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RESEARCH ARTICLE
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MANAGEMENT OF BCC IN A TERTIARY CARE CENTER OF MALWA REGION OF PUNJAB: A CASE SERIES

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Abstract
Basal cell carcinoma, the most common type of skin cancer, arises from the basal cells of the skin's outer layer. The primary etiological factor in the development of basal cell carcinoma is exposure to UV light, particularly the UVB wavelengths. The great majority of patients with BCC (95%) are noted to be between 40 and 79 years of age. BCC most commonly occurred over orbital (28.2%) and nasal (26.7%) areas on the face. Treatment of BCC include wide local excision followed by reconstruction. 60 patients with primary BCC, who presented to OPD department of Plastic Surgery and referred from Oncology department of GGSMCH, Faridkot were included in the study with minimum follow up for 6 months. Approximately seventy percent of Punjab's population is directly or indirectly engaged in agriculture. In our study, the majority of cases (82%) belonged to an agricultural background with a history of prolonged sun exposure while working in the fields. The most common incidence was seen in the sixth and fifth decade of life (33.3% and 30.00% respectively). The most common site involved was nose (35.00%) followed by cheeks (21.67%) and eyelids and canthi (16.67%). 53.33% of defects were reconstructed using flaps, 25% using skin grafting and elliptical excision followed by primary closure was done for 21.67% of the patients. While split-thickness skin grafting is a simpler choice, it tends to result in unsightly scars as it heals. Local flaps, on the other hand, provide a superior match in terms of color and texture and also maintain sensitivity, making them an ideal choice for reconstructing facial defects.

Introduction
Basal cell carcinoma, the most common type of skin cancer, arises from the basal cells of the skin's outer layer.[1] The primary etiological factor in the development of basal cell carcinoma is exposure to UV light, particularly the UVB wavelengths, and due to various other factors such as ionizing radiation exposure, arsenic exposure, immunosuppression, and genetic predisposition, which includes genes in the hedgehog signaling pathway. [2] The great majority of patients with BCC (95%) are noted to be between 40 and 79 years of age.[3] Globally, the incidence of BCC in 2019 was 4 million.[4] The incidence of nonmelanoma skin or other skin cancers for males was highest in the East region with 6.2/100,000 and for females in the Northeast with 3.49/100,000 in India. [5] Among patients under the age of 40, even in studies that reported similar BCC incidence

rates among 9 and females, women had a higher incidence.[6] Conversely, in older individuals, BCC displayed a distinct male predominance.

BCC occurs on the head or neck in the majority of cases but can involve the trunk and extremities. [7] BCC most commonly occurred over orbital (28.2%) and nasal (26.7%) areas on the face.[8] Nodular BCC is the most common type and occurs most frequently on the face, particularly on the nose, cheeks, forehead, nasolabial folds, and eyelids. It's noteworthy that pigmented nodular BCCs are more commonly observed in individuals with darker skin tones.

Clinical examination and dermoscopy aid in the diagnosis of BCC, but a skin biopsy is necessary for confirmation of BCC. It usually presents as a shiny, pink- or flesh-colored papule or nodule with surface telangiectasia. The tumor may enlarge and ulcerate, giving the borders a rolled or rodent ulcer appearance.[9] The characteristic feature seen in histopathology of BCCs is islands or nests of basaloid cells, with cells palisading at the periphery and in a haphazard arrangement in the centers of the islands.[10]

Treatment of BCC includes wide local excision followed by reconstruction, but some forms of BCC are amenable to medical treatment or radiation therapy. The various types of therapy include Mohs micrographic surgery (MMS), standard surgical excision, EDC, radiation, photodynamic therapy, cryosurgery, topical therapies, and systemic medications such as Vismodegib.[11]

Materials and Methods

Number of patients: 60 Duration of study: 2 years

Inclusion criteria:

Patients with Primary BCC, who presented to the OPD department of Plastic Surgery and referred from Oncology department of GGSMCH, Faridkot.

Patients who could be followed up post-op for a minimum of 6 months

Exclusion criteria:

Primary BCC reconstructed using regional or free flaps Metastatic BCC

Other skin malignancies

Patients who opted out or lost to follow-up before 6 months

Parameters assessed:

Age and sex Site of BCC Regional Incidence Reconstruction method used Under local or general anesthesia (depending upon reconstruction plan), lesion excised taking 3mm margin all around and sent for biopsy. Reconstructive procedure was performed simultaneously and patient was kept on follow up.

