28 Ovary and Fallopian Tube

Ovarian Biopsies and Wedge Resections

Biopsies and wedge resections of the ovary are infrequently performed procedures that are used primarily for the evaluation of infertility. Biopsies should be measured, briefly described as to color and texture, and submitted in their entirety. Wedge resections should also be weighed and evaluated for capsule thickening, ''powder burns'' of endometriosis, subcortical cysts, and yellow stromal nodularity indicating hyperthecosis. Sections should be taken perpendicular to the ovarian surface to demonstrate the relationship of the capsule, cortex, and medulla.

Salpingectomies

Fallopian tubes can be removed in part or in total. Partial salpingectomies are commonly performed for tubal sterilization. Total salpingectomies are performed for ectopic pregnancies, in conjunction with an oophorectomy, or as part of a hysterectomy specimen. Salpingectomies for primary neoplasms of the fallopian tube are uncommon.

The evaluation of the incidental salpingectomy specimen is straightforward. The gross appearance of the tube is usually unremarkable. Record the length, diameter, and color of the tube. Describe any features in relationship to the different portions of the fallopian tube. The intramural portion lies within the uterus and is not seen in separate salpingectomies. The isthmic portion is the first 2 to 3 cm external to the uterus. The ampullary portion is the next 5 to 8 cm, and the infundibulum starts where the tube begins to widen and encompasses the fimbriated end. The patency of the lumen may be tested with a blunt-tipped probe. Serially section the fallopian tube at 0.5-cm intervals, and examine it for nodularity, cysts, or masses. Submit one transverse section from each region.

Small segments of intervening fallopian tube are usually submitted in tubal sterilizaton procedures. For legal purposes, a *complete* cross section of each fallopian tube must be microscopically documented.

Salpingectomies for ectopic pregnancy should be examined for signs of rupture. Serially section the fallopian tube, and submit any tissue with the gross appearance of products of conception. Be sure to include the adjacent wall. If no products of conception are grossly identified, submit several sections from the wall in regions of hemorrhage as well as several from the intraluminal clot. In contrast to uterine products of conception, in which villi are seldom seen within the blood clots, villi are often identified in the clots from ectopic pregnancies. Sections of uninvolved fallopian tube should also be submitted to look for evidence of tubal disease contributing to the occurrence of an ectopic pregnancy (e.g., chronic salpingitis, endometriosis, or salpingitis isthmica nodosa).

A salpingectomy for tubal carcinoma should be evaluated in the same manner as an incidental salpingectomy. In addition, the size, location, and extent of the tumor should be documented. The maximum depth of tumor penetration can be evaluated with full-thickness transverse sections of the tube. Margins include the cut edge of the broad ligament and the proximal fallopian tube end, if not submitted with the uterus. In the case of

a fused tubo-ovarian mass, the primary site is almost always assumed to be the ovary.

Ovarian Cystectomies and Oophorectomies

Ovarian cystectomies and oophorectomies are evaluated in a similar manner. Oophorectomies may be accompanied by the fallopian tube or may be part of a total hysterectomy specimen. A portion of broad ligament may also be present as the ovary attaches to the posterior surface of the broad ligament and lies inferior to the fallopian tube.

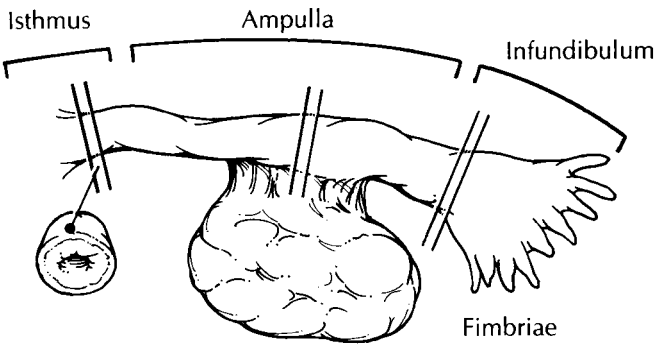
Incidental oophorectomies are easily handled. Record the weight and dimensions of the ovary. Examine the outer surface for cysts, nodules, or adhesions. Bivalve the ovary with a cut through its longest dimension and midhilum. Evaluate the sectioned surface for any cysts or nodules, and designate their location as either cortical, medullary, or hilar. Keep in mind that the appearance of the ovary will vary considerably with the age and the reproductive status of the woman. The normal ovary in the reproductive years can measure up to 4 cm, whereas an ovary this size in a postmenopausal woman warrants close evaluation. Submit one section for every 2 cm of non-neoplastic ovary. If the ovary and fallopian tube were removed as a prophylactic procedure in a woman with a family history of ovarian or breast carcinoma, the entire ovary and fallopian tube should be submitted.

