

**American College of Mohs Surgery**  
**Diagnostic Quality Control Exam 2012**  
**(Review of Answers)**

**Question 1**

A 1.1 cm, minimally erythematous, firm, subepidermal, cystic nodule on the right lateral canthus of an otherwise healthy 62-year old male is referred for Mohs surgery. Which is the most important step in management of this lesion?

**The correct answer is:**

- a. Sentinel lymph node mapping and post-operative radiation
- b. Aggressive search for internal source
- c. Post-operative radiation and chemotherapy
- d. Sentinel lymph node mapping

## Discussion

### Question 1

#### Correct Answer:

- b. Aggressive search for internal source (Primary mucinous carcinoma of the skin)

#### Main Histologic Features:

- Small nests and strands of basaloid cells with duct-like lumina are present, surrounded by extensive deposits of acid mucopolysaccharides.
- Tumor islands may appear to be floating within pools of Alcian blue (pH 2.5) positive mucin. Mucin also positive with PAS and colloidal iron stains.
- The pools of pale staining mucin are separated by thin septae of fibrocollagenous stroma giving a somewhat lobulated appearance.
- Mild nuclear pleomorphism and rare mitoses.
- Histochemical profile is consistent with the presence of non-sulfated mucoprotein, most likely sialomucin.
- The absence of expression of CK20 helps differentiate from metastatic gastrointestinal carcinoma.

#### Differential Diagnosis:

- Cutaneous metastases of breast, gastrointestinal tract, ovary, prostate, salivary and lacrimal glands, and lung primaries.

#### Clinical Concerns:

- Rare neoplasm, typically seen in older patients (median age 63 years)
- More than 75% of cases occur on the head and neck, with predilection for the eyelid (40%).
- Typically presents as an asymptomatic, slow-growing, solitary subcutaneous or cutaneous nodule
- Primary mucinous carcinoma of the skin typically has an indolent course, local recurrence is common, regional and distant metastases are rare and have been reported in 11% and 3% respectively.
- Mucinous carcinoma may be impossible to distinguish histologically from cutaneous metastases of breast, gastrointestinal tract, ovary, prostate, and lung primaries.
- A systemic evaluation is therefore mandatory before a definitive diagnosis of primary cutaneous mucinous carcinoma can be made.

#### References:

- Grosshans E, Juillard J, Schaeffle B, Ball C. Mohs Micrographic Surgery of Primary Cutaneous Mucinous Carcinoma Using Immunohistochemistry for Margin Control. *Dermatol Surg.* 2004; 30:799-802.
- Skin Cancer. Edited by K. Nouri 2008 McGraw-Hill.

**Question 2**

A flesh-colored papule on the left posterior ear of an otherwise healthy 62 year-old male is referred for Mohs surgery.

**The correct diagnosis is:**

- a. Keratotic basal cell carcinoma
- b. Trichoadenoma
- c. Basaloid follicular hamartoma
- d. Proliferating pilar tumor

## Discussion

### Question 2

#### Correct Answer:

- b. Trichoadenoma

#### Main Histologic Features:

- Relatively circumscribed, moderately well-differentiated tumor consisting of numerous small cystic structures
- Cystic structures keratinize both with and without a thin granular layer and contain a small amount of delicate keratin
- Cystic spaces are surrounded by pale-staining follicular epithelium, which resembles the outer root sheath of the hair follicle,
- Fibrotic stroma surrounds cystic structures

#### Differential Diagnosis:

- Keratotic basal cell carcinoma
- Basal cell carcinoma with follicular differentiation
- Trichoepithelioma and desmoplastic trichoepithelioma
- Vellus hair cysts

#### Clinical Concerns:

- Rare, benign follicular tumor described by Nikolowski 50 years ago
- Usually solitary, nodular lesion that occurs on the face or buttocks (3-15mm) during adult life, also may arise within a nevus sebaceous

#### References:

- Practical Dermatopathology. Edited by R. Rapini 2005 Elsevier Mosby.
- Skin Cancer. Edited by K. Nouri 2008 McGraw-Hill.
- Lever's Histopathology of the Skin. Edited by D. Elder et al 1997 Lippincott-Raven.

