

Role of amniotic membrane and full-thickness skin graft in reconstruction of kissing nevus of eyelids

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A 20-year-old girl presented with a large pigmented lesion over the temporal aspect of left lateral canthus involving the lateral one-third of both eyelids, since birth. A slow increase in its size had been noticed for the past 2 years. On examination, a hairy nevus measuring 34 mm × 22 mm was noticed involving left eyelid skin, the mucocutaneous junction (MCJ), palpebral conjunctiva, and lateral canthus. The surface was irregularly thick and covered with long, thick, and pigmented hairs. A clinical diagnosis of kissing nevus of eyelids was kept and a surgical resection with reconstruction planned. A customized full-thickness skin graft (FTSG) and amniotic membrane grafts (AMGs) were used for the reconstruction of cutaneous and MCJ, respectively. Histopathology showed the features of junctional nevus. At 4 months of follow-up, a well taken FTSG and healthy/sharp MCJ were noticed with no recurrence. We advocate a possible role of AMG, particularly in the reconstruction of the conjunctival mucosa and MCJ.

Key words: Amniotic membrane graft, full-thickness skin graft, kissing nevus of eyelids, mucocutaneous junction, reconstruction

Kissing nevus of eyelids is a pigmented lesion distributed symmetrically over both upper and lower eyelids. It is also known as divided nevi, panda nevi, paired nevi, or split ocular nevi.^[1] Generally, it affects the eyelid margin, the mucocutaneous junction (MCJ), and conjunctival mucosa but the involvement of caruncle, punctum, and medial/lateral canthus makes it complex.^[1,2] Kissing nevus of eyelids often poses a cosmetic blemish, and occasionally, it may cause functional issues such as blepharoptosis, ectropion, amblyopia, and epiphora.^[1]

This condition was first reported by Fuchs in 1919 as divided nevi of eyelids.^[3] Since then, many authors have described various classification systems, histological grading, and surgical techniques for its excision, reconstruction, and management.^[1-4] In each case, the mucosal (conjunctival), cutaneous, and MCJ involvement should be carefully studied for excision and reconstruction using various grafts, flaps, and tissues.^[5-7] We hereby report a patient with complex kissing nevus of eyelids in whom the surgical excision was accompanied by a reconstruction with amniotic membrane graft (AMG)-assisted full-thickness skin graft (FTSG).

Case Report

A 20-year-old girl, nursing student, complained of a slowly progressive, black lesion over left lateral canthus region and eyelids since birth. There was a history of foreign body sensation on blinking specifically in the left gaze, and no surgical intervention was done for the same lesion previously. On local examination, a darkly pigmented skin lesion measuring 34 × 22 mm was observed temporal to the left lateral canthus with extension over both eyelids. Fig. 1 illustrates the clinical features

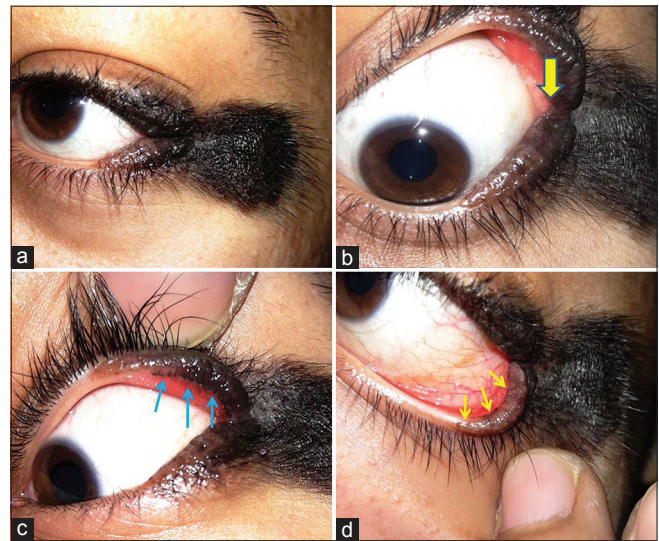


Figure 1: (a) Left eye shows a 34 mm × 22 mm, hyperpigmented lesion temporal to lateral canthus extending onto lateral one-third of upper and lower eyelids. The involved skin appears hypertrophic with overlying thick, long, and darkly pigmented hairs. (b) The yellow arrow point toward the involved lateral canthus by the nevus. (c) The superior eyelid margin, mucocutaneous junction, and palpebral conjunctiva were also involved. (d) The lower eyelid shows involvement of the eyelid margin, mucocutaneous junction, and a palpebral conjunctiva

