

# Skin Tumors

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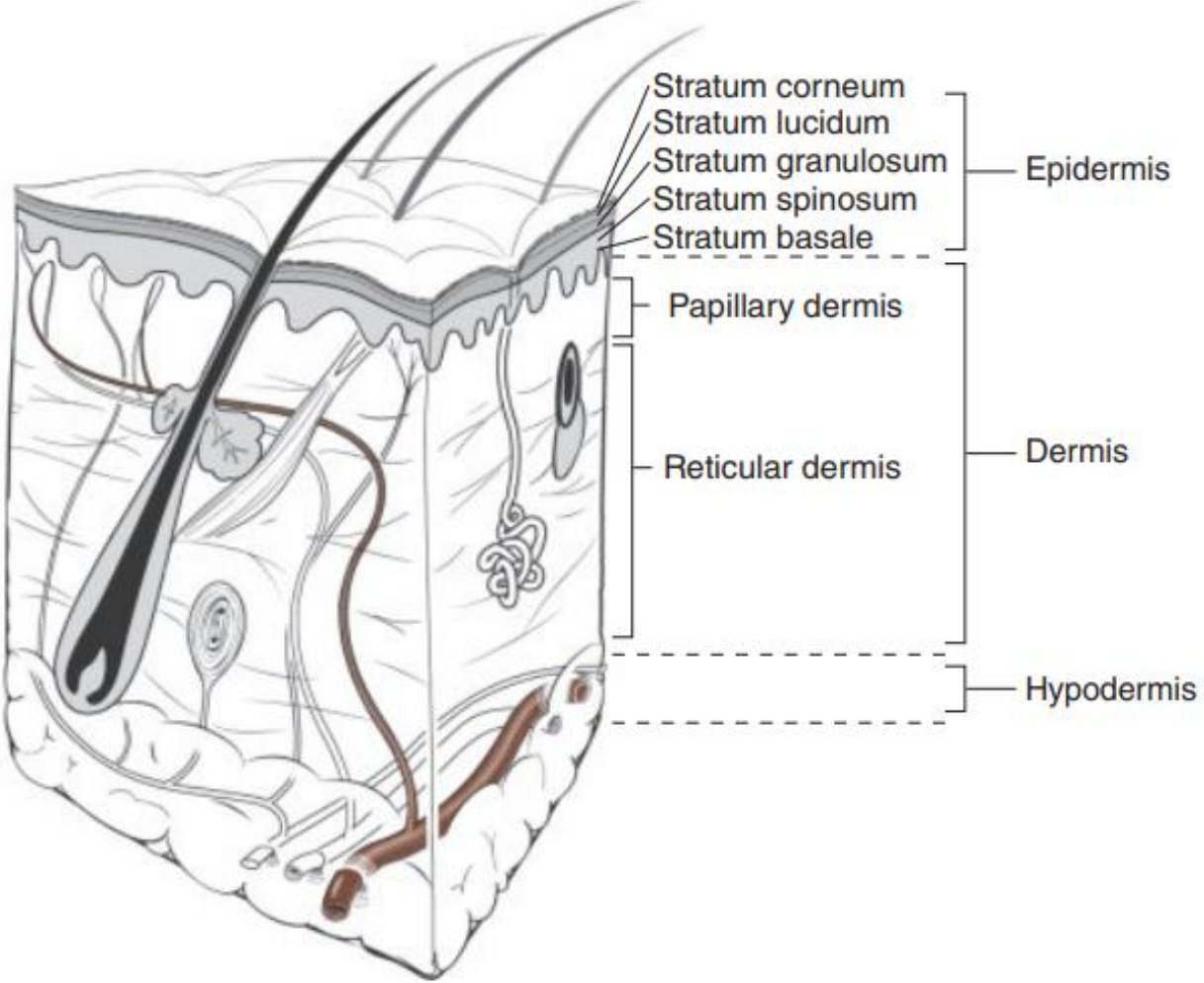
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# Structure and Function of Skin

## ❖ General Functions

- ✓ Largest body organ: 16% total body weight
- ✓ Protection: UV, mechanical, chemical, thermal, barrier to microorganisms
- ✓ Metabolic: Vitamin D synthesis
- ✓ Thermoregulation