### Question 3

An otherwise healthy 55 year-old female is sent for Mohs surgery for a 1 cm erythematous, keratotic plaque on the right cheek. Preoperative shave biopsy report was read as atypical squamoproliferative neoplasm, most consistent with a well-differentiated squamous cell carcinoma.

**The correct diagnosis is:**

- a. Lymphoepithelioma-like carcinoma of the skin
- b. Well-differentiated squamous cell carcinoma with nodular lymphoid infiltrate
- c. Atypical mycobacterial infection
- d. Low grade cutaneous B-cell lymphoma

## Discussion

### Question 3

#### Correct Answer:

- c. Atypical mycobacterial infection

#### Main Histologic Features:

- Epidermis hyperplastic or ulcerated, sometimes with neutrophilic microabscesses
- Diffuse dermal mixed infiltrate of neutrophils, histiocytes, and plasma cells
- Tuberculoid granulomas often present, usually without caseation
- Acid-fast bacilli found by AFB stain, culture, or PCR
- Pseudoepitheliomatous (pseudocarcinomatous) hyperplasia is extreme epidermal proliferation that may simulate well-differentiated squamous cell carcinoma.

#### Differential Diagnosis:

- Other infectious agents: deep fungal, tertiary syphilis, leishmaniasis, leprosy, and tuberculosis
- Sarcoid
- Granuloma faciale
- Pseudolymphoma and B-cell lymphoma

#### Clinical Concerns:

- Pseudoepitheliomatous hyperplasia may be difficult to distinguish from squamous cell carcinoma, and is mainly differentiated by clinical findings or the discovery of some reason for its presence.
- Preoperative deeper punch of excisional biopsy with tissue culture is recommended for definitive diagnosis when pseudoepitheliomatous hyperplasia is observed and there is concern for an atypical infection.

#### References:

- Practical Dermatopathology. Edited by R. Rapini 2005 Elsevier Mosby.
- Lever's Histopathology of the Skin. Edited by D. Elder et al 1997 Lippencott-Raven.

#### **Question 4**

A 3.6 cm erythematous, scaly plaque with an eccentric raised ulcerative nodule on the left postauricular area of an otherwise healthy 77 year-old male is referred for Mohs surgery.

**The correct diagnosis is:**

- a. Lymphoepithelioma-like squamous cell carcinoma
- b. Hypertrophic lichen planus
- c. Infiltrating squamous cell carcinoma with multifocal squamous cell carcinoma in-situ in a patient with chronic lymphocytic leukemia
- d. Infiltrating squamous cell carcinoma and concomitant psoriasiform dermatitis

## Discussion

### Question 4

#### Correct Answer:

- d. Infiltrating squamous cell carcinoma and concomitant psoriasiform dermatitis

#### Main Histologic Features:

- Epidermis demonstrates acanthosis, mounding and confluent parakeratosis, focal spongiosis, and increased mitotic figures.
- Dilated blood vessels at the tip of the dermal papillae and perivascular infiltrate of lymphocytes and a few neutrophils.
- No significant epidermal keratinocyte atypia, or dyskeratosis, preservation of orderly maturation of keratinocytes.
- Infiltrating the deep dermis and subcutaneous tissue are large hyperchromatic, pleomorphic cells, and often epithelioid, with atypical mitoses.

#### Differential Diagnosis:

- Pseudoepitheliomatous hyperplasia
- Lichenoid actinic keratoses
- Other inflammatory dermatoses
- Multifocal hypertrophic actinic keratoses/Bowen's disease

#### Clinical Concerns:

- Common inflammatory dermatoses can often coexist with cutaneous malignancies.
- The inflammatory infiltrate associated with infiltrating squamous cell carcinoma can make tumor identification difficult. Immunostains are often valuable in identifying tumor cells.

