Melanoma Update: 8th Edition of AJCC Staging System

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Director, Dermatopathology
University of Pennsylvania
DISCLOSURE OF RELATIONSHIPS WITH INDUSTRY

• None relevant to these talks
• Others:
  ❖ Royalties Lippincott Williams Wilkins
    ▪ Lever’s Histopathology of the Skin
  ❖ Prior consultant, Myriad Genetics
Dermatopathology, University of Pennsylvania
Guidelines of care

• Management of Primary Cutaneous Melanoma
  ❖ • AAD Guidelines of Care (2011)
  ❖ • AJCC melanoma staging, 8th ed (2018)
Guidelines of care for the management of primary cutaneous melanoma

Work Group: Christopher K. Bichakjian, MD,a Allan C. Halpern, MD (Co-chair),b Timothy M. Johnson, MD (Co-chair),a Antoinette Foote Hood, MD,c James M. Grichnik, MD, PhD,d Susan M. Swetter, MD,c,f Hensin Tsao, MD, PhD,g Victoria Holloway Barbosa, MD, b Tsu-Yi Chuang, MD, MPH, i,j Madeleine Duvic, MD,k Vincent C. Ho, MD,l Arthur J. Sober, MD,g Karl R. Beutner, MD, PhD,m,n Reva Bhushan, PhD,o and Wendy Smith Begolka, MSp

Ann Arbor, Michigan; New York, New York; Norfolk, Virginia; Miami, Florida; Palo Alto, Los Angeles, Palm Springs, San Francisco, and Fairfield, California; Boston, Massachusetts; Chicago and Schaumburg, Illinois; Houston, Texas; and Vancouver, British Columbia, Canada
• 7th edition 2010
• 8th edition 2018
AJCC Staging System

• Designed for simplicity and easy use
• Attributes that can be determined by any pathologist
• Does not capture all that is known about melanoma prognosis
AJCC 8th Edition Melanoma

• 10 major global medical cancer centers
  - USA, Europe, Australia
• 43,792 patients with melanoma Stage I-III
• Initial diagnosis 1998
• Eliminates patients from the pre-SLN B era
AJCC Melanoma Update

• For localized (stage I or II) melanoma, the most powerful prognostic parameters include:
  ❖ 1. Tumor thickness
  ❖ 2. Ulceration
AJCC 8th edition update

• T-category tumor thickness cutoffs maintained
• Except substratification of T1:
  ❖ Melanomas <0.8 mm in thickness = T1a
  ❖ Melanomas 0.8 mm - 1.0 mm = T1b
Several published reports indicate that survival T1 melanomas is related to thickness with a “breakpoint” around 0.7 – 0.8 mm
T1 Melanoma

- Positive SLNB in <5% of MM <0.8 mm
- Positive SLNB in 5-12% of MM 0.8-1.0mm
T1 Melanomas

• Definitions of T1a and T1b are revised:
  ❖ T1a, <0.8 mm without ulceration
  ❖ T1b, 0.8 – 1.0 with or without ulceration
  ❖ T1b, <0.8 mm with ulceration

• * Mitotic rate no longer a T category criterion
Tumor Thickness

- Tumor thickness measurements to be recorded to nearest 0.1 mm (not 0.01 mm)
Tumor Thickness Example

T1b, 0.8 – 1.0 with or without ulceration

- 0.75– 0.84 mm Breslow thickness tumors are reported as 0.8 mm T1b tumor
Tumor Thickness Example

T1b, 0.8 – 1.0 with or without ulceration

• 0.95 – 1.04 mm Breslow thickness tumors are reported as 1.0 mm T1b tumor
Mitotic Rate

• Tumor mitotic rate was removed as a staging criterion for T1 tumors

• Remains an overall important prognostic factor that should continue to be recorded for all patients with T1-T4 primary cutaneous melanoma
Mitotic Rate

- Refers to rate in the dermal component
- Mitotic rate in epidermis not prognostic
- No longer in the staging for the 8th Edition, but should still be reported
Mitotic Rate: Methods

