# Grossing Procedures Gynecologic Specimens

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Grossing Procedures
For Gynecologic Specimens

I. Introduction
A. Small specimens
Gross descriptions of small specimens are of little importance to the clinician; the major interest is in the microscopic diagnosis. The description should include the amount of tissue submitted (number of fragments, aggregate volume, size of each fragment), as these must match any amount of tissue described in the microscopic diagnosis. If any questions arise concerning discrepancies between the tissue form and the number and type of specimens submitted (labeling errors, etc.) the specimen should not be processed and the clinician contacted.

B. Large specimens
With the exception of the ovary (before frozen section diagnosis) and leiomyosarcomas, the tissue diagnosis is usually known at the time the large specimen is submitted (i.e. cervical or endometrial cancer). In this case, the gross description will be of major interest to the clinician. Of particular concern is whether or not lesion (tumor) has been completely removed. Attention should be paid to size, extent of involvement of associated structures (depth of invasion), and closeness to any surgical margin. If you can hold the specimen in your hand, then it should be weighed. Ink all pertinent margins before sectioning. It is always wise to demonstrate pertinent gross findings of radical surgery with the attending staff who will eventually be involved in signing out the case. For any questions regarding large specimens, consult your staff.

II. Vulva
A. Biopsy
1. Punch/shave
Vulvar biopsies should be handled no differently than skin biopsies from other sites. Specimens should be submitted in toto. For orientation purposes, eosin or red ink can be used to identify the side of the specimen to embed down in paraffin.
2. Excisional
Deep and lateral margins should be inked. The specimen should be sectioned along both the longitudinal and/or medial axis (size dependent), and the entire specimen submitted.

If the specimen has been oriented by the surgeon, the various margins should be identified by different colored inks. If not, each area can be coded separately in the microscope slide key.

B. Vulvectomy
1. Superficial (skinning)
   a) Handling
The specimen will generally include both labia, the clitoris, and perianal tissue with little subcutaneous fat. If the specimen arrives unoriented by the surgeon, he or she should be contacted, and processing delayed until orientation is completed. The specimen should be pinned out flat on corkboard and fixed overnight.
b) Description
Overall dimensions should be given. Next, include all anatomical structures removed. The features (color, texture) and size of any lesion should be described. The gross distance of tumor to any nearby section margin should be included.

c) Sections
All identifiable lesions should be completely sampled. All resection margins must also be sampled, preferably in a perpendicular fashion. In many cases (i.e. Paget’s Disease, Bowenoid dysplasia), the entire vulvectomy specimen may have to be submitted. Different colored inks can facilitate orientation of lateral and medial margins.

2. Radical Vulvectomy
a) Handling
The specimen consists of the entire vulva (with portion of vagina) inguinal skin, femoral and inguinal fat pads. If the pathologist has any question as to orientation, the surgeon should be consulted. In some cases, the right and left inguinal node can be dissected fresh from the fat pads. After the surgical margins have been inked, the underlying subcutaneous fat should be breadloafed to permit optimal fixation. The specimen should then be pinned out and fixed overnight.

b) Description
Weight and overall dimensions should be given. The size, depth, location, color and texture of the primary lesion should be described. Measurements to any close margins should be given. Overall description of the vulvar surface should be given, to include any abnormal (raised white or pigmented) areas.

c) Sections
At least 4 sections of the primary site, to include closest margins (lateral, medial, and deep); representative sections of uninvolved lateral labial, vaginal, anal, perineal and inguinal margins; one section of clitoris; all inguinal lymph nodes. Draw a picture of the specimen (or annotate a photocopy of the gross specimen) to show areas where sections have been taken.

III. Vagina
A. Biopsy
1. Punch/shave
Handle as vulvar punch biopsy. Give overall dimensions and submit in entirety.

2. Excisional
Handle as vulvar excisional biopsy. If surgeon has oriented specimen, identify quadrants using different color inks, or different letter or number codes in the gross specimen key.
B. Strips from anterior/posterior repair (optional except if hx of dysplasia)
Describe (“multiple strips of mucosa ranging in size from x to y”) and submit one or two representative cross sections from each strip.