Cystectomies are usually performed for benign lesions or in women with ovarian masses who wish to preserve their fertility. The most common indication is for the removal of a dermoid cyst. After weighing and measuring the cyst, examine the external surface for evidence of rupture. Place the cyst in a container, and carefully make a small incision in the wall to allow its contents to be drained. Note the color and consistency of the cyst fluid. Continue the incision with a pair of scissors to expose the entire inner surface. The thick sebaceous fluid within a dermoid cyst may have to be removed by rinsing briefly with hot water. Examine the cyst lining, and look for any regions of granularity or papillary projections. In dermoid cysts, look for Rokitansky's tubercle, which appears as a firm, nodular excrescence. This region and any other thickened areas should be submitted in their entirety to look for evidence of immature elements. Large, unilocular cysts with a smooth inner lining may be cut in strips and submitted like placental membrane rolls to get a maximum view of the cyst wall. Cystectomies for lesions other than unilocular smooth-walled cysts or dermoid cysts should be handled as described next.

Oophorectomies for ovarian tumors can be quite large and heavy. Often, the only recognizable structure is the fallopian tube, which may be attenuated and stretched over the ovarian surface. Begin by weighing and measuring the specimen. Closely examine the surface for evidence of rupture, adhesions, or nodular tumor excrescences. Ink these regions for orientation. Section the ovarian mass at 1-cm intervals through its longest axis. If the mass is cystic, you may want to perform this in a pan or on a work station that allows for easy drainage of fluid. Remember to document the color and consistency of the cyst fluid. Is the fluid serous, mucinous, or hemorrhagic? Note whether the mass is solid, cystic, or both. If both, document the percentage of each region. Examine the surfaces of the cysts for evidence of granularity, nodules, or papillary projections. The thickness of the cyst walls should also be recorded. Describe any regions of hemorrhage or necrosis. Try to find any residual ovarian parenchyma. This is commonly found in the region immediately adjacent to the fallopian tube. If a stromal or steroid cell tumor is suspected, tissue should be saved frozen in case fat stains are needed. Consider saving frozen tissue for any small, blue, round-cell tumor, particularly if the tumor is in a pediatric patient or is predominantly intra-abdominal. Photographs of the cut surface can aid in documentation of the mass and for designating where sections were taken. At this point, it may be helpful to fix the 1-cm slices in formalin before further manipulation.

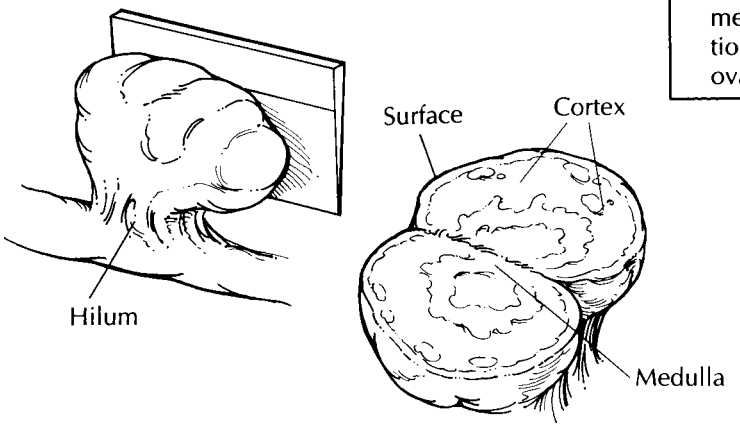
Historically, ovarian tumors are submitted with a minimum of one section per 1 to 2 cm of the greatest tumor dimension. This rule is especially useful in the case of mucinous tumors, which tend to have only focal regions demonstrating atypical or frankly invasive elements. If the tumor is uniform throughout, as many serous tumors are, fewer sections may be prudent. In general, sections should be submitted from regions that are solid, hemorrhagic, or necrotic. Cysts that show granular, nodular, or papillary excrescences should be thoroughly sampled. Also