❖ Identify highest mitotically active area, “hot spot”
❖ Count mitoses in 1 mm$^2$ (about 4.5 HPF)
❖ Report as # mitoses per mm$^2$
❖ No need to cut deeper levels just to find mitoses
❖ If no mitoses, report as 0/mm$^2$
❖ If rate is 0-1/mm$^2$, just report as 1/mm$^2$
❖ PHH3 (phosphohistone 3) may highlight mitoses, but not considered standard for AJCC staging
<table>
<thead>
<tr>
<th>Tis (melanoma <em>in situ</em>)</th>
<th>Not applicable</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>≤1.0 mm</td>
<td>Unknown or unspecified</td>
</tr>
<tr>
<td>T1a</td>
<td>&lt;0.8 mm</td>
<td>Without ulceration</td>
</tr>
<tr>
<td>T1b</td>
<td>&lt;0.8 mm</td>
<td>With ulceration</td>
</tr>
<tr>
<td></td>
<td>0.8–1.0 mm</td>
<td>With or without ulceration</td>
</tr>
<tr>
<td>T2</td>
<td>&gt;1.0–2.0 mm</td>
<td>Unknown or unspecified</td>
</tr>
<tr>
<td>T2a</td>
<td>&gt;1.0–2.0 mm</td>
<td>Without ulceration</td>
</tr>
<tr>
<td>T2b</td>
<td>&gt;1.0–2.0 mm</td>
<td>With ulceration</td>
</tr>
<tr>
<td>T3</td>
<td>&gt;2.0–4.0 mm</td>
<td>Unknown or unspecified</td>
</tr>
<tr>
<td>T3a</td>
<td>&gt;2.0–4.0 mm</td>
<td>Without ulceration</td>
</tr>
<tr>
<td>T3b</td>
<td>&gt;2.0–4.0 mm</td>
<td>With ulceration</td>
</tr>
<tr>
<td>T4</td>
<td>&gt;4.0 mm</td>
<td>Unknown or unspecified</td>
</tr>
<tr>
<td>T4a</td>
<td>&gt;4.0 mm</td>
<td>Without ulceration</td>
</tr>
<tr>
<td>T4b</td>
<td>&gt;4.0 mm</td>
<td>With ulceration</td>
</tr>
</tbody>
</table>
Epidermal ulceration

• Defined as full thickness absence of epidermis above any portion of the primary tumor with an associated host reaction (fibrinous and acute inflammatory exudate)
Ulceration

- Associated host response (fibrin, crust, inflammation, epidermal hyperplasia) helps to distinguish from sectioning artifact
- Ulceration from prior biopsy should not be reported as ulceration
- Pitfalls: sectioning artifact; trauma
Ulceration

• If doubt remains if ulcer is traumatic or iatrogenic, then report as *ulceration present*
Microsatellites, 8th Edition

- Microscopic metastasis completely discontinuous from primary melanoma with unaffected stroma between them
- No minimum size threshold
- No minimum distance from the primary tumor
Attributes not addressed by AJCC tumor staging
Sex

- Women do better than men
Anatomic Location

• Extremity melanoma better than:
  ❖ Trunk
  ❖ Head
  ❖ Palms/soles
Age

- Younger patients do better
Pathology: Growth Phase

• Radial (MIS and early level II)
• Vertical
Regression

• Inconsistent definitions in literature
• Worse prognosis in most studies
• Not a factor in AJCC staging
Regression comments, 8th Edition

• If regression is present, measure to the deepest tumor cell, not to the base of the regression

• If all invasive component is regressed, report as Tis (melanoma in situ)
Angiolympathic Invasion

- Associated with poor survival
- Many studies, not an INDEPENDENT variable
Angiolympathic Invasion

- Tumor within vascular spaces, vessels and lymphatics
- Immunoperoxidase stains (CD34, CD31, D2-40) may assist in identification of vascular invasion, but not standard of care.
Lymphatic Invasion is Independently Prognostic of Metastasis in Primary Cutaneous Melanoma

Xiaowei Xu¹, Lianjun Chen¹, DuPont Guerry², Peter Dawson³, Wei-ting Hwang³, Patricia VanBelle¹, David E Elder¹, Paul J Zhang¹, Michael E Ming⁴, Lynn Schuchter², and Phyllis A Gimotty³

¹Departments of Pathology and Laboratory Medicine, and the Melanoma Program of the Abramson Cancer Center, University of Pennsylvania School of Medicine, Philadelphia, PA

- LVI was associated with poor survival as an independent variable
- Double staining for S100/D2-40 utilized

