Ptosis Repair by "PEANUTS" MMCR: "Pelin's Easy and Needle Up To Stretch" Müller's Muscle Conjunctival Resection Without the Putterman Clamp

Pelin Kaynak[1], Gözde Derin Şengün[2], Can Öztürker[3], Eda Akgöz[4]

[1]İstanbul Nişantaşı University Faculty of Medicine, Department of Ophthalmology, İstanbul, Türkiye
[2]Göztepe Prof. Dr. Süleyman Yalçın City Hospital, İstanbul Medeniyet University, Department of Ophthalmology, İstanbul, Türkiye
[3]İstanbul University, İstanbul Faculty of Medicine, Department of Ophthalmology, İstanbul, Türkiye
[4]Urla State Hospital, Department of Emergency Medicine, İzmir, Türkiye

Keywords

Aponeurotic ptosis, Müller's muscle conjunctival resection, Putterman clamp, phenylephrine test

Dear Editor,

Müller's muscle-conjunctival resection (MMCR) is a common surgical procedure used in the management of mild to moderate ptosis cases. Patients who have levator function ≥10 mm and respond to the 2.5-10% phenylephrine test are generally eligible for this procedure.[1] MMCR was first described by Putterman and Urist[2] in 1975. The procedure involves holding and stretching the posterior lamellar tissues using a T-shaped, serrated, and concavely curved ptosis clamp designed by and named after Putterman.[3] In this correspondence, we describe our procedure–a variation of the original MMCR technique in which a 21-gauge needle is used instead of the Putterman clamp–and present the results of three ptosis patients operated with this technique. This study adhered to the tenets of the Helsinki Declaration.

The study included three patients with mild to moderate aponeurotic ptosis (1-3 mm) and levator function >14 mm who were responsive to the 2.5% phenylephrine test. The exclusion criteria were a history of eyelid and corneal surgery or trauma, any irregularity of the eyelid contour or eyelid skin, and ocular surface abnormalities. For each eye, the margin reflex distance (MRD1) was measured by holding a penlight at eye level and recording the distance from the corneal light reflex to the upper eyelid margin in the primary position. A millimeter ruler was placed next to the eye for measurement. The resection amount was determined according to preoperative MRD1.

Before the surgery, informed consent was obtained from every patient. For local anesthesia, 0.1 mL of 2% lidocaine with 1:100,000 epinephrine was injected medially and temporally below the skin. The upper eyelid was everted over a Desmarres retractor to expose the superior tarsal border and conjunctiva. According to the measured ptosis, a caliper was set between 4 mm and 5 mm to measure above the superior tarsal border. The

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Address for Correspondence: Gözde Derin Şengün, Göztepe Prof. Dr. Süleyman Yalçın City Hospital, İstanbul Medeniyet University, Department of Ophthalmology, İstanbul, Türkiye
E-mail: gozderrn@gmail.com **ORCID-ID:** orcid.org/0000-0002-2748-3079
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resection length was marked with a disposable fine-tip cautery in the central region, then in the nasal and temporal regions after measuring 6-7 mm to each side. A 21-gauge needle was inserted into the conjunctiva and Müller's muscle temporally and advanced along the mark to exit nasally 6-10 mm away from the superior punctum and hold the tissues taut, similar to the Putterman clamp. The Desmarres retractor was then removed. Then, a 6-0 Prolene suture was passed full thickness through the eyelid laterally. A running horizontal mattress stitch was made adjacent to the superior tarsal border, through conjunctiva and the superior tarsal border on one side and through conjunctiva and Müller's muscle on the other side. The suture was then externalized medially on a 1-mm silicone bolster. Subsequently, the suture was passed back toward the conjunctiva, run in the opposite direction, and externalized and secured laterally on another 1-mm silicone bolster. The lateral ends of the suture were tied on this bolster to prevent cheese-wiring of the tissues. The conjunctiva and Müller's muscles stretched on the 21-gauge needle were excised with Stevens scissors held parallel and adjacent to the plane of the horizontal mattress suture, carefully avoiding any possibility of cutting the sutures (Figure 1). The excised tissue was left on the needle.

We call our modified technique "Pelin's Easy and Needle Up To Stretch (PEANUTS)" MMCR. Follow-ups of the three patients operated using this technique were conducted for at least 6 months. After postoperative examinations on day 1 and at 1 week, 1 month, 3 months, and 6 months, all the patients showed successful ptosis repair, which was defined as improvement (2-3 mm) in MRD1 and eyelid symmetry within 1 mm. Regular upper eyelid contours were obtained in all patients. Details of the cases are summarized in Table 1.

