Fallopian Tube

Protocol applies to all invasive carcinomas of the fallopian tube.

Protocol revision date: January 2004
Based on AJCC/UICC TNM, 6th edition
and FIGO 2001 Annual Report

Procedures

- **Cytology** (No Accompanying Checklist)
- **Unilateral Salpingectomy**
- **Salpingo-oophorectomy**
- **Hysterectomy with Salpingo-oophorectomy**

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Surgical Pathology Cancer Case Summary (Checklist)

Protocol revision date: January 2004
Applies to invasive carcinomas only
Based on AJCC/UICC TNM, 6th edition
and FIGO 2001 Annual Report

FALLOPIAN TUBE: Unilateral Salpingectomy, Salpingo-oophorectomy, or Hysterectomy with Salpingo-oophorectomy

Patient name:
Surgical pathology number:

Note: Check 1 response unless otherwise indicated.

MACROSCOPIC

Specimen Type
___ Right salpingectomy
___ Left salpingectomy
___ Right salpingo-oophorectomy
___ Left salpingo-oophorectomy
___ Hysterectomy with salpingo-oophorectomy
___ Other (specify): _____
___ Not specified

Primary Tumor Site (check all that apply)
___ Right fallopian tube
  Relationship to ovary
  ___ Not fused
  ___ Fused
  Status of fimbriated end
  ___ Open
  ___ Closed
___ Left fallopian tube
  Relationship to ovary
  ___ Not fused
  ___ Fused
  Status of fimbriated end
  ___ Open
  ___ Closed
___ Not specified

* Data elements ***with asterisks*** are ***not required*** for accreditation purposes for the Commission on Cancer. These elements may be clinically important, but are not yet validated or regularly used in patient management. Alternatively, the necessary data may not be available to the pathologist at the time of pathologic assessment of this specimen.

Specimen Integrity
Specify side: _____
___ Intact
___ Ruptured
___ Fragmented
___ Other (specify): _____

Tumor Location (check all that apply)
___ Fimbria(e)
___ Ampulla
___ Infundibular portion
___ Isthmus

Tumor Size
Greatest dimension: ___ cm
*Additional dimensions: ___ x ___ cm
___ Cannot be determined (see Comment)

MICROSCOPIC

Histologic Type
___ Carcinoma in situ
___ Serous carcinoma
___ Mucinous carcinoma
___ Endometrioid carcinoma
___ Clear cell carcinoma
___ Transitional cell carcinoma
___ Squamous cell carcinoma
___ Undifferentiated carcinoma
___ Other (specify): _____
___ Carcinoma, type cannot be determined

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

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Pathologic Staging (pTNM [FiGO])

Primary Tumor (pT)

___ pTX [--]: Primary tumor cannot be assessed
___ pT0 [--]: No evidence of primary tumor
___ pTis [0]: Carcinoma in situ (limited to tubal mucosa)
___ pT1 [I]: Tumor limited to fallopian tube(s)
*___ pT1a [IA]: Tumor limited to 1 tube without penetrating the serosal surface; no ascites
*___ pT1b [IB]: Tumor limited to both tubes without penetrating the serosal surface; no ascites
*___ pT1c [IC]: Tumor limited to 1 or both tube(s) with extension into or through the tubal serosa; or with malignant cells in ascites or peritoneal washings
___ pT2 [II]: Tumor involves 1 or both tube(s) with pelvic extension
___ pT2a [IIA]: Extension and/or metastasis to the uterus and/or ovaries
___ pT2b [IIB]: Extension to other pelvic structures
*___ pT2c [IIC]: Pelvic extension (T2a or T2b/IIA or IIB) with malignant cells in ascites or peritoneal washings
___ pT3 and/or N1 [III]: Tumor involves 1 or both tube(s) with peritoneal implants outside the pelvis and/or regional lymph node metastasis
___ pT3a [IIIA]: Microscopic peritoneal metastasis beyond pelvis
___ pT3b [IIIB]: Macroscopic peritoneal metastasis beyond pelvis 2 cm or less in greatest dimension
___ pT3c/NI [IIIC]: Peritoneal metastasis beyond pelvis more than 2 cm in greatest dimension and/or regional lymph node metastasis
___ Any T/Any N and MI [IV]: Distant metastasis including presence of malignant cells in pleural fluid or parenchymal hepatic metastasis