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and extent of the lesion. On eyelid closure, the lesions appeared to be single. The lesion measured 14 mm in length over both eyelids. There was no associated lagophthalmos or blepharoptosis. There was no madarosis, ulceration, or telangiectasia, and the bulbar conjunctiva appeared normal. A clinical diagnosis of kissing nevus of eyelids with lateral canthus involvement (complex variant) was made, and a complete surgical excision along with reconstruction was planned.

Written informed consent was obtained mentioning the focal permanent eyelash loss, need for a skin graft, and its pigmentary changes. Under local anesthesia, central eyelid traction sutures (4-0 silk) were passed from both upper and lower eyelids. Keeping a 2 mm margin of normal skin, an incision was fashioned with No. 15 scalpel blade all around the skin lesion. A radiofrequency cautery-assisted dissection was performed meticulously keeping the deeper tissue plane visibly free of pigmentation. Over the eyelids, the incision was extended to the MCJ and palpebral conjunctiva. After everting the eyelids, a vigilant and conservative dissection was executed in conjunctival and lateral canthal region. The orbicularis oculi muscle, tarsal plate, and lateral canthal tendon were free of any visible pigment. The excised specimens were sent for histopathology, and frozen section samples reported overall melanocyte-free margins.

For reconstruction, the skin defect size was measured, and an FTSG was obtained from the inner aspect of the left arm, keeping 20% extra for negating graft contracture. The eyelid portion of FTSG was customized (split) to cover skin defects of both eyelids [Fig. 2a and b]. Five polyglactin (6-0) anchoring sutures were applied for better FTSG and host bed apposition. Circumferentially, interrupted sutures were applied to secure the cutaneous graft-host junction. Two AMG were used to cover the conjunctival and MCJ defects of eyelids as well as lateral canthus [Fig. 2c and d]. 8-0 polyglactin was used to secure the edges of AMG at MCJ and lateral canthus while

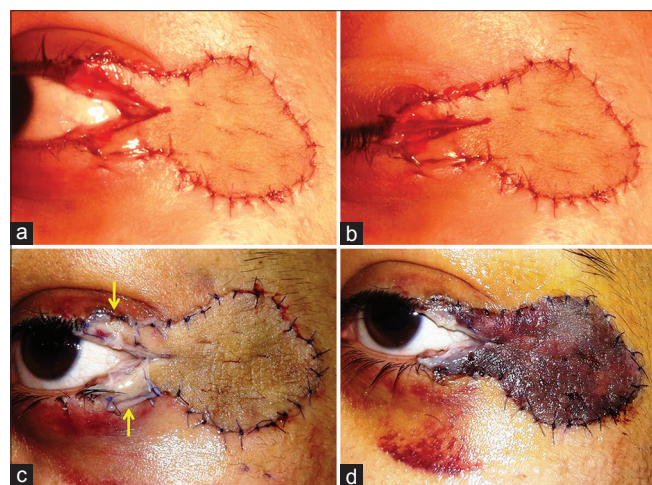


Figure 2: (a) The appearance of customized full-thickness skin graft at the end of surgery. Six slit-like openings seen for the exudation of serum or blood. Amniotic membrane graft can be appreciated at eyelid margins. (b) In eyelid closed position, the mobility of customized full-thickness skin graft is appreciable with secured lateral canthus angle. (c) Postoperative day 3, interrupted sutures of full-thickness skin graft are intact, yellow arrows point at the suture secured amniotic membrane graft over the palpebral portion of the skin graft. (d) Postoperative day 7, edematous graft showing intermittent pinkish regions suggestive of a healthy graft. No suture-related complication is noticed

fibrin glue (Tisseel, Baxter Healthcare Corporation) was used for the conjunctival site. Ointment-coated gauze pad dressing was applied with moderate pressure to prevent blanching of host bed.

