COLLEGE of AMERICAN PATHOLOGISTS

Protocol for the Examination of Specimens From Patients With Carcinoma of the Penis

Version: Penis 4.0.1.0 **Protocol Posting Date:** June 2017
Includes pTNM requirements from the 8th Edition, AJCC Staging Manual

For accreditation purposes, this protocol should be used for the following procedures AND tumor types:

Procedure	Description
Penectomy	Includes specimens designated partial penectomy and total penectomy.
Circumcision	Required if margins can be assessed.
Tumor Type	**Description**
Carcinoma	Includes carcinomas arising from foreskin glands or penile shaft.

This protocol is NOT required for accreditation purposes for the following:

Procedure
Biopsy (incisional or excisional)
Primary resection specimen with no residual cancer (eg, following neoadjuvant therapy)
Cytologic specimens

The following tumor types should NOT be reported using this protocol:

Tumor Type
Urothelial carcinoma (consider Urethra protocol)
Lymphoma (consider the Hodgkin or non-Hodgkin Lymphoma protocols)
Sarcoma (consider the Soft Tissue protocol)

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With guidance from the CAP Cancer Committee and CAP Pathology Electronic Reporting Committee.

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Accreditation Requirements
This protocol can be utilized for a variety of procedures and tumor types for clinical care purposes. For accreditation purposes, only the definitive primary cancer resection specimen is required to have the core and conditional data elements reported in a synoptic format.

- Core data elements are required in reports to adequately describe appropriate malignancies. For accreditation purposes, essential data elements must be reported in all instances, even if the response is "not applicable" or "cannot be determined."
- Conditional data elements are only required to be reported if applicable as delineated in the protocol. For instance, the total number of lymph nodes examined must be reported, but only if nodes are present in the specimen.
- Optional data elements are identified with "+" and although not required for CAP accreditation purposes, may be considered for reporting as determined by local practice standards.

The use of this protocol is not required for recurrent tumors or for metastatic tumors that are resected at a different time than the primary tumor. Use of this protocol is also not required for pathology reviews performed at a second institution (ie, secondary consultation, second opinion, or review of outside case at second institution).

Circumcision is NOT considered to be the definitive resection specimen, even though the entire cancer may be removed. A protocol is recommended for reporting such specimens for clinical care purposes, but this is not required for accreditation purposes.

Synoptic Reporting
All core and conditionally required data elements outlined on the surgical case summary from this cancer protocol must be displayed in synoptic report format. Synoptic format is defined as:

- Data element: followed by its answer (response), outline format without the paired "Data element: Response" format is NOT considered synoptic.
- The data element must be represented in the report as it is listed in the case summary. The response for any data element may be modified from those listed in the case summary, including "Cannot be determined" if appropriate.
- Each diagnostic parameter pair (Data element: Response) is listed on a separate line or in a tabular format to achieve visual separation. The following exceptions are allowed to be listed on one line:
    - Anatomic site or specimen, laterality, and procedure
    - Pathologic Stage Classification (pTNM) elements
    - Negative margins, as long as all negative margins are specifically enumerated where applicable
- The synoptic portion of the report can appear in the diagnosis section of the pathology report, at the end of the report or in a separate section, but all Data element: Responses must be listed together in one location

Organizations and pathologists may choose to list the required elements in any order, use additional methods in order to enhance or achieve visual separation, or add optional items within the synoptic report. The report may have required elements in a summary format elsewhere in the report IN ADDITION TO but not as replacement for the synoptic report i.e. all required elements must be in the synoptic portion of the report in the format defined above.

CAP Laboratory Accreditation Program Protocol Required Use Date: March 2018*

** Beginning January 1, 2018, the 8th edition AJCC Staging Manual should be used for reporting pTNM.*

CAP Penis Protocol Summary of Changes

Version 4.0.1.0 errata:
Size of Largest Metastatic Deposit

- **MODIFIED** Unit of measure from millimeters to centimeters

Version 4.0.0.0:
The following data elements were modified:
Pathologic Stage Classification (pTNM, AJCC 8th Edition)

Surgical Pathology Cancer Case Summary

Protocol posting date: June 2017

PENIS:

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
___ Incisional biopsy
___ Excisional biopsy
___ Partial penectomy
___ Total penectomy
___ Circumcision
___ Other (specify): _____
___ Not specified

