

# An Educational Case Report On Basal Cell Carcinoma With Nasolabial Flap Reconstructive Surgical Approach

Dinshaw Hormuzdi<sup>1</sup>, Dipti Patil<sup>2</sup>, Sushma Bommanavar<sup>3</sup>, Jayesh Khivasara<sup>4</sup>, Jaydeep Nilkanthrao Pol<sup>5</sup>, Prachi Goyal<sup>6</sup>, Dnyaneshwar Chitte<sup>7</sup>, Abhineet Desai<sup>8</sup>, Shivani Desai<sup>9</sup>

## ABSTRACT

Basal cell carcinoma is the most common malignancy of skin with least mortality and high morbidity index in humans. With greater incidence in aging population and widespread sun exposure cases in India, this malignancy is associated with extremely low metastatic potential with severe disfigurement and distortion. About 25% - 30% of cases occur on various anatomical parts of the nose with rapid recurrence rate after surgical intervention. The pathogenesis involves a complex interplay between environmental factors, patients' specific characteristics and genetics, exemplified with various modifiable & non-modifiable risk components. We report an advance deteriorated case of BCC of nose presenting with a typical rodent ulcer behavior that was treated under local anesthesia using Nasolabial flap (NFL) reconstructive surgical approach to close the defect. Although the case highlights common characteristic features that have already been documented in previous literature, we have focused on investigating the efficiency of NLF surgical intervention under local anesthesia considering a single patient as a sole unit of observation, thereby making this case as "N of 1 type" of educational case report. Additionally, we have applied the customized PSQ scale III (short form) developed by Grant N Marshall & Ron D Hays to assess the patient satisfaction level so as to bridge the gap of most neglected area in health care centers making this case more unique & exceptional.

**Keywords:** Basal cell carcinoma, BCC of nose, Nodular BCC, Nasolabial flap reconstructive surgical approach & BCC, Educational case report & BCC.

## INTRODUCTION

Basal cell carcinoma is the most common malignancy of skin accounting for about 80% of cases across the globe.<sup>1</sup> About 25% -30% of cases are found on various anatomical parts of the nose especially on the tip, with one third of cases with incomplete excision due to the difficulties encountered in identification of the tumor margins during presurgical procedure.<sup>2</sup>

Originating from the basal keratinocyte cells of the inter-follicular epidermis of skin & hair follicle, the pathogenesis involves a complex interplay between environmental factors, patients' specific characteristics and genetics, exemplified with modifiable and non-modifiable risk factors such as aging, skin phototype, occupational exposures to carcinogenic substances like arsenic, photosensitizing medication (tetracyclines, hydrochlorothiazide and statins), other pathologies (Kaposi's sarcoma, herpes zoster, oral candidiasis or hairy leucoplakia, HIV) and syndrome associated cases (Gorlin Glotz syndrome, xeroderma pigmentosa and Bazex-Dupré-Christol syndrome).<sup>3</sup> Being associated with low mortality, high morbidity index, rapid recurrence rate after surgical intervention, this tumor rarely shows metastasis but presents with severe disfigurement and distortion,<sup>4</sup> thereby challeng-

**Department and Institution Affiliation:** <sup>1,2,4,6,7</sup>Dept. of Head and Neck Surgery, Mahatma Gandhi Cancer Hospital, Miraj; <sup>3</sup>Dental Research Unit, Centre for Global Health Research, Saveetha Medical College and Hospital, Saveetha Institute of Medical & Technical Sciences, Thandalam, Tamil Nadu, Chennai; <sup>5</sup>Department of Surgical Pathology, Mahatma Gandhi Cancer Hospital, Miraj, Maharashtra,416410; <sup>8</sup>Department of Surgical Oncology, Mahatma Gandhi Cancer Hospital, Miraj; <sup>9</sup>NYU college of dentistry.

**Corresponding author:** Dr Sushma Bommanavar, Dental Research Unit, Centre for Global Health Research, Saveetha Medical College and Hospital, Saveetha Institute of Medical & Technical Sciences, Thandalam, Tamil Nadu, Chennai. Email: drsushopath@gmail.com

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ing the need for assessing the efficiency & patient satisfaction level of various reconstructive surgical procedures performed.

