

1  Skin cancer of the Eye and Reconstruction

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2  Eye Anatomy

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6  Why is skin cancer important?

- It's the most common type of cancer in the United States;
- about 40 to 50 percent of Americans who live to age 65 will be diagnosed with it, at least once;
- it's found in more than 1 million Americans each year;
- it will kill nearly 8,000 people;
- .... and it is largely preventable.

7  A Look at Normal Skin

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8  What Is Skin Cancer?

- An abnormal overgrowth (a *tumor*) of certain types of skin cells in the epidermis that began as normal skin structures.
- A tumor can be either *benign* (generally localized and not life-threatening) or *malignant* (invasive or spreading, and may be deadly).
- Skin cancer is a malignant tumor, able to invade surrounding tissues and metastasize (or spread) to other parts of the body, BUT.....

9  Is skin cancer deadly?

- ... it depends on the type of skin cancer, and how or if it's treated, as we'll discuss in this session.

10  What causes skin cancer?

- SUN!
- Artificially-produced UV radiation, such as from sunlamps and tanning booths, also can cause skin cancer.
- Predisposition (genetics).
- Chemicals (e.g., trivalent inorganic arsenic).

- 11  **Ultraviolet radiation**
- UVB rays (290-320 nm) are *more likely* than UVA rays (400-320 nm) to cause sunburn.
  - But, UVA rays pass deeper into the skin.
  - UVB radiation is thought to be the cause of melanoma and other types of skin cancer.
  - UVA radiation may cause skin damage that can lead to skin cancer and cause premature aging of the skin.

- 12  **UV Exposure Varies..**
- by day, time of day, latitude, and weather.

- 13  **Primary types**

**Pre-cancerous**

-Actinic keratosis

**Cancerous**

-Basal cell carcinoma

-Squamous cell carcinoma

-Melanoma

-Others (of the specialized structures of the skin)

- 14  **Actinic keratosis**
- A pre-cancerous condition of thick, scaly patches of sun-damaged skin. Also referred to as solar or senile keratosis.

- 15  **Basal Cell Carcinoma**
- A type of skin cancer that arises from the basal cells, small round cells found in the lower part (or base) of the epidermis, the outer layer of the skin.

- 16  **Basal Cell Carcinoma**
- Basal cell carcinoma accounts for more than 90 percent of all skin cancers in the United States.
  - It is a slow-growing cancer that seldom spreads to other parts of the body, and generally is readily treatable.
  - May erode into surrounding structures if not treated.

- 17  **Basal Cell Carcinoma**
- Three common presentations:

- 18  **Squamous Cell Carcinoma**
- Cancer that begins in squamous cells, which are thin, flat cells that look like fish scales.
  - Squamous cells are found in the tissue that forms the surface of the skin.
  - Also found on other internal and external body surfaces.

- 19  **Squamous Cell Carcinoma**

- More than 250,000 new cases of squamous cell carcinoma diagnosed each year.
- Often develop from sun damaged areas called solar or actinic keratosis.
- Look similar to basal cell carcinoma, and even actinic keratosis.

20  Squamous Cell Carcinoma

- Similar in appearance to actinic keratosis and basal cell carcinoma.

21  Melanoma

- A form of skin cancer that arises in melanocytes, the cells that produce pigment and also are found in the epidermis.
- Melanomas usually begin in a mole, which is a benign cluster of melanocytes and other tissue.

22  Melanoma

- Melanoma is the deadliest form of skin cancer, causing more than 75% of all skin cancer deaths.
- About 53,600 people in the United States were diagnosed with a melanoma skin cancer in 2002, and approximately 7,400 died from the disease.

23  Melanoma (the A-B-C and Ds)

**A**symmetry -- The shape of one half does not match the other.

24  Melanoma (the A-B-C and Ds)

**B**order -- The edges are often ragged, notched, blurred, or irregular in outline; the pigment may spread into the surrounding skin.

25  Melanoma (the A-B-C and Ds)

**C**olor -- The color is uneven. Shades of black, brown, and tan may be present. Areas of white, grey, red, pink, or blue also may be seen.

26  Melanoma (the A-B-C and Ds)

**D**iameter -- There is a change in size, usually an increase. Melanomas are usually larger than the eraser of a pencil (5 mm or 1/4 inch).

27  Melanoma

May be found when a pre-existing mole changes:

*Early changes*

- forming a new black area
- newly formed fine scales
- itching in a mole

*More advanced changes*

- texture changes (becomes hard or lumpy)
- itch, ooze, or bleed
- usually do not cause pain

28  Who is at risk for skin cancer?

- Light skin color, hair color, eye color.
- Family history of skin cancer.

- Personal history of skin cancer.
- Certain types and a large number of moles.
- Freckles, which indicate sun sensitivity and sun damage.
- Chronic exposure to the sun.
- History of sunburns early in life.