Foreskin (presence and type) (select all that apply) (Note A)
___ Present (uncircumcised)
+ ___ Short
+ ___ Medium
+ ___ Long
+ ___ Phimotic
___ Not identified (circumcised)
___ Cannot be determined

Tumor Site (select all that apply)
___ Glans
___ Foreskin mucosal surface
___ Foreskin skin surface
___ Coronal sulcus (balanopreputial sulcus)
___ Skin of the shaft
___ Shaft
___ Penile urethra
___ Penis, NOS

Tumor Size
Greatest dimension (centimeters): ___ cm
+ Additional dimensions (centimeters): ___ x ___ cm
___ Cannot be determined (explain): _____

+ Tumor Focality
+ ___ Unifocal
+ ___ Multifocal

+ Tumor Macroscopic Features (select all that apply)
+ ___ Flat
+ ___ Ulcerated
+ ___ Polypoid
+ ___ Verruciform
+ ___ Necrosis
+ ___ Hemorrhage

+ 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.

+ ___ Other (specify): _____

+ Tumor Deep Borders (select all that apply) (Note C)
+ ___ Pushing (broad base)
+ ___ Infiltrative (jagged)
+ ___ Other (specify): _____

Histologic Type (Note D)

Non-HPV-related squamous cell carcinoma
___ Squamous cell carcinoma, usual type
___ Pseudohyperplastic carcinoma
___ Pseudoglandular carcinoma
___ Verrucous carcinoma
___ Carcinoma cuniculatum
___ Papillary squamous cell carcinoma, NOS
___ Adenosquamous carcinoma
___ Sarcomatoid squamous cell carcinoma

HPV-related squamous cell carcinoma
___ Basaloid squamous cell carcinoma
___ Papillary-basaloid squamous cell carcinoma
___ Warty carcinoma
___ Warty-basaloid squamous cell carcinoma
___ Clear cell squamous cell carcinoma
___ Lymphoepithelioma-like carcinoma

___ Paget disease
___ Adnexal carcinoma (specify type): _____
___ Carcinoma, type cannot be determined
___ Other histologic type not listed (specify): _____

Histologic Grade (Note E)
___ G1: Well differentiated
___ G2: Moderately differentiated
___ G3: Poorly differentiated
___ GX: Cannot be assessed
___ Not applicable

Tumor Extension (select all that apply)
___ No evidence of primary tumor
___ Carcinoma in situ
___ Noninvasive localized squamous cell carcinoma
___ Tumor invades lamina propria
___ Tumor invades dermis
___ Tumor invades dartos fascia
___ Tumor invades corpus spongiosum
___ Tumor invades corpus cavernosum
___ Tumor invades tunica albuginea
___ Tumor invades Buck's fascia
___ Tumor invades penile (distal) urethra
___ Tumor invades regional skin (pubis, inguinal)
___ Tumor invades into adjacent structures (ie, scrotum, prostate, pubic bone) (specify): _____
___ Tumor invades other structures (specify): _____
___ Cannot be assessed (explain): _____

+ 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.

+ Tumor Thickness or Depth of Invasion (Note F)
+ Specify (millimeters): ___ mm

Margins (select all that apply) (Note G)
___ Cannot be assessed
___ Uninvolved
___ Involved (specify for penectomy or circumcision specimens below)
___ Invasive carcinoma
___ Noninvasive carcinoma/ carcinoma in situ

For penectomy specimens:
___ Urethral
___ Periurethral tissues (subepithelial connective tissue [lamina propria], corpus spongiosum, Buck's fascia)
___ Corpus cavernosum
___ Buck's fascia at penile shaft
___ Skin
___ Other (specify): _____

For circumcision specimens:
___ Coronal sulcus mucosal margin
___ Cutaneous margin

Lymphovascular Invasion (Note H)
___ Not identified
___ Present
___ Cannot be determined

Perineural Invasion (Note I)
___ Not identified
___ Present
___ Cannot be determined

Regional Lymph Nodes (Note B)
___ No lymph nodes submitted or found

Lymph Node Examination (required only if lymph nodes are present in the specimen)