We report an advance deteriorated case of BCC of nose presenting with a typical rodent ulcer behaviour that was treated under local anesthesia using Nasolabial flap reconstructive surgical approach. Although the case highlights common characteristic features that have already been documented in previous literature, we have focused on investigating the efficiency of NLF surgical intervention under local anesthesia, considering a single patient as a sole unit of observation, thereby making this case as "N of 1 type" of educational case report. The primary aim of publishing this case is to share the process of defining the need for NLF surgical intervention and to overcome the challenges encountered for its implementation for considering local anesthesia based on the patient's medical conditions. Additionally, we have applied the customized PSQ scale III (short form) developed by Grant N Marshall & Ron D Hays to assess the patient satisfaction level so as to bridge the gap of most neglected area in health care center's making this case more unique & exceptional.

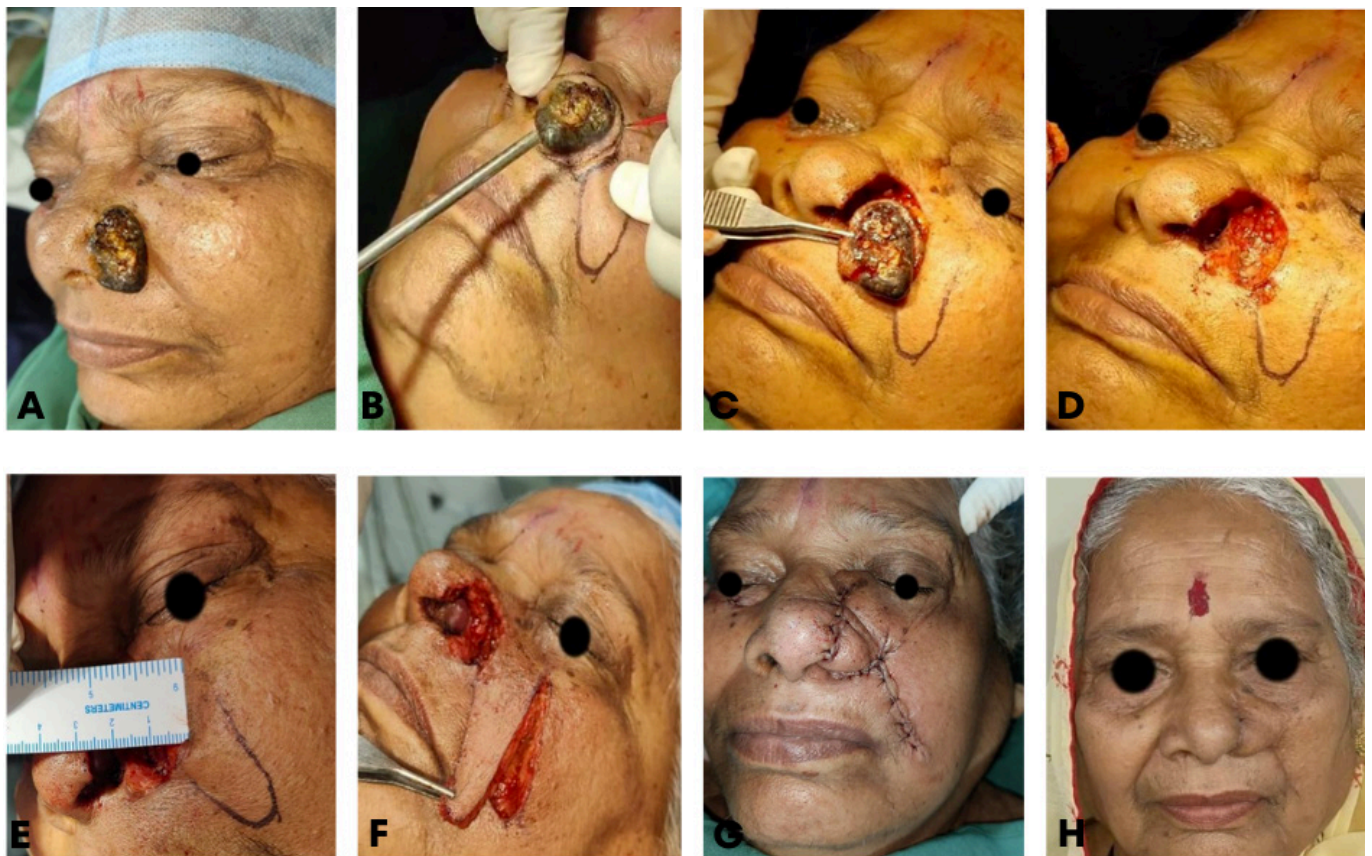
### CASE REPORT

A 69-year-old fair skinned female presented with the lesion on the left side of the nose with pain and severe disfigurement. Detailed anamnesis of the patient revealed a history of black

