

Cutaneous Skin Malignancy In Different Location – Surgical Margin And Its Reconstruction Options

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KEYWORDS

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ABSTRACT

One of most prevalent types of cancer worldwide is “skin cancer.” “Melanoma and nonmelanoma skin cancer” (NMSC) are two kinds of cutaneous skin cancer. “Malignant melanom” is most aggressive variety of NMSC, but “squamous cell carcinoma” (SCC) and “basal cell carcinoma” (BCC) constitute the most prevalent varieties. Primary goals of surgical intervention are to maximize cosmetic results, minimize functional impact, and remove the tumor completely thus avoiding recurrence. This case series consists of five cases of cutaneous skin malignancy, aim of the study to review current surgical margins in different anatomical location and its reconstruction options. Out of 5 patients, three was diagnosed SCC, one were melanoma and one were BCC after histopathological confirmation. Timely skin cancer diagnosis by routine skin screening program, education, and sun protection reduces morbidity and improves survival.

Introduction:

“Skin cancers” are commonly divided into two broad heads, melanomas and nonmelanoma skin cancer which consist of “basal cell carcinoma” and “squamous cell carcinoma.” In US, “basal cell carcinoma” (BCC), most common kind of cancer. The yearly incidence of CSCC, 2nd most common kind of skin cancer, is rising. UV radiation exposure, most important risk factor for skin cancers. Fair skin types I and II, Old age, smoking, exposure to arsenic, male sex, as well as immunosuppression are additional risk factors. BCC has a favorable prognosis and is extremely unlikely to spread. BCC causes local invasion and destruction along with disfigurement.

Case report:

42 year male presented with ulcer over plantar aspect of right foot since 1 year, later progressed to a ulceroproliferative growth to present size of about 6x4cm, h/o blackish discoloration of surrounding the ulcer, associated with foul smelling serous discharge, h/o difficulty in walking and no symptom suggestive of metastasis and no history trauma. On local examination ulceroproliferative growth about 6x4cm in the proximal plantar aspect of the right foot, surface is covered with blackish granulation tissue, irregular margin, patchy blackish discoloration (+) around the lesion, base of UGP rest on underlying soft tissue, and bleed on touch. An another swelling about 2x2cm over right lateral malleolus, well defined, non-tender, smooth surface, soft in consistency, mobile and 3cm away from the primary lesion. No in transit or satellite nodules. On examination of right inguinal region swelling about 1 x 1.5cm palpable in right vertical group non-tender, nodular surface, firm in consistency, mobile. No popliteal lymph nodes. Edge biopsy from ulceroproliferative growth detected melanoma and immunohistochemistry melan A positive. Entire body PET scan revealed a well-defined, heterogeneously enhancing ulceroproliferative soft tissue lesion spanning 3.5 x 3.4cm encompassing skin as well as subcutaneous planes of right foot's plantar aspect, with infiltration of skin above. FDG avid 2.2cx0.8cm soft tissue lesion that is highly delineated and heterogeneously enhancing involving skin as well as subcutaneous planes near lateral malleolus of right foot with no significant underlying cortical erosion. No FDG avid uptake in right inguinal and popliteal lymph nodes. No FDG avid lytic/sclerotic lesion noted in the visualized skeleton. LDH- within normal limit. He was diagnosed melanoma right sole of foot cT4bN0M0. Patient underwent wide local excision with 2cm clear margin, right modified inguinal block dissection, reconstruction utilizing split skin grafting as well as free flap of microvascular latissimus dorsi

muscle. Postoperative period flap uptake was good and Split skin graft uptake 70%. Non weight bearing movements after 3 weeks and weight bearing movements after 3 months. Histopathology report shows nodular melanoma pT4bN0M0. Patient received adjuvant chemotherapy nivolumab according to recommendation