The dressing was carefully removed on the 3rd postoperative day, and the FTSG and AMG were examined for security and integrity. Topical antibiotic and lubricating eyedrops and ointments were administered for 4 weeks. A weekly follow-up was scheduled, and any signs of graft infection, suture granuloma, scar dehiscence, or AMG avulsion were observed. The color changes of FTSG suggested a successful graft uptake [Fig. 2c and d]. The AMG stayed for 4 weeks. To prevent excessive graft contracture, injection 5-fluorouracil was injected in the FTSG bed at 14th and 21st day [Fig. 3a], and coconut oil massage was initiated.^[8] The histopathology report confirmed a junctional melanocytic nevus with all specimen margins free of pigmented cells.

At 4-month follow-up, a sharp MCJ with well-formed lateral canthus was attained with an asymptomatic and cosmetically satisfied patient [Fig. 3b-d].

Discussion

The eyelid has the thinnest skin of the body and demands an appropriately thin FTSG for its reconstruction.^[9] The MCJ is an important functional part of eyelid margin which is in constant contact with the eyeball.^[10] Hence, the reconstruction of both skin and MCJ is a challenge in kissing nevi of eyelids. Conservative management options (cryo, laser, dermabrasion) have been shown to provide inferior cosmetic and functional outcomes.^[1,4,10]

Recently, Bhattacharjee *et al.* described the use of AMG for reconstruction of MCJ with good results. As AMG supports the conjunctival epithelial cell division and growth, the idea of its application is helpful in indispensable conjunctival

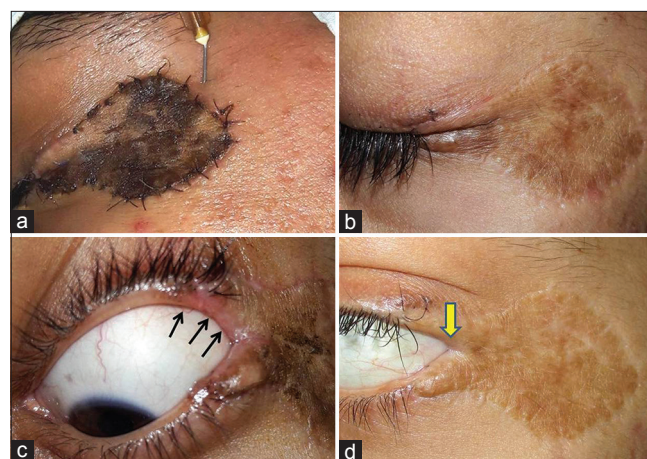


Figure 3: (a) Postoperative day 14 day showed early signs of graft contracture for which 5-fluorouracil was injected in graft bed to reduce the fibrosis. (b) At 4-month follow-up, a well-taken full-thickness skin graft with satisfactory cosmetic outcome is appreciated. No lagophthalmos and loss of temporal eyelashes are evident. (c) The black arrows point at the well-formed mucocutaneous junction of upper eyelid which provides best tear-film spread and eyelid-globe apposition. (d) Yellow arrow points at the well-formed and tumor-free lateral canthus without any residual pigmentation

mucosal reconstruction.^[10] Moreover, the antibacterial, anti-inflammatory, and antiapoptotic property along with its free availability make AMG the graft of choice for the reconstruction of eyelid MCJ.

The use of 5-fluorouracil is now fairly established to prevent or reduce the periorbital skin graft contractures.^[8] In our case, the reconstruction of MCJ and lateral canthus was the main challenge. In the largest series from China, various flaps and oral-mucosal graft were used for the reconstruction of kissing eyelid nevi.^[4] In our opinion, the oral/buccal mucosal grafts are bulkier and cause comorbidity of graft site as compared to the easier availability and utility of AMG. Due to a lack of adequate information about the mucosal and MCJ reconstruction, previous authors refrained from handling these functional components of eyelids.

Conclusion

Our patient had a classical junctional eyelid kissing nevus for which an FTSG and AMG provided satisfactory cosmetic and functional outcomes. We advocate the judicious use of AMG and report its successful combination with skin grafts for eyelid reconstruction.

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Conflicts of interest

There are no conflicts of interest.

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