colored, pea sized, painless nodule from past 28 years. Being a farmer by occupation, the patient was exposed to daily sunlight for approx. 8 hours duration per day. The patient noticed rapid growth of the lesion to the present size from the past 6 months. The lesion was associated with pain and discharge resulting in difficulty in breathing from the affected side. Her general and physical examination were normal except for her suffused face. Blood investigation report showed normal findings. The patient was well oriented with time, place and person with normal vitals. No any past medical history of systemic conditions/medications were reported. No past history of presence of same lesion in family/relatives were reported.

No previous history of hospitalization/immunosuppression/organ transplantation or surgical intervention of same type of lesion was done ruling out for its recurrence history.

On inspection, we noticed a greyish black, large nodular ulcerative lesion of about 2.9cm x1.9 cm in size with rolled out margins representing a typical rodent ulcer of skin. The lesion was not mobile and tender on palpation, it bleeds easily on touch. As per the Fitzpatrick classification of skin phototype, the patient belonged to type IV with light brown skin tone with freckles & blonde hair bearing minimal tanning ability & slight



**Figure 1:** Clinical image depicting [A] greyish black nodular ulcerative lesion on the left side of the nose; [B] Wide excision of the lesion with 5mm margin using electrocautery; [C] Enbloc full thickness resection of the left nose, alar cartilage & skin; [D] Full thickness defect and Nasolabial Flap Design (NLF); [E] Defect measurements and appropriate flap design dimension; [F] Reverse Nasolabial Flap Harvest done; [G] Post NFL Inset Outcome; [H] Post follow up with no scar tissue & zero complications with restoration of form, function & all the dimensions of reconstructive oncological procedure

burning skin when exposed to day light. (Figure 1 A) There was no any signs of cervical lymphadenopathy. Surgical excision was suggested as the primary treatment. The oldest, often considered, as invaluable reconstructive surgical approach “Nasolabial flap” (NLF) technique was applied under local anesthesia considering the benefits of this technique for the present case. Due informed consent was taken from the patient’s relatives before the surgical intervention. Perioperative prophylactic antibiotics were prescribed.

Under local anesthesia, the whole lesion present on the left alar region was resected with 5 mm margins. (Figure 1 B) The specimen was sent for frozen section analysis to assess the margins. Later, we proceeded with the Nasolabial flap (NLF) technique of soft tissue reconstruction. (Figure 1 C) We used a superiorly based NLF which was planned with, as per the defect size and was folded on itself. The donor site was closed primarily as the design of the flap was such that the flap could be transposed at the same time & the defect could be repaired primarily. (Figure 1 D – G) The thickness of skin was good enough and was easily foldable, hence it resulted in good aesthetic with no need to sandwich a cartilage graft. The patient is kept under surveillance for follow up for every 6-month duration. The post operative follows up showed satisfactory results with no evidence of any scar formation and no signs of any recurrence. (Figure 1 H)

The restoration of functionality and day to day activity of the patient is being monitored through wireless health monitoring mechanism using cell phone-based mood, activity-pain level monitoring mechanism & side effects after intervention, thereby fitting the present case for N-1-Type.

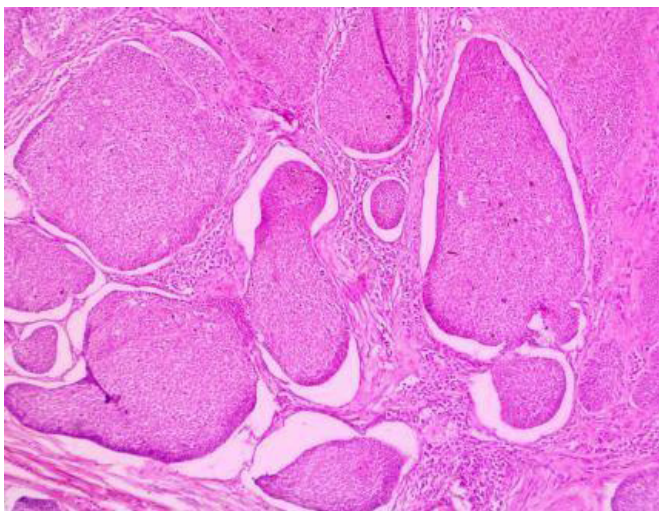
Gross examination of the resected specimens revealed greyish black ulcerative growth, firm in consistency, irregular in shape with infiltrating rolled out margins. Histopathological findings revealed proliferation of nests or cords of small to me-

