

Aesthetic Restoration in Central Facial Basal Cell Carcinoma: Surgical Excision and Flap Techniques

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Abstract

Background: Basal cell carcinoma, also referred to as rodent ulcer is the most common skin cancer seen worldwide. It is a slow-growing tumour that rarely metastasizes. Basal cell carcinoma is rarely fatal, but it can cause significant damage and disfigurement of nearby tissues if treatment is delayed. The first line of treatment is surgical excision, followed by primary repair of the defect. The face is the most commonly affected site with skin tumours. Thus, locoregional flaps are commonly used for the closure of defects due to their good texture and colour match. Skin flap techniques like transpositional flaps, advancement flaps or rotational flaps can be used to close facial defects.

Aim: This study aims to outline the different categories of flaps that can be used for reconstruction after resection of facial basal cell carcinoma and their advantages and disadvantages.

Methods: We retrospectively analysed the patients who underwent surgical excision of basal cell carcinoma followed by reconstruction with different local fasciocutaneous flaps.

Results: This study describes cases of facial defects following basal cell carcinoma excision surgery closed with different flaps. All the patients were followed up for 6 months post-excision and showed acceptable functional and cosmetic results. All the flaps were healthy without any complications.

Conclusion: Based on our observations, local flaps yield acceptable outcomes for facial restoration following surgical excision of basal cell carcinoma. Depending on the area involved, different flap techniques can be used to improve cosmetic outcomes and patient satisfaction.

Conflicts of Interest: The Authors declare no conflicts of interest.

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Introduction

Approximately 75% of nonmelanoma skin cancers are basal cell carcinomas, which are the most frequent type of skin cancer worldwide (1). It is usually seen in older patients, especially those exposed to ultraviolet radiation during their lives. Thus, basal cell carcinoma is often observed in the head and neck areas, especially the eyelid and nose. Various treatment modalities are recommended such as surgery, cryotherapy, radiotherapy, curettage and electrodesiccation. Surgery is the treatment of choice that is often associated with small or

large defects. Because local fasciocutaneous flaps are easily accessible, have a good texture, are coloured, and have a greater success rate, they are frequently employed for defects. Advancement flaps, nasolabial flaps and forehead flaps are the flaps that are frequently utilized for basal cell carcinoma of the face.

Methods

This is a retrospective analysis of patients who had primary reconstruction utilizing local fasciocutaneous flaps after surgical excision of

facial basal cell carcinoma at our institute from April 2023 to December 2023. For this review, patients diagnosed with facial basal cell carcinoma that were reconstructed with local flaps were included. In all the patients, histopathological examination was done before undertaking the surgical excision. Also, all margins of the excised lesion were found to be free of tumour on histopathological examination. There no distant or regional metastases in any of the patients.

Surgical Reconstruction

V-Y advancement flap (Figure 1)

This kind of sliding subcutaneous advancement flap is frequently utilized to correct lateral cheek or lid abnormalities (2).

The area of lesion excision and the flap were designated preoperatively with the margin of defect constituting the base of the triangle for V-Y advancement, as seen in Figure 1a. After the tumour was excised and all margins were confirmed to be clear, the defect was repaired by dissecting the V-Y flap and moving it anteriorly using a subcutaneous pedicle (2).

In situations where a structure or region needs to be extended or released from a contracted state, the V-Y advancement flap comes in handy. This flap is advantageous over other local flaps due to less scarring and superior aesthetic results, but it can also be associated with lower eyelid ectropion if not delineated properly.