Results

Each patient experienced a successful recovery with no observed systemic complications. None of the patients reported any functional impairments. Additionally, all flaps and grafts were viable, and donor wounds healed without any issues. All margins were free from tumor pathologically in all cases. Majority of the patients were females(58.33%).

The most common incidence was seen in sixth and fifth decade of life (33.3% and 30.00% respectively). The youngest patient was 32 years old and eldest being 92 years old. (Table 1 & Figure 1)

The most common site involved was nose (35.00%) followed by cheeks (21.67%) and eyelids and canthi (16.67%). (Table 1 & Figure 2)

53.33% of defects were reconstructed using flaps, 25% using skin grafting and elliptical excision followed by primary closure was done for 21.67% of the patients. (Table 1)

1.Age (mean)	63.07yrs
Males	61.30yrs
Females	64.38yrs
2. Sex	
Males	25 (41.67)
Females	35 (58.33)
3. Site	
Nose	21 (35.00)
Forehead	2 (3.33)
Cheeks	13 (21.67)
Chin	1 (1.67)
Eyelids, canthi	10 (16.67)
Lip	5 (8.33)
Ear	1 (1.67)
Back	1 (1.67)
Neck	2 (3.33)
Multiple	1 (1.67)
Extremity	3 (5.00)
4. Type of repair	
Flap reconstruction (Local flap, Distant flap, Free flap)	32 (53.33)
Skin grafting	15 (25.00)
Primary closure	13 (21.67)