Number of Lymph Nodes Involved: _____
___ Number cannot be determined (explain): _____
Specify Site(s) (if applicable):_____[#]
[#] *Note: Sites may include sentinel, inguinal, pelvic, or other lymph nodes.*

If inguinal lymph nodes involved, specify:
Number of Inguinal Lymph Nodes Involved: _____
___ Number cannot be determined (explain): _____

Laterality of Inguinal Lymph Nodes Involved (required only if applicable)
___ Unilateral
___ Bilateral
___ Cannot be determined (explain): _____

Number of Lymph Nodes Examined: _____
___ Number cannot be determined (explain): _____

+ Size of Largest Metastatic Deposit (centimeters): ___ cm
+ Specify Site: _____

+ Size of Largest Lymph Node Involved (centimeters): ___ cm
  + Specify Site: _____

Extranodal Extension (required only if lymph nodes involved)
___ Not identified
___ Present
___ Cannot be determined

Pathologic Stage Classification (pTNM, AJCC 8th Edition) (Note J)

Note: Reporting of pT, pN, and (when applicable) pM categories is based on information available to the pathologist at the time the report is issued. Only the applicable T, N, or M category is required for reporting; their definitions need not be included in the report. The categories (with modifiers when applicable) can be listed on 1 line or more than 1 line.

TNM Descriptors (required only if applicable) (select all that apply)
___ m (multiple primary tumors)
___ r (recurrent)
___ y (posttreatment)

Primary Tumor (pT)
___ pTX: Primary tumor cannot be assessed
___ pT0: No evidence of primary tumor
___ pTis: Carcinoma *in situ* (penile intraepithelial neoplasia [PeIN])
___ pTa: Noninvasive localized squamous cell carcinoma
___ pT1: Glans: Tumor invades lamina propria
Foreskin: Tumor invades dermis, lamina propria, or dartos fascia
Shaft: Tumor invades connective tissue between epidermis and corpora regardless of location
All sites with or without lymphovascular invasion or perineural invasion and is or is not high grade
___ pT1a: Tumor is without lymphovascular invasion or perineural invasion and is not high grade (ie, grade 3 or sarcomatoid)
___ pT1b: Tumor exhibits lymphovascular invasion and/or perineural invasion or is high grade (ie, grade 3 or sarcomatoid)
___ pT2: Tumor invades into corpus spongiosum (either glans or ventral shaft) with or without urethral invasion
___ pT3: Tumor invades into corpora cavernosum (including tunica albuginea) with or without urethral invasion
___ pT4: Tumor invades into adjacent structures (ie, scrotum, prostate, pubic bone)

Regional Lymph Nodes (pN)
___ pNX: Lymph node metastasis cannot be established
___ pN0: No lymph node metastasis
___ pN1: ≤2 unilateral inguinal metastases, no ENE
___ pN2: ≥3 unilateral inguinal metastases or bilateral metastases, no ENE
___ pN3: ENE of lymph node metastases or pelvic lymph node metastases

Distant Metastasis (pM) (required only if confirmed pathologically in this case)
___ pM1: Distant metastasis present[#]
Specify site(s), if known: _____

[#] *Including lymph node metastasis outside the true pelvis, lung, liver, cutaneous nodules distant from the primary site, and bone.*

+ Additional Pathologic Findings (select all that apply) (Note K)
+ ___ None identified
+ ___ HPV-related penile intraepithelial neoplasia (PeIN), warty type
+ ___ HPV-related penile intraepithelial neoplasia (PeIN), basaloid type
+ ___ HPV-related penile intraepithelial neoplasia (PeIN), warty-basaloid type
+ ___ Non-HPV-related PeIN (differentiated [simplex] penile intraepithelial neoplasia)
+ ___ Pleomorphic PeIN
+ ___ Spindle PeIN
+ ___ Clear cell PEIN
+ ___ Pagetoid PEIN
+ ___ Lichen sclerosus
+ ___ Squamous hyperplasia
+ ___ Condyloma acuminatum
+ ___ Other (specify): _____

+ Ancillary Studies
+ Specify: _____
+ ___ Not performed

+ Comment(s)