#### References:

- Skin Cancer. Edited by K. Nouri 2008 McGraw-Hill.
- Lever's Histopathology of the Skin. Edited by D. Elder et al 1997 Lippincott-Raven.



**Question 5**

This Mohs section was taken from the right cheek anterior to the tragus in a 48 year-old woman. The preoperative biopsy report was positive for a nodular basal cell carcinoma.

**The most likely diagnosis is:**

- a. A trichoblastoma
- b. An adenoid basal cell carcinoma
- c. A metastatic adenocarcinoma
- d. An adenoid cystic carcinoma

## Discussion

### Question 5

#### Correct Answer:

- a. A trichoblastoma

#### Main Histologic Features:

- Well circumscribed, lobulated nodule of basaloid cells
- Long cords of cells one to two cells thick with no evidence of invasion into the surrounding dermis.
- No mucin degradation, retraction spaces, nuclear pleomorphism, dyskeratotic cells or mitoses are noted.

#### Differential Diagnosis:

- Adenoid basal cell carcinoma
- Adenoid cystic carcinoma
- Trichoblastic carcinoma
- Trichoepithelioma
- Basaloid follicular hamartoma

#### Clinical Concerns:

- Trichoblastomas are benign tumors of follicular differentiation that typically present as a 1 cm nodule on the scalp or face.
- Trichoblastoma can be confused with or difficult to distinguish from adenoid basal cell carcinoma and the malignant variant trichoblastic carcinoma.

#### References:

- Lever's Histopathology of the Skin. 10<sup>th</sup> Ed. Edited by D. Elder 2008 Lippincott Williams & Wilkins.

### Question 6

This Mohs section was taken from the right upper cutaneous lip in a 57-year-old woman.

Based on the findings in this slide what course of action would you take?

- a. Take an additional Mohs section.
- b. Take an additional Mohs section and consider post-operative radiation.
- c. Take an additional Mohs section and consider post-operative radiation and a PET-CT scan.
- d. Take an additional Mohs section and consider post-operative chemotherapy.



## Discussion

### Question 6

#### Correct Answer:

- c. Take an additional Mohs section and consider post-operative radiation and a PET-CT scan.

#### Main Histologic Features:

- Nests of pale atypical eosinophilic epithelial cells in the dermis invading the underlying skeletal muscle.
- A smooth muscle lined blood vessel filled with a thrombus and nests of eosinophilic atypical epithelial cells with nuclear pleomorphism.
- Atypical squamous cells are noted abutting a nerve.

#### Clinical Concerns:

- There is a paucity of literature on the incidence, prognosis, evaluation and management of intravascular invasion of primary cutaneous squamous cell carcinoma/KA.
- Much of the literature on intravascular invasion of squamous cell carcinoma in the oral mucosa, lung, esophagus, and cervix regards this finding as a poor prognostic indicator.
- Intravascular spread of cutaneous SCC/KA has been described as “an alarming but benign phenomenon” with no apparent effect on recurrence rates, metastasis rates or prognosis by Colonje et al in KA though others have regarded it as an aggressive histological feature.
- Cooper et al describe a case series of rapidly growing KAs with perineural invasion and intravascular involvement observing that these lesions may have a predilection for the central face including the lips.