MART1 (red) with D2-40 (brown) double stain
T0, Tis, Tx

- T0 = No evidence of tumor/ completely regressed or unknown primary tumor
- Tis = melanoma in situ
- Tx = tumor thickness cannot be determined/diagnosis by curettage
The N Category

• Documents metastatic disease both in regional lymph nodes and in non-nodal locoregional sites (microsatellites, satellites, and in-transit metastases)
Regional LN metastases

- Number of LN involved remains the primary determinant of N stage
  - N1 = 1
    - Includes negative nodes + microsatellites/in-transits
  - N2 = 2-3
  - N3 = 4 or more metastatic nodes
Metastatic Disease

• “microscopic” = “clinically occult”
  ❖ nodal metastasis determined at SLN Bx and without clinical or radiographic node metastasis

• “macroscopic” = “clinically apparent”
  ❖ regional LN mets identified by clinical, radiographic or US examination
Synoptic Reporting

• Recommended by CAP (and TJC)
• Recommended in AAD Guidelines
Surgical Pathology Cancer Case Summary

Protocol posting date: June 2017

MELANOMA OF THE SKIN: Biopsy

Note: This case summary is recommended for reporting biopsy specimens, but is not required for accreditation purposes.

Select a single response unless otherwise indicated.

Procedure (Note A)
___ Biopsy, shave
___ Biopsy, punch
___ Biopsy, incisional
___ Other (specify): __________________________
___ Not specified

+ Specimen Laterality
+ ___ Right
+ ___ Left
+ ___ Midline
+ ___ Not specified

Tumor Site (Note B)
Specify (if known): __________________________
___ Not specified

Macroscopic Satellite Nodule(s) (applicable to invasive tumor only)
___ Not identified
___ Present
___ Cannot be determined

Histologic Type (Note C)
___ No residual melanoma identified

Invasive Melanoma
___ Superficial spreading melanoma
___ Nodular melanoma
___ Lentigo maligna melanoma
___ Acral lentiginous melanoma
___ Desmoplastic melanoma
___ Melanoma arising from blue nevus
___ Melanoma arising in a giant congenital nevus
___ Melanoma of childhood
___ Nevusoid melanoma
___ Persistent melanoma
___ Melanoma, not otherwise classified
___ Other histologic type not listed (specify): __________________________

* Data elements preceded by this symbol are not required for accreditation purposes. These optional elements may be clinically important but are not yet validated or regularly used in patient management.

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Skin + Melanoma 4.0.1.0
Biopsy

___ Melanoma in situ of childhood
___ Persistent melanoma in situ
___ Melanoma in situ, not otherwise classified
___ Other histologic type not listed (specify):

* Note: For melanomas in situ, elements that assess the invasive component are not applicable and should not be reported.

Maximum Tumor (Breslow) Thickness (Note D) (applicable to invasive tumor only)
Specify (millimeters): ___ mm

or

At least (millimeters): ___ mm (explain) __________________________
___ Cannot be determined (explain): __________________________

Ulceration (required for invasive tumor only) (Note E)
___ Present
___ Not identified
___ Cannot be determined

Microsatellite(s) (applicable to invasive tumor only) (Note N)
___ Not identified
___ Present
___ Cannot be determined

Margins (select all that apply) (Note F)
Margins (select all that apply) (Note F)

Peripheral Margin:
- Uninvolved by invasive melanoma
  - Distance of invasive melanoma from closest peripheral margin (millimeters): ___ mm
  - Specify location(s): ____________________________
  - Involved by invasive melanoma
  - Specify location(s): ____________________________
- Uninvolved by melanoma in situ
  - Distance of melanoma in situ from closest peripheral margin (millimeters): ___ mm
  - Specify location(s): ____________________________
  - Involved by melanoma in situ
  - Specify location(s): ____________________________
  - Cannot be assessed

Deep Margin:
- Uninvolved by melanoma in situ
  - Involved by invasive melanoma
  - Distance of invasive melanoma from deep margin (millimeters): ___ mm
  - Involved by melanoma in situ
  - Cannot be assessed

*Note: Margin involvement by melanoma in situ should be recorded if in situ disease is present in the specimen, and if margins are uninvolved by invasive melanoma.