29  **Sunburns are common**

The Behavior Risk Factor Surveillance System provided data showing nearly 32% of all adults in the US report having had a sunburn in 1999.  
 More than 57% of adults age 18 to 29 reported having had a sunburn.  
 Over 40% of children are reported to have had sunburns over the preceding year.

30  **How is it found?**

- Mostly by self examination of the skin
- By observations by family members
- By skin examination during visits to the doctor

To catch it early, **you have to LOOK for it!**...  
 and then you have to **DO something about it!**

31  **How is skin cancer treated?**

The physician will:

- Determine what type it is (*medical history, examination, biopsy*)
- Determine how localized or extensive it is
- Then treat it...
  - *surgery (e.g., Moh's, cryo, laser, curettage, grafts)*
  - *chemotherapy*
  - *radiation*

32  **How can it be prevented?**

**Pick your parents very carefully!**

- While genetics isn't the primary factor, having your parents keep you from getting sunburns as a child **is** important.
- Too *late* for that? Keep *your* kids from getting sunburns.
- Too late even for that? (Try to) keep *their* kids from getting sunburns.
- And, limit further overexposure and damage to \_\_\_\_\_ your own skin.

33  **Why?**

Because ongoing, excess UV light is harmful even for adults:

- Probably leads to more skin cancer, plus....
- Skin damage
- Cataracts and other eye disorders
- Immune system suppression

- 34  **Skin Damage**
- Actinic keratosis
  - Hyperplasia (thickening), leathery skin
  - Solar degeneration, such as...
    - Wrinkles
    - Atrophy (thinning skin)
    - Pigmented and non-pigmented spots
    - Elastin breakdown (sagging skin)

- 35  **Cataracts and other eye disorders**
- UV radiation increases the likelihood of:
- Cataracts
  - Pterygium (i.e., tissue growth that can block vision)
  - Skin cancer around the eyes
  - Degeneration of the macula

- 36  **How to limit sun damage to skin?**
- Avoid exposure to the midday sun *(10 a.m. to 2 p.m. standard time, or 11 a.m. to 3 p.m. daylight saving time)*
  - Wear protective clothing *(sun hats, long sleeves, long pants)*
  - Apply and renew sunscreens *(those with an SPF of 15 to 30 block most of the sun's harmful rays)*
  - Use UVA- and UVB-blocking sunglasses
  - Watch the UV Index for your area

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97 yo male c/o pain and redness OD x 2 months.

POH: CE/PCIOL OD 1980

CE/PCIOL OS 1999

PMH: Skin cancer of the neck with surgery and XRT 1990

All/Meds: None

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Va sc 7/200 OD  
20/200 OS

Pupils brisk, no APD

Ta 24 OD, 22 OS

Exam as follows

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44  **Sebaceous Carcinoma**

- Tumor of the meibomian glands
- Less than 1% of all eyelid tumors
- Usually occurs in the upper lids

45  **Epidemiology**

- Most common between ages 60-80
- Females more than males
- Younger pts with prior radiation exposure

46  **Clinical Presentation**

- Nontender enlarging upper eyelid mass
- Great Masquerader
  - Chalazion
  - Unilateral blepharitis

47  **Clinical features**

48  **Clinical features**

49  **Histopathology**

- Foamy, vacuolated appearance
- Pagetoid invasion
- Mitotic figures

- Oil Red O stain positive

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51  **Prognosis**

- Aggressive with recurrence
- 36% recur within 5 years
- Lymphatic, hematogenous, lacrimal spread
- 5-year mortality rate is 15%; with mets 67%

52  **Rules of Poor Prognosis**

- Vascular or lymphatic invasion
- Involvement of both upper and lower lids
- Pagetoid invasion
- Invasive and multicentric in origin

53  **Treatment**

- Excision with 5-6 mm margins
- Exenteration if orbital involvement or extensive invasion
- Radiation therapy

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56  **Benign Tumors of Surface Epithelium**

- Squamous Cell Papilloma

57  **Benign Tumors of Surface Epithelium**

- Seborrheic Keratosis

58  **Nevus**

59  **Precancerous Lesions**

- Keratoacanthoma

60  **Malignant Epithelial Tumors**  
• Squamous Cell Carcinoma

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62  **Malignant Epithelial Tumors**  
• Basal Cell Carcinoma  
– Noduloulcerative

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68  **Malignant Melanoma**

69  **Good signs**  
• No missing lashes  
  
• Normal smooth eyelid margin

70  **Warning Signs**  
• Bleeding  
  
• Ulceration  
  
• Growth  
  
• History or family history of bad guys!