Regional Lymph Nodes (pN)

___ pNX: Cannot be assessed
___ pN0: No regional lymph node metastasis
___ pN1 [IIIC]: Regional lymph node metastasis
Specify: Number examined: ___
Number involved: ___

Distant Metastasis (pM)

___ pMX: Cannot be assessed
___ pM1 [IV]: Distant metastasis
*Specify site(s), if known: _____

***Summary of Organs/Tissues Microscopically Involved by Tumor**

*___ Fallopian tube only
*___ Other organs/tissues
*Specify all: _____

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Venous/Lymphatic (Large/Small Vessel) Invasion (V/L)
___ Absent
___ Present
___ Indeterminate

***Additional Pathologic Findings (check all that apply)**
*___ None identified
*___ Salpingitis (type): _____
*___ Dysplasia
*___ Other (specify): _____

***Comment(s)**

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Background Documentation

Protocol revision date: January 2004

I. Cytologic Material

A. Clinical Information

1. Patient identification
   a. Name
   b. Identification number
   c. Age (birth date)
2. Responsible physician(s)
3. Date of procedure
4. Other clinical information
   a. Relevant history
      (1) abnormal uterine bleeding pattern
      (2) discharge per vaginam (Note **A**)
      (3) pregnant or nonpregnant
      (4) prior therapy (hormonal, radiation, chemotherapy)
      (5) prior tumors and operations of possible relevance
   b. Other relevant findings (eg, radiologic findings, laboratory data, ascites)
   c. Clinical diagnosis
   d. Operative findings
   e. Type(s) or site(s) of specimen(s)
      (1) ascitic fluid
      (2) peritoneal washings (specify site)
      (3) brushings (specify site)
      (4) cyst fluid (specify site)
      (5) fine-needle aspirate (specify site)
      (6) cytology preparation of tissue (touch preparation) (specify site)
      (7) other

B. Macroscopic Examination

1. Specimen
   a. Unfixed/fixed (specify fixative)
   b. Number of slides received, if appropriate
   c. Quantity and appearance of fluid specimen, if appropriate
   d. Other (eg, cytologic preparation from tissue)
   e. Results of intraprocedural consultation
2. Material submitted for microscopic evaluation (eg, smear, cytocentrifuge, touch or filter preparation, cell block)
3. Special studies (specify) (eg, cytochemistry, immunocytochemistry)

C. Microscopic Evaluation

1. Adequacy of specimen (if unsatisfactory for evaluation, specify reason)
2. Tumor, if present
   a. Histologic type, if possible (Note **B**)
   b. Histologic grade, if possible (Note **C**)
   c. Other features (eg, necrosis)
3. Additional cytologic findings, if present
4. Results/status of special studies (specify)
5. Comments

a. Correlation with intraprocedural consultation, as appropriate
b. Correlation with other specimens, as appropriate
c. Correlation with clinical information, as appropriate

II. Unilateral Salpingectomy or Salpingo-oophorectomy

A. Clinical Information

1. Patient identification
   a. Name
   b. Identification number
   c. Age (birth date)
2. Responsible physician(s)
3. Date of procedure
4. Other clinical information
   a. Relevant history
      (1) abnormal uterine bleeding pattern
      (2) discharge per vaginam (Note **A**)
      (3) pregnant or nonpregnant
      (4) prior therapy (hormonal, radiation, chemotherapy)
      (5) prior tumors and operations of possible relevance
   b. Relevant findings (eg, radiologic findings, laboratory data, ascites)
   c. Clinical diagnosis
   d. Procedure
   e. Operative findings
   f. Anatomic site(s) of specimen(s)

B. Macroscopic Examination

1. Specimen
   a. Organs/tissues received
   b. Unfixed/fixed (specify fixative)
   c. Number of pieces
   d. Dimensions (measure attached tissues individually)
   e. Orientation, if indicated by surgeon
   f. Results of intraoperative consultation
2. Tube or tube-ovary if fused into single mass[#]
   [#] *If fused ovary and tube are separately identifiable on sectioning, describe tumor in each, including relation to one another.*
   a. Dimensions
   b. Outer surface
      (1) descriptive features (eg, adhesions, roughening, granularity)
      (2) extent of findings (largest dimension, or proportion of total area involved)
   c. Fimbriated end of tube (Note **D**)
      (1) open
      (2) closed
   d. Sectioned surface of specimen or opened cyst(s)
   e. Contents of lumen of tube or cyst(s)
   f. Tumor
      (1) location
         i. fimbria(e)
         ii. ampulla
         iii. isthmus

iv. infundibular portion
v. combination

(2) extent of invasion, if discernible
i. intraluminal polypoid or papillary and attached to mucosal surface
ii. intramural
iii. serosal
iv. ovarian spread
v. combination

