Case Report

Reconstruction of the Nasolabial Fold Using Island Pedicle Flap: A Systematic Approach for Flap Design

Andrew Yoshihiro Wirya[1], Ketut Kwartantaya[2], I Gusti Nyoman Darmaputra[3], Nyoman Yoga Maya Pramita[4], Herman Saputra[5]

Abstract

Reconstruction of nasolabial defects following wide excision presents both functional and aesthetic challenges. We report the case of a 65-year-old female with basal cell carcinoma in the nasolabial region who underwent a 5-mm wide excision followed by reconstruction using an island pedicle flap. The flap demonstrated excellent viability, and follow-up revealed satisfactory wound healing with minimal scarring. This case highlights the versatility and safety of the island pedicle flap for defect repair in the nasolabial region. Successful outcomes depend on careful flap design with attention to anatomic distortion, vascular supply, technical execution, and aesthetic considerations. The island pedicle flap remains a reliable and effective option for reconstruction of nasolabial defects after tumor excision.

Keywords: Surgical Flaps, Reconstructive Surgery, Basal Cell Carcinoma, Nasolabial fold.

How to Cite this Article: Wirya AY, Kwartantaya K, Dermaputra IGN, Pramita NYM, Saputra H. Reconstruction of the Nasolabial Fold Using Island Pedicle Flap: A Systematic Approach for Flap Design. J Pak Assoc Dermatol. 2025;35(4):359-362.

Received: 04-09-2024 **Revisions:** 19-05-2025 **Accepted:** 25-09-2025

Authors Affiliation: [1-4]Dermatovenereology, Udayana University/Prof. Dr. I.G.N.G Ngoerah General Hospital Dermatovenereology Department, Indonesia, [5]Pathology, Udayana University/Prof. Dr. I.G.N.G Ngoerah General Hospital Pathology Department, Indonesia

Corresponding Author: Dermatovenereology, Udayana University/Prof. Dr. I.G.N.G Ngoerah General Hospital Dermatovenereology Department, Indonesia

Email: darmakulitbali@gmail.com

Introduction

Reconstructing a defect in the nasolabial region, especially after wide excision, remains a considerable challenge for surgeons, especially as nasolabial folds are a prominent feature of the midface, producing an aesthetically acceptable result is even more difficult due to the required symmetry to the contralateral side. Here we report a case of a 65-year-old female with basal cell carcinoma on her left nasolabial region.

Case Report

A 65-year-old female with a history of extensive sun exposure came to the dermatovenereology outpatient clinic worried about a dark, enlarging mole on her left cheek. She was subsequently diagnosed with basal cell carcinoma (Figure 1A-D) Dermoscopic examination showed an asymmetric lesion with irregular rolled borders, arborizing vessels, and multiple blue-gray globules with central ulcerations. These results heavily influenced our diagnosis to favor basal cell carcinoma. A preoperative procedure was conducted with normal physical examinations, and all laboratory values were within normal limits. A 50 mL of simple tumescent anesthesia with epinephrine, lidocaine, and normal saline was used in this procedure to provide a safe and relatively bloodless operating area. Owing to the tumor's size and location, a 5-mm wide excision was performed along the nasolabial fold, and an island pedicle flap was chosen to close the surgical defect. Histopathology reports showed a mixed type (infiltrating, superficial, and nodular) Basal Cell Carcinoma. The first follow-up

Figure 1: *A & B. Initial Basal Cell Carcinoma Lesion C. Three days after surgery D. Three weeks after surgery.*

Figure 2: *Successful Island Pedicle Flap Surgery Results in Faint Scarring After seven months.*

on the third day showed satisfactory wound healing with no signs of tissue necrosis or hematoma. Subsequent follow-up showed excellent post-operative recovery, leaving only faint traces of scar (Figure 2).

Discussion

The flap is defined as a unit of tissue of variable composition that is transferred from one site to another while maintaining its original blood supply.[1] Flaps are categorized into several categories according to their design, composition, and vascularrization.[2] Common flap designs in dermatologic surgery can be divided into advancement, rotation, and transposition. Composition in facial flaps usually contain epidermis, dermis, and subcutaneous tissue. Blood supply is supplied randomly by unnamed vessels beneath the tissue due to the wealth of vascularization in the facial area. Flap design requires a few pre-operative considerations, such as the possibility of nearby anatomic distortions such as the eyes, nose, ears, and lips, skin reservoir, tension redirection, and extensibility. The second consideration is flap viability. It is imperative to choose and design flaps to be viable donors. There are design rules to abide such as a 2-3:1 ratio of the width and minimal tension to ensure adequate vascular supply. Flap length of more than six centimeters also decreases perfusion and high-tension flaps. Other factors that may affect vascular supply are higher temperature, sympathetic nerve fibers, excessive sweat glands, and smoking habits. Flap donors require at least ten times the nutritional requirement compared to normal tissue.[3] The third consideration is technique; with the face divided into several cosmetic units and lines of resting tension, it is crucial to design a flap that does not cross cosmetic units of the face, and incision lines should be made along the lines of resting skin tension to provide an aesthetically excellent outcome.