FIG-1-Ulcero-proliferative growth over Plantar aspectof foot

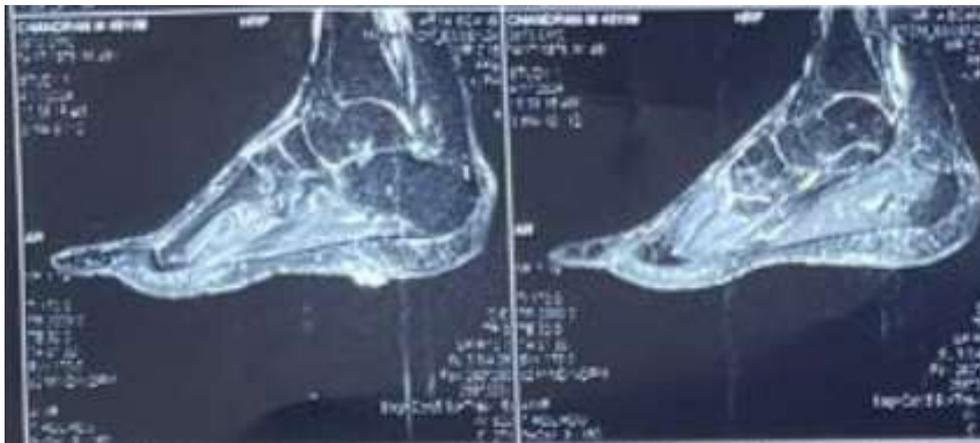


Fig-2-Xray foot



Fig-3-Post operative image

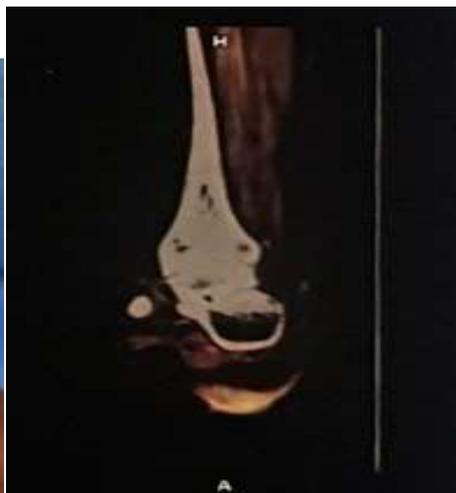


Fig-4-PET CT IMAGE



FIG-4-Donor Site

Fig-5-Intraoperative photo

Case report 2:

61 year female presented with ulcer in the left heel for 1 year, which was initially small in size and gradually progressed ulceroproliferative growth to attain present size of 5x4cm, history of bleeding from ulcer and with serous discharge. History of difficulty in walking. No history of trauma. On clinical examination of left foot-ulceroproliferative growth 6 x 5cm in the proximal aspect of left sole of foot, irregular margin, raised and everted edges, floor of ulcer is covered with slough and granulation tissue, base rest on underlying soft tissue. On examination of left inguinal region there was no palpable inguinal and popliteal lymph nodes. Edge biopsy from ulcer shows squamous cell carcinoma. MRI left foot showed exophytic T1 heterogenous STIR hyperintense cutaneous lesion 4x4.5x2.5cm extending upto calcaneal surface causing calcaneal signal abnormalities, loss of normal plantar arch with destruction, dislocation, disorganisation of metatarsophalangeal joints of toes with edema, erosion of distal metatarsal, proximal phalanges and diffuse soft tissue edema - suggestive of neuropathic joints. Rest of tarsal bones appears normal. Ultrasonogram of inguinal region showed multiple lymph nodes with preserved fatty hilum. Fine needle aspiration cytology of left inguinal node showed reactive and malignant deposits.

Patient underwent 3D wide local excision of lesion and reconstructed by cutaneous medial plantar artery flap and left modified superficial inguinal block dissection. Histopathology report revealed well-differentiated SCC exhibiting 1cm tumor-free margin in 3 dimensional and no metastatic deposits in inguinal nodes. Pathologic stage pT3N0. Postoperative period was uneventful. Patient was mobilized after 3 weeks and weight bearing after 3 months