(3) dimensions, if different from size of entire specimen
(4) descriptive features
(5) adhesions suspicious for tumor

g. Resection margins(s), describe relation to or involvement by tumor
h. Additional pathologic findings, if present

3. Non-fused ovary or ovaries
a. Dimensions
b. Outer surface
c. Sectioned surface
d. Tumor
(1) location
(2) dimensions
(3) descriptive features
(4) relation to tubal tumor, if pertinent
e. Additional pathologic findings, if present
4. Tissues submitted for microscopic evaluation (Note **E**)
5. Tissues submitted for special studies (specify) (eg, frozen tissue for immunohistochemistry, flow cytometry, electron microscopy)

C. Microscopic Examination

1. Tube or tube-ovary if fused into single mass
a. Tumor (Note **F**)
(1) histologic type (Note **B**)
(2) histologic grade (Note **C**)
(3) location
i. fimbria(e)
ii. ampulla
iii. isthmus
iv. infundibular portion
v. ovarian spread
vi. combination
(4) depth of invasion
i. intraluminal (polypoid or papillary and attached to mucosal surface)
ii. intramural
iii. serosa
(5) venous/lymphatic vessel invasion
(6) extent and distribution in tube and ovary if also involved
(7) site(s) of origin (Note **G**)
(8) total extent (eg, with invasion of, metastasis to)
b. Other features of possible prognostic or therapeutic significance
c. Resection margins, as appropriate
d. Additional pathologic findings, if present

(1) salpingitis (Note **H**)
(2) endometriosis (Note **H**)
(3) relation to tumor, if pertinent

2. Non-fused ovary or ovaries
   a. Tumor, if present
      (1) histologic type
      (2) histologic grade
      (3) location
      (4) relation to tubal tumor
   b. Resection margins, if pertinent
   c. Additional pathologic findings, if present
      (1) endometriosis (Note **H**)
      (2) relation to tumor, if pertinent
3. Results/status of special studies (specify)
4. Pathologic stage
5. Comments
   a. Correlation with intraoperative consultation, as appropriate
   b. Correlation with other specimens, as appropriate
   c. Correlation with clinical information, as appropriate

III. Hysterectomy with Salpingo-oophorectomy
(With or Without Pelvic Exenteration)

A. Clinical Information
1. Patient identification
   a. Name
   b. Identification number
   c. Age (birth date)
2. Responsible physician(s)
3. Date of procedure
4. Other clinical information
   a. Relevant history
      (1) abnormal uterine bleeding pattern
      (2) discharge per vaginam (Note **A**)
      (3) pregnant or nonpregnant
      (4) prior therapy (hormonal, radiation, chemotherapy)
      (5) prior tumors and operations of possible relevance
   b. Other relevant findings (eg, radiologic findings, laboratory data, ascites)
   c. Clinical diagnosis
   d. Procedure
   e. Operative findings
   f. Anatomic site(s) of specimen(s)

B. Macroscopic Examination
1. Specimen
   a. Organs/tissues received (specify)
   b. Unfixed/fixed (specify fixative)
   c. Number of pieces
   d. Dimensions (measure attached tissues individually)
   e. Orientation, if indicated by surgeon
   f. Results of intraoperative consultation