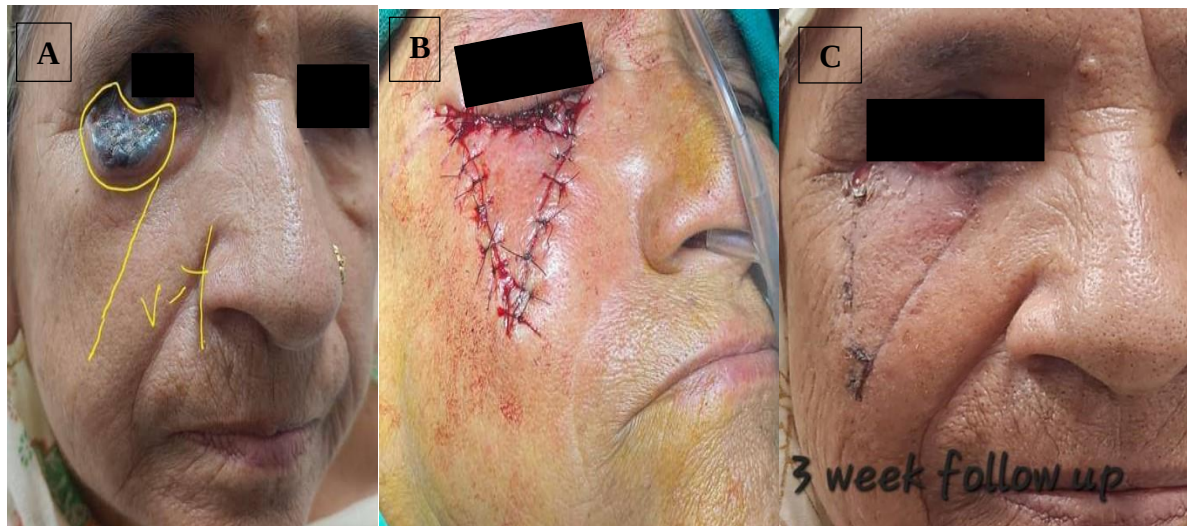


Figure 1: V-Y advancement flap. (A) Area of the lesion involving the lower eyelid and flap marked preoperatively. (B) the repaired defect using V-Y advancement flap and (C) 3 weeks follow up post excision.

Rhomboid flap (Figure 2):

The rhomboid or LIMBERG flap is incredibly adaptable as a random pattern flap can be raised from any or all of the corners of the rhomboid. (3) the flap is a parallelogram with two angles of 120 degrees and two of 60 degrees. These angles can however be modified based upon the shape of the defect. The longitudinal axis of the rhomboid excision is positioned by the flap design parallel to the line of least skin tension. To avoid an elevated hump when transferred, the elevated flap requires sufficient subcutaneous fat and dissection must extend

past its base. This is a commonly used flap for the closure of primary defects of the facial region and also anywhere in the body.

Unilateral advancement flap (Figure 3):

Unilateral advancement flap is a single pedicled cutaneous flap. Based on the shape of the closure, it is also termed as U-plasty or the O-to- U flap. The flap is designed in such a way that two parallel incisions are made to enable movement in a linear vector. Burow triangles may need to be excised to correct standing cone deformities (4).

This type of advancement is useful in areas such as the forehead where the incisions are made along the hairline or the brow. It can also be used in areas of the upper lip, cheek,

nasolabial sulcus, or nasal dorsum. A particular type of U-plasty called the rintala flap advances glabellar skin inferiorly to correct nasal dorsum deformities (4).

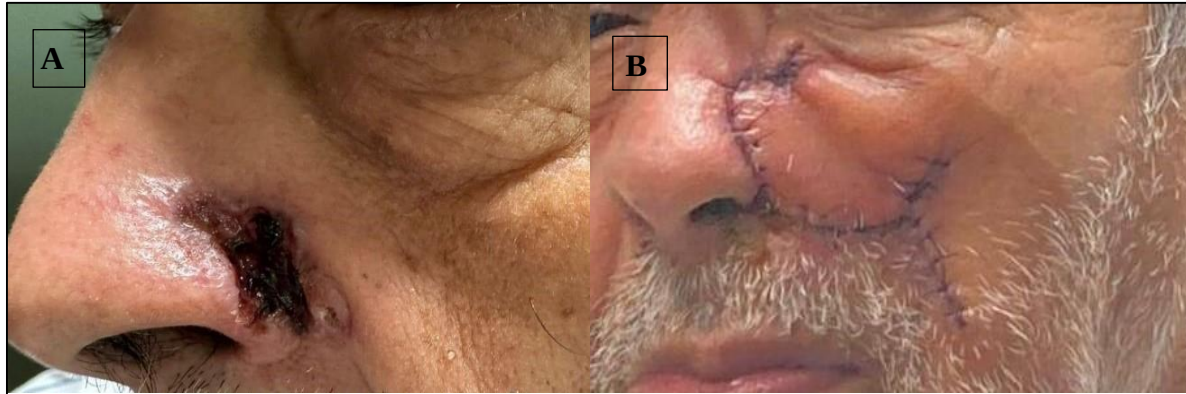


Figure 2: The rhomboid flap. (A) BCC of the left nasolabial region and (B) post operative photo demonstrating the closure of the defect.



Figure 3: U-plasty. (A) pre-operative photo showing the basal cell carcinoma of the right side of upper lip (B) Intraoperative excision of the lesion and the marked flap with burrow triangle to avoid cone deformity and (C) closure following advancement.

Bilateral advancement O-to-H flap or H-plasty (Figure 4):

Bilateral modification of the unipedicle flap, the H-plasty can be helpful in closure of larger defects in cases where there is insufficient tissue or laxity on one side to close the defect completely (4). H-plasty is also useful in repair of defects involving the forehead as well as the central lip and chin.