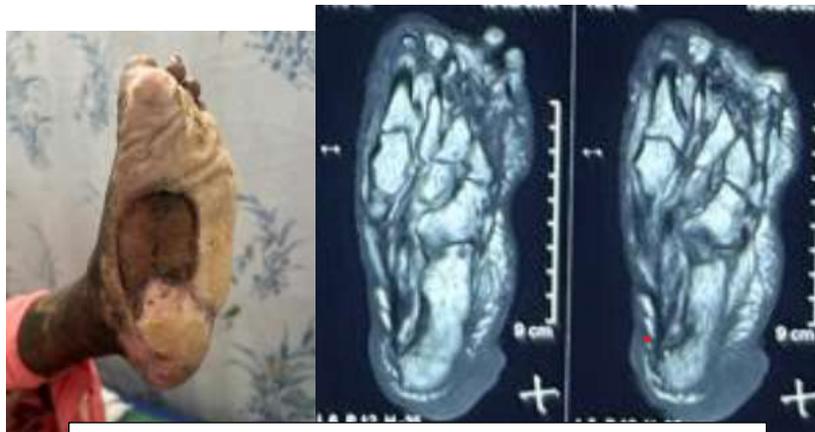


FIG-6,7-PRE OPERATIVE AND CT IMAGE



FIG-8,9-MRI IMAGE



FIG-10-left foot showed exophytic T1 heterogenous STIR hyperintense cutaneous lesion 4x4.5x2.5cm extending upto calcaneal surface



FIG-11-INTRAOPERATIVE IMAGE



Case report 3

54 year female patient had no comorbidities and she had presented with ulcer over angle of mouth for 2 years. Patient had no history of discharge, trauma, pain or rapid increase in size of ulcer. On examination, a 2x1cm ulcer was noted in the left angle of mouth region with beaded edges, irregular in shape, well defined borders, surrounding skin appears normal and not fixed to subcutaneous tissue. No palpable neck nodes. Edge biopsy from the lesion detected pigmented basal cell carcinoma. Patient had 3D wide local lesion excision having clear margin 1cm as well as reconstructed by abbe estlander flap. Histopathological report showed pigmented BCC with margins free of tumor pT1NxM0. Postoperative period was uneventful. The patient kept on intense surveillance for history and clinical investigation every three months for first two years and every six months for next three and sunlight protection.



FIG-12-PRE OPERATIVE IMAGE



FIG-13-POST OPERATIVE IMAGE

Case report 4:

58 year male presented with complaints of ulcer over left heel for 2 years, which was gradually progressed to ulceroproliferative growth size of 6x5cm associated with bleeding and serous discharge from the ulcer. The patient had no history trauma. On examination, ulceroproliferative growth about 6.5x 5cm in proximal aspect of sole of the left foot, well defined borders, everted and raised edges, floor of ulcer covered with granulation tissue, base of ulcer rest on soft tissue.on examination of left groin no palpable inguinal groups of lymph nodes. Edge biopsy from lesion showed well differentiated squamous cell carcinoma. MRI left foot Ultrasonogram of left inguinal region no significant inguinal group of lymph nodes. The patient had a large local lesion removed with a clear margin of 1cm, left modified inguinal block dissection and reconstructed using medial plantar artery flap. Histopathology report showed tumor-free margins of well-differentiated SCC pT3N0M0. Postoperative period was uneventful.



FIG-14-ULCEROPROLIFERATIVE GROWTH OVER HEEL OF FOOT



FIG-15-POST OPERATIVE



FIG-16-CLOSURE OF DEFECT WITH FLAP COVER AND SSG



FIG -17-INTRA OPERATIVE IMAGE

Case report 5:

A 95-y/o man complained of 2month-old ulcer across right parietal area of his head, which was later progressed to ulceroproliferative growth associated bleeding and discharge from ulcer, no h/o trauma/radiation/chronic ulcer/prolonged sunlight exposure/ immunosuppression. No comorbidites. On local examination of scalp a ulceroproliferative growth of about 2.5x 1.5cm in right temporal region, irregular border, raised and everted edges, base rest on the bone, not fixed, mobile, induration present around the ulcer, which bleeds on touch, no other lesion anywhere in the body, no palpable lymph nodes in the neck. The edge biopsy from lesion show well differentiated squamous cell carcinoma. Without contrast, CT head displays unclear soft tissue density lesion in right parietal region of sclp, abutting underlying bone with no evidence of bony destruction and intracranial extension.