C. Colpectomy/Vaginectomy
1. Handling
The specimen can be handled in one of two ways:
- Open along the lateral borders, ink the deep and distal resection margins, pin out and fix.
- Stuff the cavity with formalin soaked gauze, fix overnight, and cut in half.
- Ink the deep and distal resection margins.

2. Description
Give overall measurements (length, width, depth), description and measurements of any lesions, distance to closest margin.

3. Sections
Submit cross sections of all lesions, to include any margins if distance is less than one cm. Representative sections of distal resection margins, including margins closest to any lesions.

IV. Cervix
A. Biopsy
Punch biopsies can be treated as vulvar or vaginal punch biopsies. Large cervical polyps should be divided before placement into cassettes. Endocervical curettings (ECC) can be removed from the formalin using forceps, or strained into a teabag. All curettings must be submitted.

B. Conization & LEEP (loop electrocautery excision procedure)
1. Handling
A cervical cone/LEEP specimen is an excisional biopsy. If it is submitted fresh and unopened, note where the suture is placed (used by the surgeon to orient the cone/LEEP, example: “suture @ 12 o’clock”), remove the suture and open the cone specimen at that site. Ink the surgical margins (i.e. black – ectocervical; green – endocervical) and pin out the specimen on corkboard. If the cone specimen has no suture, open the specimen at any site (i.e. 3 o’clock).

Be aware of LEEP margins, especially when multiple “passes” have been used to remove the specimens. A “top-hat” refers to a second pass to obtain a deep endocervical sample. In these cases, the base of the endocervical specimen is no longer a “true” margin. Use an alternate color ink to differentiate these sites. If the specimen is in multiple pieces (especially with LEEP specimens), contact the surgeon to assist with proper orientation.
2. Description
Give overall dimensions (unopened) of ectocervix and canal. Identify the squamocolumnar junction. Measure and describe any identifiable lesions.

3. Sections
The entire cone specimen is submitted in a clockwise fashion. The elongated specimen is serially cross-sectioned (breadloafed) and ideally, each piece put in separate cassettes. To conserve blocks, it is helpful to subdivide the specimen into quadrants (12 to 3 o’clock, 3 to 6 o’clock, and so on), placing multiple serial sections from the same quadrant into one or two consecutive cassettes. Each individual section should represent at least one hour of the clockface. An ECC is usually submitted with the cone biopsy. It is submitted in its entirety as described above.

C. Hysterectomy for high grade squamous dysplasia/adenocarcinoma in situ

1. Handling
The specimen will consist of a uterus with attached cervix, with or without attached adnexae. If present, the adnexae can be processed as described under benign ovarian disease. If the uterus is received fresh, it should be weighed and measured (length, cornu to cornu, and anterior to posterior fundus). The cervix should be amputated and opened as a cone specimen. The vaginal margins should be inked, and the specimen pinned out on corkboard and fixed overnight. The corpus should be split open along the lateral borders and fixed overnight.

2. Description
The following measurements should be described: overall (see above), dimension of ectocervix, length of endocervical canal, thickness of endometrium, thickness of cut surface of myometrium. Describe and measure any cervical, serosal and/or endomyometrial lesions.

3. Sections
The entire cervix should be submitted, in its entirety, as a cone specimen. If the hysterectomy has been previously opened and fixed without handling by the pathologist, ink the vaginal margins, and section and submit all portions of the cervix. For high grade squamous dysplasia (CIN 2-3, CIS), the sections need only to include the portion of the endocervical canal at the transformation zone (squamocolumnar junction) and the vaginal margins. Excess deep cervical tissue can be trimmed so that each section can fit into one cassette.
For *adenocarcinoma in situ*, a larger portion of the endocervical canal should be submitted—two cassettes may have to be used for each section of cervix. Also submit anterior and posterior sections of the lower uterine segment. Submit one section from the anterior and posterior endomyometrium, respectively. Excess myometrium can be trimmed so that each section can fit into one cassette. Also submit representative sections of any myometrial/serosal lesions (see Hysterectomy for benign disease.)

