

Graded Full Thickness Anterior Blepharotomy for Correction of Upper Eyelid Retraction: Case Report

Üst Göz Kapağı Retraksiyonunda Kademeli Tam Kat Anterior Blefarotomi

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ABSTRACT Upper eyelid retraction is a common sign of Graves' ophthalmopathy and less frequently congenital or caused by overcorrected ptosis, trauma, burn injury or weakness of the orbicularis oculi muscle from facial nerve paralysis. Upper eyelid retraction may cause photophobia, foreign body sensation, superficial punctate keratopathy, corneal ulceration and cosmetic deformity. Conservative treatment options for management of upper eyelid retraction are topical administration of artificial tears, eyelid taping, and downward massage of the upper eyelid in mild cases. Surgical treatment procedures are usually reserved for moderate and severe cases. Various surgical treatment modalities have been described for the treatment of upper eyelid retraction such as weakening of the Muller's muscle/levator complex, placement of autologous or synthetic spacer grafts between the tarsal plate and Muller's muscle/levator complex and upper eyelid loading with various materials. We present two cases that underwent graded full-thickness anterior blepharotomy surgeries for upper eyelid retraction. The first case was a 46 year old man who had had a ptosis surgery two months ago and complained of overcorrection. The second case was a 48 year old woman who had a left upper eyelid retraction due to Graves' ophthalmopathy. Successful results were obtained in both cases after graded full-thickness anterior blepharotomy for correction of upper eyelid retraction was performed.

Key Words: Graves ophthalmopathy; eyelids

ÖZET Üst göz kapağı retraksiyonu Graves oftalmopatinin en sık karşılaşılan bulgusudur ve daha az sıklıkla fazla düzeltme yapılmış ptozis olgularında, travma sonrası, yanık olgularında, konjenital olarak veya fasiyal paralizili olgularda orbiküler kasın zayıflamasına bağlı ortaya çıkabilir. Üst göz kapağı retraksiyonu yabancı cisim hissine, fotofobiye, yüzeysel punktate keratopatiye, korneal ülser ve kozmetik deformiteye neden olabilir. Hafif olgularda, topikal suni gözyaşı uygulanması, kapama yapılması ve üst göz kapağına aşağı doğru masaj yapılması gibi çeşitli konservatif metodlar önerilmiştir. Cerrahi yaklaşım ise orta ve daha ciddi olgularda tercih edilmektedir. Üst göz kapağı retraksiyonu tedavisinde önerilen başlıca cerrahi yöntemler ise Müller kası/levator kompleksinin zayıflatılması, tarsal plate ile Müller kası/levator kompleksi arasına olog veya sentetik yer tutucu materyaller yerleştirilmesi ve üst göz kapağına çeşitli materyallerle ağırlık implante edilmesidir. Bu makalede üst göz kapağı retraksiyonu tanısıyla kademeli anterior tam kat blefarotomi ameliyatı uygulanan iki olgu sunulmuştur. İlk olgu, 46 yaşında sağ gözden ptozis ameliyatı geçirmiş ve fazla düzeltme nedeniyle üst göz kapağı retraksiyonundan şikayeti olan bir erkek hasta idi. İkinci olgu, 48 yaşında, sol üst göz kapağında Graves hastalığı nedeniyle üst göz kapağı retraksiyonu olan bir kadın hasta idi. Her iki olguda da anterior yaklaşımla kademeli tam kat blefarotomi uygulanarak başarılı sonuçlar elde edilmiştir.

Anahtar Kelimeler: Graves oftalmopatisi; göz kapakları

Upper eyelid retraction is mostly associated with Graves' eye disease (GED) and it may be congenital or caused by overcorrected ptosis, trauma, burn injury, or weakness of the orbicularis oculi muscle from facial nerve paralysis.¹ Upper eyelid retraction may result in ocular symptoms including photophobia, foreign body sensation, superficial punctate keratopathy, corneal ulceration and cosmetic deformity.² Several treatment modalities have previously been described for the management of upper eyelid retraction, such as conservative treatment with artificial tears, eyelid taping, and downward massage of the upper eyelid in mild cases.²⁻⁵ Surgical interventions are usually needed to avoid complications and obtain cosmetic rehabilitation. Various surgical methods have already been described, including Muller's muscle and levator palpebrae superioris muscle recession or excision via anterior or posterior approach, marginal myotomy, and placement of autologous or synthetic spacer grafts between the tarsal plate and Muller's muscle and the levator palpebrae superioris muscle, and upper eyelid loading with various materials.³⁻⁷ In recent years, most oculoplastic surgeons have preferred the full-thickness blepharotomy procedure for upper eyelid retraction due to its easy implementation and satisfying and predictable results.⁵⁻⁷

In this study, we present two cases who underwent graded full-thickness anterior blepharotomy surgery for the correction of upper eyelid retraction. Written informed consent forms were obtained from both patients.