2. Tube or tube-ovary if fused into single mass[#]
   [#] *If fused ovary and tube are separately identifiable on sectioning, describe tumor in each, including relation to one another.*
   a. Dimensions
   b. Outer surface
      (1) descriptive features (eg, adhesions, roughening, granularity)
      (2) extent of findings (largest dimension or proportion of total area involved)
   c. Fimbriated end of tube (Note **D**)
      (1) open
      (2) closed
   d. Sectioned surface of specimen or opened cyst(s)
   e. Contents of lumen of tube or cyst(s)
   f. Tumor
      (1) location
         i. fimbria(e)
         ii. ampulla
         iii. isthmus
         iv. infundibular portion
         v. combination
      (2) depth of invasion, if discernible
         i. intraluminal polypoid or papillary and attached to mucosal surface
         ii. intramural
         iii. serosal
         iv. ovarian spread
         v. combination
      (3) dimensions, if different from size of entire specimen
      (4) descriptive features
      (5) adhesions suspicious for tumor
   g. Resection margin(s), describe relation to or involvement by tumor
   h. Additional pathologic findings, if present
3. Contralateral fallopian tube
   a. Dimensions
   b. Tumor
      (1) dimensions
      (2) location
      (3) descriptive features
   c. Additional pathologic findings, if present
4. Non-fused ovary or ovaries
   a. Dimensions
   b. Outer surface
   c. Sectioned surface
   d. Tumor
      (1) dimensions
      (2) location
      (3) descriptive features
      (4) relation to tubal tumor, if pertinent
   e. Additional pathologic findings, if present
5. Uterus
   a. Dimensions

   b. Tumor
      (1) dimensions
      (2) location
      (3) descriptive features
      (4) relation to tubal tumor (separate or continuous)
   c. Additional pathologic findings, if present
6. Omentum
   a. Dimensions
   b. Tumor
      (1) number of nodules, if easily counted
      (2) size range
      (3) descriptive features
      (4) size and gross appearance of confluent mass(es)
   c. Additional pathologic findings, if present
7. Regional lymph nodes
   a. Number and size range at each designated location
   b. Tumor
      (1) dimensions
      (2) location
      (3) descriptive features
   c. Additional pathologic findings, if present
8. Other staging biopsy specimens (label separately if so designated)
9. Other organ(s)/tissue(s) removed
   a. Type, dimensions, and other gross features
   b. Tumor
      (1) location and relation to tubal tumor (separate or adherent)
      (2) size and distribution within organ or tissue
   c. Resection margins, if applicable
   d. Additional pathologic findings, if present
10. Tissues submitted for microscopic evaluation (Note **E**)
11. Tissues submitted for special studies (specify) (eg, frozen tissue for immunohistochemitstry, flow cytometry, electron microscopy)

C. Microscopic Examination

1. Tube or tube-ovary if fused into single mass
   a. Tumor (Note **F**)
      (1) histologic type (Note **B**)
      (2) histologic grade (Note **C**)
      (3) location
         i. fimbria(e)
         ii. ampulla
         iii. isthmus
         iv. infundibular portion
         v. ovarian spread
         vi. combination
      (4) depth of invasion
         i. intraluminal polypoid or papillary and attached to mucosal surface
         ii. intramural
         iii. serosa
      (5) venous/lymphatic vessel invasion

(6) extent and distribution in tube and ovary if also involved
(7) site(s) of origin (Note **G**)
(8) total extent (eg, with invasion of, metastasis to)
(9) other features of possible prognostic or therapeutic significance
b. Status of resection margins, as appropriate
c. Additional pathologic findings, if present
(1) salpingitis (Note **H**)
(2) endometriosis (Note **H**)
(3) relation to tumor, if pertinent

2. Non-fused ovary or ovaries
a. Tumor, if present
(1) histologic type
(2) histologic grade
(3) location
(4) relation to tubal tumor
b. Additional pathologic findings, if present
(1) endometriosis (Note **H**)
(2) relation to tumor, if pertinent
3. Uterus
a. Tumor, if present
(1) histologic type
(2) histologic grade
(3) location
(4) relation to tubal tumor
b. Status of resection margins, if pertinent
c. Additional pathologic findings, if present
(1) endometriosis (Note **H**)
(2) relation to tumor, if pertinent
d. Endometrium uninvolved by tumor
4. Omentum
a. Tumor, if present
(1) histologic type
(2) histologic grade
b. Additional pathologic findings, if present
5. Lymph nodes at each location, if separately designated (Note **F**)
a. Tumor, if present
(1) histologic type
(2) histologic grade
b. Additional pathologic findings, if present (eg, inclusion glands or cysts [endosalpingiosis])
6. Other staging biopsy specimens at each location, if so designated
a. Tumor, if present
(1) histologic type
(2) histologic grade
b. Additional pathologic findings, if present (eg, endosalpingiosis)
7. Other organ(s) or tissue(s) removed
a. Tumor, if present (Note **F**)
(1) histologic type
(2) histologic grade