D. **Radical hysterectomy**

1. **Handling**
The specimen is usually sent fresh, and consists of a uterus with cervix and a portion of vaginal mucosa, with or without adenexae. Attached to the lateral cervix and lower uterine segment are the right and left parametria (soft tissue with vessels). Areas that are considered margins are the vaginal mucosal edge, and any of the parametrial tissues. Weigh and measure the fresh specimen (see hysterectomy). **Dissect the lower uterine segment parametria down to the cervix. Amputate the cervix from the uterus, leaving the parametria down to the cervix. Amputate the cervix from the uterus, leaving the parametria attached. Open the anterior cervix at 12 o’clock and pin out on a corkboard.** Separate the lateral borders of the uterus, exposing the endometrial cavity. Fix all portions of the specimen overnight in a large container.

2. **Description**
The following measurements should be described: overall uterine and ectocervical dimensions, length of endocervical canal, size of tumor (including gross depth of invasion), distance of tumor to closest vaginal margin, thickness of endometrium, thickness of cut surface of myometrium. Description of tumor should include color, consistency, exo- or endophytic, necrosis, hemorrhage. Describe and measure any cervical, serosal and/or endomyometrial lesions (myomas).

3. **Sections (see diagram)**
Ink the vaginal margin. The cervix can be sectioned like a cone specimen. Submit the entire tumor. The portions can be trimmed to fit into one cassette, but should include the distal tumor and its relationship to the inked vaginal margin. One entire section of tumor at the site of deepest invasion should be submitted--this may require two cassettes. Also submit one random section from each quadrant of cervix. If no tumor is identifiable, then the entire cervix should be submitted. Separate the right and left parametria from the cervix and submit in toto. Do not ink the parametria.

   Submit longitudinal portions of the anterior and posterior lower uterine segment.
   Submit one section from the anterior and posterior endomyometrium, respectively.
   Excess myometrium can be trimmed so that each section can fit into one cassette. Also submit representative sections of any myometrial/serosal lesions (see Hysterectomy for benign disease).
E. Pelvic exenteration

1. Definitions

An **anterior exenteration** consists of the uterus, adnexae, vagina, bladder, proximal ureters, urethra, and portion of vulva.

A **posterior exenteration** consists of the uterus, adnexae, vagina, rectosigmoid, and a portion of vulva.

A **total exenteration** consists of the uterus, adnexae, vagina, bladder, proximal ureters, urethra, rectosigmoid, and portion of vulva. Recent modifications to the exenterative procedure involve removal of the pelvic organs block at the level of the levator ani, leaving the vulva.

2. Exenteration specimen preparation (two methods):

In the **preferred method**, obtain two Foleys, a 50 cc irrigation syringe, a 12 cc syringe, a 18 gauge needle, and 0 to 2-0 silk suture on a Keith needle from the operating room. Weigh and obtain the overall measurements of the fresh tissue block. Place a Foley in the bladder, inflate the balloon, and fill the bladder with formalin using the irrigation syringe. Place a purse-string suture around the anal portion of the rectosigmoid; insert the other Foley in the rectum and fill the rectosigmoid with formalin. Insert formalin soaked gauze sponges into the vagina. Inject formalin into the uterine cavity using the 12 cc syringe and needle. Place the specimen with catheters into a large formalin filled container to fix overnight. After fixation, drain off all formalin, remove the gauze and Foleys, and divide the specimen longitudinally into two halves using knife and scissors. Photograph the specimen to show relationship of tumor to vagina, bladder, and rectum. Quarter both halves through the mid vagina to show relationship of tumor to the lateral soft tissue margins. Ink the distal vaginal/vulvar resection margins, and the lateral margins closest to the tumor mass.
The alternate method involves opening all hollow organs in the fresh state, opening the anterior uterus, and fixing the specimen overnight in a large container. Ink the distal vaginal/vulvar resection margins, and the lateral margins closest to the tumor mass.

3. Description
Describe organs present and type of exenteration. Give measurements (length and width) of each organ (including ureteral lengths). Describe the tumor (location, involvement of adjacent structures, size, color, consistency, distance to closest margin). The gross description of each organ should be accomplished as described in other sections of the manual.

4. Sections
At least 4 sections of tumor, plus sections of any involvement of adjacent organs, and areas of close proximity to resection margins. One section of uninvolved cervix; one-two sections of vagina, endomyometrium, fallopian tubes, ovaries, rectum, bladder. Margins to be sampled include the vagina/vulva, proximal and distal rectosigmoid, urethra, ureteral, and lateral soft tissue margins adjacent to tumor. Remove any lymph nodes from the parametrial and rectosigmoid fat and submit separately.

