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

Protocol applies to all invasive carcinomas of the vagina.

Based on AJCC/UICC TNM, 7th edition, and FIGO 2009 Annual Report
Protocol web posting date: January 2016

Procedures
• Biopsy
• Excisional biopsy
• Vaginectomy
• Radical Vaginectomy

Authors
Dina H. Kandil, MD*
Department of Pathology, University of Vermont, Burlington, Vermont

Philip A. Branton, MD
Department of Pathology, Inova Fairfax Hospital, Fairfax, Virginia

Anthony Montag, MD
Department of Pathology, University of Chicago Medical Center, Chicago, Illinois

Esther Oliva, MD
Department of Pathology, Massachusetts General Hospital, Boston, Massachusetts

Christopher N. Otis, MD
Department of Pathology, Baystate Medical Center (Tufts University School of Medicine), Springfield, Massachusetts

Kumarasen Cooper, MBChB, DPhil†
Department of Pathology, Fletcher Allen Health Care, University of Vermont College of Medicine, Burlington, Vermont

For the Members of the Cancer Committee, College of American Pathologists

* Denotes primary author. † Denotes senior author. All other contributing authors are listed alphabetically.

Previous lead contributors: Arthur L. Herbst, MD; Esther Oliva, MD; Patricia M Baker, MD; Robert J. Kurman, MD; Robert E. Scully, MD
The College does not permit reproduction of any substantial portion of these protocols without its written authorization. The College hereby authorizes use of these protocols by physicians and other health care providers in reporting on surgical specimens, in teaching, and in carrying out medical research for nonprofit purposes. This authorization does not extend to reproduction or other use of any substantial portion of these protocols for commercial purposes without the written consent of the College.

The CAP also authorizes physicians and other health care practitioners to make modified versions of the Protocols solely for their individual use in reporting on surgical specimens for individual patients, teaching, and carrying out medical research for nonprofit purposes.

The CAP further authorizes the following uses by physicians and other health care practitioners, in reporting on surgical specimens for individual patients, in teaching, and in carrying out medical research for non-profit purposes: (1) Dictation from the original or modified protocols for the purposes of creating a text-based patient record on paper, or in a word processing document; (2) Copying from the original or modified protocols into a text-based patient record on paper, or in a word processing document; (3) The use of a computerized system for items (1) and (2), provided that the protocol data is stored intact as a single text-based document, and is not stored as multiple discrete data fields.

Other than uses (1), (2), and (3) above, the CAP does not authorize any use of the protocols in electronic medical records systems, pathology informatics systems, cancer registry computer systems, computerized databases, mappings between coding works, or any computerized system without a written license from the CAP.

Any public dissemination of the original or modified protocols is prohibited without a written license from the CAP.

The College of American Pathologists offers these protocols to assist pathologists in providing clinically useful and relevant information when reporting results of surgical specimen examinations of surgical specimens. The College regards the reporting elements in the “Surgical Pathology Cancer Case Summary” portion of the protocols as essential elements of the pathology report. However, the manner in which these elements are reported is at the discretion of each specific pathologist, taking into account clinician preferences, institutional policies, and individual practice.

The College developed these protocols as an educational tool to assist pathologists in the useful reporting of relevant information. It did not issue the protocols for use in litigation, reimbursement, or other contexts. Nevertheless, the College recognizes that the protocols might be used by hospitals, attorneys, payers, and others. Indeed, effective January 1, 2004, the Commission on Cancer of the American College of Surgeons mandated the use of the required data elements of the protocols as part of its Cancer Program Standards for Approved Cancer Programs. Therefore, it becomes even more important for pathologists to familiarize themselves with these documents. At the same time, the College cautions that use of the protocols other than for their intended educational purpose may involve additional considerations that are beyond the scope of this document.

The inclusion of a product name or service in a CAP publication should not be construed as an endorsement of such product or service, nor is failure to include the name of a product or service to be construed as disapproval.
CAP Vagina Protocol Revision History

Version Code
The definition of version control and an explanation of version codes can be found at www.cap.org (search: cancer protocol terms).