   (3) location
   (4) extent
   (5) distribution
   b. Resection margins, if applicable
   c. Additional pathologic findings, if present (specify)
8. Results/status of special studies (specify)
9. Pathologic stage
10. Comments
   a. Correlation with intraoperative consultation, as appropriate
   b. Correlation with other specimens, as appropriate
   c. Correlation with clinical information, as appropriate

Explanatory Notes

A. Discharge Per Vaginam

The occurrence of a gush of cholesterol-rich, clear fluid per vaginam accompanied by abdominal pain and reduction in the size of an abdominal mass is suggestive of but not specific for carcinoma of the fallopian tube.

B. Histologic Type

The histologic classification proposed by the World Health Organization (WHO) is recommended as shown below.[1]

World Health Organization (WHO) Classification of Carcinoma of the Fallopian Tube

Carcinoma in situ
Serous carcinoma
Mucinous carcinoma
Endometrioid carcinoma
Clear cell carcinoma
Transitional cell carcinoma
Squamous cell carcinoma
Undifferentiated carcinoma

C. Histologic Grade

No specific grading system for tubal cancers is recommended. For the sake of uniformity, however, it is suggested that 3 grades be used.

GX Cannot be assessed
G1 Well differentiated
G2 Moderately differentiated
G3 Poorly differentiated

Undifferentiated carcinoma equals grade 4, and it is applied to tumors with no differentiation or minimal differentiation that is discernible in only rare tiny foci.

D. Fimbriated End

Although most investigators have not commented on the possible prognostic significance of the status of the fimbriated end, in 2 series of cases of tubal carcinoma,[2,3] closure of the fimbriated end was associated with lower stage of the tubal carcinoma.

E. Selection of Specimens for Microscopic Examination

Primary Tumor

- Sections adequate to demonstrate extent of tumor, including maximal depth of invasion.
- Adhesions of tumor and resection margins, if pertinent, sampled and labeled specifically if necessary for microscopic identification.
- Sections to determine relation of tubal and ovarian or tubal and uterine components, if present.

- Tissue fragments frozen for intraoperative consultation.

Uterus
- Tumor grossly present: sections necessary to determine its extent, including depth of invasion of myometrium if tumor originates in endometrium, and to determine relation to tubal tumor (for primary tumors of endometrium, see endometrium protocol).

Non-fused Ovary or Ovaries
- No tumor or other abnormalities: single representative section.
- Tumor: sections to determine relation to tubal tumor(s).

Omentum
- Representative sampling of grossly identifiable tumor.
  (Multiple sections are generally optimal when no tumor is detected grossly because of the possible impact of microscopically detected disease on prognosis and therapy).

Lymph Nodes
- Representative sections of grossly positive lymph nodes are generally adequate.
  (If lymph nodes appear to be free of tumor, an attempt should be made to identify and sample every node in the specimen[s].)

Other Staging Biopsy Specimens
- Submit entirely (unless grossly positive, in which case a representative section usually suffices).

Other Excised Organ(s) or Tissue(s)
- Sections adequate to determine presence or absence, and location and extent of tumor, if present.
- Resection margins, if applicable.

F. TNM and Stage Groupings

The TNM staging system for fallopian tube endorsed by the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC), and the parallel system formulated by the International Federation of Gynecology and Obstetrics (FIGO) are recommended as shown below.[4-7]

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.

Primary Tumor (T)