dium sized basaloid cells with peripheral palisading of nuclei and large retraction spaces/ artifacts representing the amount of mucin that was washed away during the routine tissue processing method. (Figure 2) Higher magnification showed individual basaloid cells with hyperchromatic nuclei and inconspicuous nucleoli with scant cytoplasm. At places, few mitotic cells, apoptotic cells & melanin deposits were noticed. (Figure 3) No perivascular invasion and tumor necrosis were seen.

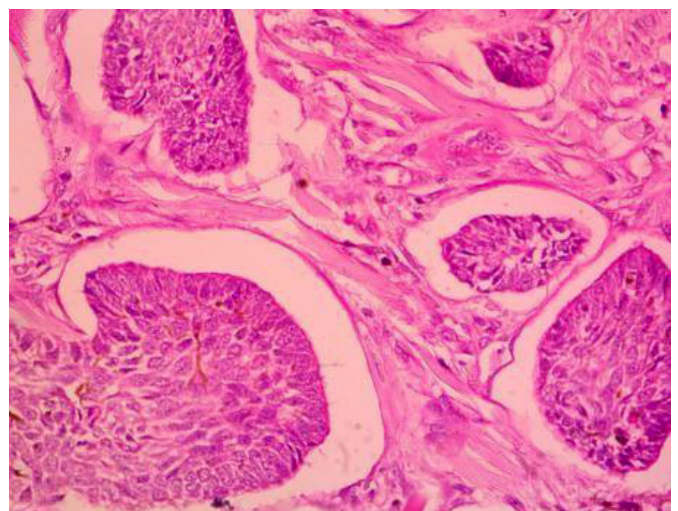
## DISCUSSION

Originating from the pluripotent basal cells of surface epithelium, BCC is the most common malignancy among individuals of Asian, African, Caucasians or Hispanic origin.<sup>5</sup> Commonly known as “Rodent Ulcer” as described by Jocab Arthurin in 1827, the increasing incidence rates of BCC worldwide has resulted in rise in economic burden in health care system. However, the overall estimate of cases in Indian population is comparatively lower to western world. The absolute number of cases still remains vague due to lack of clinical studies with statistical data, lack of existing literature on BCC in India and lack of cancer registry that collects data on BCC.<sup>6</sup> The present case report is N-1-type as we have initiated policy reforms and strategies to document cases of BCC visiting our hospital to bridge this knowledge gap, however awaiting approval.

Widespread cumulative and /or intermittent and intense, long-term exposure to UV rays is considered to be one of the major known risk factor for its occurrence in Indian population. Detailed anamnesis in the present case revealed past history of blistering sunburn from childhood with intermittent exposure/continuous cumulative exposure. However, several modifiable and non-modifiable associated risk factors exemplified with environmental and genetic activation of PTCH/hedgehog gene/ p 53 and other oncogenic pathways have implicated their role in its pathogenesis. Elderly population, white skinned photo-



**Figure 2:** H & E stained section (40 x magnification) showing nests and cord of small to medium sized hyperchromatic basaloid cells with palisading nuclei and large retraction spaces scattered in the connective tissue stroma



**Figure 3:** H & E stained section (40x magnification) shows presence of melanin deposits, mitotic cells and apoptotic cells in between the basaloid nests.