# Anatomy of Skin



**Table 14-1** *Contents of Skin Layers*

	<b>Cells</b>	<b>Appendages</b>	<b>Function/Responses</b>
Epidermis	Keratinocyte (predominant) Melanocyte  Langerhans cell Merkel cell		Protective barrier Pigmentation UV protection Immunity (antigen presentation) Constant touch and pressure Static two-point discrimination
Dermis	Fibroblast  Macrophage Mast cell	Hair follicle Sebaceous gland Eccrine sweat gland Apocrine sweat gland Naked nerve fiber  Meissner's corpuscle  Pacinian corpuscle  Bulb of Krause Ruffini ending	Collagen/elastic fiber Ground substance Scavenger Allergic response  Sebum Thermoregulation Sweat Pain Temperature Chemoreceptor Light touch Dynamic two-point discrimination Vibration Deep pressure Temperature (cold) Sustained pressure Temperature (hot)
Hypodermis	Adipocyte		Insulation Energy
Muscle	Striated muscle cell		Movement

**Table 14-2** *Five Layers of Epidermis*

<b>Layer</b>	<b>Cell Types</b>	<b>Clinical Significance</b>
Stratum corneum	Nonviable keratinocytes	Responsible for thickness of glabrous skin Exfoliates with use of topical tretinoin
Stratum lucidum	Nonviable keratinocytes	
Stratum granulosum	Marginally viable keratinocytes	Thickens the most with tissue expansion
Stratum spinosum	Viable keratinocytes	
Stratum basale	Mitotically active keratinocytes, melanocytes, tactile cells, nonpigmented granular dendrocytes	Origin of various skin cancers

# DIAGNOSIS OF SKIN LESIONS

- When a patient presents with a skin lesion or soft-tissue mass, a focused **history and physical examination** are crucial to derive the correct diagnosis. For the **diagnosis** of cutaneous lesions, **biopsy** remains the gold standard.

# Examination

- 3 Ss, 3Cs, 3Ts, 3Ss, 3 Ls
- Site | Size | Shape
- Colour | Contour | Consistency
- Temperature | Tenderness | Transillumination
- Fixity to: Skin | Subcutaneous tissues | Structures deep

# BENIGN SKIN LESIONS

## I. SEBORRHEIC KERATOSES.

Seborrheic keratoses are benign skin growths that characteristically appear in older people as **multiple, raised, irregularly rounded lesions with a verrucous, friable, waxy surface, and variable pigmentation on the face, neck, or trunk**. No treatment is indicated for most lesions. If treatment is desired, surgical excision, curettage followed by electrodesiccation, topical trichloroacetic acid, or cryotherapy with liquid nitrogen may be employed.