TNM Category	FIGO Stage	Definition
TX	(--)	Primary tumor cannot be assessed
T0	(--)	No evidence of primary tumor
Tis	Stage 0	Carcinoma in situ (limited to tubal mucosa)
T1	Stage I	Tumor limited to fallopian tube(s)
T1a	Stage IA	Tumor limited to 1 tube without penetrating the serosal surface; no ascites
T1b	Stage IB	Tumor limited to both tubes without penetrating the serosal surface; no ascites
T1c	Stage IC	Tumor limited to 1 or both tube(s) with extension onto or through the tubal serosa, or with malignant cells in ascites or peritoneal washings
T2	Stage II	Tumor involves 1 or both fallopian tube(s) with pelvic extension
T2a	Stage IIA	Extension and/or metastasis to the uterus and/or ovaries
T2b	Stage IIB	Extension to other pelvic structures
T2c	Stage IIC	Pelvic extension (T2a or T2b/IIA or IIB) with malignant cells in ascites or peritoneal washings
T3 and/or N1	Stage III	Tumor involves 1 or both fallopian tube(s) with peritoneal implants outside of the pelvis and/or positive regional lymph nodes
T3a	Stage IIIA	Microscopic peritoneal metastasis outside the pelvis
T3b	Stage IIIB	Macroscopic peritoneal metastasis outside the pelvis 2 cm or less in greatest dimension
T3c and/or N1	Stage IIIC	Peritoneal metastasis more than 2 cm in greatest dimension and/or positive regional lymph nodes
M1	Stage IV	Distant metastasis (excludes peritoneal metastasis)

Note: Liver capsule metastasis is T3/stage III; liver parenchymal metastasis is MI/stage IV. Pleural effusion must have positive cytology for MI/stage IV.

Some authors recommend a modified FIGO staging system for fallopian tube carcinomas subdividing stage IA and IB in 3 subcategories as they found depth of invasion to be a very important prognostic factor in these tumors.[8] Those include:

Stage IA-0: Growth limited to 1 tube with no extension into lamina propria
Stage IA-1: Growth limited to 1 tube with extension into the lamina propria, but no extension into muscularis
Stage IA-2: Growth limited to 1 tube with extension into muscularis

The same substagings are applied to stage IB tubal carcinomas.

Some authors also recommend to use stage IF for fimbrial carcinomas as they seem to be associated with worse prognosis because the tumor cells are exposed directly to the peritoneal cavity even though they do not invade the tubal wall.[2]

The above proposals for altering the FIGO classification are particularly important in staging of early carcinomas such those that have been detected in salpingo-oophorectomy specimens from BRCA-positive patients undergoing prophylactic oophorectomy.[9,10]

Regional Lymph Nodes (N) (TNM Staging System)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph nodes metastasis
N1	Regional lymph node metastasis

Distant Metastasis (M) (TNM Staging System)

MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis

TNM Stage Groupings

Stage 0	Tis	N0	M0
Stage IA	T1a	N0	M0
Stage IB	T1b	N0	M0
Stage IC	T1c	N0	M0
Stage IIA	T2a	N0	M0
Stage IIB	T2b	N0	M0
Stage IIC	T2c	N0	M0
Stage IIIA	T3a	N0	M0
Stage IIIB	T3b	N0	M0
Stage IIIC	T3c	N0	M0
	Any T	N1	M0
Stage IV	Any T	Any N	M1

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).

Vessel Invasion
By AJCC/UICC convention, vessel invasion (lymphatic or venous) does not affect the T category indicating local extent of tumor unless specifically included in the definition of a T category. In all other cases, lymphatic and venous invasion by tumor are coded separately as follows.

Lymphatic Vessel Invasion (L)
LX Lymphatic vessel invasion cannot be assessed
L0 No lymphatic vessel invasion
L1 Lymphatic vessel invasion

Venous Invasion (V)
VX Venous invasion cannot be assessed
V0 No venous invasion
V1 Microscopic venous invasion
V2 Macroscopic venous invasion

G. Site(s) of Origin of Tumor
When a tumor involves both the fallopian tube and the ovary, it may be difficult to determine the primary site of the tumor in some cases. Typically, the primary tumor predominates and obviously originates from one or the other organ. Occasionally, however, the tube and ovary are fused to form a solid or cystic mass, with destruction of most or all landmarks. In such cases, the tumor is almost always assumed to be a primary ovarian cancer because its frequency is much greater than that of tubal cancer. Microscopic examination may be helpful because most tubal cancers resemble serous carcinomas of the ovary, with tubal carcinomas of other cell types being relatively rare. Finding what appears to be in situ carcinoma in the tube adjacent to the main tumor mass is not always a reliable criterion for origin in the tube since carcinoma that has extended into the tube from elsewhere can grow along its mucosal surface and closely simulate carcinoma in situ. One group of investigators concluded that the true primary site of origin of some tumors classified as widely disseminated ovarian cancer is in the fallopian tube[11] because in a large screening study they detected a higher ratio of tubal to ovarian carcinoma among the early carcinomas that were found.