#### References:

- Colonje E, Jones EW. Intravascular Spread of Keratoacanthoma: An alarming but benign phenomenon. *Am J Dermatopathol* 1992; 14(5):414-417.
- Cooper PH, Wolfe JT. Perioral keratoacanthomas with extensive perineural invasion and intravenous growth. *Arch Dermatol* 1988; 124:1397-1401.
- Turhan K, Samancilar O, Cagirici U, Goksel T, Nart D, Cakan A, Cok G. The effect of blood vessel invasion on prognosis of operated stage I non-small cell lung cancer patients. *Thorac Cardiovasc Surg.* 2010 Feb; 58(1):28-31.
- Watanabe M, Kuwano H, Araki K, Kawaguchi H, Saeki H, Kitamura K, Ohno S, Sugimachi K. Prognostic factors in patients with submucosal carcinoma of the oesophagus. *Br J Cancer.* 2000 Sep; 83(5):609-13.
- Yilmaz T, Hosal AS, Gedikoğlu G, Onerci M, Gürsel B. Prognostic significance of vascular and perineural invasion in cancer of the larynx. *Am J Otolaryngol.* 1998 Mar-Apr; 19(2):83-8.
- Barber BR, Sommers SC, Rotterdam H, Kwon T. Vascular invasion as a prognostic factor in stage IB cancer of the cervix. *Obstet Gynecol.* 1978 Sep; 52(3):343-8.

### Question 7

This is a Mohs stage of a 3 cm scaly erythematous patch of the central back of a 65-year-old man. Immunostains were positive for EMA and androgen receptor. S-100, CEA, and cytokeratin 5 and 6 stains were negative.

The most likely diagnosis is:

- a. Melanoma in situ
- b. Sebaceous carcinoma
- c. Extramammary Pagets
- d. Squamous cell carcinoma in situ



## Discussion

### Question 7

#### Correct Answer:

b. Sebaceous carcinoma

#### Main Histologic Features:

- Intraepidermal atypical epithelioid cells with large nuclei and abundant clear cytoplasm
- The atypical cells stained positive for EMA and androgen receptor but negative for CEA, cytokeratin 5/6 and S100.

#### Differential Diagnosis:

- Extramammary Paget's
- Squamous cell carcinoma
- Melanoma

#### Clinical Concerns:

- Pagetoid sebaceous carcinoma can be difficult to distinguish from these other entities which may have similar clinical and histopathologic appearance.
- It is important to differentiate sebaceous carcinoma and melanoma from SCC due to the increased rates of metastasis. Immunohistochemical staining is useful in differentiating these tumors:

Lesion Type	CEA	EMA	CK 5/6	Androgen Receptor	S100
Sebaceous CA	+/-	+	-	+	-
Extramammary Paget's	+	+	-	-	-
BCC	+	-	+	+	-
SCC	+	+	+	-	-
Melanoma	-	-	-	-	+

- Consider Muir-Torre syndrome (MTS) in any patient with a sebaceous carcinoma due to the increased risk of colon, genitourinary, breast and hematologic malignancies.
- MTS can be screened for by using immunohistochemical stains for MLH-1, MSH-2 and MSH-6 proteins (Muir-Torre panel) on biopsy. Absence of staining with MSH-1, MSH-2 and MSH-6 identifies tumors with mismatch repair deficiency and suggests MTS, which can then be confirmed by genetic testing.

#### References:

- Ansai S, Takeichi H, Arase S, Kawana S, Kimura T: Sebaceous carcinoma: an immunohistochemical reappraisal. *The American Journal of dermatopathology*. 2011; 33:579-587.

### Question 8

This frozen section was taken from a recurrent scalp lesion at the site of a previous cyst removal a year prior in a 73-year-old gentleman.

The most likely diagnosis is:

- a. A dermoid cyst
- b. A post-surgical inclusion cyst
- c. A cylindroma
- d. A proliferating trichilemmal tumor



## Discussion

### Question 8

#### Correct Answer:

- d. Proliferating trichilemmal (pillar) tumor

#### Main Histologic Features:

- Well circumscribed nodule in the mid to deep dermis sharply demarcated from the surrounding stroma
- Band of proliferating atypical squamous epithelial cells with palisading of the peripheral layer and little to no granular layer
- Epithelial cells become larger and more squamoid as they move toward the center abruptly changing into eosinophilic, amorphous keratin (trichilemmal keratinization).
- Individual cell keratinization with budding and invasion of the surrounding tissue is noted at the periphery.
- Some nuclear atypia is present in individual cells with larger hyperchromatic nuclei.