Version: Vagina 3.2.0.0

Summary of Changes
The following changes have been made since the December 2013 release.

Biopsy
The following data elements were modified:
- Histologic Type
- Additional Pathologic Findings

The following data element was deleted:
- Tumor Type

Excisional Biopsy, Resection
The following data elements were modified:
- Histologic Type
- Margins
- Lymph-Vascular Invasion
- Regional Lymph Nodes
- Distant Metastasis (changed to required only if confirmed pathologically)
- Additional Pathologic Findings

The following data element was added:
- FIGO Stage (not required)

The following data element was deleted:
- Tumor Type
Surgical Pathology Cancer Case Summary

Protocol web posting date: January 2016

VAGINA: Biopsy

Note: Use of case summary for biopsy specimens is optional.

Select a single response unless otherwise indicated.

+ Procedure (Notes A through C)
  + ___ Incisional biopsy
  + ___ Other (specify): _________________________
  + ___ Not specified

+ Tumor Site
  + ___ Upper third
  + ___ Middle third
  + ___ Lower third
  + ___ Not specified

+ Histologic Type (select all that apply) (Note D)
  + ___ Superficial invasive squamous cell carcinoma (SISCCA)
  + ___ Squamous cell carcinoma
    + ___ Keratinizing
    + ___ Nonkeratinizing
    + ___ Basaloid
    + ___ Verrucous
    + ___ Warty
  + ___ Adenocarcinoma
    + ___ Clear cell
    + ___ Mucinous
    + ___ Endometrioid
    + ___ Mesonephric
    + ___ Intestinal type
  + ___ Adenosquamous carcinoma
  + ___ Undifferentiated carcinoma
  + ___ Other (specify): ___________________________

+ Histologic Grade (Note E)
  + ___ Not applicable
  + ___ GX: Cannot be assessed
  + ___ G1: Well differentiated
  + ___ G2: Moderately differentiated
  + ___ G3: Poorly differentiated
  + ___ G4: Undifferentiated
  + ___ Other (specify): ___________________________

+ Microscopic Tumor Extension
  + ___ Cannot be assessed
  + ___ Stromal invasion
  + ___ Muscle invasion

+ Data elements preceded by this symbol are not required. However, these elements may be clinically important but are not yet validated or regularly used in patient management.
+ Margins
+ ___ Not applicable
+ ___ Cannot be assessed
+ ___ Uninvolved by tumor
+ ___ Involved by tumor
  + Specify site: ___________________________

+ Additional Pathologic Findings (select all that apply) (Note F)
+ ___ None identified
+ ___ High grade squamous intraepithelial neoplasia
+ ___ Low grade squamous intraepithelial neoplasia
+ ___ Vaginal intraepithelial neoplasia, differentiated type
+ ___ Condyloma accuminatum
+ ___ Adenocarcinoma in situ
+ ___ Atypical adenosis
+ ___ Other (specify): ___________________________

+ Comment(s)
Surgical Pathology Cancer Case Summary

Protocol web posting date: January 2016

VAGINA: Excisional Biopsy, Resection (Vaginectomy, Radical Vaginectomy)

Select a single response unless otherwise indicated.

Procedure
___ Excisional biopsy
___ Partial vaginectomy
___ Radical vaginectomy
___ Other (specify): ____________________________
___ Not specified

Tumor Site (select all that apply)
___ Upper third
   + ___ Circumferential
   + ___ Anterior
   + ___ Posterior
   + ___ Left lateral
   + ___ Right lateral

___ Middle third
   + ___ Circumferential
   + ___ Anterior
   + ___ Posterior
   + ___ Left lateral
   + ___ Right lateral

___ Lower third
   + ___ Circumferential
   + ___ Anterior
   + ___ Posterior
   + ___ Left lateral
   + ___ Right lateral

___ Not specified

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

Histologic Type (select all that apply) (Note D)
___ Superficial invasive squamous cell carcinoma (SISSCA)
___ Squamous cell carcinoma
   ___ Keratinizing
   ___ Non-keratinizing
   ___ Basaloid
   ___ Verrucous
   ___ Warty