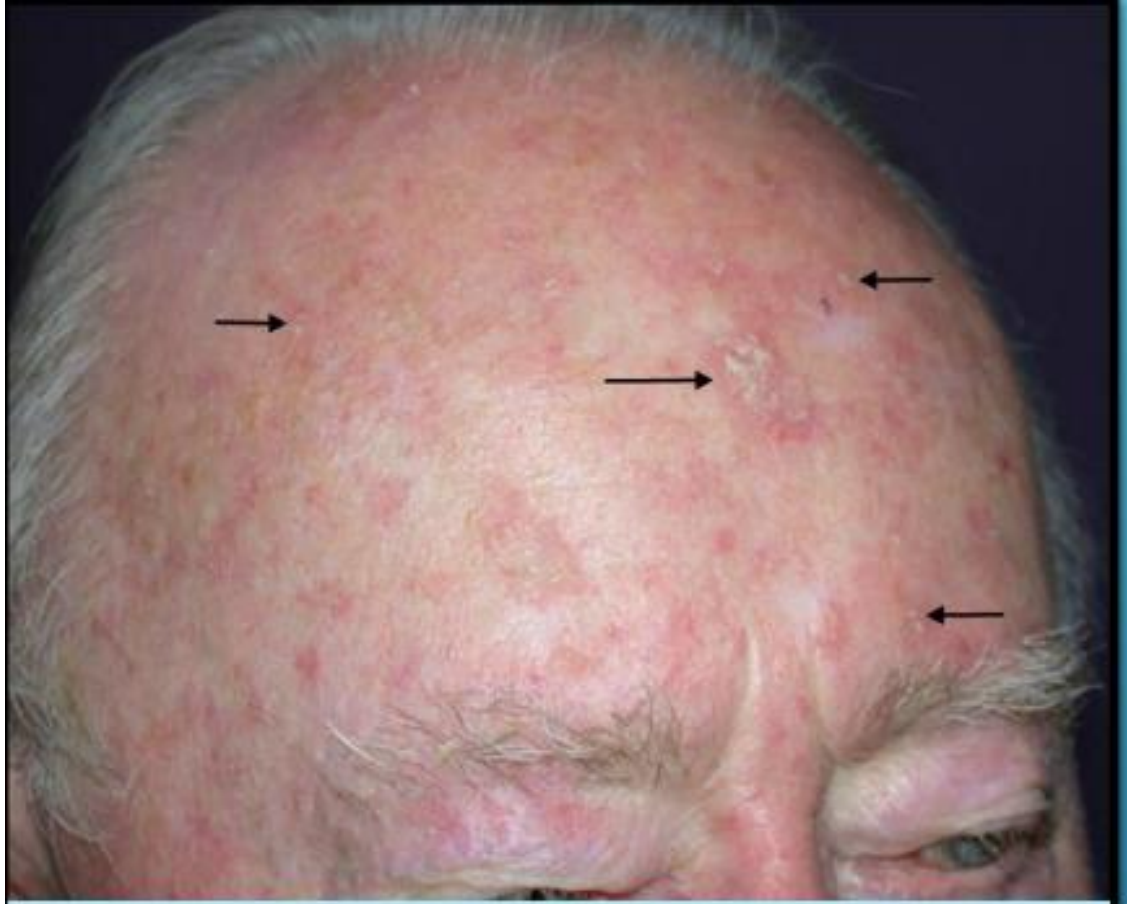




# BENIGN SKIN LESIONS

## II. ACTINIC KERATOSES.

Actinic keratoses result from sun exposure and are found predominantly in elderly, fair-skinned patients. Lesions **are small, usually multiple, flat-to-slightly elevated with a scaly surface ranging from red to yellowish brown to black.** Unlike seborrheic keratoses, these lesions have **malignant potential**; up to 20% become squamous cell carcinoma. Benign-appearing actinic keratoses may be observed; treatments include excision, cryotherapy, dermabrasion, topical applications of imiquimod or 5-fluorouracil, and photodynamic therapy.



**Solar (senile/ Actinic) keratosis**



# BENIGN SKIN LESIONS

## III. NEVI.

Junctional nevi are **small (<6 mm), well-circumscribed, light brown or black macules found on any area of the body.** Nevi rarely develop in people **older than 40 years old**, so any new lesion in this population should be considered **a possible melanoma.**

# MALIGNANT SKIN LESIONS

- 1- Basal Cell Carcinoma (BCC)
- 2- Cutaneous SCC
- 3- Melanoma

# 1- Basal Cell Carcinoma (BCC)

## ❖ Demographics:

- BCC is the most common form of skin cancer.
- It is 4-5 times more common than squamous cell carcinoma (SCC).
- 95% of cases occur between 40 and 79 years of age.
- Greater than 80% occur in the head and neck.
- It is the most common malignancy of the eyelid.
- Nose is the most common location for BCC.

# 1- Basal Cell Carcinoma (BCC)

## ❖ Risk Factors:

- Fitzpatrick skin type: Types I and II have increased risk
- Sun exposure
- Advancing age
- Immunosuppression: AIDS, organ transplant medications
- Carcinogen exposure: UV and ionizing radiation, arsenic, hydrocarbons
- Genetic mutations: Albinism, Xeroderma pigmentosum (XP)
- Premalignant lesions: Nevus sebaceus of Jadassohn

**Table 15-1** *Fitzpatrick's Classification of Sun-Reactive Skin Types*

<b>Skin Type</b>	<b>Color</b>	<b>Reaction to First Summer Exposure</b>
I	White	Always burn; never tan
II	White	Usually burn; tan with difficulty
III	White	Sometimes mild burn; tan average
IV	Moderate brown	Rarely burn; tan with ease
V	Dark brown*	Very rarely burn; tan very easily
VI	Black	Do not burn; tan very easily

\*Asian Indian, Asian, Hispanic, or light African descent.



## ❖ Biology:

- Tumors originate from the pluripotential epithelial cells of epidermis and hair follicles (basal keratinocytes) at the dermoepidermal junction.

## ❖ Types of BCC:

### 1- Nodular

- Most common histologic type: 50%-60%
- Well-defined borders, flesh-colored, pearly nodule with overlying telangiectasias
- May be ulcerated: Central ulcer surrounded by rolled border; historically called rodent ulcer.

