Surgical Management of Melanoma and Other Skin Cancers

Presley Regional Trauma Center
Department of Surgery
University of Tennessee Health Science Center
Memphis, Tennessee
General

- Clinical assessment and management can be challenging
- Natural history and prognosis variable
- 1.2M cases of nonmelanoma per year
- 80K cases of melanoma per year
Assessment of Skin Lesions
History

- Critical to the evaluation of skin lesions
- Sun exposure
- Personal or family history – 8 to 12 fold risk with first degree relative
- Immunosuppression or transplantation
- First noted and changes in size or appearance
Physical

- Complete skin examination
- Examination of mucous membranes
- Ulceration
- Focus on potentially draining nodal basins
Biopsy

• Any suspicious lesion should be biopsied
• Excisional vs incisional
• Full thickness excision into the subq fat – margins marked for orientation
• Shave biopsy is discouraged – can potentially compromise the ability to determine true depth
Biopsy

- Incision should be elliptically-shaped
- Oriented along the long axis of the extremity
- Facilitates re-excision if necessary
- If benign – no further tx
- If malignant – further excision with appropriate margin is usually necessary
Excision

- Malignant
  - Complete excision with adequate margins
  - Elliptical-shaped incision with a length 3.5 to 4 times the width
  - If area cannot be closed without significant tension, skin grafting or tissue transfer may be needed
Basal Cell Carcinoma
Incidence and Epidemiology

- Most common malignancy in Caucasians and the most prevalent type of skin CA
- Low metastatic potential
- Majority occur on the head and neck
- No known precursor lesion – UV exposure
Histologic Subtypes

- Nodular or cystic, superficial, morpheaform and pigmented
- Nodular or cystic present as solitary lesions, often on the face, shiny, red with central telangiectasias
- Classic is nodular type = rodent ulcer
- Indurated edge and ulcerated center
Histologic Subtypes

- Superficial typically found on the trunk and appear as an erythematous patch – slow-growing
- Morpheaform – more aggressive natural history
Surgical excision = mainstay

4 mm margin

Lymphatic spread rare

Nonsurgical options include radiotherapy, photodynamic therapy and topical agents
Squamous Cell Carcinoma
Incidence and Epidemiology

- Second most common form of nonmelanoma skin CA
- Majority occur on the head and neck
- Most common tumor found in elderly patients
- Risk of metastasis is 2 to 4% - (scalp, nose, ear, lip and extremities) – regional LN, lungs and liver
Precursor Lesions

• Actinic keratoses or solar keratoses develop in chronically sun-damaged areas

• Ill-defined and irregular, range in size from only a mm to a few cm

• Scaly appearance, often multiple

• Range in color from dark brown to flesh-colored
Precursor Lesions

- Rate of malignant transformation is < 0.1% per year
- Should be treated to decrease the chance of progression
- Treatment options include cryotherapy, curettage and topical agents
Precursor Lesions

- Intraepithelial squamous cell CA, CA in situ, is thought to be next step – Bowen disease

- Typically located on the sun exposed areas of the head, neck, trunk or legs

- Sx suggestive of transformation = pain, erythema, ulceration or induration
Diagnosis

- Most often associated with sun exposure but can be seen with old scars, radiation-damaged skin or chronic open wounds
- Marjolin ulcer
- Typically appear as keratotic papules, may be reddish-brown, pink or flesh-colored
- Cutaneous “horn”
Treatment

• Surgical excision = mainstay

• 0.5 to 2 cm margin

• Sentinel node mapping for large (>2cm) lesions or FNA of clinically involved nodes

• Nonsurgical options include radiotherapy, photodynamic therapy and topical agents
Melanoma
Incidence and Epidemiology

- Less common than basal or squamous cell
- 80K cases per year – 6\textsuperscript{th} leading cause of death in US
- Lifetime risk = 1 in 75
- Incidence is increasing at a rate of 4.1\% per year – faster than any other malignancy
Incidence and Epidemiology

- Slighter higher in men
- Median age at diagnosis is 57
- Results from the malignant transformation of melanocytes
- Involves both genetic and environmental factors
Incidence and Epidemiology

- Somatic mutations at the p16 tumor suppressor gene in both familial and sporadic cases
- Exposure to UV radiation
- Associated with intermittent intense sun exposure rather than cumulative effect
Risk Factors

- FH of melanoma
- h/o 3 or more blistering sunburns before 20
- Presence of blonde or red hair
- Presence of actinic keratosis
- h/o 3 or more years of an outdoor summer job as a teenager
- Presence of marked freckling of the upper part of the back
Screening and Diagnosis