A wide 5-mm excision margin was done in this patient due to the location and size of the tumor are considered to be high-recurrence basal cell carcinoma.[4] Due to the size and area of the defect, primary intention approximation is not possible, and flaps are needed to close the defect.[5]

Island Pedicle Flap, also known as V-Y flap or kite flap, is a type of advancement flap made by designing the flap as an isosceles triangle with the defect at its base and the entire base of the flap is undermined.[1,6] The base of the flap is intended to be as wide as the widest portion of the defect, and the lateral side of the triangle is of the same length along the nasolabial fold. Perfusion of this flap is derived through the intact bridge of subcutaneous tissue beneath it. Advancement of the tissue is obtained owing to the laxity in the subcutaneous plane both beneath and lateral to the flap.[7] This is a very versatile flap and can be used to reconstruct matching tissue from the contiguous area, as shown in this patient with a tumor originating from the nasolabial fold. A Hungarian study has proposed using this technique to reconstruct wide defect and maintain the contour in the nasolabial area.[8] Similar techniques are also used to reconstruct defects near the alar or even on the perialar skin, as reported by case reports from Bandung and Korea.[9,10]

Simple modified tumescent anesthesia using 2 mL Lidocaine HCl 20 mg and Epinephrin 12,5 mcg/mL and 8 mL of 0.9% Normal Saline was performed in this patient to provide anesthesia, minimize blood loss, and provide sufficient cushion beneath the operating area to reduce the risk of trauma to the surrounding area. 50 mL of the solution was injected subcutaneously. The design of the flap and the approximation of the surgical defect need to account for the expansion of the tissue due to the tumescent solution. This solution is absorbed in a few hours, and flawed designs may reveal themselves after the solution is completely absorbed.

Conclusion

A 65-year-old woman was diagnosed with basal cell carcinoma of the nasolabial fold area; considering the size of the lesion as a high recurrence zone for basal cell carcinoma, a wide excision was performed with a margin of 5 mm. The need for wide excision complicates the closure of the defect with primary intention. Therefore, an island pedicle flap was required to close the defect. This flap design was chosen after considering anatomical distortion, flap viability, aesthetics, and technique. On subsequent follow-up, it was noted that the wound healing was excellent without any necrosis or infection, indicating good flap viability, and only minimal scarring was found (Figure 1A-D).

Conflict of Interest: There was no conflict of interest to be declared by any authors.

Funding Source: None.

Author's Contribution

AYW: Conceived, designed, edited the manuscript, given final approval of the version to be published, critical revisions.

KK: Manuscript writing, final approval of the version to be published.

IGND: Manuscript writing, final approval of the version to be published.

NYMP: Edited the manuscript, given final approval of the version to be published, critical revisions.

HS: Manuscript writing, final approval of the version to be published.

References

1. Li JH, Xing X, Liu HY, Li P, Xu J. Subcutaneous island pedicle flap: Variations and versatility for facial reconstruction. Ann Plast Surg 2006;57(3):255–9. Doi: 10.1097/01.sap.0000221639.76906.3a.
2. Degner DA. Facial Reconstructive Surgery. Clin Tech Small Anim Pract 2007;22(2):82–8. Doi: 10.1053/j.ctsap.2007.03.009
3. Ebrahimi A, Motamedi MHK, Koushki ES, Nejadsarvari N. Applications of kite flap in reconstruction of cheek defects after tumor excision. Maced J Med Sci 2012;5(3):313–6.
4. Drucker AM, Adam GP, Rofeberg V, Gazula A, Smith B, Moustafa F, et al. Treatments of primary basal cell carcinoma of the skin: A systematic review and network meta-analysis. Ann Intern Med 2018;169(7):456–66. Doi: 10.7326/M18-0678.

5. Krathen RA, Meunnich E, Donnelly HB. Island pedicle flap for alar defects. Dermatologic Surg 2010; 36(3):386–91.
Doi: 10.1111/j.1524-4725.2009.01450.x.
6. Omidi M, Granick MS. The versatile V-Y flap for facial reconstruction. Dermatol Surg. 2004;30(3):415-20.
Doi: 10.1111/j.1524-4725.2004.30113.x
7. Monarca C, Rizzo MI, Palmieri A, Chiummariello S, Fino P, Scuderi N. Comparative analysis between nasolabial and island pedicle flaps in the ala nose reconstruction. Prospective study. In Vivo. 2012;26(1):93-8.
8. Mohos G, Kocsis Á, Erős G, Korponyai C, Varga Á, Bende B, et al. Reconstruction of Alar-Perialar Defects with a Combined Subcutaneous and Cutaneous Pedicled Rotation-Advancement Nasolabial Flap. J Investig Surg 2020;33(7):666–72.
Doi: 10.1080/08941939.2018.1538397.
9. Sutedja EK, Ahmed R, Sutedja E, Rowawi R, Suwarsa O, Gunawan H. A successful defect closure after total excision of seborrheic keratoses with atypical clinical presentation using island pedicle flap in an elderly patient. Int Med Case Rep J 2021;14: 157–61. Doi: 10.2147/IMCRJ.S294839.
10. Yi SM, Lee KG, Kim JH, Choi JE, Ro KW, Kim IH. Single-stage reconstruction of nasal ala and perialar defect with island pedicle flap and Burow's graft. Dermatol Surg. 2011;37(6):851-4.
Doi: 10.1111/j.1524-4725.2011.01963..x.