Usg neck no significant lymph nodes in the neck. The patient had a large local lesion eliminated through 1cm clear margin as well as periosteum stripping as deep resected margin and restoration of scalp deformity with local transposition flap and split skin grafting. Histopathology report showed well-differentiated SCC having no perineural and lymphovascular invasion, margins free of tumor. Patient was kept on close surveillance.



FIG-18,19-INTRA OPERATIVE PHOTO showing excision of ulceroproliferative growth from skull



**FIG-20-ULCEROPROLIFERATIVE GROWTH OVER SCALP
 FIG-21-POST OPERATIVE IMAGE WITH FLAP COVER**

Conclusion:

Surgical excision with clear margin remains the gold standard options for cutaneous skin malignancy. Minimal margin of excision of 4mm- 6mm margin around the periphery border with deep margin less than 1mm for CSCC and BCC do not confer a greater recurrence risk.

Discussion:

Melanoma and non-melanoma skin cancer are two types of “cutaneous skin cancer.” “Squamous cell carcinoma” as well as “basal cell carcinoma” are types of non-melanoma skin cancer. Compared to cutaneous SCC, basal cell carcinoma is at least twice as prevalent. With >3million new cases annually, “non-melanoma skin cancer” (NMSC) has been most common kind of cancer in US. Eighty percent of them were “basal cell carcinoma” (BCC), 20percent are “squamous cell carcinoma” (SCC), and fewer than 1percent are other tumors like adnexal tumors as well as “Merkel cell carcinoma.” [1]

Basal cell carcinoma:

Most prevalent cancer amongst Caucasian people globally is “Basal Cell Carcinoma.” Risk factors encompass exposure to chemicals involving immunosuppression, UV radiation, arsenic, and therapeutic ionizing radiation, which can be employed to treat acne vulgaris, eczema, and tinea capitis. BCC is most frequently

seen in those with red or blond hair, fair skin, as well as light eyes. BCC risk is linked to genetic diseases such as bazex dupre christol syndrome, xeroderma pigmentosa, and nevoid BCC syndrome. [2-4] Risk of BCC is considerably elevated by male gender and older age group. The head and neck area is where BCC most frequently occurs, afterward torso and extremities. BCC may be classified as low risk or high risk based on size and anatomical location of the lesion. Recurrence is more often for BCC that forms in neck as well as head, encompassing the mask area or face's H-zone. Histological subtypes of BCC includes non aggressive histologic subtypes nodular, nodulocystic, ulcerative, superficial, infundibulocystic, and fibroepitheloma of pinkus. The aggressive histologic subtypes BCC with squamous differentiation, infiltrative, morpheaform and sclerosing. [5]. Risk stratification for BCC into low risk and high risk. Low risk BCC – trunk, extremities, size of lesion <2cm, well defined borders, non aggressive histologic subtypes, no prior history of radiation, immunosuppression and recurrence.

High risk BCC-trunk, extremities >2cm, neck, head, hands, pretibial, feet, and anogenital area of any size, prior history of radiation, unclear border, history of immunosuppression, recurrent tumor, and aggressive histologic types. The clinical features of BCC includes ulcer on the face, which is non tender, dry, slowly growing, non mobile, with raised and beaded edges with central scab. The site of beading edges signifies the area of active proliferating cells. It does not spread through lymphatics nor through the blood stream. But it erodes deeply into local tissues including cartilages, bones causing extensive local destruction. BCC is local malignant. A history and physical evaluation has been first steps in BCC workup. Any concerning lesion is subjected to a skin biopsy. The deep reticular dermis should be included in the biopsy. Clinically severe diseases encompassing bone, perineural invasion, and deep soft tissue involvement may be reason for recent imaging study recommendations. When perineural illness is suspected, MRI, with or without contrast, is recommended. For bone involvement, contrast-enhanced CT is recommended. There are four types of BCC therapy options: low risk, locally advanced, high risk, as well as metastatic. For low-risk BCC treatment options include curettage and electrodesiccation, shave removal, wide local excision with 4 to 6mm clinical margin. [9-15]