#### Differential Diagnosis:

- Epidermal inclusion cyst
- Trichilemmal (pillar) cyst
- Malignant proliferating trichilemmal tumor
- Squamous cell carcinoma

#### Clinical Concerns:

- These usually present as a single nodule on the scalp of elderly females.
- They must be differentiated from the benign trichilemmal cyst as they may all look similar clinically and histologically depending on sampling.
- Proliferating trichilemmal tumors tend to recur and may become invasive if not completely removed.
- Malignant proliferating trichilemmal tumors have a rate of metastases up to 25% necessitating complete removal and close follow-up.

#### References:

- Satyaprakash A, Sheehan D, Sanguenza O. Proliferating Trichilemmal tumors: A Review of the Literature. *Dermatol Surg*, 2007; 33:9:1102-1108.
- Lever's Histopathology of the Skin. 10<sup>th</sup> Ed. Edited by D. Elder 2008 Lippincott Williams & Wilkins.



### Question 9

The supplied slide is from the first layer of a patient sent for Mohs surgery for an SCC on the left cheek. Regarding this slide which of the following is the best interpretation:

- a. Infiltrative SCC is present at the deep margin. Another layer is necessary.
- b. Caseating granulomas are present in the deep dermis. An AFB stain should be performed. A PPD should also be considered.
- c. Sarcoidal granulomas are present within the deep dermis. The original pathology from the biopsy should be requisitioned to ascertain that the lesion was not misdiagnosed.
- d. Prominent mononuclear and giant cell inflammation is present within the deep dermis. This might be a reaction to gel foam applied at the time of biopsy.

## Discussion

### Question 9

#### Correct Answer:

- d. Prominent mononuclear and giant cell inflammation is present within the deep dermis. This might be a reaction to gel foam applied at the time of biopsy.

#### Main Histologic Features:

- At low power there are large areas of missing epidermis, and solar elastosis. The epidermis that is present is relatively normal
- Deep in the dermis there are several inflammatory foci surrounding areas of slightly basophilic extracellular foreign material.
- The inflammatory infiltrate is composed of normal appearing mononuclear cells and some scattered giant cells.

#### Histologic Concerns:

- The granulomas are neither caseating nor sarcoidal. Foreign body reaction is the main histologic concern. The extracellular slightly basophilic substance is typical of gel foam, a hemostatic agent.<sup>1</sup> Inflammation is generally not common, but foreign body like reactions with mononuclear cells and giant cells has been reported many times in the past.<sup>2-5</sup>

#### References:

1. Anderson JM, Rodriguez A , Chang DT. Foreign body reaction to biomaterials. *Seminars in immunology* 2008;20:86-100.
2. Siskin GP, Englander M, Stainken BF, Ahn J, Dowling K , Dolen EG. Embolic agents used for uterine fibroid embolization. *AJR American Journal of Roentgenology* 2000;175:767-73.
3. Jenkins HP , Janda R. Studies on the use of gelatin sponge or foam as an hemostatic agent in experimental liver resections and injuries to large veins. *Annals of Surgery* 1946;124:952-61.
4. Kawano H, Arakawa S, Satoh O, Matsumoto Y, Hayano M , Miyabara S. Foreign body granulomatous change from absorbable gelatin sponge and microcoil embolization after a guidewire-induced perforation in the distal coronary artery. *Intern Med* 2010;49:1871-4.
5. Knowlson GT. Gel-foam granuloma in the brain. *Journal of Neurology, Neurosurgery, and Psychiatry* 1974;37:971-3.