V. Corpus (Uterus)

A. Endometrial biopsy/curettage
Describe tissue in terms of aggregate cross section measurements, or volume (cc). Note color and consistency, presence of polyps. Submit all tissue.

B. Hysterectomy
1. Benign disease
   a) Handling

The specimen will usually consist of the corpus with attached cervix, with or without adnexae. Occasionally the cervix will have been amputated in the operating room. All uteri must be weighed. The information is required by gynecologists collecting cases for their oral boards. Measurements of the uterus include the longitudinal axis (cervix - fundus) transverse axis
(cornu - cornu) and depth (anterior - posterior fundus). **Sounding the uterus is no longer important for staging purposes.** Orientation of the uterus can be accomplished in two ways:

If the adnexae are present, pick up the specimen by the ovaries. The portion of the uterus facing you will be the posterior portion.

Identify the peritoneal reflections at the lower uterine segment. The anterior reflection is generally less ragged and higher that the posterior reflection.

- If the uterus is received fresh, it is best opened along the lateral sidewalls. **Score the outer myometrium with a knife to develop a plane, then open the sidewalls with scissors.** If the myometrium if thick, partial breadloafing will aid in fixation. Also divide/breadloaf any myomas, and fix with adequate amount of formalin overnight.

b) **Description**

Important measurements (besides overall) include diameters of ectocervix, length of endocervical canal, endometrial thickness, myometrial thickness.

Cervical description should note appearance of ectocervix, transformation zone, endocervical canal: erosions, hemorrhage, polyps.

The endometrial description should include color, consistency, hemorrhage, surface contour, presence of polyps.

If myomas are present; number, location, size (usually can be given in ranges), consistency, pedunculated, hemorrhage, necrosis, calcification, fatty change, tumor border.

Serosa: presence of hemorrhage, raised lesions, cysts.

c) **Sections**

For **uteri without gross pathology** (i.e. hysterectomy for prolapse) take one section from the anterior and posterior cervix, and one section from the anterior and posterior endomyometrium. The myometrium can be trimmed to fit the section into the cassette. Otherwise submit any abnormal serosal areas (possible endometriosis), cervical lesions, and/or abnormal endometrial areas (polyps). If the hysterectomy has been submitted for endometrial hyperplasia, at least three sections from both the anterior and posterior endometrial surface should be submitted. The myometrium can be trimmed to fit each section into the cassette.

If **myomas** are present: submit one section from each myoma. If greater than 3-4 cm in size, two to three sections may be adequate if the myoma is grossly unremarkable. **In myomas with evidence of necrosis, hemorrhage, soft consistency or infiltrating borders: at least one section for every cm of largest tumor diameter, sampling central areas, areas near the necrotic sites, and the myoma-myometrial interface.**
2. Endometrial Adenocarcinoma
   a) Handling
   The hysterectomy specimen will usually be received fresh. Weigh, measure, and open the specimen along the lateral borders as described above. Note the location and measure the exophytic tumor mass. Ink the serosal surface for identification and partially cut through the tumor and endomyometrium (cross-section). Note the deepest point of tumor invasion into the endomyometrium; measure the depth of invasion and the myometrial thickness at that point. Report to the surgeon the invasion amount in terms of halves of the uterine wall (inner one-half, outer one-half).
   b) Description
   Description of the uterus is the same as for benign disease, but should also include the size, color, and consistency of the endometrial tumor, depth of invasion, location of the tumor, and whether or not there is extension into the lower uterine segment or cervix.

3. Sections
   At least one section from each quadrant of cervix, removed as described in the section on benign disease. At least two (anterior and posterior) sections from the lower uterine segment. Submit at least four sections of the tumor, removed as described in the section on benign disease, however at least one section (preferably two) showing the deepest point of gross tumor invasion must include the entire myometrial thickness. More than one cassette may be necessary to accomplish this.