Explanatory Notes

A. Types of Foreskin
There are three foreskin types: in the short foreskin, the preputial orifice is located behind the glans corona; in the medium foreskin, the orifice is between the corona and the meatal orifice; in the long foreskin, the entire glans is covered and the meatus is not identified without retracting the foreskin. Phimotic foreskins are unretractable and long.[1] Phimosis is present in up to one-half of patients with penile carcinoma,[1] and its presence is considered a risk factor for the development of this tumor.[2-4]

B. Number of Involved Lymph Nodes and Extension of the Lymphadenectomy
The presence of more than two positive lymph nodes in one inguinal basin increases the likelihood of contralateral inguinal and ipsilateral pelvic nodal involvement.[5] In such cases, prophylactic contralateral inguinal and ipsilateral pelvic lymphadenectomy is advised. The number and percentage of positive nodes involved also has an impact on survival.[6,7]

C. Tumor Base of Infiltration
Two patterns are recognized: infiltrating (invasion in blocks of small solid strands of cell tumors broadly infiltrating the stroma) and pushing infiltration (tumor cells invading in large cell blocks with well-defined tumor-stroma interface). The infiltrating pattern of invasion is associated with a higher risk for nodal involvement.[8]

D. Histologic Subtype of Squamous Cell Carcinoma
The World Health Organization (WHO) classification of tumors of the penis was recently published.[9] Most penile cancers are squamous cell carcinomas (SCC), and most arise from the epithelium of the distal portion of the penis (including glans, coronal sulcus, and mucosal surface of the prepuce). Squamous cell carcinoma of the usual type (keratinizing SCC) comprises about 50% to 60% of all cases.[10-12] There are other SCC variants showing distinctive morphological and outcome features.[11-13] The different histological subtypes correlate with different rates of regional/nodal and systemic dissemination. Penile cancer subtypes can be prognostically stratified in three groups. The low-risk group includes verruciform tumors such as verrucous, papillary, and warty/condylomatous carcinomas.[13,14] More recently described subtypes, such as pseudohyperplastic and carcinoma cuniculatum of the penis, also belong to this category of excellent prognosis.[15,16] The high-risk category is comprised by basaloid, sarcomatoid, adenosquamous, and poorly differentiated SCC of the usual type.[17-19] There is an intermediate category of metastatic risk that includes most SCCs of the usual type, some mixed neoplasms (such as hybrid verrucous carcinomas), and high-grade variants of warty/condylomatous carcinomas.[14]

E. Histologic Grade
Histological grade has been consistently reported as an influential predictive factor of groin metastasis and dissemination of penile cancer.[20-22] We recommend a method to grade penile SCCs as follows:

- Grade 1 is an extremely well-differentiated carcinoma, with a minimal deviation from the morphology of normal/hyperplastic squamous epithelium.

- Grade 2 tumors show a more disorganized growth as compared to grade 1 lesions, higher nuclear-to-cytoplasmic ratio, evident mitoses, and, although present, less prominent keratinization.

- Grade 3 are tumors showing any proportion of anaplastic cells, identified as solid sheets or irregular small aggregates, cords or nests of cells with little or no keratinization, high nuclear-to-cytoplasmic ratio, thick nuclear membranes, nuclear pleomorphism, clumped chromatin, prominent nucleoli, and numerous mitosis.[22-23]

A tumor should be graded according to the least differentiated component. Any proportion of grade 3 should be noted in the report.[23]

F. Depth of Invasion
The tumor depth in small lesions is best obtained by perpendicularly sectioning along the tumor central axis. For

large glans tumors, it is preferred to section the specimen longitudinally in half, with additional parallel sections of each half, using as an axis the central and ventral penile urethra. The depth of invasion of SCC is defined as a measurement in millimeters from the epithelial-stromal junction of the adjacent nonneoplastic epithelium to the deepest point of invasion. In larger tumors, especially verruciform ones, the previously mentioned system is not applicable, and we measure the thickness from the surface (excluding the keratin layer) to the deepest point of invasion. Depth of invasion and tumor thickness are of equivalent significance. There is a correlation between depth of invasion and outcome in penile cancers. Minimal risk for metastasis was reported for tumors measuring less than 5 mm in thickness.[22,24] Tumors invading deeper into penile anatomical levels are usually associated with a higher risk for nodal involvement. There is also a correlation between deeper infiltration and higher histological grade, although some exceptions do occur.[26] Tumors invading corpus cavernosum are at higher risk for presenting nodal metastases than those invading only corpus spongiosum,[26,27] and the deepest erectile tissue invaded should be clearly stated in the final pathology report. Per AJCC 8th edition, tumor invading into subepithelial connective tissue (lamina propria), Dartos muscle, and Buck's fascia is staged as T1; tumor invading into corpus spongiosum (either glans or ventral shaft) with or without urethral invasion is staged as T2; tumor invading into corpora cavernosum (including tunica albuginea) with or without urethral invasion is staged as T3; and tumor invading into adjacent structures (ie, scrotum, prostate, pubic bone) is staged as T4.