### Question 10

Regarding this slide from the second layer of an auricular BCC, which of the following is the best interpretation (area of concern is dotted with purple marker):

- a. There is a follicular basaloid proliferation present in the superficial dermis. This layer is tumor free.
- b. There is an adenoid type BCC present in the superficial dermis. Another layer should be removed.
- c. There is an incidental lymph node present in addition to some cartilage. No further layers are necessary.
- d. Anaplastic lymphocytes are present within the dermis. A lymphoma work up should be started.

## Discussion

### Question 10

#### Correct Answer:

- b. There is an adenoid type BCC present in the superficial dermis. Another layer should be removed.

#### Main Histologic Features:

- Basaloid epithelial cells are present in a lace like pattern surrounding a mucoid type stroma.

#### Main Histologic Concerns:

- Adenoid BCCs are distinguished by intertwining strands of basaloid epithelium arranged radially around mucoid connective tissue.<sup>6</sup>
- Adenoid BCCs make up 3.7% of the total BCCs found at biopsy.<sup>6</sup>
- Their biologic behavior is similar to that of nodular BCCs, and not thought to be as aggressive as morpheaform or sclerosing types.<sup>7</sup>
- The main differential diagnosis is: ameloblastoma, peripheral ameloblastoma, adamantinoid BCC.
  - Ameloblastomas develop intraosseously in tooth-bearing areas of maxilla or mandible. Histologically they appear as jigsaw-like arrangements of peripherally palisaded basaloid cells with reverse polarity (nucleus located away from the basement membrane) within a loose, stellate reticulum.<sup>7</sup>
  - Peripheral ameloblastomas consist of islands and strands of columnar-appearing basaloid epithelial cells. It may be continuous with the surface epithelium, may have an associated mononuclear infiltrate, and may produce keratin pearls. It is not possible to distinguish histologically a gingival BCC from a peripheral ameloblastoma. Some authorities believe these are synonymous tumors.<sup>7</sup>
  - Solid masses of basal cells are embedded in a fibrovascular stroma. The tumors are surrounded by a layer of cells with palisaded nuclei. Inside this layer, the tumor consists of cells with elongated nuclei and stellate cytoplasm stretched as thin, connecting bridges across empty spaces, producing the adamantinoid appearance.<sup>8</sup>

#### References:

6. Chen CC , Chen CL. Clinical and histopathologic findings of superficial basal cell carcinoma: A comparison with other basal cell carcinoma subtypes. Journal of the Chinese Medical Association : JCMS 2006;69:364-71.
7. Golda N, Wheeland RG, Thomas TL , Trout C. Adenoid basal cell carcinoma simulating ameloblastoma. Dermatolog Surg. 2009;35:1410-3.
8. Lerchin E , Rahbari H. Adamantinoid basal cell epithelioma. A histological variant. Arch Derm 1975;111:586-8.
9. Brownstein MH. The benign acanthomas. J Cutaneous Path 1985;12:172-88.

**Question 11**

The slide from the first layer of a patient with a large tumor on the temple is supplied. Which of the following is most likely diagnosis?

- a. Fibrosis and inflammation is present exclusive of tumor cells
- b. Microcystic adnexal carcinoma
- c. Desmoplastic trichoepithelioma
- d. Infiltrative SCC

## Discussion

### Question 11

#### Correct Answer:

d. Infiltrative SCC

#### Main Histologic Features:

- Infiltrative strands and islands of epithelioid cells are present within the deep dermis and surrounded by a sclerotic stroma. There are no glandular or cystic tumor structures.
- Many of these tumor islands are found in close proximity to nerves. Perineural invasion should be carefully considered here.