Mitotic Rate (applicable to invasive tumor only) (Note G)
- None identified
- Specify number/mm² (# mitoses/mm²): ________
  - Cannot be determined

+ Data elements preceded by this symbol are not required for accreditation purposes. These optional elements may be clinically important but are not yet validated or regularly used in patient management.

Lymphovascular Invasion (applicable to invasive tumor only) (Note H)
- Not identified
- Present
- Cannot be determined

Neurotropism (applicable to invasive tumor only) (Note I)
- Not identified
- Present
- Cannot be determined

Tumor-Infiltrating Lymphocytes (applicable to invasive tumor only) (Note O)
- Not identified
- Present, brisk
- Cannot be determined

Tumor Regression (Note J)
- Not identified
- Present
- Cannot be determined

Pathologic Stage Classification (pTNM, AJCC 8th Edition) (Notes L and M)

TNM Descriptors (required only if applicable) (select all that apply)
- m (multiple)
- r (recurrent)
- y (posttreatment or posttherapy)

Primary Tumor (pT)
- pT0: No evidence of primary tumor (eg, unknown primary or completely regressed melanoma)
- pTis: Melanoma in situ (ie, not an invasive tumor; anatomic level I)
- pT1: Melanoma 0.76 mm or less in thickness, ulceration status unspecified (see Note D)
- pT1a: Melanoma <0.8 mm in thickness, no ulceration
- pT1b: Melanoma <0.8 mm in thickness with ulceration, or melanoma 0.8 to 1.0 mm in thickness with or without ulceration
### CAP Approved

#### Skin • Melanoma 4.0.1.0

**Biopsy**

<table>
<thead>
<tr>
<th>Anatomic (Clark) Level (applicable to invasive tumor only) (Note D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- At least level II (melanoma present but does not fill and expand papillary dermis)</td>
</tr>
<tr>
<td>- III (melanoma fills and expands papillary dermis)</td>
</tr>
<tr>
<td>- IV (melanoma invades reticular dermis)</td>
</tr>
<tr>
<td>- V (melanoma invades subcutis)</td>
</tr>
<tr>
<td>- Cannot be determined</td>
</tr>
</tbody>
</table>

**Lymphovascular Invasion (applicable to invasive tumor only) (Note H)**

<table>
<thead>
<tr>
<th>Not identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
</tr>
<tr>
<td>Cannot be determined</td>
</tr>
</tbody>
</table>

**Neurotropism (applicable to invasive tumor only) (Note I)**

<table>
<thead>
<tr>
<th>Not identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
</tr>
<tr>
<td>Cannot be determined</td>
</tr>
</tbody>
</table>

**Tumor-Infiltrating Lymphocytes (applicable to invasive tumor only) (Note O)**

<table>
<thead>
<tr>
<th>Not identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present, nodular</td>
</tr>
<tr>
<td>Present, brisk</td>
</tr>
<tr>
<td>Cannot be determined</td>
</tr>
</tbody>
</table>

**Tumor Regression (Note J)**

<table>
<thead>
<tr>
<th>Not identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
</tr>
<tr>
<td>Cannot be determined</td>
</tr>
</tbody>
</table>

**Pathologic Stage Classification (pTNM, AJCC 8th Edition) (Notes 1 and M)**

**TNM Descriptors (required only if applicable) (select all that apply)**

- m (multiple)
- r (recurrent)
- y (posttreatment or posttherapy)

**Primary Tumor (pT)**

<table>
<thead>
<tr>
<th>pTX: Primary tumor thickness cannot be assessed (eg, diagnosis by curettage) (explain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pT0: No evidence of primary tumor (eg, unknown primary or completely regressed melanoma)</td>
</tr>
<tr>
<td>pTis: Melanoma in situ (ie, not an invasive tumor; anatomic level I)</td>
</tr>
<tr>
<td>pT1: Melanoma 1.0 mm or less in thickness, ulceration status unknown or unspecified (see Note D)</td>
</tr>
<tr>
<td>pT1a: Melanoma &lt;0.8 mm in thickness, no ulceration</td>
</tr>
<tr>
<td>pT1b: Melanoma &lt;0.8 mm in thickness with ulceration, or melanoma 0.8 to 1.0 mm in thickness with or without ulceration</td>
</tr>
<tr>
<td>pT2: Melanoma &gt;1.0 to 2.0 mm in thickness, ulceration status unknown or unspecified</td>
</tr>
<tr>
<td>pT2a: Melanoma &gt;1.0 to 2.0 mm in thickness, no ulceration</td>
</tr>
<tr>
<td>pT2b: Melanoma &gt;1.0 to 2.0 mm in thickness, with ulceration</td>
</tr>
<tr>
<td>pT3: Melanoma &gt;2.0 to 4.0 mm in thickness, ulceration status unknown or unspecified</td>
</tr>
<tr>
<td>pT3a: Melanoma &gt;2.0 to 4.0 mm in thickness, no ulceration</td>
</tr>
<tr>
<td>pT3b: Melanoma &gt;2.0 to 4.0 mm in thickness, with ulceration</td>
</tr>
</tbody>
</table>