G. Resection Margins

Positive margins adversely affect prognosis in patients with penile squamous cell carcinomas.[10,12,28] Important margins to be examined in partial penectomy specimens include: (1) proximal urethra and surrounding periurethral cylinder consisting of epithelium, subepithelial connective tissue (lamina propria), corpus spongiosum, and penile fascia; (2) proximal shaft with corresponding corpora cavernosa separated and surrounded by the tunica albuginea and Buck's fascia; and (3) skin of shaft with underlying corporal dartos[27] (Figure 1). The coronal sulcus mucosal margin and cutaneous margin should be entirely examined when evaluating circumcision specimens.

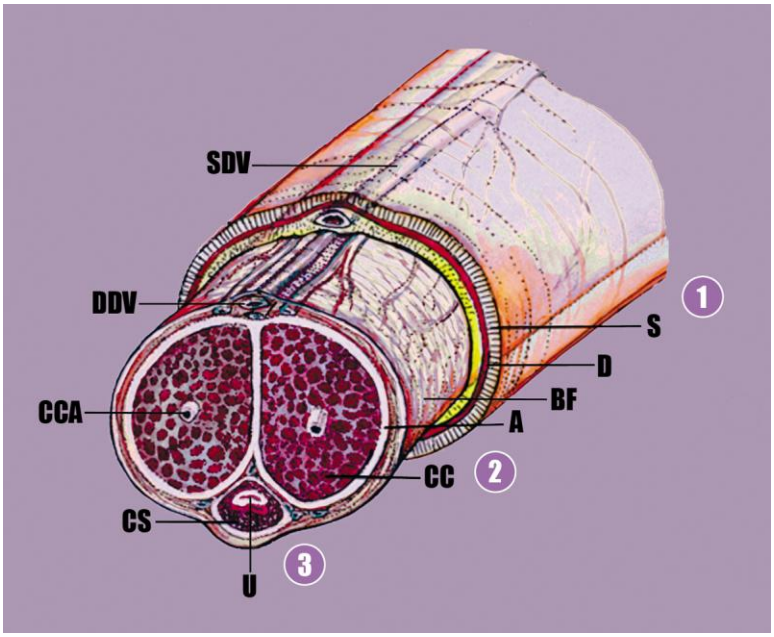

Figure 1. Partial penectomy specimen; anatomical structures of proximal resection margin. The ventral urethra (U) is surrounded by the corpus spongiosum (CS) and a delicate white tunica albuginea (A). The latter is also surrounding the corpora cavernosa (CC). The penile fascia (Buck's fascia) (BF) is located underneath skin (S) and dartos (D). The proximal margin of resection should be cut en face and all the structures including the entire circumference of the urethra with periurethral cylinder should be examined. The 3 important margins to be examined include (1) skin of the shaft with underlying dartos and penile fascia, (2) the corpora cavernosa with surrounding tunica albuginea, and (3) the urethra and periurethral cylinder that includes the lamina propria, corpus spongiosum, albuginea, and penile fascia.
Abbreviations: CCA, cavernous artery; DDV, deep dorsal vein; SDV, superficial dorsal vein.

H. Lymphovascular Invasion

Vascular invasion, lymphatic or venous, adversely affects prognosis of penile cancer.[29-33] The TNM staging classification in the 8th edition of the *AJCC Cancer Staging Manual* subdivides T1 tumors into T1a and T1b based on the absence or presence of lymphovascular invasion or poorly differentiated tumors.[34] Embolic involvement of lymphatic vascular spaces occurs usually near the invasive tumor front, but it may also be found at a certain distance from the primary tumor in anatomical areas such as the lamina propria, penile fascia, and especially in the subepithelial connective tissues surrounding penile urethra. Venous invasion indicates a more advanced stage of the disease and is related to the compromise of the specialized erectile venous structures of corpora spongiosa and cavernosa.

