# Clinical Diagnosis & Recent Trends in Management of Melanoma and malignant Keratinocytic tumors

**AN ESSAY**

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**By**

**Ahmed Hussein El-Degwy**
**M.B., B.Ch.**

**Supervised By**

**Prof. Dr. Mohey El-Din Ragab El-Banna**

**Prof. Of General Surgery**
**Faculty of Medicine- Ain Shams University**

**Dr. Mohammed Abdel-Mohsen Ghanem**

**Lecturer of Plastic Surgery**
**Faculty of Medicine- Ain Shams University**

Faculty of Medicine
Ain Shams University
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( وقل رب زدني علما)

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# List of Abbreviations

| Abb. | Full name |
|---|---|
| **NDYAG** | **Neodymium-doped yttrium aluminium garnet.** |
| **DNCB** | **Dinitrochlorobenzene** |
| **5-FU** | **5-Fluorouracil** |
| **IFN** | **Interferon** |
| **IL** | **Interleokin** |
| **LAK** | **lymphokine Activated Killer** |
| **FDA** | **Food and Drug Association** |
| **STSG** | **Spilt Thickness Skin Graft** |
| **FTSG** | **Full thickness Skin Graft** |
| **TM** | **Temporalis Muscle** |
| **STF** | **Superficial temporal Fascia** |
| **DTF** | **Deep Temporal Fascia** |
| **STA&V** | **Superficial Temporal Artery and Vein** |
| **PFlPericranial Flap** | |
| **rTMFl** | **reverse Temporalis Muscle Flap** |
| **PMF** | **Platysma Muscle Flap** |
| **PMMF** | **Pectoralis Major Muscle Flap** |

| | |
|---|---|
| **WHO** | **World Health Organization** |
| **SCC** | **Squamous Cell Carcinoma** |
| **MM** | **Malignant Melanoma** |
| **BCC** | **Basal Cell Carcinoma** |

# Introduction

Human skin is considered the largest organ of the body. The surface area of the skin on an average adult is 1.8 $m^2$, and represents 16% of the total body weight. It is divided into two main layers, the epidermis & dermis **(Wysocki, 2000).**

The epidermis is the outer thin cellular layer, consisted mainly of keratinocytes. Keratinocytes are layered in five layers from deep: stratum basale (columnar actively dividing deepest cells) stratum spinosum&granulosum (polygonal cells, forming the main epidermal thickness), stratum lucidum (flat & dead cells found only in thick skin in palm & sole), stratum corneum (flattened non-nucleated cells & compact keratin filaments). Other cells not included in epidermal main structure: melanocytes (cells secreting & transferring melanin pigment responsible for skin color), phagocytic Langerhans cells, and neurally associated Merkel cells **(Kanitakis, 2002).**

The dermis is the deep thick layer made up of a matrix of collagen, elastin and network of capillaries and nerves. Sub-divided into: Papillary superficial dermis (forming dermo-epidermal junction), Reticular deep dermis (compacted fibrous layer)**(Netter, 2009).**

Skin Appendages include: Sebaceous glands (apocrine glands secreting sebum related to hair follicles), sweat glands (simple coiled tubular exocrine glands secreting sweat), hair (filamentous, keratinized structure consists of a shaft and a root within a tubular invagination of the epidermis called hair follicle)**(MacGrath and Uitto, 2010)).**

Several risk factors for malignant skin tumors are described; the most important of which is prolonged exposure of Ultraviolet rays (residing near the equator, ozone depletion areas, prolonged sun exposure, tanning beds). Other

important risk factors as excessive exposure to ionizing radiation e.g: x-rays, Strong family history, Genetic skin diseases e.g: Gorlin's syndrome, xerodermapigmentosa, or albinism. Also, burn scars & chronic ulcers, Premalignant skin lesions e.g: actinic keratosis and Bowen`s disease. Also, fairly skin ethnic groups & immunosuppressed patients and those with repeated contact to some chemical irritative substances **(Markovic, 2007).**