**Additional Pathologic Findings (select all that apply)**

- Associated nevus (specify type)
- Other (specify)

**Ancillary Studies**

Note: For molecular genetic reporting, the CAP Melanoma Biomarker Template should be used. Pending biomarker studies should be listed in the Comments section of this report.
<table>
<thead>
<tr>
<th><strong>DIAGNOSIS:</strong></th>
<th>MALIGNANT MELANOMA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type:</strong></td>
<td>Nodular type</td>
</tr>
<tr>
<td><strong>Radial Growth Phase:</strong></td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Vertical Growth Phase:</strong></td>
<td>Present</td>
</tr>
<tr>
<td><strong>Level of Invasion:</strong></td>
<td>Level III</td>
</tr>
<tr>
<td><strong>Greatest Thickness:</strong></td>
<td>0.7mm</td>
</tr>
<tr>
<td><strong>Site:</strong></td>
<td>Left forearm</td>
</tr>
<tr>
<td><strong>Sex:</strong></td>
<td>Male</td>
</tr>
<tr>
<td><strong>Mitotic Count:</strong></td>
<td>1/mm²</td>
</tr>
<tr>
<td><strong>Tumor Infiltrating Lymphocytes:</strong></td>
<td>Present, brisk</td>
</tr>
<tr>
<td><strong>Regression:</strong></td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Precursor Lesion:</strong></td>
<td>Compound dysplastic nevus</td>
</tr>
<tr>
<td><strong>Ulceration:</strong></td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Elastosis Grade:</strong></td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Predominate Cell Type:</strong></td>
<td>Epithelioid and heavily pigmented</td>
</tr>
<tr>
<td><strong>Satellite Lesions:</strong></td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Lymphovascular Invasion:</strong></td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Perineural Invasion:</strong></td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Tumor Stage:</strong></td>
<td>T1a</td>
</tr>
</tbody>
</table>
Survival of patients with early invasive melanoma down-staged under the new 8th AJCC edition


Survival of patients with early invasive melanoma down-staged under the new 8th AJCC edition

- Queensland, Australia
- Compared the outcomes of patients classified as T1b in AJCC 7\textsuperscript{th} Ed
  - T$\leq$1.0mm with mitoses
- Reclassified in 8\textsuperscript{th} edition
Total 208 T1b patients (7th)

• Reclass to 8th edition criteria
  ❖ Removal of mitoses as criterion
• 111 (53%) remained T1b
• 97 (47%) became T1a
<table>
<thead>
<tr>
<th>Mitotic Rate</th>
<th>Disease Free Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 per mm$^2$</td>
<td>96%</td>
</tr>
<tr>
<td>&gt;3 per mm$^2$</td>
<td>80%</td>
</tr>
</tbody>
</table>
Selected New Literature
Nodular MM vs Metastasis
Pathology Report

• Nodular Malignant Melanoma 2.5mm
  ❖ Note: metastatic melanoma cannot be excluded
Comprehensive histopathological comparison of epidermotropic/dermal metastatic melanoma and primary nodular melanoma

Stephanie L Skala,1 David P Arps,2 Lili Zhao,3 Kelly B Cha,4 Min Wang,1 Paul W Harms,1,4 Aleodor A Andea,1,4 Douglas R Fullen1,4 & May P Chan1,4

1Department of Pathology, University of Michigan, Ann Arbor, MI, 2Consolidated Pathology Consultants, Libertyville, IL, 3Department of Biostatistics, University of Michigan, and 4Department of Dermatology, University of Michigan, Ann Arbor, MI, USA
Primary vs Metastasis

