

CROSS-LID SWITCH FLAP FOR EYELASH RECONSTRUCTION

KARŞI KAPAKTAN TRANSFER İLE KİRPİK REKONSTRÜKSİYONU

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ABSTRACT

Eyelash area and eyelid marginal defects can be quite problematic to reconstruct in case of deficiency due to its unique features. Reconstruction of eyelashes not only contributes to aesthetic but also functional results. The switch flap technique, which aims to reconstruct eyelashes in two stages, can provide a tissue with reliable vascularity. Besides, the main advantage of the technique is the reconstruction of the eyelashes with their exact equivalents and the ability of primary closure of the donor area.

Keywords: Eyelash reconstruction; eyelid margin; reconstruction; cross-lid; switch flap

ÖZET

Kirpik bölgesi ve göz kapağı marjinal defektleri kendine has yapısı nedeniyle eksikliği durumunda rekonstrüksiyonu oldukça problemlili olabilen bir alandır. Kirpiklerin rekonstrüksiyonu, sadece estetik değil aynı zamanda fonksiyonel sonuçlara da katkı sağlar. İki aşamada kirpiklerin rekonstrüksiyonunu amaçlayan switch-flap tekniği, oldukça güvenilir vaskülariteye sahip bir doku sağlayabilmektedir. Bunun yanında, tekniğin asıl avantajı kirpiklerin birebir eşdeğerleri ile rekonstrüksiyonunu ve donör alanın primer kapanması avantajlarını beraberinde getirmesidir.

Anahtar Kelimeler: kirpik; rekonstrüksiyon; göz kapağı marjini; çapraz kapak flep

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Olgu sunumudur. Etik kurul onayı gerekmemektedir. Hastadan yazılı onam alınmıştır.

INTRODUCTION

Reconstruction of marginal eyelid defects still remains a challenge for the surgeon despite various techniques described. As with all of our practice, “replacing like with like” is the ultimate goal in reconstruction. Uniqueness of anatomy and limited donor area complicates surgical planning. Eyelid margin includes conjunctiva, tarsal plate, pretarsal orbicularis oculi muscle, skin and eyelashes. Reconstruction of each of these components is crucial for functional and aesthetic triumph.

Hair transplantation and composite grafts including eyelid margin were introduced for reconstruction of eyelashes(1, 2), Composite grafts have the advantage of containing all of the missing components and no need for hair trimming(2). Yet, graft failures and contractions have been reported(3). Another limitation is the eyelash survival rates between 14-23% with composite grafts(3, 4).

Lower lid switch flap technique is a method for eyelid margin reconstruction using ipsilateral lower eyelid for full thickness reconstruction(5). It has the advantage of containing all of the missing components without the disadvantages of nonvascularised grafting. However, donor site morbidity is a limitation. Combination of switch flap with a advancement flap facilitates primary closure.

A case treated with this technique is presented. Informed consents have been taken for treatment and publishing purposes, All of the process conducted in conformity with the Helsinki Declaration and Health Insurance Portability and Accountability Act regulations.

CASE

A 26-year-old male patient presented with partial loss of right upper eyelashes due to excision of cavernous hemangioma during childhood(**Figure 1**). Chief complaint was the aesthetic deformity due to absence of eyelashes. During physical examination 2 mm scleral exposure was found when eyes were closed without evidence of lagophthalmus(**Figure 2**). Defect was measured 24 mm horizontally. Under general anesthesia, after trimming defect edges, on lower lid, a full-thickness, medially based, 4 mm wide and 12 mm long marginal cross-lid flap and a full thickness, laterally based, 4 mm wide advancement flap were elevated. Cross lid flap's base was at the level of the lateral border of defect and advancement flap's base was at the level of lateral canthus. After inset of the cross lid flap to the defect, laterally based advancement flap was used to close the donor area(**Figure 3**). Three layered closure involving conjunctiva, tarsal plate and skin was done. After 28 days, flap pedicle was divided and margin repairs were completed(**Figure 4**). Complications such as dehiscence, scar contracture, lagophthalmus, eye dryness or ectropion were not noted in the long term follow-up.