CASE REPORTS

CASE 1

A 46 year old man with aponeurotic ptosis who had undergone ptosis correction surgery in our clinic (Figure 1A) developed right upper eyelid retraction due to overcorrection of the ptosis (Figure 1B). At the first weekly visit, vertically interpalpebral distance was 10 mm in the right eye and 7 mm in the left eye. Artificial tears, eyelid taping, and downward massage of the upper eyelid were recommended. When there was no improvement at the second month, surgical intervention was planned.

Graded full thickness anterior blepharotomy was performed as previously described by Elner et al.⁸ After marking the upper eyelid crease, anesthesia was accomplished by means of local infiltration with 0.5% bupivacaine mixed in equal parts with 1% lidocaine, with epinephrine supplementation. The incision was initiated at the junction of the lateral and central thirds of the upper eyelid. Then all layers were incised including skin, orbicular muscle, levator aponeurosis, muller muscle and conjunctiva respectively at the superior border of the tarsal plate creating a full thickness blepharotomy. After performing approximately a 1 cm length incision, the patient was seated during the surgery in order to check whether the eyelid had reached the targeted level or not in the primary position of gaze (Figure 1C). If it did not reach a symmetrical level, the incision was extended symmetrically nasally and temporally in a full thickness fashion. When the desired upper eyelid symmetry and contour were obtained, the surgery was finalized with only the suturing of the skin with 6-0 polyglactin suture. In the follow-up visits, it was observed that the upper eyelid retraction had regressed and the surgical result was 'perfect' according to the classification system of Mourits et al.⁹ The upper 1.5 mm of the cornea in the 12 o'clock position was covered by the eyelid, the difference in the lid aperture between the left and right side was less than 1 mm, and the patient was completely satisfied and requested no further surgery (Figure 1D).

CASE 2

A 48 year old woman who had a left upper eyelid retraction because of GED was admitted to our clinic (Figure 2A). A complete ophthalmic examination was done, and best visual acuity was 1.0 according to the Snellen chart in both eyes, corneal epitheliopathy was detected at the down side of the cornea in slit lamp examination in the left eye and dilated fundus examination was unremarkable bilaterally. Vertically interpalpebral distance was 8 mm in the right eye and 11 mm in the left eye. No exophthalmos was detected with a Hertel exophthalmometer. The patient was consulted to the endocrinology department, upon which it was reported that she was euthyroid and there was no



FIGURE 1: A) Photograph of the patient before ptosis surgery with right ptosis B) Pre-operative photograph of the patient, with right upper eyelid retraction due to overcorrection of the ptosis C) Perioperative photograph of the patient while adjusting the height of the upper eyelid. D) Three months after the graded full-thickness anterior blepharotomy showing the perfect result.

(See color figure at <http://www.turkiyeklinikleri.com/journal/oftalmoloji-dergisi/1300-0365/>)

active disease, with all signs and symptoms being stable for the past year. Graded full-thickness anterior blepharotomy was performed as previously described by Elner et al. and above.⁸ During the first month of follow-up, upper eyelid retraction was regressed and the surgical result was 'acceptable' according to the classification system of Mourits et al (Figure 2B).⁹ The upper eyelid margin was within 0.5 mm of the limbus, the difference in the lid aperture between the left and the right sides was less than 2 mm, and the patient was satisfied and requested no further surgery.