- 75 Primary Nodular Melanomas
- 74 Epidermotropic Metastatic Melanomas
Features associated with Mets

- Diameter <2mm
- Absent TILs
- Absent infiltrating plasma cells
- Monomorphism
- Involvement of adnexal epithelium
Features associated with Primary

- Exophytic
- Prominent TILs
- Prominent Plasma cells
- Diameter >10mm
- Ulceration
- Epidermal collarette
- Hi mitotic count
- Necrosis
- Pleomorphism
- Multiple phenotypes
- Lichenoid inflammation
Multivariate analysis
Features predictive of Primary Tumor

- Large size
- Ulceration
- Prominent infiltrating plasma cells
- Lichenoid inflammation
- Collarette
The prognostic significance of tumor-infiltrating lymphocytes for primary melanoma varies by sex

Andrew J. Sinnamon, MD, a, b Cimarron E. Sharon, BS, a Yun Song, MD, a Madalyn G. Neuwirth, MD, a David E. Elder, MBChB, c Xiaowei Xu, MD, PhD, c Emily Y. Chu, MD, PhD, d Michael E. Ming, MD, MSCE, d Douglas L. Fraker, MD, a Phyllis A. Gimotty, PhD, b and Giorgos C. Karakousis, MD a

Philadelphia, Pennsylvania

Journal of the American Academy of Dermatology
Volume 79, Issue 2, August 2018, Pages 245-251
Tumor Infiltrating Lymphocytes

- Not in AJCC staging
  - Not recorded by many labs
- Lymphocytes infiltrating the dermal melanoma cells
- Recording
  - Brisk
  - Non-brisk
  - Absent
The prognostic significance of tumor-infiltrating lymphocytes for primary melanoma varies by sex

- Brisk and nonbrisk TIL in men: associated with lower risk of SLN positivity
- Brisk TIL in men: associated with longer overall survival
- TIL in women: no associated with survival or SLN positivity
Risk of Subsequent Cutaneous Melanoma in Moderately Dysplastic Nevi Excisionally Biopsied but With Positive Histologic Margins

Caroline C. Kim, MD; Elizabeth G. Berry, MD; Michael A. Marchetti, MD; Susan M. Swetter, MD; Geoffrey Lim, MD; Douglas Grossman, MD, PhD; Clara Curiel-Lewandrowski, MD; Emily Y. Chu, MD, PhD; Michael E. Ming, MD, MSCE; Kathleen Zhu, BA; Meera Brahmbhatt, MD; Vijay Balakrishnan, BS; Michael J. Davis, BMus; Zachary Wolner, BA; Nathaniel Fleming, BA; Laura K. Ferris, MD, PhD; John Nguyen, BA; Oleksandr Trofyenko, BA; Yuan Liu, PhD; Suephy C. Chen, MD, MS; for the Pigmented Lesion Subcommittee, Melanoma Prevention Working Group
Moderately Dysplastic Nevi

- 9 academic centers

- Does melanoma develop at the sites of moderately dysplastic nevi with + margins?
Moderately Dysplastic Nevi

- 467 nevi, 438 patients
- No melanomas developed at sites
- 23% developed MM at separate site
Moderately Dysplastic Nevi: Limitations of study

- Number of cases
- Cases that had any concern, clinically or histologically were likely re-excised and therefore eliminated from study
ORIGINAL ARTICLE

Immunohistochemistry of p16 in nevi of pregnancy and nevoid melanomas

Stephen S. Koh¹  |  Brian F. Roehmholdt²  |  David S. Cassarino³
P16, melanocytic lesions

- Benign nevi: p16+, close to 100%
- MM p16+ 12-93% (most 40-60%)
- MM vs Spitz
  - Conflicting studies
P16

• Do not use p16 alone to differentiate benign and malignant

• Consider using with panel IHC
  ❖ HMB45
  ❖ Ki67/MART double stain
Methods

• 14 nevi from pregnant/postpartum women
• 20 nevoid melanoma
• % nuclear p16 staining
Results

• 81% of nevi showed >5% +
• 65% of MM showed <5% +

• Maybe helpful in this scenario
• Limitations:
  ❖ Small sample size
  ❖ Long term follow-up
• More studies needed
Thank you!

University of Pennsylvania, Philadelphia