4. Uterine Sarcoma
   a) Handling
   A hysterectomy with a tentative diagnosis of a leiomyosarcoma is processed no differently than a uterus with leiomyomas. Serial sectioning of all suspicious tumors is necessary for optimal fixation. Hysterectomies for mixed Müllerian tumors will be sent fresh, and should be handled the same as hysterectomies for endometrial adenocarcinomas.
   b) Description
   Tumor location, shape and size; color, consistency, presence of necrosis, hemorrhage, areas of fat or calcification, tumor border. If pedunculated, size of tumor base (sessile, fusiform). Any extension to the lower uterine segment, cervix.
   c) Sections
   At least one section for every cm of largest tumor diameter should be submitted. Attention should be directed to tumor borders, central areas, and areas bordering necrotic sites. The remainder of sections should be submitted as described in sections for endometrial adenocarcinoma.

VI. Adnexae
   A. Tube
   1. Ligation
   Give measurements and whether lumen(s) can be identified grossly. Cross section and submit entire specimen. For sections of tube submitted from anastomosis procedures; measure, cross section and submit entire specimen.
   2. Ectopic Pregnancy (salpingectomy)
   Weigh and measure length and greatest diameter. Describe serosal abnormalities (adhesions, hemorrhage) and note any areas of rupture. Note the presence or absence of the fimbriated end if a salpingectomy is performed. Cross section and describe luminal contents. Measure and describe any paratubal cysts.
For salpingectomies incidentally done, one cross section can be submitted. For tubal disease, submit cross sections of diseased areas. For ectopic pregnancies, submit portions of tube that contain obvious chorionic villi. Otherwise, submit the entire tube and all blood clots.

3. Carcinoma
The diseased tube will usually be submitted as part of a hysterectomy specimen. Remove the affected adnexae; weigh and measure the tube. Note any extension of tumor upon the serosa or to the hemorrhage ovary. Breadloaf the tube and note the depth of invasion into the muscularis. Pay attention to areas of transition between grossly benign tube and tumor. Submit one section for each cm of largest tumor diameter, including sections from deepest area of invasion and the area of transition. Describe and process the uterus and contralateral adnexae as described elsewhere.

B. Ovary
1. Benign disease
If cases of adnexae incidentally removed with a hysterectomy specimen, remove the tube and ovary and weigh. Measure the tube (length and width). Describe and section as described above. Measure the ovary in three dimensions. Describe the serosa, noting areas of hemorrhage, adhesions, surface lesions. Open the ovary longitudinally. Note the amount of stroma present; measure any cysts (follicular, corpus luteum. Submit one longitudinal section, which can be trimmed to fit the cassette.

2. Cyst
More often than not ovarian cysts arrive to surgical pathology previously opened. Weigh and measure the collapsed specimen. Inspect the cyst wall for the presence of thickening, excrescences, adhesions, hair, calcifications. Note the presence of any spontaneous rupture site. If the cyst fluid is present, describe it color and consistency. Note the presence of residual normal ovary, if present. In general, one section for each cm of largest tumor diameter is submitted. More than one section of a thin walled cyst can be placed on end in a single cassette. Submit sections from any cyst wall thickening, raised nodules, adhesion sites, all excrescences, and residual ovary. Describe and section the attached fallopian tube as described above.

3. Malignancy
Suspected ovarian malignancies will usually arrive to surgical pathology fresh. Remove the affected adnexa if still attached to the uterus. Weigh the specimen and measure in three dimension. Note extension of any tumor on the ovarian surface, or to the ipsilateral tube or uterus. Also note any spontaneous rupture site. Open any cystic spaces and drain the contents. Measure any solid areas of tumor present. Note evidence of hemorrhage, necrosis, excrescences, calcification. Submit one section for each cm of largest tumor diameter, concentrating on solid areas, areas adjacent to necrosis, excrescences, surface adhesions. If the tumor is bilateral, process the contralateral ovary in a like fashion.
If the omentum is also submitted, weigh and measure the specimen. Examine for any solid nodules within the omental fat. Submit sections from any abnormal portion of omentum. If normal, submit four random sections.

Grossing Procedures Gynecologic Specimens
VII. Contraception

A. IUDs

Intrauterine devices are sometimes submitted after removal, or as part of a D & C procedure. Describe the appearance and ascertain the type (see below). Remove any material from the surface and submit separately.

Examples of the more common IUD types:

- Copper 7
- Lippes Loop
- Progestasert
- Paraguard (Copper T)
- Sal-T Coil
- Dakon Shield

B. Tubal ligation materials

Foreign material often removed during tubal reanastomosis procedures:

- Yoon ring
- Hulka/Bleier clip