Regions of the fallopian tube

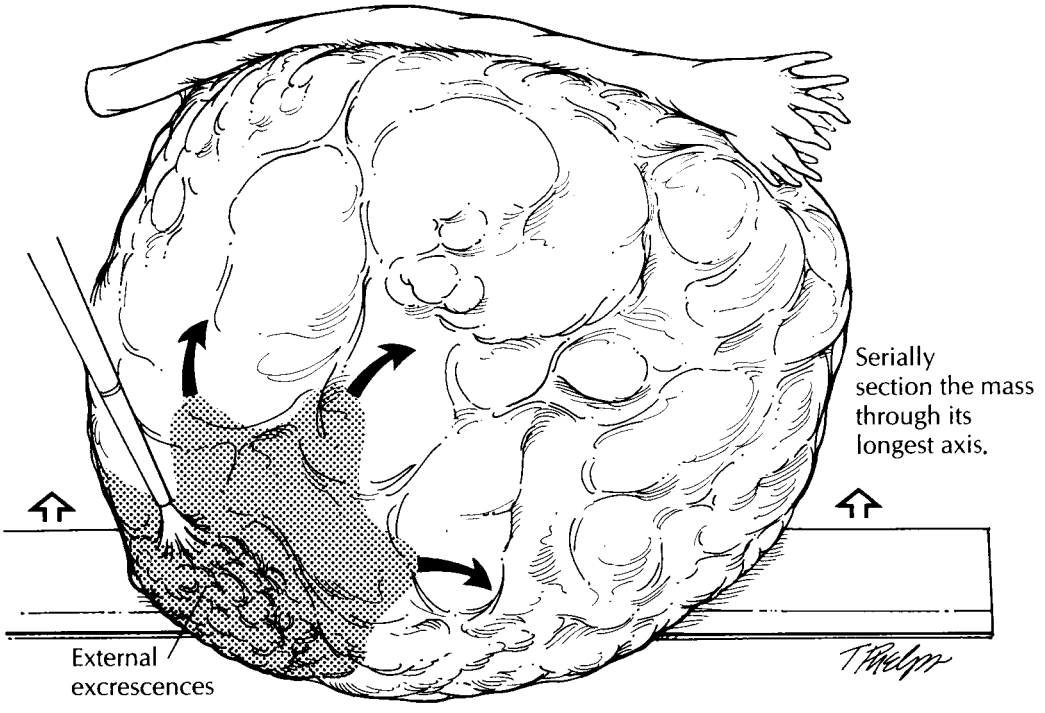


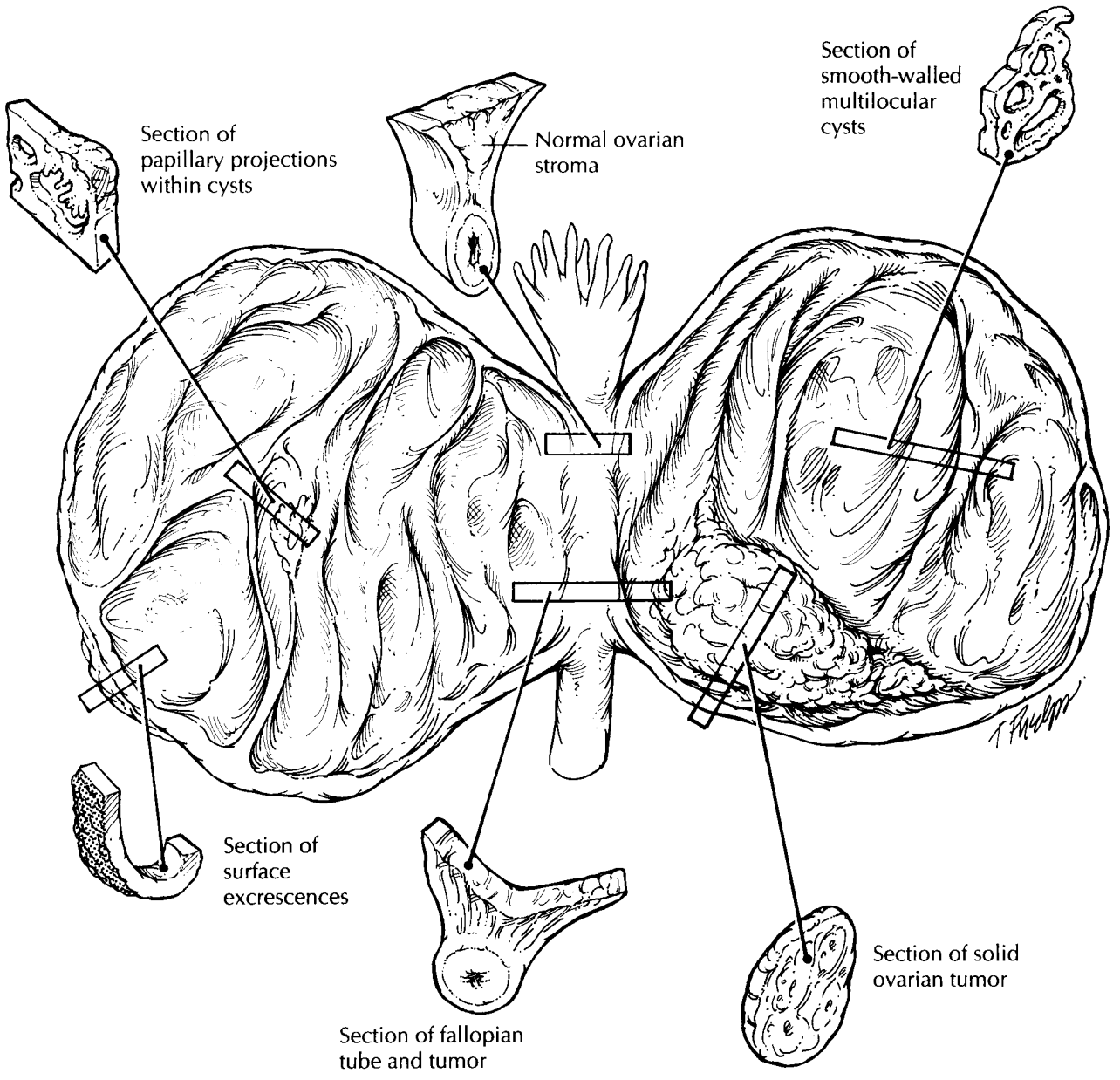
Incidental Salpingo-oophorectomy

1. Identify the fimbriated end of the fallopian tube. Record the length and diameter of the tube.
2. Probe the lumen for patency.
3. Serially section the fallopian tube at 0.5-cm intervals. Submit one transverse section from each of the isthmic, ampullary, and infundibular regions.
4. Weigh and measure the ovary.
5. Section the ovary through its longest dimension and hilum. Submit one section for every 2 cm of non-neoplastic ovary.



Salpingo-oophorectomy for an Ovarian Mass





Salpingo-oophorectomy for an Ovarian Mass

1. Weigh and measure the mass. Identify the fallopian tube, if present.
2. Carefully inspect the ovarian surface for evidence of rupture, adhesions, or tumor excrescences.
3. Ink any external surface excrescences, and section the ovarian mass at 1- to 2-cm intervals through its longest axis. If the mass is cystic, note the color and consistency of the cyst contents.
4. Submit one section per 1 to 2 cm of tumor diameter. Sample to emphasize solid, papillary, necrotic, and hemorrhagic regions. Include any surface excrescences, extension to the fallopian tube, and any residual ovary.

include any regions that appear sieve-like or honeycombed. Multiple large unilocular cysts may be more judiciously sampled. Sections that demonstrate the junction between the ovary and adjacent fallopian tube, as well as any residual ovary, should also be submitted.

Specimens for Ovarian Tumor Staging

The staging procedure for an ovarian tumor can include an omentectomy, multiple biopsies of the peritoneum, and lymph node dissections.

Omentectomy specimens should be weighed, measured, and serially sectioned at 0.5-cm intervals to look for gross tumor nodules. Measure the size of the gross tumor and specifically indicate if it is 2 cm or less or more than 2 cm for staging purposes. Palpate the fat for areas of induration or small miliary nodules. For grossly visible tumor involvement, one to three representative sections should be submitted for histology. If the tumor is not grossly visible, take multiple sections from the firmest regions in the omental fat. Five representative sections are usually sufficient, although some authorities recommend up to ten sections.