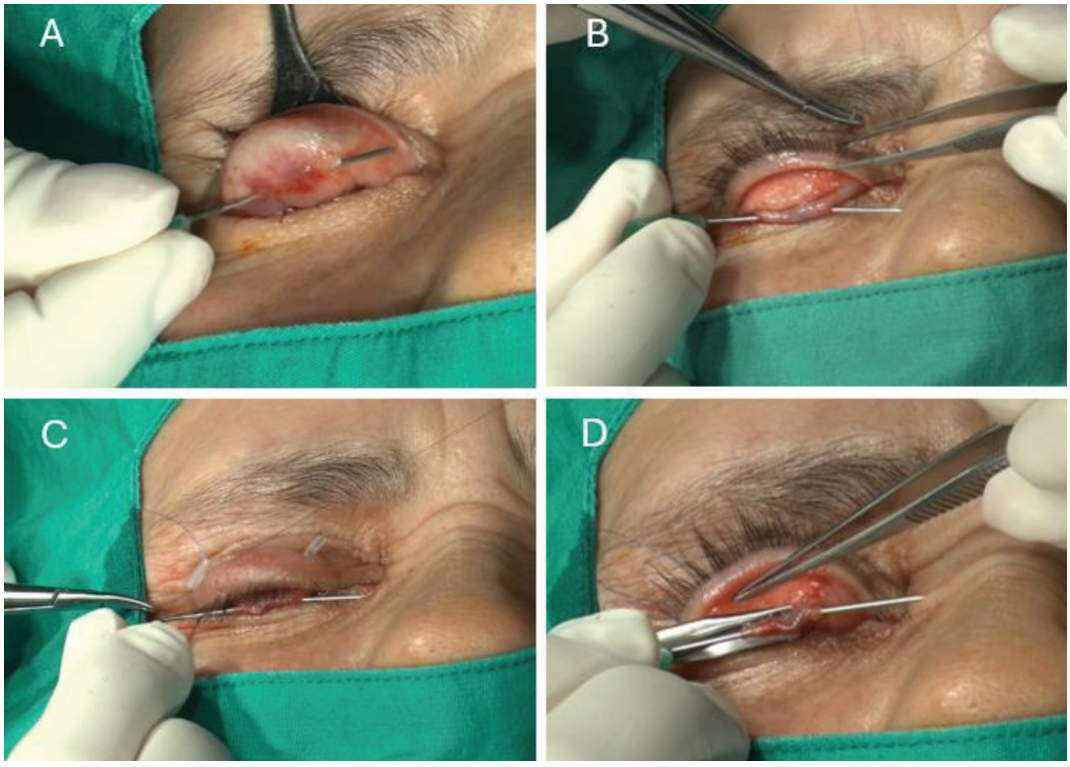

Figure 1. Surgical technique. A) A 21-gauge needle is inserted into the conjunctiva and Müller's muscle at the marking. B) The tissues are held taut with the 21-gauge needle while a 6-0 Prolene suture is used to make a running horizontal mattress stitch. C) Small silicone bolsters are left on the skin of the eyelid where the sutures are externalized, and the two ends of the suture are tied laterally. D) The conjunctiva and Müller's muscle are excised with Stevens scissors

Table 1. Clinical data of PEANUTS MMCR cases

Case no.	Age (years)	Sex	Eye	Preoperative MRD1 (mm)	Postoperative MRD1 (mm)	Complications	Follow-up duration (months)
1	46	F	Right	3	5	None	6
2	50	F	Right	2	4.5	None	6
3	44	F	Right	2.5	5	None	6

PEANUTS: Pelin's Easy and Needle Up To Stretch, MMCR: Müller's muscle-conjunctival resection, F: Female, MRD1: Margin reflex distance 1

The Putterman clamp was designed by Allen M. Putterman in 1972 to replace the two curved hemostats used in Fasanella-Servat ptosis surgery. Its main advantages include easier manipulation and increased stability compared to the hemostats.[3] During MMCR, the use of the Putterman clamp has been reported to secure the posterior lamellar tissues for resection and yield favorable surgery outcomes.[4,5] Various modifications of the original MMCR technique have also been described.[6,7] One modification with the clamp is Carruth's simplified MMCR internal ptosis repair technique, where traction sutures are not used and there is a single knot external to the eyelid.[7]

Despite the many advantages of the Putterman clamp, its limited availability, substantial cost, and need for sterilization after each surgery restrict its use. Moreover, due to the bulkier nature of the clamp, visualization of the tissues is restricted during surgery, making it challenging to position the clamp properly at the superior tarsal border. Inadvertent inclusion of tarsus into the clamp is also possible. In addition, the conjunctiva and Müller's muscle secured with the Putterman clamp can occasionally slip out of the ends of the clamp.

In this case series, we describe a variation of the original MMCR technique that utilizes a 21-gauge needle instead of the Putterman clamp to hold and stretch the conjunctiva and Müller's muscle for resection. The PEANUTS MMCR is an easy and effective ptosis repair technique with certain advantages over the original MMCR. In particular, the 21-gauge needle is a disposable, single-use tool that is easy to manipulate, widely available, and less costly than the Putterman clamp. We observed that the 21-gauge needle provided stable traction on the conjunctiva and Müller's muscle, similar to the Putterman clamp. The 21-gauge needle also allowed better visualization of the tissues intraoperatively, with a lower risk of slipping away. However, one disadvantage associated with the 21-gauge needle is its less stable nature compared to the clamp and that it may require steadier hands to operate with.

We aimed to define an alternative variation to the MMCR performed with the Putterman ptosis clamp. The PEANUTS MMCR technique was effective in our three cases, with surgical results comparable to previous MMCR procedures performed with the Putterman clamp. However, this study is limited by the small number of patients. A large series is needed to assess the consistency of the favorable outcomes of this technique.

Ethics

Informed Consent: Informed consent was obtained from all patients before surgery.

Declarations

Authorship Contributions

Surgical and Medical Practices: P.K., Concept: P.K., C.Ö., Design: P.K., C.Ö., Data Collection or Processing: G.D.Ş., E.A., Analysis or Interpretation: P.K., G.D.Ş., Literature Search: G.D.Ş., E.A., Writing: P.K., G.D.Ş., C.Ö., E.A.

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