Keratinocytic tumors include; basal cell carcinoma (BCC), squamous cell carcinoma (SCC)&Bowen's disease, while Melanocytic tumors include; superficial spreading melanoma, nodular melanoma, acral-lentiginous melanoma, amelanotic melanoma. **(Ricotti et al, 2009)**

A malignant tumor primarily originates from the cell of origin infiltrating the surroundings. Macroscopically, the tumor is often elevated, fungating mass showing areas of hemorrhage, necrosis &crustations. However, it may be ulcerated with irregular borders, necrotic floor & indurated base. Microscopically, tumor cells of epidermal origin- destroy the basement membrane and form sheets or compact masses which invade the subjacent connective tissue (dermis). In well differentiated carcinomas, tumor cells are pleomorphic/atypical, but resemble normal cell of origin. Each type of cancer has its characteristic microscopic appearance e.g: palisade appearance in BCC & cell nests in SCC.

Modes of spread occure generally by three main mechanisms: local spread, distant lymphatic spread & distant vascular spread. Each specific type of neoplasm has its preferred mode of spread, such as: BCC is a locally malignant neoplasm, SCC spreads mainly through lymphatic system, etc. **(danciu&Mihailovici, 2009).**

Early Detection of skin malignant tumors is held by both periodic clinical & self-examination of the skin, confirmatory diagnosis is done mainly by taking biopsy, tumor markers and radiological studies. Pathological examination of biopsies aids in determining the differentiation & hence the prognosis of the tumor. Other diagnostic tools, as nuclear medicine, have important role in diagnosis, prognosis & assessing spread of malignant shin neoplasm **(Sauer & Hall, 1996).**

Treatment is dependent onspecific type of cancer, location of the cancer, age of the patient, and whether the cancer is primary or a recurrence.

Non-surgical management including; radiation therapy (external beam radiotherapy or brachytherapy), topical chemotherapy (imiquimod or 5-fluorouracil) and cryotherapy (freezing the cancer off) can provide adequate control of the disease; both, however, may have lower overall cure rates than certain types of surgery. Other modalities of treatment such as photodynamic therapy, topical chemotherapy, electrodesiccation and curettage can be found in the discussions of basal cell carcinoma and squamous cell carcinoma **(Doherty et al, 2005).**

Mohs' micrographic surgery (Mohs surgery) is a technique used to remove the cancer with the least amount of surrounding tissue and the edges are checked immediately to see if tumor is found. This provides the opportunity to remove the least amount of tissue and provide the best cosmetically favorable results. This is especially important for areas where excess skin is limited, such as the face. Cure rates are equivalent to wide excision. Special training is required to perform this technique **(Tierney and Hanke, 2009).**

Currently, surgical excision with safety margin is the most common & most successful form of treatment for skin cancers. The goal of reconstructive surgery is restoration of normal appearance and function. The choice of technique

in reconstruction is dictated by the size and location of the defect. Excision and reconstruction of facial skin cancers is generally more challenging due to the presence of highly visible and functional anatomic structures in the face **(Thomas, 2004).**

When skin defects are small in size, most can be repaired with simple repair where skin edges are approximated and closed with sutures making a linear scar. Larger defects may require repair with a skin graft (split or full thickness), local, regional or distant flap, or a microvascular free flap **(Jeffrey et al, 2011).**

Skin grafts and local skin flaps are by far more common than the other listed choices. Split thickness grafts can be used to repair larger defects, but the grafts are inferior in their cosmetic appearance. Full thickness skin grafts are more acceptable cosmetically. However, full thickness grafts can only be used for small or moderate sized defects. Local skin flaps are a method of closing defects with tissue that closely matches the defect in color and quality. Skin from the periphery of the defect site is mobilized and repositioned to fill the deficit. Pedicled skin flaps are a method of transferring skin with an intact blood supply from a nearby region of the body. Once the flap develops a source of blood supply form its new bed, the vascular pedicle can be detached **(Boyce &Shokrollahi, 2006).**

# Aim of the work

The aim of this essay is to review different types and clinical Diagnosis of Melanoma, Basal cell carcinoma and Squamous cell carcinoma and to highlight the different modalities of their management in Head, Neck &Extrmeties.