

SPLIT LATERAL FOREHEAD FLAP FOR RECONSTRUCTION OF UPPER AND LOWER EYELIDS

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ABSTRACT

Introduction: Eyelids reconstruction after tumor resection has been one of the most challenging procedures in reconstructive plastic surgery. Small defects may be closed by primary suture or covered by small local flaps or skin graft. But in large eyelids defects, we need to find a bigger source of color and texture matching tissue that will ensure functional and aesthetic outcomes. Many techniques have been described, but in this case, the author suggests a split lateral forehead flap designed to cover upper and lower eyelids.

Case Illustration: A Male 51 years-old-patient, presented himself in our clinic with a basal cell carcinoma involving the right upper and lower eyelids. The tumor had a history of 7 years, without any pain or vision disorders involved. Tumor was widely excised, leaving a full thickness on upper and lower eyelids. The inner lining palpebral was replaced by composite auricular graft following bilateral cantopexy. A lateral forehead flap raised with a right temporal pedicle, and the distal part of flap was split in half, and inset into the upper and lower eyelids defect. The donor region was closed with an STSG from Femur Dextra. After 14 days the flap was divided, the functional result was excellent.

Discussion: At first, surgeons were worried of raising forehead flaps beyond the midline, fearing that by splitting the distal flap would cause its compromise. However, rich anastomotic plexus exists between the major forehead angiosomes lined by the smaller calibre "choke" vessels.

Conclusions: Periorbital Basal cell carcinoma resection may leave great defect to the underlying tissue. The need to provide adequate support to this structure requires complex techniques with minimum two flaps. In our case, we performed a split lateral forehead flap with a good functional and cosmetic outcome.

Highlights:

1. Split Lateral Forehead Flap Technique was successful.
2. Eyelid Reconstruction was Challenging.

INTRODUCTION

Basal cell carcinoma (BCC) has a predilection for the periorbital region, which is a special, prominent, cosmetic, functional area to protect the eyeball. For squamous cell carcinoma and melanoma, extensive resection with reconstruction is performed. In contrast, for BCC, resection is often confined to a small to medium-sized

area, necessitating higher quality reconstructive surgery³. These tumors are usually diagnosed by incisional biopsy. Following tumor removal in the periorbital region, reconstruction of the defect requires understanding of the differences and uses of soft tissue flaps and skin grafts⁸. Many techniques have been described and it can be classified considering the anatomical

area requiring treatment: superior eyelid, inferior eyelid, and inner or external canthus¹. Flaps are usually preferred over grafts because homogeneity of skin color and texture more likely leads to better unification with surrounding tissue⁷. The ultimate goal of every eyelid reconstruction is to create a stable eyelid margin, to ensure the eyelid has proper dimensions and tension when open and closed, to obtain eyelid symmetry with no rough or uneven internal surfaces, and to optimize aesthetics⁸.

CASE ILLUSTRATION

51-years-old male was presented with chronic wound since 7 years ago on his right upper and lower eye lid. At first it appears as a nodule which grows slowly, and hardened with a blackened appearance. The computed tomographic scan showed lesions size 1.17x3.11x0.81 cm in the soft tissue of the right periorbital region of the lateral side which infiltrate up to *Musculus Orbicularis Oculi* and extends to the right palpebra soft tissue. The pathological examination confirm it was Basal Cell Carcinoma.



Figure 1. Basal Cell Carcinoma on Right Eyelids

Tumor was widely excised, leaving a full thickness on upper and lower eyelids. A lateral forehead flap raised with based on the right temporal artery transversely across the forehead. Upon elevation, the flap design encompass the whole forehead area just below the hairline up to the upper edge of eyebrows, from one pedicle

reaching the full contralateral forehead. This is done in order to leave a donor defect which suits the forehead aesthetic unit. The flap is elevated just above the pericranium layer, then shaped as necessary into the dimensions needed to cover the primary defect. In this case, the distal part of flap was split in half, and inset into the upper and lower eyelids defect.

Inner lining palpebra superior and inferior was replaced by composite auricular graft then following by lateral cantophexy. The donor region was closed with an STSG from Femur Dextra. Fixation sutures was done pericranial base serves as a rigid and immobile graft bed. To maintain pressure, tie-over dressing applied, allow 5 days before the first dressing change. By 24 hour monitoring, it has been showed the survival of flap without any bleeding or ischemic part. After 14 days the flap was divided, the functional result was excellent.