H. Other Lesions

Severe salpingitis, including tuberculous salpingitis, can be associated with pseudocarcinomatous changes in the tube.[12] Carcinoma is rarely associated with severe salpingitis. Therefore, the presence of severe salpingitis should alert the pathologist to the possibility of a pseudocarcinomatous change. Endometriosis may be present in the background of endometrioid carcinoma of the tube.[8,13,14]

References

1. Scully RE, Bonfiglio TA, Silverberg SG, Wilkinson EJ. *World Health Organization International Histological Classification of Tumours. Histological Typing of Female Genital Tract Tumours.* 2nd ed. Berlin: Springer-Verlag; 1994.
2. Alvarado-Cabrero I, Navani SS, Young, RH, Scully RE. Tumors of the fimbriated end of the fallopian tube: a clinicopathologic analysis of 20 cases, including nine carcinomas. *Int J Gynecol Pathol*. 1997;16:189-196.
3. Green TH, Scully RE. Tumors of the fallopian tube. *Clin Obstet Gynecol.* 1962;5:886-906.
4. Greene FL, Page DL, Fleming ID, et al, eds. *AJCC Cancer Staging Manual.* 6th ed. New York: Springer; 2002.
5. Sobin LH, Wittekind CH, eds. *UICC TNM Classification of Malignant Tumors.* 6th ed. New York; Wiley-Liss; 2002.
6. Heintz APM, Odicino F, Maisonneuve P, et al. Carcinoma of the fallopian tube: FIGO Annual Report. *J Epidemiol Biostat.* 2001;6:87-103.
7. Wittekind CH, Henson DE, Hutter RVP, Sobin LH. *TNM Supplement. A Comentary on Uniform Use.* 2nd ed. New York: Wiley-Liss; 2001.
8. Alvarado-Cabrero I, Young RH, Vamvakas EC, Scully, RE. Carcinoma of the fallopian tube: a clinicopathological study of 105 cases with observations on staging and prognostic factors. *Gynecol Oncol*. 1999;72:367-379.
9. Agoff SN, Mendelin JE, Grieco VS, Garcia RL. Unexpected gynecologic neoplasms in patients with proven suspected BRCA-1 or -2 mutations*. Am J Surg Pathol*. 2002;26:171-178.
10. Colgan TJ, Murphy J, Cole DE, Narod S, Rosen B. Occult carcinoma in prophylactic oophorectomy specimens: prevalence and association with BRCA germline mutation status. *Am J Surg Pathol.* 2001;25:1283-1289.
11. Woolas R, Jacobs I, Davies AP, et al. What is the true incidence of primary fallopian tube carcinoma*? Int J Gynecol Cancer.* 1994;4:384-388.
12. Cheung AN, Young, RH, Scully, RE. Pseudocarcinomatous hyperplasia of the fallopian tube associated with salpingitis. *Am J Surg Pathol*. 1994;8:1125-1130.
13. Lisa JR, Gioia JD, Rubin IC. Observations of the interstitial portion of the fallopian tube. *Surg Gynecol Obstet*. 1954;99:159-169.
14. Rubin IC, Lisa JR, Trinidad S. Further observations on ectopic endometrium of the fallopian tube. *Surg Gynecol Obstet*. 1956;103:469-474.

Bibliography

Benedet JL, Miller DM. Tumors of fallopian tube: clinical features, staging and management. In: Coppleston M, ed. *Gynecolgical Oncology.* Vol. 2. 2nd ed. Edinburgh: Churchill Livingstone; 1991:853-860.

Scully RE, Young RH, Clement PB. *Tumors of the Ovary, Maldeveloped Gonads, Fallopian Tube, and Broad Ligament. Atlas of Tumor Pathology.* 3rd series. Fascicle 23. Washington, DC: Armed Forces Institute of Pathology; 1997.

Sedlis A. Primary carcinoma of the fallopian tube. *Obstet Gynecol Surv*. 1961;16:209-226.

Wheeler JE. Diseases of the fallopian tube. In: Kurman RJ, ed. *Blaustein's Pathology of the Female Genital Tract.* 4th ed. New York, NY: Springer-Verlag; 1994:529-561.

Woodruff JD, Pauerstein CJ. *The Fallopian Tube.* Baltimore, Md: Williams and Wilkins; 1969:237-306.