MOHS and PDEMA are recommended for recurring tumors, H zone, size lesion >1 cm, aggressive histologic subtype, and routine excision with broader surgical margins for high-risk BCC. [16-22] Compared to standard excision, the recurrence rates for MOHS were reduced. [23]. Although surgery remains most frequently employed treatment option for cBCC, primary radiotherapy is regarded as suitable substitute for patients who are unsuitable for general anesthesia (because of their advanced age or co-morbidities), in situations where surgical resection might outcome in inadequate cosmetic as well as functional outcomes (for instance, midface area), as well as when patients decline surgical treatment. Topical imiquimod, 5-fluorouracil, photodynamic treatment, and cryotherapy are non-surgical modalities for superficial BCC and radiation therapy for non-surgical patients.

1. A positive resected margin where re-excision is not feasible, substantial perineural invasion large (>0.1mm), or identified nerve involvement, as well as cases of regional spread, are indications for adjuvant radiation. When high-risk characteristics are present, like feet, or head and neck region, primary location in hands; deep tumor invasion; poorly defined borders; recurring tumor; lympho-vascular dissemination; poorly differentiated histology; and several other characteristics, adjuvant radiation therapy is also taken into consideration. [24]

Systemic therapy is advised for locally progressed, metastatic, and regional nodal disease in cases of advanced BCC. Recent approved hedgehog pathway inhibitor -vismodegib and Sonidegib for advanced BCC. [25]. For metastatic and locally advanced BCC that has previously treated with cemiplimab, hedgehog inhibitors, anti-PD 1 immunotherapy, also approved. [26]

Squamous cell carcinoma:

2nd most prevalent kind of skin cancer is cSCC. Majority of cSCCs form on sun-exposed areas, particularly neck as well as head. It happens in premalignant conditions such as radiodermatitis, Bowen disease, Pagets disease, and chronic scars. Additional risk factors include genetic syndrome, immunosuppression (like chronic lymphocytic leukemia, drug-induced, lymphoma, and HIV), and demographics involving older age, male gender, and fair complexion. Raised and everted edges, indurated base and edge, and ulcerative or ulceroproliferative proliferation are the clinical indications of cSCC. Regional lymph nodes are affected.

They are different variants of cSCC – verrucous carcinoma, marjolin ulcer and SCC. The histologic subtypes of adenosquamous, acantholytic, and metaplastic cSCC are rare. For any suspected lesion, a skin biopsy is done. The deep reticular dermis ought to be examined in the biopsy when lesion is believed to be more than just superficial.

Risk factors for local recurrence, metastasis, or depth have been employed to stratify the risk of local cSCC. There are three risk groups on basis of risk stratification: low, high, and very high. Location/size lesion: trunk,

extremities <2cm, well-defined border, original tumor, well or moderately differentiated, <2mm thick, and no invasion beyond subcutaneous fat are all included in low-risk group. Trunk, extremities >2cm but <4cm, other areas such as neck, hands, head, feet, pretibia, as well as anogenital of any size, poorly defined border, recurrent tumor, poor differentiation, 2–6mm thick, no invasion beyond subcutaneous fat, perineural involvement, and aggressive histologic subtypes are all considered high risk. The very high-risk group includes lesion sizes greater than 4 cm in any location, >6 mm or invasion beyond subcutaneous fat, previous radiation history, perineural invasion, desmoplastic SCC, lymphovascular invasion, immunosuppression, rapidly growing tumor, nerve symptoms, and more.

When there is extensive structural engagement, such as in bone, perineural illness, or deep soft tissue, imaging should be performed. When deep soft tissue or perineural engagement has been present, MRI contrast was recommended. Additionally, CT with contrast is advised if bone involvement seems suspected. To find regional lymph node metastases, perform an ultrasound of the draining areas. PET CT or contrast-enhanced CT scans of abdomen, chest, as well as pelvis are utilized when clinically indicated to rule out distant diseases.