Mustarde/Tenzel flap (Figure 5):

This flap is a large, rotational flap designed to repair the lower eyelids, the cheeks, and the nasal ala. The incision starts superior to the

lateral edge of the original defect and goes along the lower eyelid to the lateral canthus. After that, it makes a superior-lateral incision to the area of the temple.

The flap is designed in such a way that it distributes tension in a horizontal plane and prevents excessive tension on the lower eyelid and subsequent ectropion (5).

Dorsal nasal flap (Figure 6):

The dorsal nasal flap is a modified rotational flap usually used to repair skin defects of the nasal tip, dorsum, and sidewall.

While the initial description focused on correcting the defects in the lower part of the

nose, a little modification can effectively address the dorsum of the nose as well (6).



Figure 4: H-plasty. (A) Basal cell carcinoma of the central lip and (B) closure following advancement.



Figure 5: Mustarde flap. (A) photo showing the marked lesion (B) the defect and area of flap and (C) closure of the defect using the flap.



Figure 6: Dorsal Nasal Flap. (A) Lesion over the dorsum of nose (B) defect after excision of lesion and raised dorsal nasal flap and (C) flap was rotated to cover the defect and sutured.

Forehead flap (Figure 7):

The forehead flap is a 2- stage procedure in which a median or paramedian pedicled flap is raised for surgical reconstruction of the defect. It is usually used in lesions involving the medial canthus and the adjacent eyelids, nasal tip or dorsum.

The flap is a type of axial flap with a rich blood supply at its distal end ensuring good take of the mucosal or skin grafts. For nasal defects involving the tip or ala midline forehead flap is raised. It is elevated and transposed 180 degrees to cover the new nose (7).

Nasolabial flap (Figure 8):

Nasal sidewall, ala, and tip defects can be treated with the superiorly based nasolabial flap; upper and lower lip, nasal floor, and columella defects can be treated with the inferiorly based nasolabial flap (8).

The nasolabial flap has excellent blood supply from the perforating branches of the facial artery (9). After the lesion is excised, the flap is designed on the nasolabial fold in such a way that the median incision follows the nasolabial sulcus and the lateral incision is no higher than the level of inferior defect margin (8).

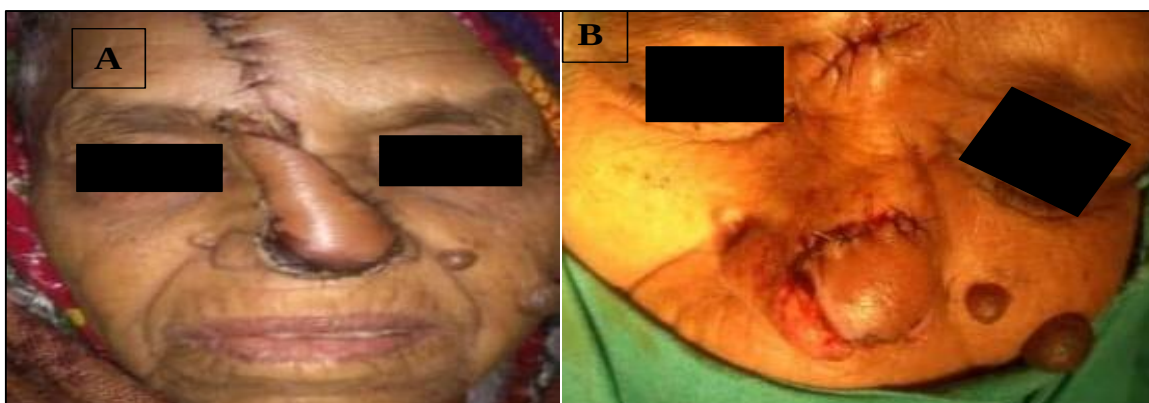


Figure 7: Median forehead flap. (A) and (B) photo showing the median forehead flap for basal cell carcinoma of the nasal tip in a two-stage procedure.



Figure 8: Superiorly based nasolabial flap. (A) lesion involving the infraorbital region (B) marked area of the lesion along with the flap and (C) closure of the defect.

Results

All the patients responded favourably to the surgical procedure, with no instances of any systemic or anaesthesia-related complications. There was no evidence of any post-operative haematoma or surgical site infection. All the flaps healed well, and there was no instance of flap loss reported in any patient.

The patients were followed up for 6 months and no recurrence was reported during this period. The V-Y advancement flap healed well without any functional loss and no sign of ectropion. The donor site of forehead flap was closed primarily and later divided in a second staged procedure after 3 weeks.

All the flaps survived completely and healed well without any sign of complication.