- Should be based on risk factors
- Routine screening of low risk patients using a total body skin exam is not supported
- Self-screening is recommended
- Early recognition is paramount to effective Tx
- ABCD guidelines for evaluation of pigmented lesions
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<tbody>
<tr>
<td><strong>Asymmetry</strong></td>
<td>Most early lesions grow at an uneven rate, resulting in an asymmetrical pattern</td>
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<tr>
<td><strong>Border irregularity</strong></td>
<td>The uneven growth rate also results in an irregular border</td>
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<td><strong>Color variegation</strong></td>
<td>Irregular growth also causes new shades of black and light and dark brown</td>
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<td><strong>Diameter</strong></td>
<td>Lesions with ABC features and diameters of &gt; 6 mm should be considered suspicious for melanoma</td>
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Histologic Subtypes

• Based on patterns of growth and anatomic location
• Lentigo maligna, superficial spreading, acral lentiginous and nodular
• Superficial spreading accounts for >70% - back or legs
• Nodular – 15 to 30% - dome-shaped, occur anywhere
Histologic Subtypes

- Lentigo maligna – 5% - Hutchinson freckle
- Acral lentiginous occur on the hands or feet, often under the nail bed where the dermis is thinner (subungal melanoma)
- Desmoplastic – rare variant – tends to recur locally
Prognostic Factors

- Thickness and ulceration
- Clark or Breslow system
- Breslow microstaging system – measured in mm from the epidermal surface to the deepest point of the tumor
- Age, sex, location, # of involved LN, presence of distant mets, LDH
Breslow

- 1 = < 0.76 mm
- 2 = 0.76 – 1.49 mm
- 3 = 1.50 – 3.99 mm
- 4 = > 4.0 mm
Melanoma

- Prognosis better:
  - < 65
  - Women
  - Extremity
  - LN (-)
  - Mets (-)
  - LDH normal
Stage I and II

- Localized
- Thickness and ulceration = most important prognostic factors for early stage
- Mitotic rate
- Thin (< 1 mm), intermediate thickness (1 – 4 mm) and thick (> 4 mm)
Stage III

- Nodal mets with or without in-transit or satellite lesions
- # of metastatic LNs
- Micro vs macroscopic LN deposits
- Presence of in-transit or satellite lesions
- Ulceration
Stage IV

- Site of distant metastasis
- LDH
Initial Evaluation

- Complete H&P, comprehensive derm exam
- Thin or intermediate – no routine lad or radiologic tests
- Stage III (clinically positive nodes) - CTCAP
- Stage IV – CXR and LDH, brain MRI and CTCAP prior to OR
Surgical Treatment of Stage I and II Melanoma
Margins of Excision

- Depends on lesion thickness
- In situ = 0.5 cm
- < 1 mm = 1 cm
- 1 – 2 mm = 2 cm
- > 2 mm = 2 cm
Sentinel Lymph Node Biopsy

- Single most important predictor of survival
- Recommended for intermediate and thick
- Not recommended for thin unless high risk
- Should not be performed in the setting of clinically positive nodes or in those who would otherwise not be considered for lymphadenectomy
Surgical Treatment of Stage III Melanoma
Therapeutic LN Dissection

- Recommended for the management of the regional LN drainage basin in the presence of a positive sentinel node and in clinical Stage III disease
- Controversial – conflicting studies regarding overall survival benefit
Isolated Limb Perfusion

- Therapeutic option for patients with extensive in-transit mets in an extremity
- Allows for high regional concentrations of therapeutic agents while minimizing systemic side effects
- With clinically positive nodes, therapeutic LN dissection is performed just prior to ILP
- Isolated limb infusion
Adjuvant Therapy

- Radiotherapy following therapeutic LN dissection
- Chemotherapy – interferon α2b
- Melanoma vaccines
Treatment of Stage IV Melanoma
Options

- Metastatectomy
- Chemotherapy
- Melanoma vaccines
- Immunotherapy
Metastatectomy

• Improved survival
  - Stage of initial disease
  - Disease-free interval after tx of primary
  - Initial site of met
  - Extent of met disease
  - Ability to achieve complete resection

• Pre-op imaging
  - Critical
  - FDG-PET to more accurately detect occult mets
Metastatectomy

• Palliation
  - Control identifiable Sx caused by advanced malignancy while minimizing morbidity
  - ie – bleeding SB mets, ulcerated subq mets, symptomatic brain mets
Immunotherapy

• Most promising area of investigation for advanced melanoma
  - Modulate the immune system to achieve a therapeutic goal
  - IL-2
  - Adoptive cell transfer
For Your Own Good

- Always thorough H&P
- Know both Clark and Breslow
- Thickness and margins
- Role of SLNB and LN dissection