#### Main Histologic Concerns:

- Infiltrative SCC is an aggressive subtype of SCC.<sup>9</sup> Some prefer the term desmoplastic SCC, which is associated with stromal desmoplasia. The tumor islands are marked by infiltrative islands of atypical keratinocytes. Glandular structures must be excluded to eliminate the possibility of microcystic adnexal carcinoma among others.
- Morpheaform BCC can be considered in the differential diagnosis but is excluded by the presence of basaloid, nonkeratinizing cells with a mucoid type stroma.
- Perineural fibrosis. Nerves can be encased in fibrosis, which can simulate tumor infiltration. Careful inspection of affected areas should be performed to ascertain tumor free margins.<sup>10</sup> Perineural invasion signifies a much more aggressive tumor type.<sup>11</sup> A validated approach to these tumors does not exist. Currently authorities are recommending adjuvant radiotherapy for named nerves only, though this remains largely a conjectural recommendation.
- Microcystic adnexal carcinoma. These tumors consist of islands and strands of small basaloid adnexal keratinocytes within the dermis, some of which contain horn cysts and abortive follicles embedded in a desmoplastic stroma.<sup>12</sup> A second component of the tumors consisting of ductal structures frequently lined by two layers of cuboidal cells also occurs. The lack of ducts in our case eliminates this possibility.
- Desmoplastic melanoma should be considered in the differential diagnosis of infiltrative SCC. However, the cells of desmoplastic melanoma are typically spindled. Immunostains may be employed if necessary.

#### References:

9. Salmon PJ, Hussain W, Geisse JK, Grekin RC, Mortimer NJ. Sclerosing squamous cell carcinoma of the skin, an underemphasized locally aggressive variant: a 20-year experience. *Dermatol Surg.* 2011;37:664-70.
10. Hassanein AM, Proper SA, Depcik-Smith ND, Flowers FP. Peritumoral fibrosis in basal cell and squamous cell carcinoma mimicking perineural invasion: potential pitfall in Mohs micrographic surgery. *Dermatol Surg.* 2005;31:1101-6.
11. Dunn M, Morgan MB, Beer TW. Perineural invasion: identification, significance, and a standardized definition. *Dermatol Surg.* 2009;35:214-21.
12. Eisen DB, Zloty D. Microcystic adnexal carcinoma involving a large portion of the face: when is surgery not reasonable? *Dermatol Surg.* 2005;31:1472-7; discussion 8.

## Question 12

For the supplied slide from a patient with forehead SCC, which of the following is the best interpretation (area of concern is dotted with purple marker):

- a. Upward pagetoid spread of melanocytes is focally present in some of the cuts. Immunostains should be performed to verify the presence of malignant melanoma.
- b. Upward pagetoid spread of keratinocytes is present focally in some cuts. Another layer should be performed.
- c. Acantholysis is present focally in some cuts. Transient acantholytic dermatoses should be ruled out.
- d. Epidermolytic hyperkeratosis is present in some cuts. This is a benign finding. No further action is necessary.
- e. Atypical koilocytes are present. A verruca is present at the margin.

## Discussion

### Question 12

#### Correct Answer:

- e. Epidermolytic hyperkeratosis is present in some cuts. This is a benign finding. No further action is necessary.

#### Main Histologic Features:

- Histologic sections of skin show epidermal acanthosis, papillomatosis, and hyperkeratosis. Hypergranulosis with keratinocytic clear cell change is also noted, even at this low power.

#### Histologic Concerns:

- Epidermolytic hyperkeratosis can be solitary (acanthoma) or disseminated as in a genodermatosis.<sup>13</sup>
- When present as a solitary finding it is usually an incidental non-pathologic finding.
- Characterized by perinuclear vacuolization of keratinocytes in the upper epidermis, irregular keratohyaline granules, and compact hyperkeratosis.<sup>13, 14</sup>
- Found more commonly around dysplastic nevi than benign nevi. Associated with more than 10 other benign and malignant conditions including BCC and SCC.<sup>14</sup>

#### References:

13. Brownstein MH. The benign acanthomas. J Cutaneous Pathol 1985;12:172-88.
14. Gaertner EM. Incidental cutaneous reaction patterns: epidermolytic hyperkeratosis, acantholytic dyskeratosis, and hailey-hailey-like acantholysis: a potential marker of premalignant skin change. J of Skin Cancer 2011;2011:645743.