I. Nomograms, Risk Groups, and Perineural Invasion

An evaluation of clinical and pathological variables using a nomogram was recently developed.[31] The selected factors were clinical stage of lymph nodes, microscopic growth pattern, grade, vascular invasion, and invasion of corpora spongiosa and cavernosa and urethra. The probability of nodal metastasis as predicted by the nomogram was close to the real incidence of metastasis observed at follow up. A second nomogram to estimate predictions of survival at 5 years with the same clinical and pathological factors gave similar results.[32] More recently, perineural invasion and histological grade were found to be the strongest independent predictors of mortality in penile tumors 5 to 10 mm thick. A nomogram considering the predictive value of perineural invasion and histological grade was accordingly constructed.[21] Risk groups stratification systems are available to predict the likelihood of inguinal nodal involvement and for therapeutic planning and are based on a combination of histological grade and pT stage.[35-38] Strongest predictive power results from the combination of histological grade, deepest anatomical level of infiltration, and presence of perineural invasion. These factors are used for constructing the prognostic index.[27]

J. TNM Staging Classification

The protocol recommends the use of the TNM staging system of the American Joint Committee on Cancer (AJCC) for carcinoma of the penis.[34] By AJCC convention, the designation T refers to a primary tumor that has not been previously treated. The symbol p refers to the pathologic classification of the TNM, as opposed to the clinical classification, and is based on gross and microscopic examination. pT entails a resection of the primary tumor or a biopsy adequate to evaluate the highest pT category, pN entails removal of nodes adequate to validate lymph node metastasis, and pM implies microscopic examination of distant lesion. Pathologic staging is usually performed after surgical resection of the primary tumor. The summary of changes in the TNM staging classification in the 8th edition of the AJCC Cancer Staging Manual is as follows:

Change	***Details of Change***
Histologic Grade (G)	The 3-tiered World Health Organization (WHO)/International Society of Urological Pathology (ISUP) grading system has been adopted. Any proportion of anaplastic cells is sufficient to categorize a tumor as grade 3.
Definition of Primary Tumor (T)	Ta definition is now broadened to include noninvasive localized squamous carcinoma.
Definition of Primary Tumor (T)	T1a and T1b have been separated by an additional prognostic indicator—the presence or absence or perineural invasion.
Definition of Primary Tumor (T)	T1a or T1b are described by the site where they occur on the penis and are designated glans, foreskin, or shaft. Anatomic layers invaded are described for the three locations.
Definition of Primary Tumor (T)	T2 definition includes corpus spongiosum invasion.
Definition of Primary Tumor (T)	T3 definition now involves corpora cavernosum invasion.
Definition of Regional Lymph Nodes (N)	pN1 is defined as ≤2 unilateral inguinal metastases, no extranodal extension.
Definition of Regional Lymph Nodes (N)	pN2 is defined as ≥3 unilateral inguinal metastases or bilateral metastases

Additional Descriptor
The m suffix indicates the presence of multiple primary tumors and is recorded in parentheses, eg, pTa(m)N0M0.

Anatomic Stage/Prognostic Groups

Group	T	N	M
Stage 0is	Tis	N0	M0
Stage 0a	Ta	N0	M0
Stage I	T1a	N0	M0
Stage IIA	T1b	N0	M0
Stage IIA	T2	N0	M0
Stage IIB	T3	N0	M0
Stage IIIA	T1-3	N1	M0
Stage IIIB	T1-3	N2	M0
Stage IV	T4	Any N	M0
Stage IV	Any T	N3	M0
Stage IV	Any T	Any N	M1

Prognostic Factors (Site-Specific Factors)
Factors required for staging: None.