+ Data elements preceded by this symbol are not required. However, these elements may be clinically important but are not yet validated or regularly used in patient management.
Adenocarcinoma
  ___ Clear cell
  ___ Endometrioid
  ___ Mucinous
  ___ Mesonephric
  ___ Intestinal type
___ Adenosquamous carcinoma
___ Undifferentiated carcinoma
___ Clear cell
___ Small cell neuroendocrine carcinoma
___ Large cell neuroendocrine carcinoma
___ Other (specify): ____________________________

Histologic Grade (Note E)
___ Not applicable
___ GX: Cannot be assessed
___ G1: Well differentiated
___ G2: Moderately differentiated
___ G3: Poorly differentiated
___ G4: Undifferentiated
___ Other (specify): ____________________________

Margins (select all that apply)
___ Cannot be assessed
___ Uninvolved by invasive carcinoma
   Distance of invasive carcinoma from closest margin: ___ mm
   Specify margin, if possible: ____________________________
___ Involved by invasive carcinoma
   Specify margin(s), if possible: ____________________________
___ Uninvolved by high grade squamous intraepithelial lesion (VAIN 2-3)
___ Involved by high grade squamous intraepithelial lesion (VAIN 2-3)
___ Uninvolved by vaginal intraepithelial neoplasia, differentiated type
___ Involved by vaginal intraepithelial neoplasia, differentiated type
   Specify margin(s): ____________________________

Lymph-Vascular Invasion
___ Not identified
___ Present
___ Cannot be determined

Pathologic Staging (pTNM) (Note H)

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

Primary Tumor (pT)
___ pTX: Cannot be assessed
___ pT0: No evidence of primary tumor
___ pTis: Carcinoma in situ
___ pT1: Tumor confined to vaginal wall
___ pT2: Tumor invades paravaginal tissues but not the pelvic wall
___ pT3: Tumor extends to pelvic wall
___ pT4: Tumor invades mucosa of bladder or rectum and/or extends beyond true pelvis
Regional Lymph Nodes (pN) (select all that apply)

+ Modifier
+ ___ (sn)
+ ___ (sn)(i-)
+ ___ (sn)(i+)

Category (pN)
___ pNX: Cannot be assessed
___ pN0: No regional lymph node metastasis
___ pN1: Pelvic or inguinal lymph node metastasis

___ No nodes submitted or found

Inguinal lymph nodes:
___ No inguinal nodes submitted or found

Number of Inguinal Lymph Nodes Examined
Specify: ____
___ Number cannot be determined (explain): ________________________

Number of Inguinal Lymph Nodes Involved
Specify: ____
___ Number cannot be determined (explain): ________________________

Other lymph nodes:
Specify site: ________________________

Number of Other Lymph Nodes Examined
Specify: ____
___ Number cannot be determined (explain): ________________________

Number of Other Lymph Nodes Involved
Specify: ____
___ Number cannot be determined (explain): ________________________

+ Number of lymph nodes with isolated tumor cells (<0.2 mm): _____
+ Number of lymph nodes with micrometastasis (0.2 mm to 2 mm): _____

Distant Metastasis (pM) (required only if confirmed pathologically in this case)
___ pM1: Distant metastasis
   Specify site(s), if known: ________________________

+ FIGO Stage
+ ___ I: Carcinoma is limited to the vaginal wall
+ ___ II: Carcinoma has involved the sub-vaginal tissue but has not extended to the pelvic wall
+ ___ III: Carcinoma has extended to the pelvic wall
+ IV: Carcinoma has extended beyond the true pelvis or has involved the mucosa of the bladder or rectum
   (bullaous edema as such does not permit a case to be allotted to stage IV)
+ ___ IVA: Tumor invades bladder and/or rectal mucosa and/or direct extension beyond the true pelvis
+ ___ IVB: Spread to distant organs

+ Data elements preceded by this symbol are not required. However, these elements may be clinically important but are not yet validated or regularly used in patient management.
**Additional Pathologic Findings (select all that apply) (Note F)**