The treatment modalities for CSCC based on risk group. The low-risk CSCC treatment options were curettage and electrodesiccation, wide local excision with clear margin 4-6mm. Wide local excision with larger margin, MOHS, or PDEMA are main treatments for high and very high CSCC. Complete margin assessment, or PDEMA, is a technique that enables high-quality histologic inspection and analysis of the tissue's whole marginal surface that has been surgically removed. PDEMA technique like tubingen muffin and tubingen torte technique used.

The treatment of “regional lymph node metastasis” according to clinical as well as radiological features of metastatic node should done fine needle aspiration cytology to confirm regional metastasis. For unilateral lymph node metastases- primary tumor excision as well as ipsilateral modified radical neck dissection. For bilateral lymph node metastasis- bilateral modified radical neck dissection. Indication of adjuvant radiation for CSCC are resected margin positive (re resection is not feasible), extensive perineural or lymphovascular invasion, more than 6cm tumor, recurrent tumor, aggressive histologic subtypes, >2 positive nodes or one node > 3cm, extracapsular extension and others very high groups.

Adjuvant radiation dosage for primary tumor 60-79Gy for conventional fraction and 56- 70Gy for hypofractionation. For non surgical candidates definitive radiation dosage 79-93Gy for conventional fraction. For regional disease after lymph node dissection with negative margin and no extracapsular extension- 50-60Gy over 5-6weeks, positive margin or extracapsular extension-60to66Gy over 6-7weeks.

“Systemic therapy” has been recommended for metastatic disease and unresectable disease. For follow up protection from sunlight, history and clinical investigation every 6months for following 3years, every 3months for first 2, and imaging studies if clinical exam insufficient for disease

Melanoma :

Cutaneous melanoma constitutes 5th most common kind of cancer in US. Skin cancer in its most aggressive form. Malignant alteration of melanocytes is source of this tumor. It comes from neural crest. 20 times as common in white individuals than in black people. All things considered, the lifetime risk of melanoma is around 2.4% for Caucasians, 0.5% for Black individuals, 0.1% for Black individuals, and 0.55 for Hispanic adults. {1} The incidence is equal in both sexes. In females, leg is the commonest site and in males, the front or back of the trunk. The types of melanoma are cutaneous, extracutaneous, and occult.

Risk factors are ultraviolet rays(two levels of cumulative sun damage: low and high),physical characteristics: blue or green eyes, light skin, red or blond hair, family predisposition like familial atypical melanoma pancreatic cancer syndrome and BRCA 2 associated. Others high socioeconomic status, ethnic factors, albinism,xeroderma pigmentosa, giant naevus, junctional naevus and sporadic dysplastic naevus syndrome.[2] According to degree of concurrent solar elastosis and histopathologic degree of cumulative solar damage of surrounding skin, melanomas on sun-exposed skin were further categorized as low or high CSD. Lentigo maligna and desmoplastic melanoma are included in the high CSD group of melanoma, whereas superficial spreading is included in the low CSD group. Some melanoma in congenital nevi, mucosal melanomas, spitz melanoma, Acral melanomas, melanoma in blue nevi, and uveal melanoma are all included in the non-CSD categorization. Any mechanism can result in nevoid and nodular melanoma. [3]

Histo-pathological subtypes includes acral lentiginous melanoma, nodular melanoma, lentigo malignant melanoma, desmoplastic melanoma, superficial spreading melanoma, as well as amelanotic melanoma. {4}. About 70 percent of cases of superficial spreading melanoma develop in pre-existing moles. It has more radial growth pattern and better prognosis. The nodular melanoma about 15-30% common,it has vertical growth and

nodal spread. It has poor prognosis. Lentigo maligna melanoma is about 7-15% less common, least malignant. It occurs in older age group and common site is face. Acral lentiginous melanoma less than 5% . occur in palms, soles and subungual region. It has poor prognosis. Desmoplastic melanoma has high affinity for perineural invasion and high recurrence rate. The amelanotic melanoma is worst type and mimics soft tissue sarcoma because of the undifferentiation, tumor cells lose their capacity to synthesise melanin.