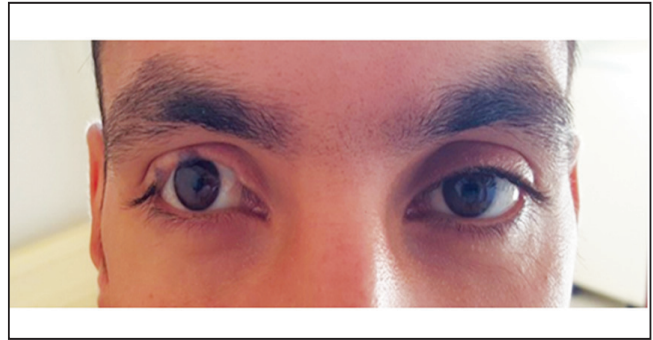


Figure 1. Preoperative view of the defect.



Figure 2. Intraoperative view of the defect.



Figure 3. After flap inset, postoperative view.

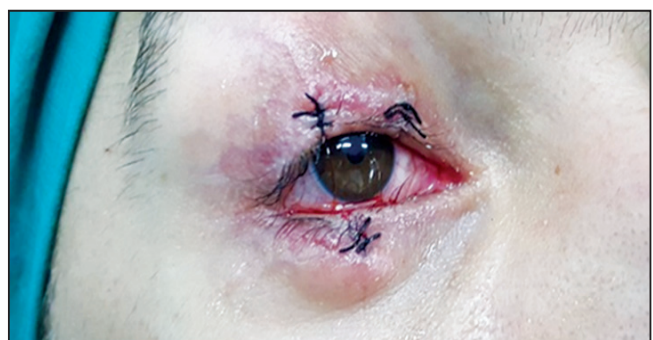


Figure 4. After flap division, postoperative view.

DISCUSSION

Layered structure of the eyelid and necessary contribution of every component possesses a surgical challenge. Conjunctiva is unique and essential for corneal protection, tarsal plate is needed for form and

support of the eyelid, pretarsal muscle fibers play a role in eye closure and delicate skin layer cloaks all of these structures. Eyelashes are aesthetically indispensable features of eyelid and they also protect globe from sweat and direct sunlight.

For marginal eyelid defects, oral mucosal grafts taken from hard palate for conjunctival and tarsal reconstruction with a local skin flap was recommended for layered reconstruction. These techniques proved efficiency on functional basis but inevitable graft contraction, possible graft loss and loss of eyelashes possibly due to relative hypoxia during graft take are pitfalls, and they also lack eyelashes and margin integrity(6, 7). Traditional local flaps such as Mustarde or Tenzel semicircular flaps also doesn't involve margin reconstruction(3).

Hair transplantation techniques using scalp, eyebrow or sideburn as donor areas were introduced for eyelash reconstruction. Coarser features of transplanted hair follicles and need for hair trimming are drawbacks(2).

Lid sharing techniques such as Cutler Beard, Hewes and Hughes tarsoconjunctival flaps offer two step reconstruction for eyelid defects(6, 8). After revascularisation, pedicle is divided and flap inset is complete. Two stage nature is surely a drawback, however, they offer replacing like with like with vascularised tissue. Presented switch flap takes place under lid sharing techniques(5). Reconstructing every single layer of eyelid with homologous tissues, preserving blood supply, maximizing eyelash survival, no need for hair trimming, and limiting morbidity to one eye are strengths of technique. With advancement flap, up to 2/3 defects of upper eyelid can be reconstructed with primary donor area closure. Marginal arcade that takes course 3.8 mm inferior to the lid margin must be included in both flaps for preserving axial flap vasculature(6).

Drawback of the technique is the inevitable monocular period which is limited to 4 weeks as in our patient. This drawback may limit application of the technique to pediatric population due to lack of patient compliance and possible amblyopia. Another drawback is upper and lower eyelash diversity, lower eyelashes are shorter and fewer. But, difference can only be noted on close examination.

Switch flap technique based on marginal arcade of the lower eyelid which makes it reliable, that gives the option for larger defect reconstruction while making primary donor area closure possible for functional and aesthetic reconstruction of eyelashes.

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