+ ___ None identified
+ ___ Low-grade squamous intraepithelial lesion (VAIN 1)
+ ___ High-grade squamous intraepithelial lesion (VAIN 2-3)
+ ___ Vaginal intraepithelial neoplasia, differentiated type
+ ___ Condyloma acuminatum
+ ___ Adenocarcinoma in situ
+ ___ Atypical adenosis
+ ___ Other (specify): __________________________

**Comment(s)**
Explanatory Notes

A. Prenatal DES Exposure
Prenatal exposure to diethylstilbestrol (DES) or related synthetic drugs was relatively common in the United States and other countries until 1971, when its relation to clear cell adenocarcinomas of the vagina and cervix led to proscription of these drugs by the Food and Drug Administration. From the 1970s to the turn of the 21st century, most patients with clear cell adenocarcinoma of the vagina had a history of DES exposure. As this cohort ages, the diagnosis has been less common, and most women with this diagnosis currently have no DES exposure history. Furthermore, it has been reported that these patients have significantly worse outcomes than do patients with history of DES exposure and patients with squamous cell carcinoma. A bimodal age peak for DES-related carcinoma has, however, been recently reported, and therefore a history of this type of prenatal drug exposure should alert the pathologist to the possible presence of those tumors and associated lesions.

B. Prior Tumors and Operations
A history of dysplasia, carcinoma in situ, or invasive carcinoma of the cervix as well as knowledge of the tumor’s microscopic features may be essential in the determination whether a subsequent vaginal tumor is a recurrent or new tumor. Also, a history of a carcinoma higher in the female genital tract may influence the interpretation of a neoplasm that is detected in a specimen from the vagina. Prior pathology slides and reports should be obtained and reviewed if a review is deemed essential by the clinician or pathologist for optimal pathologic evaluation of the present specimen.

C. Clinical Findings and DES Exposure
Naked-eye examination, colposcopy, and iodine staining of the cervix and vagina may disclose a variety of changes highly suspicious of prenatal DES exposure, such as cervical hypoplasia, pseudopolyp, or coxcomb deformity, and vaginal adenosis or ridge, any of which should alert the pathologist to look carefully for DES changes.

D. Histologic Type
The World Health Organization (WHO) classification and nomenclature of vaginal tumors is recommended because of its wide acceptance. The most common subtype is squamous cell carcinoma. However, when such tumor simultaneously involves the cervix or the vulva and the vagina, the tumor is considered to originate from the cervix or vulva, with secondary extension to the vagina. Also, when an adenocarcinoma is present in the vagina, it is important to keep in mind that many of those tumors represent secondary involvement either by direct extension or metastases, more commonly from the endometrium, colorectal, ovary, vulva, urethra, and urinary bladder. Although not included in the current WHO classification, primary intestinal type adenocarcinoma has recently been described in the vagina. These tumors usually arise in a background of benign adenomatous lesion. Awareness of this new subtype is necessary to avoid misdiagnosis of a metastatic colorectal adenocarcinoma.

WHO Classification
Precancerous Lesions and Carcinomas of the Vagina (Modified)

Epithelial Tumors
Squamous tumors and precursors
Squamous intraepithelial lesions (SIL) Vaginal intraepithelial neoplasia (VAIN)
Mild dysplasia VAIN 1 Low-grade SIL (LSIL)
Moderate dysplasia VAIN 2 High-grade SIL (HSIL)
Severe dysplasia VAIN 3 HSIL
Carcinoma in situ VAIN 3 HSIL
Vaginal intraepithelial neoplasia, differentiated type
Squamous cell carcinoma, not otherwise specified
Keratinizing
Nonkeratinizing
Basaloid
Verrucous
Warty
Glandular tumors
  Clear cell carcinoma
  Endometrioid adenocarcinoma
  Mucinous adenocarcinoma
  Mesonephric adenocarcinoma
High-grade neuroendocrine carcinoma
  Small cell neuroendocrine carcinoma
  Large cell neuroendocrine carcinoma
Other epithelial tumors
  Adenosquamous carcinoma
  Adenoid cystic carcinoma
  Adenoid basal carcinoma
  Undifferentiated carcinoma

E. Histologic Grade
No specific grading system for vaginal cancers is recommended. For the sake of uniformity, however, it is suggested that 3 grades be used, as shown below, with grades 1 to 3 assigned to carcinomas showing squamous or glandular differentiation.

