The Reconstruction of The Lower Eyelid Defect with Lower Lateral Nasal Cartilage and Mucoperichondrium Composite Graft: A New Technique

Alt Göz Kapağı Defektinin Alt Lateral Nazal Kıkırdak ve Mukoperikondrium Kompozit Greft İle Rekonstrüksiyonu: Yeni Bir Teknik

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Öz

Bu yazıda, 83 yaşında bir kadın hastada alt göz kapağı defektinin rekonstrüksiyonu için yeni bir kompozit greft ve yeni bir teknik anlatılmaktadır. Sunulan olguda alt nazal alar kıkırdak, paramedian alın flebi ile kombine greft olarak kullanılmıştır.

Anahtar Kelimeler: Alar Nasal Kıkırdak, Alın, Rekonstrüktif Cerrahi Girişimler, Göz Kapağı, Greft

Abstract

In this paper, we describe a new composite graft and a new technique for reconstruction of a lower eyelid defect in an 83-year old female patient. Lower nasal alar cartilage is used as a composite graft combined with a paramedian forehead flap in the presented case.

Keywords: Alar Nasal Cartilages, Forehead, Reconstructive Surgical Procedures, Eyelids, Graft

Introduction

Lower eyelid reconstruction is challenging as it requires good aesthetic and functional outcomes. The eyelid reconstruction techniques vary from primary closure to free flap use according to the size and location of the defect. Although primary closure is appropriate for small defects, defects exceeding 30% of the eyelid compel the use of grafts or flaps (1). The main strategy for an acceptable functional outcome is to use tissues that are similar to the defect. At least two layers of closure are required for repair of the lower eyelid. The outer lamella of the eyelid is composed of skin and orbicularis oculi muscle and the inner lamella consists of the tarsal plate, lamellae, and conjunctiva. In consideration of the histological features, two-layer repair of the eyelid may decrease the risk of complications such as epiphora, exposure keratopathy, ectropion, entropion, and lagophthalmos.

Although many techniques for lower eyelid defects have been reported in the literature, an ideal surgical technique for all defects has not yet been described. It is noteworthy that the most critical point of a surgical technique is the construction of a supporting system for the tarsal plate. Different methods such as nasal septal cartilage, ear cartilage, hard palate mucosa, or other autologous grafts have been described and used to provide acceptable support systems similar to the tarsus (2-4). It is important to restore a conjunctiva-like structure to not cause discomfort in the eye, which can be achieved successfully by mucosal graft harvested from the oral or nasal cavity (5). The use of autologous nasal mucosa is an effective method for conjunctival reconstruction due to its histological features and goblet cells (6). In this case report, we present a new method for the reconstruction of the lower eyelid partial defect by using lower lateral nasal cartilage and its mucoperichondrium combined with a forehead flap.

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Case

An 83-year-old female patient applied to our Mugla Education and Training Hospital ENT outpatient clinic, with a 3×2.2 cm expanding and non-healing ulcerated lesion located at the left infraorbital region, lateral nasal wall, and lower eyelid (Figure 1A). Incisional biopsy was performed with the preliminary diagnosis of skin cancer reported as basal cell carcinoma. Total excision of the tumor and reconstruction was planned under general anesthesia in our Mugla Education and Training Hospital ENT clinic operation room.

Tumor excision was performed with a safe surgical margin of at least 5 mm and deepened down to the periosteum. After the excision, a 3x4 cm defect formed involving the medial canthus, lower punctum, 2 mm of the lower canaliculi and approximately 50% of the lower eyelid and part of the left lateral nasal wall (Figure 1B). Upper punctum and canaliculi was preserved. The specimen was sent to the pathology department for permanent examination. Then, the lid and skin defect was reconstructed. The left lower lateral nasal

cartilage was explored from the present defect similar to the skin elevation of a rhinoplasty operation. The lower lateral cartilage was harvested similar to an alar cephalic resection but contained the perichondrium and mucosa below it as a composite graft (Figure 1C). The composite graft was shaped for proper fitting palpebral continuity. At least 1-2 mm mucoperichondrium beyond the cartilage on all sides was left to facilitate suturing it to the conjunctival plane. The composite graft was then positioned by following the concavity of the mucosal side facing internally. Only the mucosa was in contact with the conjunctiva. The graft was sutured to the periosteum of the nasal bone medially with 6/0 Prolene and laterally and inferiorly to the tarsal stumps and residual eyelid conjunctiva with absorbable sutures (Vicryl Rapid 7/0).

Figure 1. a-c. Nodular type basal cell carcinoma located at the left infraorbital region (a), defect of lower eyelid and infraorbital area after tumor excision (b), harvesting the composite graft from lower lateral cartilage and its mucosa (c).

The median or paramedian forehead flap is a workhorse for the reconstruction of nasal or midfacial defects. The most important advantage of these flaps is, they have good vascularity. (7).

The paramedian forehead flap technique is applied in two steps; the first step involves repair of the defect and the second step involves the separation of the pedicle. In the flap design, the medial cantus and the superior orbital rim are touchstones. The boundaries of the pedicle are lines that are drawn 7 mm lateral and 7 mm medial vertically from the medial cantus. The lower border of the pedicle was designated by measuring 1 cm above the superior orbital rim. (8). Subsequently, the flap was harvested and transferred to the defect side and sutured with 5/0 Prolene (Figure 2A). Three weeks later at the second stage of the technique, the pedicle was separated under local anesthesia (Figure 2B and 2C). The signs in figure 2B, indicate the composite graft, used for lower eyelid defect repair. Because that, upper punctum and canaliculi was preserved the patient did not have epiphora or eye discomfort during the follow-up period. Informed consent was taken.

Figure 2. a-c: Appearance after first step of the procedure is completed (a), appearance after three weeks from the first operation (b), the signs in figure 2b, indicate the composite graft, used for lower eyelid defect repair. appearance after paramedian forehead flap pedicule separated (c).

Discussion

Although many techniques have been described in the literature, there is no widely accepted or "gold standard" method for reconstruction of the lower eyelid. In literature, studies have demonstrated that cartilage graft harvested from the nasal septum or auricular conchal cartilage in tarsal plaque repair may provide successful outcomes. (4, 9, 10). The conchal cartilage graft has advantages because it is easy to harvest, and the convex shape may adapt to the eyeball. It has shown to be a strong supporting tissue for the lower eyelid. Although perichondrium formation on the conjunctival surface is an important advantage of this technique, it is suggested that an inner layer repair with nasal or oral mucosa provides better functional and aesthetic outcomes (5). This suggestion is associated with improved lubricity of the oral or nasal mucosal surface due to containing goblet cells and minor salivary glands (6). To the best of our knowledge, this is the first description for the use of lower nasal cartilage with its mucoperichondrium for eyelid reconstruction.

In conclusion, a new technique for repair of a lower eyelid partial defect is described. This technique may provide some advantages in lower eyelid reconstruction but further studies with more cases are needed to support this method.

Written consent: Written consents of the patients were obtained on 12.12.2018.

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