Table 1

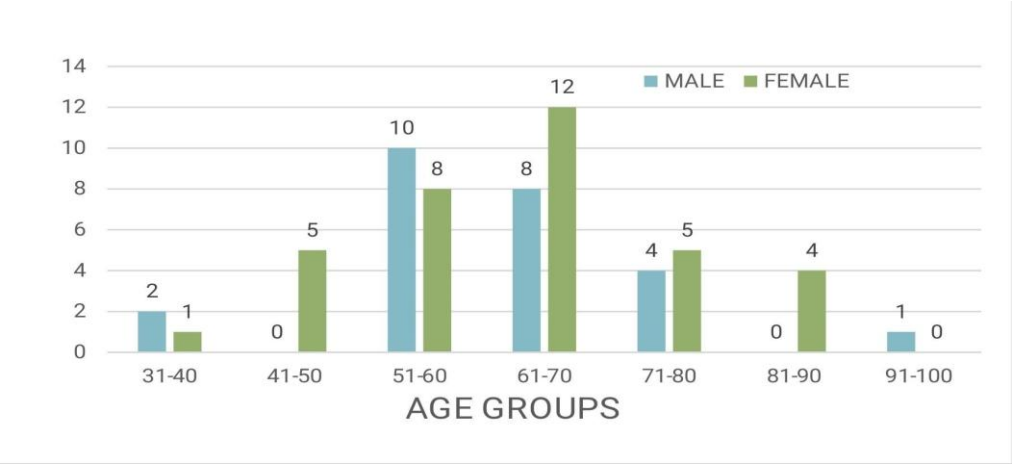

Figure1: Age group and Sex distribution

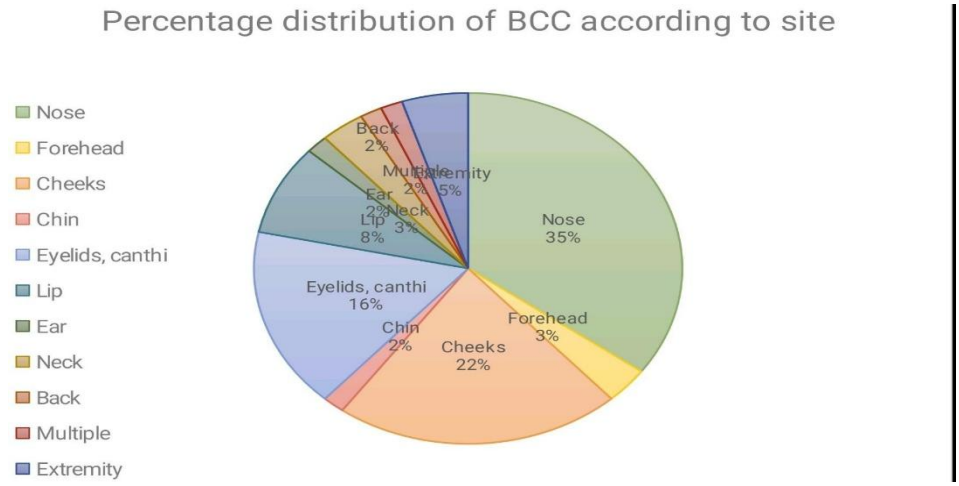

Figure 2: Percentage distribution of BCC according to site

The most common flap used for nose defects was Nasolabial flap (38.1%) and for cheek defects, it was Limberg flap (46.15%). The most commonly used flap overall was Nasolabial flap (13.33%). Full thickness skin grafting (FTSG) was used for defect closure in 20% patients whereas Split thickness skin graft (STSG) was used in 5% of patients. (Table 2).

S.No	Site	No. of cases	Flap used
1	Forehead	2	Primary closure (2)
2	Nose	21	Bilobed flap (5) Nasolabial flap (8) Paramedian forehead flap(3) FTSG (5)
3	Eyelids, canthi	10	FTSG (4) Primary closure (1) Glabellar flap (4) Fricke flap (1)
4	Cheeks	13	Limberg flap (6) Free flap (1) FTSG (1) Lateral forehead flap (1) Primary closure (4)
5	Lips	5	Abbe flap (3) Primary closure (2)
6	Chin	1	FTSG (1)
7	Neck	2	Primary closure (1) Limberg flap (1)
8	Ear	1	Primary closure (1)
9	Multiple	1	Primary closure (1)
10	Back	1	Primary closure (1)
11	Extremity	3	STSG (3)

Table 2

Out of the 60 patients, 3 patients had recurrence after 12, 24 and 96 weeks of follow up respectively. Appearance of new telangiectasias on dermoscopic evaluation over the surgical site arose the suspicion of recurrence.

Figure 3: Preoperative and postoperative image of BCC over nose region (forehead flap

coverage)

Figure 4: Preoperative and postoperative image of BCC over right cheek region (lateral forehead flap)

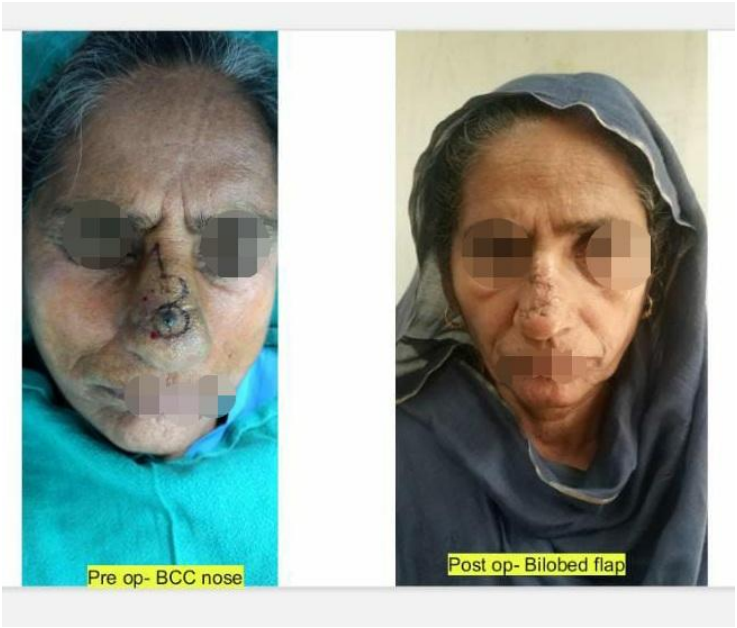

Figure 5: Preoperative and postoperative image of BCC over nose (bilobed flap)

DISCUSSION

Basal cell carcinomas (BCCs), previously known as basal cell epithelioma, are the most common skin tumors of the face. BCC manifests on skin exposed to sunlight, with rare occurrences on mucous membranes or the palms and soles.[12] Basal cell carcinoma is usually a slow-growing tumor which metastasizes rarely. Although rarely fatal, BCC can be highly destructive and disfigure local tissues when treatment is inadequate or delayed.

The prime etiological factor in the development of basal cell carcinoma is exposure to UV light, particularly the UVB wavelengths.[2] Furthermore, an individual's Fitzpatrick skin type is a reliable indicator for estimating the comparative risk of BCC, particularly within the White racial group.[4]

BCCs also occur due to various other factors such as ionizing radiation exposure, arsenic exposure, immunosuppression, and genetic predisposition.