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Figure 2. Post Excision of Tumor



Figure 3. Placing Composite Graft on Palpebral Superior and Superior

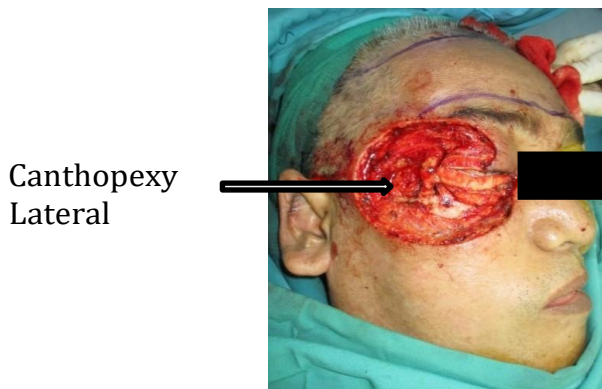


Figure 4. Lateral Canthopexy

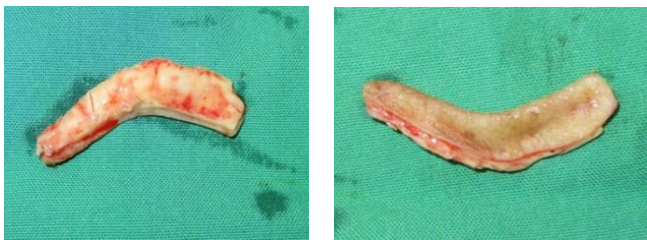


Figure 5. Composite Auricular Graft



Figure 6. Elevation of Lateral Forehead Flap



Figure 7. Defect Covered by Split Lateral Forehead Flap, Donor Covered by STSG from Femur Dextra



Figure 8. 14 Days After Flap Placement, Distal Part as Divided from The Base

DISCUSSION

There are fundamental guidelines that should be followed with every reconstruction effort. First, the surgeon should assess the defect. This patient had large defect involves right upper and lower eyelids due to wide excision of tumor. There exists no singular flap that can address all full-thickness upper and lower eyelid and medial canthus defects. Thus, a minimum of two flaps is required for these types of combined defects⁵. But in this case the surgeon suggest using split lateral forehead flap rather than use multi techniques.

The forehead flap is acknowledged as the ideal donor for midface reconstruction due to its color and texture match, vascularity, and ability to resurface all or part of the reconstructed area⁹. Its supplied by superficial temporal arteries, and ophthalmic arteries each consisting of the

supraorbital and supratrochlear arteries². At first, surgeons were worried of raising forehead flaps beyond the midline, fearing that by splitting the distal flap would cause its compromise. However, a vascular study using micropaque injections on the superficial temporal artery in cadavers shows that rich anastomotic plexus exists between the major forehead angiosomes linked by the smaller caliber “choke” vessels⁴. Fortunately, at 24 hour post operative evaluation, the vascular status of flap was excellent which monitored by observation of color and has no tendencies to bleeding or ischaemia on flap site. After 14 days the flap was divided, the functional result was excellent.

CONCLUSION

Periorbital Basal cell carcinoma resection may leave great defect to the underlying tissue. The need to provide adequate support to this structure requires complex techniques with minimum two flaps. In our case, we performed a split lateral forehead flap with a good functional and cosmetic outcome.

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CONFLICT OF INTEREST

None.

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None.

AUTHORS CONTRIBUTION

IGANWP contributed to the study design, methodology, and manuscript

writing, SR contributed to project administration, and content revision.

REFERENCES

1. Actis AG, et al. Reconstruction of the Upper Eyelid with Flaps and Free Grafts after Excision of Basal Cell Carcinoma. *Case Reports in Ophthalmology*. 2011;2(3): 347-353.
2. Houseman ND, et al. The angiosomes of the head and neck: anatomic study and clinical applications. *Plast Reconstr Surg* 2000; 105:2287-313
3. Kakudo, N., et al. Clinical Outcome of Surgical Treatment for Periorbital Basal Cell Carcinoma. *Ann Plast Surg*. 2009;63: 531– 535
4. Mangold U, et al. The arteries of the forehead as the basis of nasal reconstruction with forehead flaps. *Acta Anat (Basel)* 1980;107:18-25.
5. Motomura, H. et al. A combined flap reconstruction for full-thickness defects of the medial canthal region. *J. Plast. Reconstr. Aesthet. Surg*. 2006. 59 (7):747–751.
6. Orbit, Eyelids, and Lacrimal System, section 7, *American Academy of Ophthalmology*, 2011.
7. P. Fogagnolo, et al, “Partial and total lower lid reconstruction: our experience with 41 cases,” *Ophthalmologica*, 2012. 228(4):239–243.
8. Scott M. Hayano, et al, “Principles of Periocular Reconstruction following Excision of Cutaneous Malignancy,” *Journal of Skin Cancer*, vol. 2012, Article ID 438502, 6 pages, 2012
9. Thorne CH, et al, eds. *Grabb and Smith’s Plastic Surgery*. 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2014:389-96.