Peritoneal small biopsies should be routinely processed and submitted in their entirety. If the tumor extensively involves the pelvic peritoneum, a cavitronic ultrasonic surgical aspirator may be used to remove the implants. Tissue removed this way can be handled like a curettage specimen.

A predominant mass in the omentum or peritoneum, with no ovarian involvement and no tumor in the ovary invading to a depth of 5 mm or more, is generally considered to be a primary peritoneal carcinoma.

Lymph nodes are received separately and designated by location. They can be handled in a routine manner for evaluation of metastatic disease, as detailed in chapter 5.

Important Issues to Address in Your Surgical Pathology Report on Ovarian Tumors

- What procedure was performed, and what structures/organs are present?
- Is a neoplasm present? Is it of epithelial, sex-cord/stromal, germ cell, or metastatic origin? Metastatic involvement is suggested by the presence of multiple tumor nodules, surface implants, and vascular space involvement.
- What are the size, histologic type, and grade of the neoplasm?
- Was the ovarian capsule ruptured?
- Does the tumor involve the ovarian capsule?
- Does the tumor involve the adjacent fallopian tube or broad ligament?
- Is there capillary–lymphatic space invasion?
- If submitted, does the tumor involve the contralateral ovary and/or the serosa or parenchyma of the uterus? When identical tumors involve both the ovary and endometrium, consider independent primary sites of origin.
- Does the tumor involve the omentum? Is the tumor microscopic, 2 cm or less, or more than 2 cm? Consider a primary peritoneal origin if there is no or minimal ovarian involvement.
- Does the tumor involve any lymph nodes? Include the number of nodes involved and the number of nodes examined at each specified site.
- Do the soft tissue staging biopsies show tumor implants? If so, specify whether they are invasive or noninvasive.