DISCUSSION

The purpose of correcting upper eyelid retraction is to improve the ocular exposure symptoms such as photophobia, foreign body sensation, superficial punctate keratopathy and corneal ulceration as well as restoring cosmetic deformity.^{2,6} Various surgical methods have been described to correct upper eyelid retraction including partial thickness

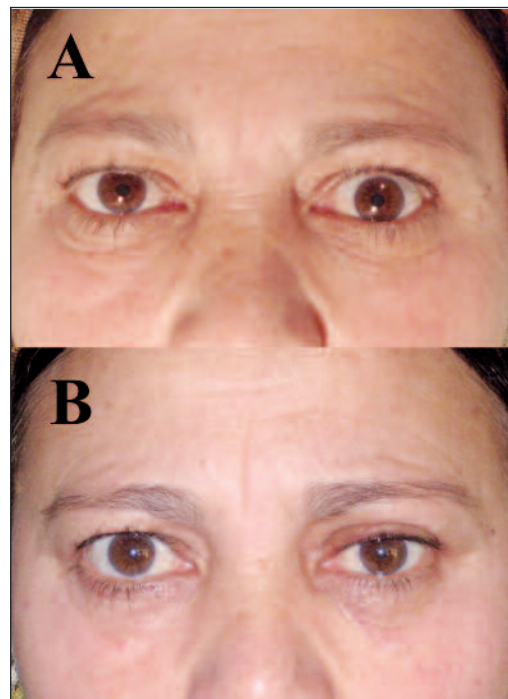


FIGURE 2: A) Pre-operative photograph of the patient, with left upper eyelid retraction caused by Graves' eye disease. B) Two weeks after the graded full-thickness anterior blepharotomy showing the acceptable result for the patient.

(See color figure at <http://www.turkiyeklinikleri.com/journal/oftalmoloji-dergisi/1300-0365/>)

eyelid dissection, full thickness blepharotomy, muscle debilitation with or without spacers, and loading weight on the upper eyelid.¹⁻¹¹ Anterior or posterior approaches for Muller's muscle and levator palpebra superioris excision or recessions have been described. Elnor et al. described the surgical procedure in detail and reported that more than 90% of patients' preoperative symptoms resolved or improved after graded full thickness blepharotomy, with a very low complication rate.^{7,8} Hintschich et al. obtained 'perfect' or 'acceptable' results at a rate of 95% of the patients according to the classification system described by Mouritis et al.^{3,9} Demirci et al. applied this procedure to patients with various conditions including overcorrected ptosis, paralytic and cicatricial groups.⁶ Although four out of six patients failed in the cicatricial group, they reported successful results in all of the patients in the overcorrected and paralytic groups. In addition, they reported no surgical or postoperative complications.

Autogenous, cadaveric, or synthetic spacer materials inserted between the tarsal plate and upper eyelid retractor muscles were used to correct upper eyelid retraction.¹¹⁻¹³ Various materials such as deep temporal fascia, fascia lata, auricular cartilage, nasal cartilage, opposite lid tarsus, conjunctiva and mucoperiosteal hard palatal grafts, and Mersilene Vicryl mesh have been used for this procedure. Extrusion, contraction, increased eyelid bulk, displacement of the graft, donor site morbidity and unpredictable long term results were the main disadvantages of these spacer materials.^{11,13}

Upper eyelid loading is an alternative method for lowering the eyelid, especially in facial nerve palsy. Acting as an upper eyelid load, hyaluronic acid filler is injected to the upper eyelid and it has been shown that it physically stents and inhibits

the levator muscle. Mancini et al. reported immediate results with minimal transient complications in a pilot study that involved 8 patients.¹⁴ In the previously published literature, retinal artery occlusions, brain infarctions and phthisis bulbi were reported after autologous fat and hyaluronic acid fillers were injected into the facial region of the patients.^{15,16} Ozturk et al. reviewed 41 articles representing 61 patients who were identified with severe complications and they determined that blindness due to embolization of the filler into ophthalmic artery was the most often complication associated with injections in the glabella.¹⁵

Gold and platinum metals are the most commonly preferred materials for loading upper eyelid. Previously, varying complication rates have been reported with these techniques.¹⁷⁻¹⁹ Egemen et al. recommended covering the gold weight to avoid common short or long-term complications such as ulceration of the skin, and extrusion and visibility of the implant.²⁰ Disadvantages of this technique are the high complication rates and the high cost of these metals.

Our cases demonstrate that graded full thickness blepharotomy is a safe, cheap and effective technique with satisfying results. It does not require any additional surgery to harvest a graft nor does it require a synthetic material to implant. Despite these advantages, when we searched Turkish ophthalmology literature, we determined that published articles about graded full thickness blepharotomy for correction of upper eyelid retraction are limited.^{4,12,21} We tried to draw attention to this technique with this case presentation.