## 2- Superficial spreading:

- 9%-15% of BCCs, second most common type
- Located in epidermis, no dermal invasion
- Flat, pink, scaly patches with ulcerations and crusting, usually multiple, on trunk
- Often mistaken for fungal infection, actinic keratosis, psoriasis, or eczema

### 3- Micronodular

- 15% of BCCs
- Small rounded nodules of tumor the size of hair bulbs

### 4- Infiltrative

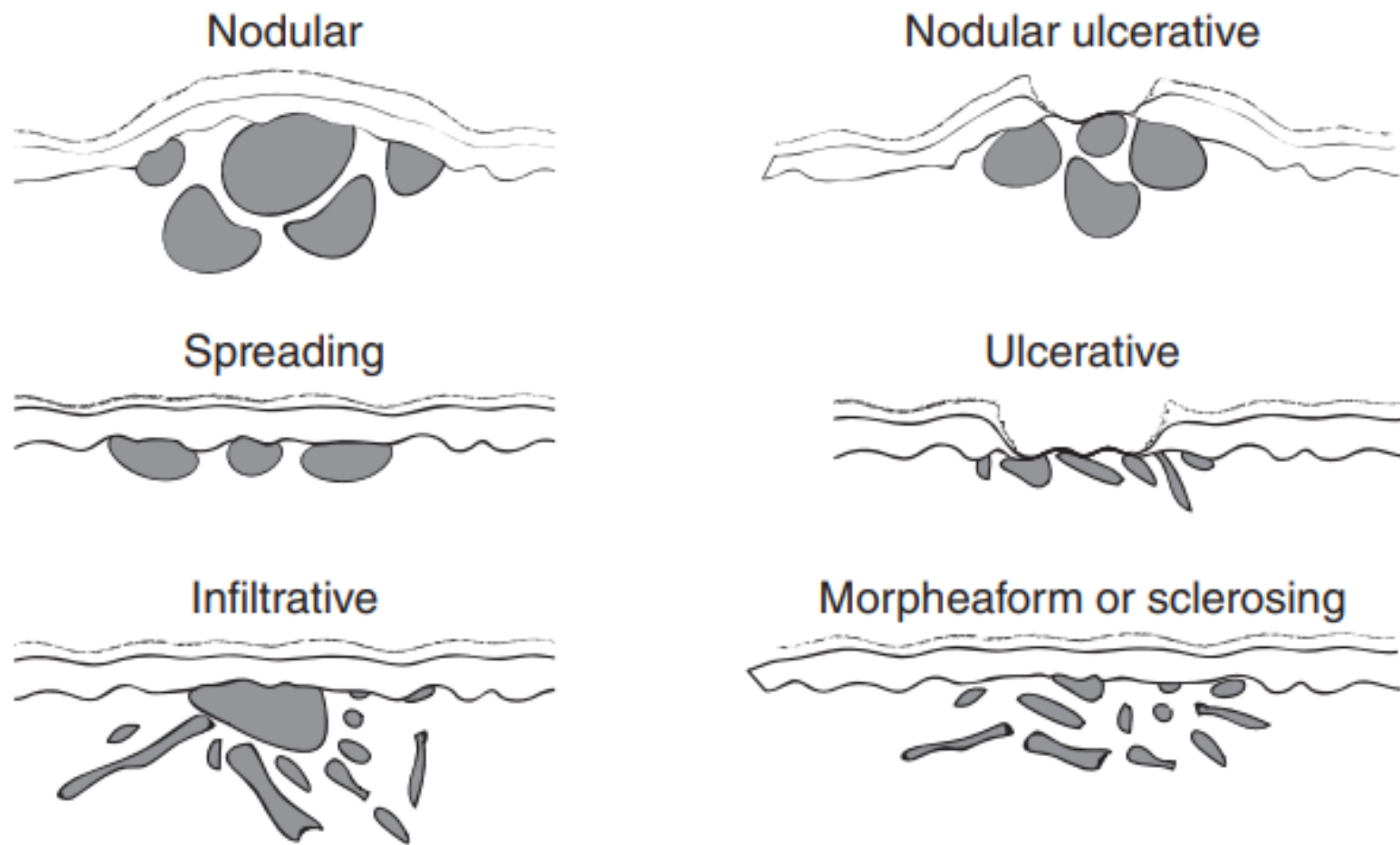
- 7% of BCCs
- Opaque yellow-white color, blends with surrounding skin
- Tumor islands of variable size with jagged configuration