The clinical diagnosis based on ABCDE(asymmetry, border irregularities, color variation, diameter >6mm, evolution in size, shape, color, or new lesion). {5}. The lesion stands out different from other mole in the body is called ugly duckling. The biopsy from any suspicious lesion confirms the diagnosis. The biopsy may be excision biopsy for small lesion with 1-3mm margin and incisional biopsy for larger lesion, lesion on face, palm, soles. The nail biopsy-nail fold, nail bed and nail matrix. {6}. The histopathology is confirmatory and IHC, FISH and molecular techniques- HMB 45, SOX10, S 100, MIF, and antigens that are selectively expressed in melanoma.

The essential data in histopathology report includes diagnosis- melanoma in situ or invasive, Breslow thickness – <0.75mm, 0.76 to 1.5mm, 1.56 to 4mm, >4mm, ulceration-present or absent, mitoses-number/mm², microscopic satellites-present or absent, vascular invasion, surgical margin status, histologic types, Clark's level, vertical or radial growth phase pattern and tumor infiltrating lymphocytes. [7]

Melanoma spread through lymphatics to regional nodes either by permeation or by embolisation and hematogenous to lung, liver, brain, skin and bones. The staging investigation for melanoma stage 1 to stage 2- metastatic workup not indicated, stage 3 and above required x ray chest, CT/PET CT whole body and MRI brain to rule out distant metastasis. [8]

The main surgical treatment comprises wide surgical excision with clear histological margin. Current NCCN recommendation for excision margin in primary cutaneous melanoma were melanoma in situ- 0.5cm, <1mm – 1cm, 1.0-2.0mm -1-2cm, >2mm- 2cm margin. [9,10,11]

Managing draining lymph nodes option sentinel lymph node biopsy is standard of care in N0 and stage 1 – 3. The SNB can be avoided in stage 1A without ulceration. False negative rate of SNB in melanoma is 12%. A key component of treating melanoma patients with positive SNB has been full dissection of lymph nodes. Patients having regional lymph node metastasis have 10 year survival rate between 20-40 percent. One significant prognostic factor is tumor burden in regional lymph node; higher nodal involvement is linked to worse prognosis. [12,13,14]

The management of satellite and in transit metastasis in melanoma. Satellite metastases are extremely noticeable cutaneous and subcutaneous metastasis that has been situated within 2cm of original melanoma. Within transit metastasis has been clinically noticeable subcutaneous and dermal metastasis that are located between primary and first echelon of regional nodes, >2cm away from original melanoma. [15]. Treatment options include intralesional injection like talimogene laherparepvee, interleukin 2, BCG vaccine, local ablation and topical therapy. [16]

“Isolated limb perfusion” (ILP) or “isolated limb infusion” (ILI), type of regional chemotherapy, utilized only for recurrent, incurable diseases. Most often utilized drug for isolated limb perfusion in regional therapy is melphalan, either independently or in conjunction with TNF alpha and actinomycin D. ILP makes it possible to give the afflicted limb larger dosages of drugs without having any harmful systemic implications. This is accomplished by surgically isolating the afflicted limb's inflow and outflow from the body as a whole. In ILI, extremity has been isolated proximally applying a pneumatic tourniquet, and percutaneously positioned venous and arterial catheters enable chemotherapy infusion via an arterial catheter. ILI is different from ILP in that it does not result in hyperthermia and circulates blood in the affected extremity for only 30 minutes at a significantly slower rate. [17,18]

CONCLUSION.

Over past few decades, there appears to have been rise in number of cutaneous cancers that are presented to hospitals. In individuals with cutaneous cancers, proportion of squamous cell carcinoma seems to be steadily rising.

Initial recognition of malignant lesions and prevention of morbidity and mortality caused by these lesions necessitates an understanding of the fundamental skin cancer screening techniques. Enhanced clinician comprehension of clinical picture of illness and education of general public are indispensable for prevention and treatment of this lethal malignancy, as the survival and prognosis of skin cancer are contingent upon early diagnosis.