Clinically significant factors:
- Involvement of corpus spongiosum
- Involvement of corpus cavernosum
- Percentage of tumor that is poorly differentiated
- Verrucous carcinoma depth of invasion
- Size of largest lymph node metastasis
- Extranodal/extracapsular extension
- Human papillomavirus (HPV) status

K. Penile Intraepithelial Neoplasia
Penile Intraepithelial Neoplasia (PeIN) may be subclassified as differentiated (simplex), warty, basaloid, and warty/basaloid (mixed).[39,40] Differentiated PeIN shows parakeratosis, epithelial thickening, elongation of rete ridges, prominent bridges, basal cell atypia, enlarged nuclei, and prominent nucleoli. Differentiated PeIN is frequently associated with lichen sclerosus. It is considered HPV-unrelated, there is no koilocytosis, and p16 immunohistochemical staining results (surrogate of high-risk types of HPV) are usually negative. Basaloid PeIN is characterized by a replacement of the normal epithelium by small, uniform cells with round nuclei and scant cytoplasm. Numerous mitosis and apoptotic cells are usually present. Warty PeIN shows a spiky surface with parakeratosis. The normal epithelium is replaced by markedly pleomorphic cells showing prominent koilocytosis. Mixed warty-basaloid lesions are not infrequent. Warty and basaloid PeIN are HPV-related lesions and usually overexpress p16.

L. Handling of the Specimen

Circumcision Specimen
Take measurements, describe specimen, and identify and describe tumor. Identify and ink the mucosal and cutaneous margins with different colors. Most SCCs arise from the mucosal surface of the foreskin, therefore the coronal sulcus (mucosal) margin is especially important. Lightly stretch and pin the specimen to a cardboard. Fix for several hours in formalin. Cut vertically the whole specimen labeling from 1 to 12, clockwise.

Penectomy Specimen
Take measurements, describe specimen, and identify and describe tumor. Most SCCs of the penis arise from the epithelium of the distal portion of the organ (glans, coronal sulcus, and mucosal surface of the prepuce; the tumor may involve one or more of these anatomical compartments).[41] If present, classify the foreskin as short, medium, long, and/or phimotic.[2] Cut the proximal margin of resection en face making sure to include the entire circumference of the urethra (Figure 1). If the urethra has been retracted, it is important to identify its resection

margin and submit it entirely. The resection margin can be divided in three important areas that need to be analyzed: the skin of the shaft with underlying dartos and penile fascia; corpora cavernosa with albuginea; and urethra with periurethral cylinder that includes subepithelial connective tissue (lamina propria), corpus spongiosum, albuginea, and penile fascia (Figure 1). The urethra and periurethral cylinder can be placed in one cassette. The skin of the shaft with dartos and fascia can be included together with the corpora cavernosa. Because this is a large specimen, it may need to be included in several cassettes to include the entire resection margin. Fix the rest of the specimen overnight. Then, in the fixed state and if the tumor is large and involves most of the glans, cut longitudinally and centrally by using the meatus and the proximal urethra as reference points. Do not probe the urethra. Separate the specimen into halves, left and right (Figures 2 and 3). Then cut two to six serial sections of each half. If tumor is small and asymmetrically located in the dorsal or ventral area, the central portion of the tumor may be used as the axis of sectioning. If the tumor is large involving multiples sites (glans, sulcus and foreskin), it is important not to remove the foreskin leaving the entire specimen intact for sectioning.

In cases of small carcinomas exclusively located in the glans with no foreskin involvement, one may choose to remove the foreskin leaving a 3-mm redundant edge around the sulcus. Proceed cutting the foreskin as indicated for circumcision specimens. If the primary tumor is located in the glans, one should still submit the foreskin serially and in orderly fashion labeled from 1 to 12 clockwise. The rest of the penectomy specimen should be handled as described above.