### 5- Pigmented

- 6% of BCCs
- Pigmentation from melanin
- Often confused with melanoma

## 6- Morpheaform (sclerosing or fibrosing)

- 2%-3% of BCCs, most aggressive
- Typically described by patients as an “enlarging scar” without history of trauma
- Usually an indurated, flat, or slightly elevated papule or plaque with white to yellow scarlike appearance
- Rarely ulcerates
- High incidence of positive margins after excision



**Fig. 15-1** Histologic types of basal cell carcinoma.



**Basal Cell Carcinoma**

## Recurrence and Metastasis:

- 30%-50% will recur within 5 years.
- Metastasis is rare, with less than 0.1% incidence overall to lymph nodes, lungs, and bones.

## Treatment:

- Goal of treatment is cure of tumor with preservation of function and cosmesis.
- Each case should be treated differently according to size, anatomic location, histologic type, and whether it is primary or recurrent, with low or high risk.
- Treatment modalities include medical, destructive, and surgical excision.



## ❖ Medical:

- Superficial therapies: Reserved for patients in whom surgery or radiation is contraindicated or impractical.
- Imiquimod 5% (Aldara) or 5-fluorouracil
  - Topical cream
  - Effective for multiple, low-risk superficial BCC and SCC in situ
- Radiotherapy (RT): Option for nonsurgical candidates, reserved for ages +60 years

❖ Destructive:

- Curettage and electrodesiccation (C&E)
- Cryosurgery
- Laser phototherapy (CO2 laser)
- Photodynamic therapy (PDT)

## ❖ Surgical excision:

- Primary surgical excision

- Current literature recommends 4 mm margin for small primary BCC on face or other low-risk lesions.

- 10 mm margins are recommended for primary resection of high-risk larger tumors on trunk or extremities.

TIP: If tissue rearrangement or skin grafting is necessary for closure, intraoperative margin assessment is recommended.

❖ Mohs micrographic surgery:

Sequential horizontal excision using topographic map of lesion and repeat excision until all positive margins are tumor free

❖ Follow-Up :

- Patients treated for BCC should be observed every 6-12 months with full H&P and complete skin examination.
- Patient education is critical and includes sun protection and self-examination.

## 2- Cutaneous SCC

### ❖ Demographics:

- SCC is second most common skin cancer after BCC.
- Common on face, hands, forearms
- 60% of all tumors of external ear

### ❖ Risk Factors :

- Fitzpatrick skin type: Types I and II have increased risk
- Sun exposure: Cumulative exposure strongly correlated to SCC
- Carcinogen exposure: Pesticides, arsenic, organic hydrocarbons
- Viral infection: HPV and herpes simplex
- Radiation: Long-term latency between exposure and disease
- Immunosuppression: 253-fold increased risk for SCC in renal transplant patients.

- Chronic wound caused by thermal burn, discoid lupus, fistula tract, osteomyelitis
- Premalignant lesions:
  - Actinic keratosis/solar keratosis
  - Bowen's disease
  - Leukoplakia
  - Keratoacanthoma



# Bowen's disease

- Red scaly lesion
- Usually found in the elderly or immunosuppressed
- Best regarded as SCC in situ
- 3-5% become invasive SCCs
- Treatment options include topical treatment with 5-FU, imiquimod, cryo, curettage, PDT, or excision





❖ Recurrence and Metastasis:

- Local metastasis occurs to regional nodal basins.

TIP: Lymph node examinations are critical.

❖ Biology

- SCC arise from the malpighian or basal layer of epidermis.

## ❖ Types of SCC :

All types are histologically similar with irregular masses of squamous epithelium proliferating downward toward dermis.

- Verrucous
- Ulcerative
- Marjolin's ulcer
  - Typically arise in chronic wounds (burn scars, fistulas)
- Subungual

## ❖ Treatment :

- Biopsies of suspicious lesions are essential. Treatment modalities include medical, destructive, and surgical excision.
- Surgical:
  - Excision
    - Wide local excision is a good treatment option with 95% cure rate.
    - Most recent recommendations are based on size, grade, location of tumor, and depth of invasion.
    - Generally 4-6 mm margins are recommended.
    - Frozen sections often give false negatives.

- Mohs micrographic surgery
  - 95% cure rate for primary SCC
- Lymphadenectomy
  - This is indicated for clinically palpable nodes.