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REFERENCES

- Bartley GB. The differential diagnosis and classification of eyelid retraction. *Ophthalmology* 199;103(1):168-76.
- Chang EL, Rubin PA. Upper and lower eyelid retraction. *Int Ophthalmol Clin* 2002;42(2):45-59.
- Hintschich C, Haritoglou C. Full thickness eyelid transsection (blepharotomy) for upper eyelid lengthening in lid retraction associated with Graves' disease. *Br J Ophthalmol* 2005;89(4):413-6.
- Banaz A, Bürümcek E, Arslan MO. [Levator aponeurosis and Muller's muscle recession for upper eyelid retraction associated with thyroid ophthalmopathy]. *T Oft Gaz* 2000;30(5): 508-12.
- Kazim M, Gold KG. A review of surgical techniques to correct upper eyelid retraction associated with thyroid eye disease. *Curr Opin Ophthalmol* 2011;22(5):391-3.
- Demirci H, Hassan AS, Reck SD, Frueh BR, Elner VM. Graded full-thickness anterior blepharotomy for correction of upper eyelid retraction not associated with thyroid eye disease. *Ophthal Plast Reconstr Surg* 2007;23(1):39-45.
- Elner VM, Hassan AS, Frueh BR. Graded full-thickness anterior blepharotomy for upper eyelid retraction. *Trans Am Ophthalmol Soc* 2003;101:67-73; discussion 73-5.
- Elner VM, Hassan AS, Frueh BR. Graded full-thickness anterior blepharotomy for upper eyelid retraction. *Arch Ophthalmol* 2004;122(1):55-60.
- Mourits MP, Sasim IV. A single technique to correct various degrees of upper lid retraction in patients with Graves' orbitopathy. *Br J Ophthalmol* 1999;83(1):81-4.
- Ribeiro SF, Milbratz GH, Garcia DM, Devoto M, Guilherme Neto H, Mörschbacher R, et al. Pre- and postoperative quantitative analysis of contour abnormalities in Graves upper eyelid retraction. *Ophthal Plast Reconstr Surg* 2012;28(6):429-33.
- Schwarz GS, Spinelli HM. Correction of upper eyelid retraction using deep temporal fascia spacer grafts. *Plast Reconstr Surg* 2008;122(3):765-74.
- Ünal M, Konuk O. [Surgical management of upper eyelid retraction in Graves' ophthalmopathy]. *MN Ophthalmology* 2003;10(1):45-9.
- Fenton S, Kemp EG. A review of the outcome of upper lid lowering for eyelid retraction and complications of spacers at a single unit over five years. *Orbit* 2002;21(4):289-94.
- Mancini R, Khadavi NM, Goldberg RA. Non-surgical management of upper eyelid margin asymmetry using hyaluronic acid gel filler. *Ophthal Plast Reconstr Surg* 2011;27(1):1-3.
- Ozturk CN, Li Y, Tung R, Parker L, Piliang MP, Zins JE. Complications following injection of soft-tissue fillers. *Aesthet Surg J* 2013;33(6): 862-77.
- Park SW, Woo SJ, Park KH, Huh JW, Jung C, Kwon OK. Iatrogenic retinal artery occlusion caused by cosmetic facial filler injections. *Am J Ophthalmol* 2012;154(4):653-662.e1.
- Bladen JC, Norris JH, Malhotra R. Indications and outcomes for revision of gold weight implants in upper eyelid loading. *Br J Ophthalmol* 2012;96(4):485-9.
- Bladen JC, Norris JH, Malhotra R. Cosmetic comparison of gold weight and platinum chain insertion in primary upper eyelid loading for lagophthalmos. *Ophthal Plast Reconstr Surg* 2012;28(3):171-5.
- Silver AL, Lindsay RW, Cheney ML, Hadlock TA. Thin-profile platinum eyelid weighting: a superior option in the paralyzed eye. *Plast Reconstr Surg* 2009;123(6):1697-703.
- Egemen O, Ozkaya O, Uscetin I, Akan M. Covering the gold weight with fascia lata graft in paralytic lagophthalmos patients. *Br J Oral Maxillofac Surg* 2012;50(4):369-72.
- Acaroğlu G, Göka Ş, Zilelioğlu O, Fırat E. [Levator aponeurosis and Muller's muscle recession in thyroid related upper eyelid retraction]. *Türkiye Klinikleri J Ophthalmol* 2004;13(2):82-7.