Grade X  Cannot be assessed
Grade 1  Well differentiated
Grade 2  Moderately differentiated
Grade 3  Poorly differentiated
Grade 4  Undifferentiated

F. Other Lesions
Squamous dysplasia or carcinoma in situ, adenocarcinoma in situ, or atypical adenosis, particularly if such changes are at the resection margin, may increase the frequency of recurrent tumor. Also, few cases of primary invasive carcinoma of vagina have been reported to occur in association with severe vaginal prolapse.9-11

G. Staining of Mucosal Surface
Schiller’s or Lugol’s solutions stain glycogenated epithelium brown. Therefore, they stain glycogenated squamous epithelium and well-glycogenated tumors. The stains are useful in identifying sites of nonstaining vaginal adenosis or immature squamous metaplasia of adenosis in patients exposed to DES, which may not be detectable before staining.

H. TNM and FIGO Stage Groupings
The TNM staging system for vaginal cancer endorsed by the American Joint Committee on Cancer (AJCC) and the International Union against Cancer (UICC),12,13 and the parallel system formulated by the International Federation of Gynecology and Obstetrics (FIGO)14 are recommended.

By AJCC/UICC 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 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 lesions. Clinical classification (cTNM) is usually carried out by the referring physician before treatment during initial evaluation of the patient or when pathologic classification is not possible.

Pathologic staging is usually performed after surgical resection of the primary tumor. Pathologic staging depends on pathologic documentation of the anatomic extent of disease, whether or not the primary tumor has been completely removed. If a biopsied tumor is not resected for any reason (eg, when technically unfeasible) and if the highest T and N categories or the M1 category of the tumor can be confirmed microscopically, the criteria for pathologic classification and staging have been satisfied without total removal of the primary cancer.
TNM and FIGO Staging Systems for Vaginal Carcinoma

Primary Tumor (T)

<table>
<thead>
<tr>
<th>TNM</th>
<th>FIGO</th>
<th>Category</th>
<th>Stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>(-)</td>
<td>Primary tumor cannot be assessed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0</td>
<td>(-)</td>
<td>No evidence of primary tumor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tis</td>
<td>0</td>
<td>Carcinoma in situ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>I</td>
<td>Tumor confined to vaginal wall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>II</td>
<td>Tumor invades paravaginal tissues but not the pelvic wall*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>III</td>
<td>Tumor extends to pelvic wall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>IVA</td>
<td>Tumor invades mucosa of bladder or rectum and/or extends beyond the true pelvis (bullous edema is not sufficient to classify a tumor as T4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M1)</td>
<td>IVB</td>
<td>Distant metastasis (excludes peritoneal metastasis)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Pelvic wall is defined as muscle, fascia, neurovascular structures, or skeletal portions of the bony pelvis.

Microinvasive/early carcinoma is not, currently, a recognized entity in the vagina, in contradistinction to the cervix, and the term is therefore not used. Superficially invasive tumors which invade 3 mm or less without lymphovascular invasion (LVI) have a low incidence of lymph node metastasis.15

Regional Lymph Nodes (N): TNM

| NX    | Regional lymph nodes cannot be assessed |
| N0    | No regional lymph node metastasis       |
| N1    | Pelvic or inguinal lymph node metastasis |

Although N0(sn)(i-) and N0(sn)(i+) are not explicitly mentioned in the vagina chapter of the AJCC 7th edition, AJCC acknowledges use of (sn) and (i) modifiers for cancers other than breast cancer. This nomenclature is currently being adopted and used by pathologists for vaginal cancer.

