

Original Research Article

Aesthetic subunit reconstruction of basal cell carcinoma face

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ABSTRACT

Background: Arising from the basal cell layer of epidermis; BCC is one of the most common cutaneous malignancy encountered in elderly (77%) followed by SCC (20%) and malignant melanoma (3%).

Method: A prospective observational study was conducted at department of plastic and reconstructive surgery with 50 patients included for over a span of 2 years. Patients with biopsy confirmed BCC lesion over face were included and were grouped on the basis of subunit involved and type of flap done.

Results: The 50 patients were included which comprised of 16(32%) males and 34 (68%) females. Mean age was 61 ± 10.2 years. Smallest defect size was of 1.5 cm^2 whereas largest defect size was of 5 cm^2 . Cheek was the most common site of occurrence. Cheek advancement flap was the most commonly performed flap.

Conclusions: Reconstruction of facial subunit post BCC excision with local tissue has superior aesthetic outcome in terms of colour and texture than any other modality.

Keywords: Basal cell carcinoma, Aesthetic subunits, Glabellar flap, Forehead flap, Limber flap, Mustarde flap

INTRODUCTION

Arising from the basal cell layer of the epidermis; BCC is one of the most common cutaneous malignancies encountered in the elderly (77%) followed by SCC (20%) and malignant melanoma (3%).¹ Head and neck is the most common site for BCC with almost 85% of all the malignant lesions.^{1,2} It is a slow-growing locally invasive and destructive malignant lesion that rarely metastasizes. The most common etiological factor is chronic sun exposure with the nose being the commonest site in the head and neck region.^{3,4} BCC is a clinical diagnosis but a wedge biopsy from the edge is confirmatory.⁵ Various clinico-pathological subtypes of BCC include superficial, morphea-form, nodular, fibroepithelial, and infiltrative.⁵ Wide local excision is the treatment of choice with a 3-7 mm margin.^{1,6} Post-excision defects should be reconstructed with a local flap for a good aesthetic outcome.⁷

This study aims to highlight the various anatomical sites for BCC and reconstruction of the aesthetic subunits utilizing local flaps and study the aesthetic outcome.

METHODS

A prospective observational study was conducted at the department of plastic and reconstructive surgery of Sawai Man Singh medical college and hospital, Jaipur with 50 patients included from June 2021 to June 2023. This retrospective observational study involving human participants was in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The research ethics committee of our institute has confirmed that no ethical approval is required. Data collection was conducted within the study period and analyzed by SPSS software (Version 20, Chicago, IL, USA).

Descriptive data is presented as mean $\pm$ SD. Numerical data were presented using mean $\pm$ SD or medians and ranges if not normally distributed, whereas percentages were used for categorical data

Patients with biopsy-confirmed BCC lesions over the face were included in this study. Lesions were divided into facial subunits involved and after WLE were resurfaced with flap accordingly. Patients with large lesions involving multiple aesthetic subunits were excluded from this study. Suture removal was done on the 7th post-operative day and prevention of sun exposure and application of sunscreen was advised to all the patients. Patients were followed up for a period of 3 months and were accessed for flap settlement and scar line. Aesthetic subunits were classified as follows:

Nose: Nasal dorsum, sidewalls, tip and supratip region, ala

Cheek: Suborbital, nasolabial and pre auricular

Periorbital: Lower eyelid, upper eyelid, medial canthus and lateral canthus

RESULTS

The 50 patients were included in this study which comprised males 16 (32%) and females 34 (68%) Figure 1. The mean age was calculated to be 61 ± 10.2 years Figure 2. The site of the lesion, subunit involved and type of flap done have been tabulated and represented in form of charts. The smallest defect size was 1.5 cm² whereas the largest defect size was 5 cm².

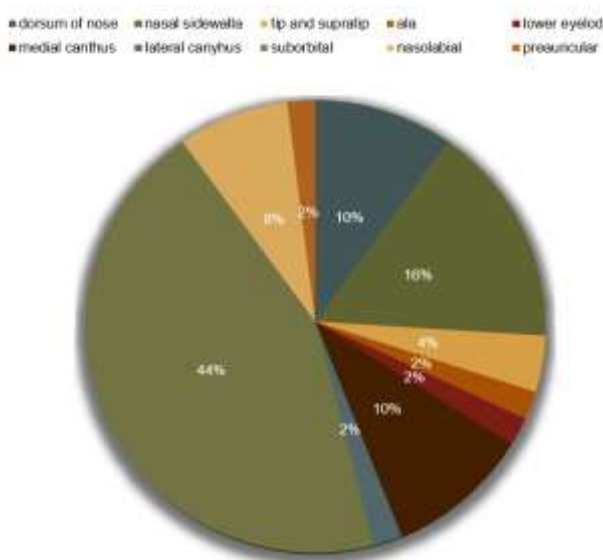


Figure 1: Aesthetic subunits involved.

The cheek was the most common site of occurrence for BCC (54% of total cases), followed by the nose (32%) and periorbital region (14%).

The suborbital region was the most frequent aesthetic subunit involved with 22 (44%) patients (Figure 1).

The cheek rotation advancement flap was the majorly performed flap (24% of cases) followed by the Limberg flap (14%), with an equal number of Mustarde flap (10%), bilobed flap (10%), glabellar flap (10%) and an equal number of nasolabial (6%), V-Y advancement flap (6%) and local transposition flap (6%). Forehead flap was done in 4 (8%) of cases Figure 2. There was no flap loss or necrosis. No patient underwent suture line dehiscence. The suture line scar was well settled with no hypertrophic or hyper-pigmented changes.

