the patients tolerated the procedure well and had satisfactory postoperative appearance of the skin crease and eyelid contour. However, patient 2 had 1.5 mm of asymmetry postoperatively. There were no major intraoperative or postoperative complications.

**DISCUSSION**

We obtained excellent postoperative elevation and symmetry in the two patients who underwent unilateral resection for unilateral blepharoptosis. Although these patients had the same amount of resection (9 mm) performed, the ΔMRD₁ differed by 2 mm, indicating variable response to surgery, probably related to the different etiology of their blepharoptosis. Patient 2 had 1.5 mm of postoperative MRD₁ asymmetry and the amount of eyelid elevation obtained was greater in the left than the right upper eyelid, despite a larger Müller muscle conjunctival resection having been performed on the right eye. It is possible that there is no linear correlation between the amount of resection and the postoperative MDR₁ in patients with fair levator function.

The reason why Müller muscle conjunctival resection should be effective in correcting ptosis in patients with fair levator function remains somewhat unclear. However, Müller muscle conjunctival resection did appear to be effective in some patients, and those were patients who responded well to the phenylephrine test. We have not yet encountered patients with fair to poor levator function and satisfactory response to phenylephrine who failed to respond to Müller muscle conjunctival resection.

This small retrospective study demonstrates that Müller muscle conjunctival resection can be used successfully in patients with fair and perhaps poor levator function. Although these patients may respond to Müller muscle conjunctival resection with excellent upper eyelid elevation, there may be a certain degree of unpredictability in the degree of eyelid elevation achieved with a given amount of tissue resection. A larger, prospective study would be helpful in confirming these results and establishing a quantitative algorithm for Müller muscle conjunctival resection in cases of blepharoptosis with poorer (< 8 mm) levator function.

**REFERENCES**

3. Mercandetti M, Putterman AM, Cohen ME, Mirante