The great majority of patients with BCC (95%) are noted to be between 40 and 79 years of age. The reduced ability to repair the UVR-induced DNA damage with advancing age is considered as the reason for the higher incidence of BCC in older individuals.[13] In the majority of studies, the average age of individuals affected by basal cell carcinoma (BCC) ranged from 60 to 65 years.[14] In our study, 63.33% of the patients were aged between 41-60 years. Men are more commonly affected due to their outdoor occupation. Several studies conducted in India have consistently observed a higher incidence of BCC among females which is also consistent with our study.[15] In our study, 58.33% cases were of female patients. This is probably attributed to the long hours spent in sun by women in rural areas, while working in open kitchens, while doing agriculture work, and caring for farm/domestic animals.[16] Punjab ranks among India's most prosperous states, primarily owing to the impact of the green revolution. Approximately seventy percent of its population is directly or indirectly engaged in agriculture. In our study, majority of cases (82%) belonged to an agricultural background with a history of prolonged sun exposure while working in the fields. BCC typically develops on body areas that are frequently exposed to sunlight, with the head and neck being the most common sites, followed by the trunk, arms, and legs. There have also been documented cases of BCC occurring in atypical locations, such as the axillae, breasts, perianal region, genitalia, as well as the palms and soles.[17] Nose is the most common site of facial BCC, accounting for 25%–30% because of cumulative exposure.[18] In our study, nose was the most common site accounting for 35% of the cases followed by cheeks and eyelids (21.67% and 16.67% respectively). Dermoscopy aids in the diagnosis of BCC, usually presents as a shiny, pink- or flesh-colored papule or nodule with surface telangiectasia. [9]

While there are several treatment options for BCC, the standard approach is wide local excision. Mohs micrographic surgery (MMS) has gained widespread use and has demonstrated a high success rate in achieving tumor removal with clear margins.[19] Following surgical excision, reconstruction is performed using various methods, including local flaps, regional flaps, free flaps, or skin grafts. Local flaps offer the advantage of matching skin color and texture, resulting in a more aesthetically pleasing outcome with minimal donor-site morbidity. The choice of reconstructive procedure depends on several factors, including size, location, and involvement of deeper structures. Primary skin closure was done for smaller defects in 21.67% of the patients. The most common site for primary skin closure was cheek. Full thickness and split-thickness skin grafting is widely used for primary wound coverage after skin cancer resection because donor-site morbidity is lower and larger donor area is available. Skin grafting is usually performed when defects are large and unsuitable for primary closure or a local flap.

FTSG was done for defect closure in 20% of the patients whereas STSG was used in 5% of patients. Skin grafting was most commonly used for defect closure over eyelids and nose. Initially our approach for reconstruction was skin grafting but later flaps were chosen for better color and texture match. In our study, 53.3% defects were reconstructed using flaps. The most commonly used flap overall was Nasolabial flap used in 13.33% of the patients. Most of the nasal defects were reconstructed using a nasolabial flap(38.1%). Reconstruction over cheek defects was done using the Limberg flap in 46.15% of the patients. Out of the 60 patients, 3 patients had recurrence after 12, 24 and 96 weeks of follow up respectively. Revision surgery was done in two out of these three patients and biopsy came out negative while one patient refused for any intervention and lost to follow up later.

CONCLUSION

BCC is a multifaceted disease influenced by various factors. In our research, we identified several factors associated with the development of BCC, including advanced age and exposure to UV rays, mostly in occupational settings. The significant number of BCC cases diagnosed on sun-exposed skin, particularly on the face, supports the well-established link between these tumors and prolonged exposure to UV radiation.

Furthermore, it is noteworthy that females are more frequently affected than males. Given the dramatic rise in the incidence of skin cancers, it becomes imperative to gain a comprehensive understanding of the various contributing factors as a crucial step in their prevention. After the removal of basal cell carcinoma (BCC) in the head and neck area, it is essential to reconstruct the resulting defects while giving equal importance to all aspects of oncological reconstruction: clearance, shape, functionality, and patient contentment. While split-thickness skin grafting is a simpler choice, it tends to result in unsightly scars as it heals. Local flaps, on the other hand, provide a superior match in terms of color and texture and also maintain sensitivity, making them an ideal choice for reconstructing facial defects. Furthermore, local flaps contribute to a better restoration of facial animation. Consequently, when it comes to fulfilling the fourth dimension of reconstruction, which is patient satisfaction, local flaps are the preferred option.

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