71  **If pigmented like a mole,**  
  
• Be uniform color  
  
• No blotchy spots

72  **Conjunctival Malignant Melanoma**

73  **Conjunctival Melanoma**

Arises from  
Pre-existing PAM  
Pre-existing nevus  
De-novo

74  **Conjunctival Melanoma**

Relatively rare  
Largest series AFIP - 131 cases  
Incidence is rising!  
Yu et al published in 2003 that the biannual rise in conjunctival melanoma in the US is 5.5%

75  **AFIP Series**

Presence of PAM – 75%  
5 yr mortality – 26%

76  **AFIP Series – Prognostic Factors**

Thickness > 0.8 mm  
Mitotic activity > 5 per hpf  
Location – worse if palpebral conj  
If coexisting PAM is present & has severe atypia

77  **Conjunctival Melanoma**

Several series have corroborated in reporting that a non-bulbar, non-limbal tumor has the worst prognosis!

78  **Conjunctival Melanoma Metastases**

Lymphatic spread  
Pre-auricular (parotid)– most common  
Submandibular  
Cervical  
Systemic spread  
Viscera (liver)  
Skin  
Brain  
Lung

79  **Conjunctival Melanoma**

Tuomaala & Kivela, Finland, 2004  
85 pts  
20 developed metastatic dz  
Half of those developed regional node mets before systemic metastases

Mets from limbal tumors or tumors < 2mm thick were very rare

- 80  **Conjunctival Melanoma**  
Esmali, et al., MD Anderson, 2001  
Retrospective review 27 pts  
41% had regional lymph node mets!  
Mean time to metastasis = 3.2 yrs
- 81  **Conjunctival Melanoma Series**  
Wershnik et al., Germany, 2002  
85 pts  
22.3% 10 yr mortality (tumor-related deaths)  
Poorer prognosis if no adjunctive therapy was received for tumors > 2mm.
- 82  **Can Conjunctival Melanomas be treated once they have lymphatic spread?**
- 83  **AFIP series**  
9 patients with mets to regional lymph nodes  
  
4/9 alive and well ..... (one > 20 yrs later)
- 84  **Regional Lymph Node Mapping**  
Intra-operative mapping of "sentinel" nodes using technetium (TC-99 sulfur colloid) lymphoscintigraphy  
  
Amato et al, MD Anderson, 2003  
At least one sentinel node easily identified in 7/8 pts intraoperatively
- 85  **Controversies in Conjunctival Melanomas:**  
Efficacy of Mohs resection technique?  
  
Role for prophylactic radical neck lymph node dissection (like other head & neck tumors with significant mortality from LN spread)  
  
Should sentinel node mapping be the standard of care?  
  
When is the need for exenteration in melanoma with PAM?
- 86  **Case Report #1:**  
**Mrs. S.**  
  - 73 yr old caucasian lady
  - >5 yr history of PAM, with many excisional biopsies and cryo
  - Histology on later lesions: "PAM with severe atypia"
  - Rapid growth (2 months) of fleshy red lesion over most recent cryo bed
- 87  **Case Report:**  
  - Mrs. S

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90  Exenteration

91  Subtotal  
Radical  
Neck  
Dissection

92  Full-thickness Skin Graft

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94  First  
Prosthesis

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96  Case Report #2: Senior Chief R.

- 32 yr old ACDCU male
- Had longstanding flat freckle on lower eyelid
- Wife noticed 2<sup>nd</sup> freckle one day
- SrChief looked more closely at his lid in the mirror one morning

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102  POD #14

103  PAM & Conjunctival Melanoma: Many confusing decisions

104  Can be good or bad?

- Young pt or Older pt
- Painful or painless

105  **Prevention**

- Avoid the sun
- Chemical exposures
- “Bad” genes
- Radiation exposure

106  **How the heck can I fix this?**

- Getting over the shock!!
- Plan strategy
- Explain to patient

107  **Medial Canthus**

- High risk of webbing
- Will pull upper and lower eyelids in
- Must be very redundant with skin
- Watch out for your lacrimal system

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114  **Lower Eyelid**

- Any pull (years later!!) will cause ectropion
- Concerns with lash misdirection or lash loss

115  **Large Inferior Wounds**

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120  Moderate Inferior Wounds

121  Small Inferior Wounds

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129  Upper lid

- Concern with ptosis
- Eyelid assymetry
- Lagophthalmos

130  Lateral aspect

- Without deep periosteal bites, patient may develop phimosis
- Do not shorten horizontal length of eyelid!

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133  Everyone has a

- Basal cell carcinoma!
- Squamous cell carcinoma

- Sebaceous cell carcinoma

- Melanoma

134  **Eyelid**

- Lower eyelid
- Medial canthus
- Lateral canthus
- Upper eyelid

135  **Conclusion**

- Make the pathologist aware of clinical suspicions so special processing can be done – e.g. SGC.
- Provide clinical history so histology can be better interpreted e.g. keratoacanthoma
- Appreciate expertise of ocular pathologist.