Discussion

The goal of basal cell carcinoma treatment is to completely resect the tumour followed by repair of the defect with satisfactory results. The facial tumours present a unique challenge due to the delicate balance between effective cancer treatment and preserving both the functional and cosmetic aspects. Therefore, it is crucial to prioritize oncological surgeries while striving for optimal cosmetic and functional outcomes. Different local flaps can be used in the closure of the facial defect following resection of the tumour. The optimal method of restoration of face deformities is decided depending upon the

anatomic location, size of the lesion, patient age and gender, as well as number of lesions.

Advancement flaps represent a viable treatment option for selected facial defects. Unilateral advancement flap is most useful along the brow or hairline. A common shortcoming of this flap is cone deformity which can be tackled by excising burrow triangles. H-plasty is helpful in repair of defects involving the central lip and chin. Advancement flaps are frequently associated with skin necrosis due to random patterns of blood supply. Thus, proper monitoring of the flap for congestion is required. A nasolabial flap can be used in lesions involving the nasal supra structure and the surrounding areas. It has an excellent blood supply from the perforators of the facial artery thus providing excellent outcomes.

In our review, patients with basal cell carcinoma involving different areas of the face suggest that local flaps for closure of facial defects give better outcomes. Thus, our clinical observation indicates that different facial defects can be addressed by a particular type of flap that offers good cosmetic results and few postoperative.

Conclusion

Based on our observations, local flaps yield acceptable outcomes for facial restoration following surgical excision of basal cell carcinoma. This is contingent upon the

vascularity, tissue flexibility, and consequent donor-site deformation. Depending upon the area involved, different flap techniques can be used to improve cosmetic outcomes and patient satisfaction.

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None to declare.

Conflicts of Interest

The authors declare no conflicts of interest.

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Patient Consent

Verbal informed consent was obtained from all the patients. The whole process of examination and the purpose of the article was explained to all the patients.

Reviewer's Opinion

The reviewers believe that the authors could not access follow-up data from the patients beyond the six-month. Consequently, the authors indicated that they could not procure six-month photographs from the patients. Additionally, no surgical intervention complications were reported by the patients, which They did not need to seek for further follow up. It is important to note that verbal informed consent was obtained from all patients.

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References

1. Rao J, Deora H. Surgical excision with forehead flap as single modality treatment for basal cell cancer of central face: single institutional experience of 50 cases. J Skin Cancer. 2014;2014:320792. doi: [10.1155/2014/320792](https://doi.org/10.1155/2014/320792), PMID [24616811](https://pubmed.ncbi.nlm.nih.gov/24616811/).
2. Rao JK, Shende KS. Overview of local flaps of the face for reconstruction of cutaneous malignancies: single institutional experience of seventy cases. J Cutan

Aesthet Surg. 2016 Oct-Dec;9(4):220-5. doi: [10.4103/0974-2077.197029](https://doi.org/10.4103/0974-2077.197029), PMID [28163451](https://pubmed.ncbi.nlm.nih.gov/28163451/).

3. Chasmar LR. The versatile rhomboid (Limberg) flap. Can J Plast Surg. 2007 Summer;15(2):67-71. doi: [10.1177/229255030701500207](https://doi.org/10.1177/229255030701500207), PMID [19554188](https://pubmed.ncbi.nlm.nih.gov/19554188/).

4. Schopper H, Kriet JD, Humphrey C. Advancement flaps. Plast Aesthet Res. 2022;9:25. doi: [10.20517/2347-9264.2021.72](https://doi.org/10.20517/2347-9264.2021.72).

5. Prohaska J, Sequeira Campos M, Cook C. Rotation Flaps [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing; 2020. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK482371/>

6. Fliss DM, Freeman JL. The nasal glabellar flap. J Otolaryngol. 1994;23(1):6-7. PMID [8170023](https://pubmed.ncbi.nlm.nih.gov/8170023/).

7. Rao J, Deora H. Surgical excision with forehead flap as single modality treatment for Basal cell cancer of central face: single institutional experience of 50 cases. J Skin Cancer. 2014;2014:320792. doi: [10.1155/2014/320792](https://doi.org/10.1155/2014/320792), PMID [24616811](https://pubmed.ncbi.nlm.nih.gov/24616811/).

8. Chaudhary D, Soni A, Agarwal S, Kumawat JL. A retrospective study to analyze local flaps for coverage of facial defects. Int Surg J. 2020;7(12):4052-8. doi: [10.18203/2349-2902.isj20205356](https://doi.org/10.18203/2349-2902.isj20205356).

9. Nakayama M, Tabuchi K, Nakamura Y, Hara A. Basal cell carcinoma of the head and neck. J Skin Cancer. 2011;11:20-8.