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. Health care providers are good about explaining the reason for medical tests.	1	2	3	4	5
2. I think my health care provider's office has everything needed to provide complete medical care.	1	2	3	4	5
3. The health care I have been receiving is just about perfect.	1	2	3	4	5
4. Sometimes health care providers make me wonder if their diagnosis is correct.	1	2	3	4	5
5. I feel confident that I can get the health care I need without being set back financially.	1	2	3	4	5
6. When I go for health care, the provider is careful to check everything when treating and examining me.	1	2	3	4	5
7. I have to pay for more of my health care than I can afford.	1	2	3	4	5
8. I have easy access to the medical specialists I need.	1	2	3	4	5
9. Where I get health care, people have to wait too long for emergency treatment.	1	2	3	4	5
10. Health care providers act too businesslike and impersonal toward me.	1	2	3	4	5
11. My health care provider treats me in a very friendly and courteous manner.	1	2	3	4	5
12. Those who provide my health care sometimes hurry too much when they treat me.	1	2	3	4	5
13. Health care providers sometimes ignore what I tell them.	1	2	3	4	5
14. I have some doubts about the ability of the health care providers who treat me.	1	2	3	4	5
15. Health care providers usually spend plenty of time with me.	1	2	3	4	5
16. I find it hard to get an appointment for health care right away.	1	2	3	4	5
17. I am dissatisfied with some things about the health care I receive.	1	2	3	4	5
18. I am able to get health care whenever I need it.	1	2	3	4	5

**Annexure 1: Patient Satisfaction Level Assessment PSQ III Short Form (Grant N Marshall & Ron D Hays)**

type, pharmacological therapy, exposure to arsenic, immunosuppression and associated genetic syndromes increase the risk of BCC development.<sup>7,8</sup> Recent updates on BCC has shown significant association of MC1R gene (melanocortin 1 receptor) with fair skinned & red hair individuals.<sup>9</sup>

Being more common in males than females, the present case was seen in female patient who was a housewife working in open outdoor kitchen and in farm especially during sowing and harvesting season, thereby exposing herself to continuous exposure to sunlight from many years. The patient showed type IV Fitzpatrick classification of skin phototype & positive association with age related deterioration of skin, thereby proving the empirical hypothesis of accumulation of damaged DNA and senescent cells with declined capacity of DNA repair mechanism, genomic instability with defective immune system in old age.<sup>8-10</sup> The presence of chronic inflammatory status and induction of oxidative stress due to longer term exposure to sunlight as seen in the present case has resulted in modification in the dermal matrix integrity, thereby resulting in the development of this tumor. The female predilection in the present case can also be correlated to changes in cultural practice of “VEIL” (Old cultural practice in ancient India where the females covered ¾ th of their face with clothes, thereby protecting their skin from UV rays). The patient did not follow such practice and had no knowledge of sunscreen/ UV protective lotions. She reported exposure to pesticides for locally grown vegetables in her farm, thereby confirming their role in occurrence of BCC. However, the exact pathogenetic mechanism of role of pesticides in BCC needs to be delineated in future research.

Since BCC has only 20% lifetime risk of development and rarely metastasize, this malignancy is often overlooked. In the present case, the delay in visiting the general physician was due to presence of skin lesion that did not bleed or itch initially with no discomfort & pain, absence of same lesion in other family members and negligence. The patient reported to the hospi-

tal once she had severe discomfort and pain, thereof inferring that this malignancy is often disdained in Indian scenario.

Defect closure as per the patient’s preference and needs was the primary goal of our treatment plan.<sup>11</sup> Restoration of the aesthetic and functional component were determined as the main outcome to be achieved with no scar formation on post follow up. This was achieved in the present case using NLF technique, thereby proving to be highly efficient with better outcomes. However, the short duration follow-up of 6-month time can be considered a one of the limitations of our case study. Post operative follow up & preventive measures such as lifestyle changes of prolonged exposure to sunlight, sunscreen application and whole-body skin examination for initial 6 -12 months duration and later annually for lifetime, from the dermatologist as per the NCCN guidelines<sup>11,12</sup> were suggested. Regular self-monitoring and dietary intake of water-soluble vitamin B3 derivative, β-carotene and selenium were recommended for better prognosis.<sup>13</sup>

PSQ scale III short form developed by Grant N Marshall & Ron D Hays (Annexure 1) was applied to assess the patient satisfaction level so as to bridge the gap of most neglected area in hospital setting system.<sup>13,14</sup> Importance of patient satisfaction in health care system especially after oncological resection and reconstructive surgical procedures is often neglected area in most health care centers and we bridged this gap in our cancer hospital, thereby restoring the anatomical form and function of nose with less obvious suture lines scars & zero complications.<sup>15-17</sup> A total score of 56 was achieved as per this scale.

## CONCLUSION

An advanced deteriorated case of BCC of nose had been treated with equal weightage of restoring the form, function and patient satisfaction and all the dimensions of oncological reconstructive procedure.

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