Reference

1. Collins A, Savas J, Doerfler LN. 2019. Nonsurgical Treatments for Nonmelanoma Skin Cancer. *Dermatol Clin.* 37(3):435–441. doi: 10.1016/j.det.2019.05.003.
2. Gallagher RP, Hill GB, Bajdik CD, Coldman AJ, Fincham S, McLean DI, Threlfall WJ. 1995. Sunlight Exposure, Pigamous Factors, and Risk of Nonmelanocytic Skin Cancer. *Arch Dermatol.* 131(2):164–169. doi: 10.1002/cncr.21898.
3. Van Dam RM, Huang Z, Rimm EB, Weinstock MA, Spiegelman D, Colditz GA, Willett WC, Giovannucci E. 1999. Risk Factors for Basal Cell Carcinoma of the Skin in Men: Results from the Health Professionals Follow-up Study. *Am J Epidemiol.* 150(5):459–468. doi: 10.1093/oxfordjournals.aje.a010034.
4. Gallagher RP, Hill GB, Bajdik CD, Coldman AJ, Fincham S, McLean DI, Threlfall WJ. 1995. Sunlight Exposure, Pigamous Factors, and Risk of Nonmelanocytic Skin Cancer. *Arch Dermatol.* 131(2):164–169. doi: 10.1002/cncr.21898
5. Niculet E, Craescu M, Rebegea L, Bobeica C, Nastase F, Lupasteanu G, Stan DJ, Chioncel V, Anghel L, Lungu M, Tatu AL. 2022. Basal Cell Carcinoma: Comprehensive Clinical and Histopathological Aspects, Novel Imaging Tools and Therapeutic Approaches (Review). *Exp Ther Med.* 23(1):60.
6. Weber P, Tschandl P, Sinz C, Kittler H. 2018. Dermatoscopy of Neoplastic Skin Lesions: Recent Advances, Updates, and Revisions. *Curr Treat Options Oncol.* 19(11):56.
7. National Comprehensive Cancer Network. 2022. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines): Basal Cell Skin Cancer.
8. Lin SH, Cheng YW, Yang YC, Ho JC, Lee CH. 2016. Treatment of Pigmented Basal Cell Carcinoma with 3 mm Surgical Margin in Asians. *Biomed Res Int.* 2016:7682917. doi: 10.1155/2016/7682917.
9. Chadha V, Wright M. 2009. Small Margin Excision of Periocular Basal Cell Carcinomas. *Br J Ophthalmol.* 93(6):803–806. doi: 10.1136/bjo.2008.151183.
10. Kimyai-Asadi A, Alam M, Goldberg LH, Peterson SR, Silapunt S, Jih MH. 2005. Efficacy of Narrow-Margin Excision in Nonmelanoma Skin Cancer. *J Am Acad Dermatol.* 53(3):464–468. doi: 10.1016/j.jaad.2005.03.038.
11. Que SKT, Zwald FO, Schmults CD. 2018. Cutaneous Squamous Cell Carcinoma: Incidence, Risk Factors, Diagnosis, and Staging. *J Am Acad Dermatol.* 78(2):237–247. doi: 10.1016/j.jaad.2017.08.054.
12. Omland SH, Ahlström MG, Gerstoft J, Pedersen G, Mohey R, Pedersen C, Kronborg G, Larsen CS, Kvinesdal B, Gniadecki R, Obel N, Omland LH. 2018. Risk of Skin Cancer in Patients with HIV: A Danish Nationwide Cohort Study. *J Am Acad Dermatol.* 79(4):689–695.
13. Gül U, Kiliç A. 2006. Squamous Cell Carcinoma Developing on Burn Scar. *Ann Plast Surg.* 56(4):406–408. doi: 10.1097/01.sap.0000200734.74303.d5.
14. Veness MJ, Palme CE, Morgan GJ. 2006. High-Risk Cutaneous Squamous Cell Carcinoma of the Head and Neck: Results from 266 Treated Patients with Metastatic Lymph Node Disease. *Cancer.*