Distant Metastasis (M): TNM

| M0    | No distant metastasis                  |
| M1    | Distant metastasis                     |

Stage Groupings

<table>
<thead>
<tr>
<th>AJCC/UICC TNM</th>
<th>FIGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Tis</td>
</tr>
<tr>
<td>Stage I</td>
<td>T1</td>
</tr>
<tr>
<td>Stage II</td>
<td>T2</td>
</tr>
<tr>
<td>Stage III</td>
<td>T1</td>
</tr>
<tr>
<td></td>
<td>T2</td>
</tr>
<tr>
<td></td>
<td>T3</td>
</tr>
<tr>
<td>Stage IVA</td>
<td>T4</td>
</tr>
<tr>
<td>Stage IVB</td>
<td>Any T</td>
</tr>
</tbody>
</table>

TNM Descriptors

For identification of special cases of TNM or pTNM classifications, the “m” suffix and “y,” “r,” and “a” prefixes are used. Although they do not affect the stage grouping, they indicate cases needing separate analysis.

The “m” suffix indicates the presence of multiple primary tumors in a single site and is recorded in parentheses: pT(m)NM.

The “y” prefix indicates those cases in which classification is performed during or following initial multimodality therapy (ie, neoadjuvant chemotherapy, radiation therapy, or both chemotherapy and radiation therapy). The cTNM or pTNM category is identified by a “y” prefix. The ycTNM or ypTNM categorizes the extent of tumor
actually present at the time of that examination. The “y” categorization is not an estimate of tumor prior to multimodality therapy (ie, before initiation of neoadjuvant therapy).

The “r” prefix indicates a recurrent tumor when staged after a documented disease-free interval, and is identified by the “r” prefix: rTNM.

The “a” prefix designates the stage determined at autopsy: aTNM.

Additional Descriptors

Residual Tumor (R)
Tumor remaining in a patient after therapy with curative intent (eg, surgical resection for cure) is categorized by a system known as R classification, shown below.

RX Presence of residual tumor cannot be assessed
R0 No residual tumor
R1 Microscopic residual tumor
R2 Macroscopic residual tumor

For the surgeon, the R classification may be useful to indicate the known or assumed status of the completeness of a surgical excision. For the pathologist, the R classification is relevant to the status of the margins of a surgical resection specimen. That is, tumor involving the resection margin on pathologic examination may be assumed to correspond to residual tumor in the patient and may be classified as macroscopic or microscopic according to the findings at the specimen margin(s).

Lymph-Vascular Invasion (LVI)
LVI indicates whether microscopic lymph-vascular invasion is identified. LVI includes lymphatic invasion, vascular invasion, or lymph-vascular invasion. By AJCC/UICC convention, LVI does not affect the T category indicating local extent of tumor unless specifically included in the definition of a T category.

Regional Lymph Nodes: Isolated Tumor Cells
Isolated tumor cells (ITC) are single cells or small clusters of cells not more than 0.2 mm in greatest dimension. Lymph nodes or distant sites with ITC found by either standard histologic examination, immunohistochemical stains (eg, cytokeratin), or nonmorphological techniques (eg, flow cytometry, DNA analysis, polymerase chain reaction [PCR] amplification of a specific tumor marker) should be so identified. There is currently no guidance in the literature as to how these patients should be coded; until further studies are available, they should be coded as “N0(i+)” with a comment noting how the cells were identified.

Sentinel Lymph Nodes
The sentinel lymph node is the first node to receive drainage from a primary tumor. There may be more than 1 sentinel node for some tumors. If a sentinel node contains metastatic tumor, it indicates that other more distant nodes may also contain metastatic disease. If sentinel nodes are negative, other regional nodes are less likely to contain metastasis.

I. Cervical Abnormalities
Ectropion (erosion, eversion) of the cervix, which is characterized by the appearance of glandular (columnar) epithelium outside the external os of the cervix, is seen in approximately 90% of women exposed to DES in utero (but is often seen in nonexposed women as well). Approximately one-third of patients exposed to DES have 1 or more gross structural abnormalities of the cervix.1,4

J. Fallopian Tubes
The fallopian tubes are abnormal in some women exposed to DES in the form of hypoplasia or defects demonstrated on hysterosalpingographic examination.4
References