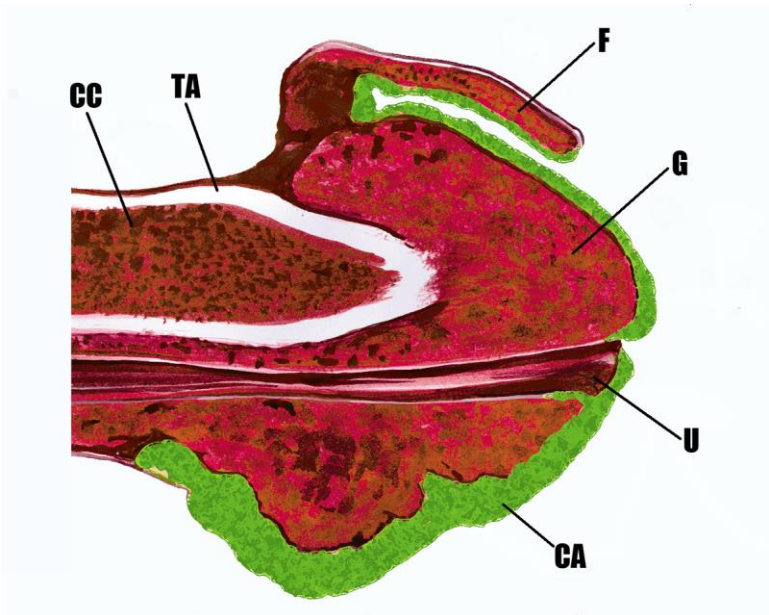

Figure 2. Partial penectomy specimen. After submitting the proximal resection margin, the specimen is cut in half longitudinally. Parallel serial sections will follow.
Abbreviations: CA, carcinoma; CC, corpus cavernosum; F, foreskin; G, glans; TA, tunica albuginea; U, urethra.

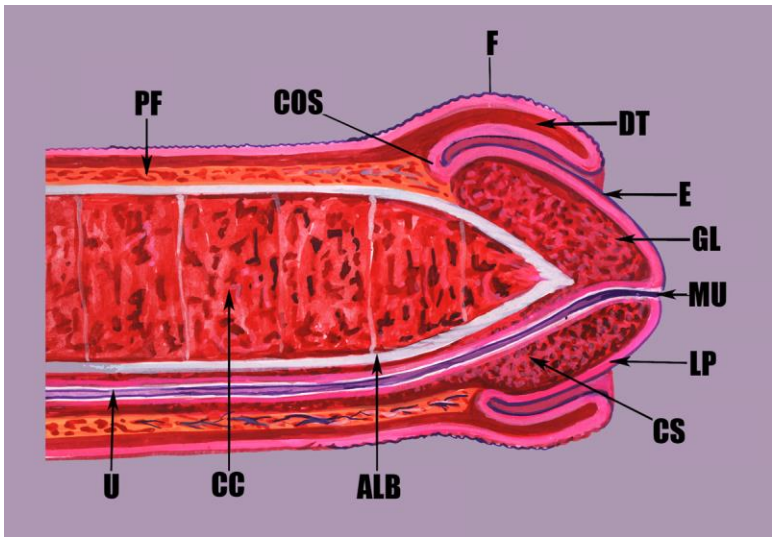

Figure 3. Longitudinal and central section showing the ventral urethra (U) and the penile main anatomic compartments: glans (GL), coronal sulcus (COS), and foreskin (F). The Buck's (penile) fascia (PF) encases the shaft and inserts into the coronal sulcus.
Abbreviations: ALB, albuginea; CC, corpus cavernosum; CS, corpus spongiosum; DT, dartos; E, epithelium; LP, lamina propria; MU, urethral meatus.

M. Pathology Report for Penile Squamous Cell Carcinoma

The report should contain the following information: primary tumor: tumor site or sites, size in centimeters, histologic subtype, histologic grade, anatomical level of invasion, tumor thickness in millimeters, and vascular and perineural invasion. In penectomy specimens, the margins of resection to be reported are urethral/periurethral, corporal, and skin of the shaft.[28] In circumcision specimens, margins include coronal sulcus mucosal margin and cutaneous margin. Common associated lesions to be reported are penile intraepithelial neoplasia (differentiated or undifferentiated), lichen sclerosus, and other "inflammatory dermatologic" conditions.

If the specimen is accompanied by inguinal nodes, the number and size of nodes should be described. All nodes should be included for microscopic examination. The number of positive nodes and total number of nodes examined should be reported as well as the presence of extracapsular extension and the number and site (eg, inguinal versus pelvic) of metastatic nodes. The distinction between superficial and deep inguinal lymph nodes has been eliminated in the seventh edition TNM classification.[34]

References

1. Velazquez EF, Bock A, Soskin A, Codas R, Arbo M, Cubilla AL. Preputial variability and preferential association of long phimotic foreskins with penile cancer: an anatomic comparative study of types of foreskin in a general population and cancer patients. *Am J Surg Pathol.* 2003;27(7):994-998.
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