#### ❖ Follow-Up

-Patients treated for SCC should be observed frequently with full H&P, complete skin and **nodal examination**.

# 3- Melanoma:

## ❖ Demographics:

- 5-year survival rate
  - Localized <1 mm thickness: .50%-90%
  - Regional disease, stage III: .20%-70% depending on nodal tumor burden
  - Distant disease: generally ,10%

❖ Risk Factors:

- UV exposure
- Age
- Prior melanoma
- Family history
- Fitzpatrick types I, II
- Race :

Risk is 10 to 20 times higher for whites than blacks.

Prognosis in darker skin is worse because of delayed diagnosis

- Predisposing conditions:

Congenital nevus: 6% lifetime risk depending on size

Typical moles: Increased risk if more than 50

Xeroderma pigmentosum

Lentigo maligna

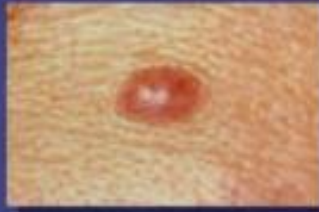
## BENIGN

## MALIGNANT

### ASYMMETRY

This benign mole is not asymmetrical. If you draw a line through the middle, the two sides will match, meaning it is symmetrical.

A



If you draw a line through this mole, the two halves will not match, meaning it is asymmetrical, a warning sign for melanoma.

### BORDER

A benign mole has smooth, even borders, unlike the one on the opposite page.

B



The borders of an early melanoma tend to be uneven. The edges may be scalloped or notched.

### COLOR

Most benign moles are all one color—often a signal shade of brown.

C



Having a variety of colors is another warning signal. A number of different shades of brown, tan, or black could appear. A melanoma may also become red, white, or blue.

### DIAMETER

Benign moles usually have a smaller diameter than malignant ones.

D



Melanomas usually are larger in diameter than the size of the eraser on your pencil ( $\frac{1}{4}$  inch or 6mm), but they may sometimes be smaller when first detected.

### EVOLVING

Common, benign moles look the same over time. Be on the alert when a mole starts to evolve or change in any way.

E



when a mole is evolving, see a doctor. Any change—in size, shape, color, elevation, or another trait, or any new symptom such as bleeding, itching, or crusting—points to danger.



- TIP: Melanomas are characterized by ABCDs: Asymmetry, Border irregularity, Color variation, and Diameter more than 6 mm.

❖ Melanoma Growth Patterns:

1- Superficial spreading melanoma

- Most common: 50%-70%
- Usually arises from preexisting nevus

2- Nodular melanoma

- 15%-30% of all cases
- Aggressive

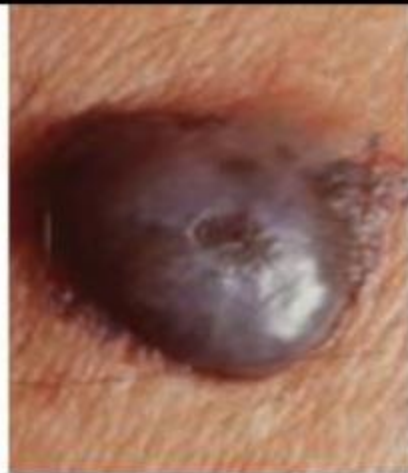
3- Lentigo maligna

4- Acral-lentiginous melanoma:

Usually on palms, soles of feet, subungual, or sun-protected sites



Surface Spreading  
Melanoma



Nodular  
Melanoma



Lentigo Maligna  
Melanoma



Subungual acral lentiginous  
melanoma of the thumb.

## Melanoma Staging:

- Histologic analysis of full-thickness biopsy specimen is categorized by microstaging.
  - Breslow thickness: Measurement of tumor thickness in millimeters
  - Clark's level: Level determined by histologic invasion through skin layers

- Tumor thickness (Breslow thickness) replaces level of invasion (Clark's level) as the most important prognostic variable of primary tumor invasion that best predicts survival.

- ❖ Treatment of Melanoma:

- Surgical excision:

- Wide local excision (WLE) with surgical margins based on tumor thickness

- In situ: 0.5 cm margin

- 1 mm: 1 cm margin

- 1-4 mm: 2 cm margin

- 4 mm: 2 cm margin

- Lymph nodes:

- Sentinel lymph node biopsy (SLNB) is a Staging procedure, not a therapeutic treatment

THANK YOU