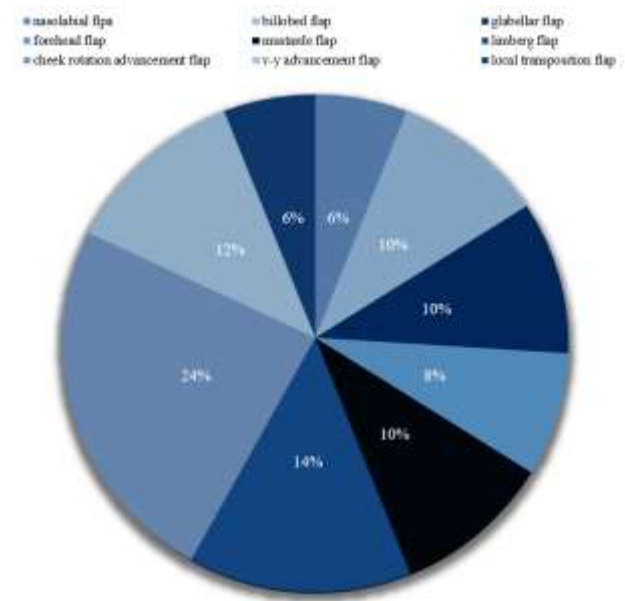


Figure 2: Type of flap done.

DISCUSSION

Facial subunits are similar in character concerning color, texture, thickness of skin and subcutaneous tissue, hair-bearing areas, and the presence of adjacent anatomical structures. These characteristics are also gender specific which makes them an extremely important factor for planning the reconstruction.⁸

Principles of aesthetic reconstruction of facial subunit include tension-free closure of suture line, replacing tissue with the like tissue, maintaining the morphology of major anatomical structures, and positioning of the scar corresponding to the functional and aesthetic units.^{1,7} The above-mentioned points are essential for planning a reconstructive procedure for superior aesthetic outcomes.

Lesions of nose

The nose is a three-dimensional and complex anatomical structure that requires careful planning while performing reconstruction. Nasal sidewalls were the most frequent subunit involved in our study Figure 3. Small lesions of

the nasal tip and supra-tip region can be reconstructed with a nasolabial flap, an extended glabellar flap or a bilobed flap. The nasolabial flap can be superiorly or inferiorly based and in both cases donor site is closed primarily and the suture line is concealed within the nasolabial crease Figure 4.



Figure 3: Nasal sidewall aesthetic subunit reconstruction with a glabellar flap.



Figure 4: Alar aesthetic subunit reconstruction with a nasolabial flap.

Whereas the lesion occupying a larger area with a composite defect occupying any aesthetic subunit of the nose post-excision requires a median or para-median forehead flap.⁹ In cases that involve large composite defect of the tip and ala of the nose; a forehead flap can be used without the need for a cartilage graft as the skin in the Indian population is thick that gives the desired contour to the subunit involved. Similarly, defects of the nasal dorsum and side walls can be resurfaced by a bilobed flap or a glabellar or an extended glabellar flap, or a forehead flap if the defect is large.¹⁰

Lesions of periorbital region

In our study, the medial canthus with medial aspect of lower eyelid was the most frequent site of occurrence for BCC in the periorbital region and most commonly flap done to resurface the defect was the Mustarde flap.

Lesions occupying the medial canthus region are tricky to reconstruct as they require great attention toward the aesthetic and functional outcome.

Small medial canthal defects can be resurfaced by a glabellar flap whereas large defects involving sidewalls of nose require median forehead flap reconstruction.

For defects involving medial canthus and lower eyelid; a Mustarde flap is good option as suture line is concealed within the infraorbital crease and nasolabial fold.

For isolated lower eyelid anterior lamellae defects a modified Fricke flap or a Mustarde flap has a good aesthetic outcome. For defects that also involve the posterior lamellae of the eyelid or the full-thickness defects; a palatal mucoperiosteal autograft can be used to reconstruct the palpebral conjunctiva.^{11,12}

Lesions of cheek

Cheek as an aesthetic subunit is bounded by lower eyelid superiorly, nasolabial sulcus medially, preauricular sulcus poster-laterally and distal border of mandible inferiorly.¹³



Figure 5: Cheek suborbital aesthetic subunit reconstruction with a rotation advancement flap.

The lower eyelid as an aesthetic subunit should always be kept in mind while reconstructing cheek defects. A defect closure under tension may cause ectropion of the lower eyelid resulting in epiphora due to exposed conjunctiva; leading to ocular complications. The skin of the cheek has more pliability and mobility than anywhere else on the face which makes it easy to plan advancement and transposition flaps. Avoiding blunting and distortion of

the nasolabial crease, alar-facial sulcus is one the most important aspects to be kept in mind while planning.¹⁴

Most frequent subunit involved in BCC cheek in our study was suborbital region and the most common flap done for this region was a cheek rotation advancement flap Figure 5.

Elliptical excision and primary closure of very small lesions can be done but planning should be done so that the suture line comes along the natural crease of the face; for example, nasolabial crease or infraorbital crease. Small defects post-excision can be resurfaced with a V-Y advancement flap or a geometrical Limberg flap. As the facial skin has abundant subdermal plexus for its blood supply; random pattern local transposition flaps have good aesthetic outcomes for small post-excision defects. For large defects rotation advancement or Mustarde flaps are good options as the suture line merges with the infraorbital and nasolabial aesthetic creases. Small defects involving preauricular region can be closed primarily otherwise Limberg flap is a good option.

Limitation of this study was a small sample size and short follow up.

CONCLUSION

Reconstruction of facial subunit post BCC excision with local tissue has a superior aesthetic outcome in terms of color and texture than any other modality. Skin laxity in the elderly makes it easy to achieve a tension-free closure. The rich and reliable blood supply of the face makes it a workhouse of various local flaps for resurfacing facial defects.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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