No Womb For Error: A case study demonstrating adequate specimen sampling, despite a distracting pathology

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Abstract

Primary fallopian tube carcinoma is rare and often already invasive at the time of diagnosis.[3] The following case is that of a woman who presented with postmenopausal bleeding, believed to be attributed to a very large and likely benign endometrial polyp. Since the protocol for grossing a TLH-BSO specimen involves heavy sampling of the fallopian tubes & ovaries, the pathologist was able to discover multifocal invasive and metastasizing serous carcinoma, originating from the fallopian tube.

Clinical History& Presentation:

A 66 year old obese female being monitored for an abnormal mammogram presented to her primary physician with post-menopausal bleeding. Her last period was 2 months prior, and she claimed that menstruation "never stopped" after turning 50. Her medical history was extensive, as expected for someone of her age and weight. It included several cardiovascular conditions in addition to kidney stones, gastritis and asthma. Her surgical history included the removal of an unspecified throat tumor and a previous breast biopsy revealing a benign cyst. Most notable among her family history was a paternal history of colon cancer.

An ultrasound revealed a vascular and complex mass within the endomyometrium, which exhibited solid and cystic components and no convincing evidence of myometrial involvement. Though the mass was notably large, it was likely benign. A physical exam by a gynecologic oncologist did not reveal any abnormalities among the external genitalia, uterus, or adnexa. Fragments of an endometrial polyp were collected via an endometrial biopsy. Results showed a background of inactive endometrium and no obvious signs of hyperplasia or carcinoma. Despite the benign findings, a total hysterectomy and bilateral salpingo-oophorectomy was scheduled.

Note: Roughly two weeks before her TLH-BSO, the patient was diagnosed with DCIS and Stage II Grade I invasive ductal carcinoma of the right breast. Her physicians decided to plan for a mastectomy following her gynecologic surgery and results.

Grossing Scheme: TLH-BSO

1. Orient the specimen utilizing the peritoneal reflections and/or relationship of fallopian tubes, ovaries, and round ligament. Weigh the specimen and provide dimensions utilizing landmarks. Describe the serosal surface and open the uterus along the lateral sides.
2. Describe the endocervical canal, endometrial cavity, and myometrium. Measure the polyp and describe its location. Measure the base of the polyp to the parametrial margins, lower uterine segments, and the external os.
3. Section the cervix longitudinally, the endomyometrium transversely, and evaluate the depth of polyp invasion if present.
4. Describe and section the ovaries and fallopian tubes.
5. Submit sections including the parametrial margins, anterior/posterior cervix, and anterior/posterior lower uterine segment. Submit endometrial polyps entirely.
   - For patients with identified or suspected breast cancer history or mutation, submit ovaries and fallopian tubes entirely. Submit the fallopian tubes per SEE-FIM protocol (Figure 1).

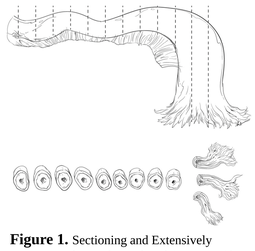

Figure 1. Sectioning and Extensively Examining the Fimbriated End (SEE-FIM)[1]

Surgery and Intraoperative Consult:

The procedure revealed a large endometrial polyp. Intraoperative consultation showed no evidence of carcinoma within the mass. During surgery, a small nodule was incidentally found on the outer surface of the cecum. Analysis of the cecal nodule revealed fibrous tissue involved by invasive carcinoma (Figure 3-E).

Gross Findings:

Our approach to the specimen was to measure the distance of the base of the endometrial polyp to the lower uterine segment, cervical os, and the parametrial margins. The entire polyp was submitted, though it did not grossly appear to extend into the myometrium upon cut section. The fallopian tubes and ovaries were submitted entirely due to the patients history of breast cancer, per the SEE-FIM protocol. Additionally, the cecal nodule was entirely submitted.

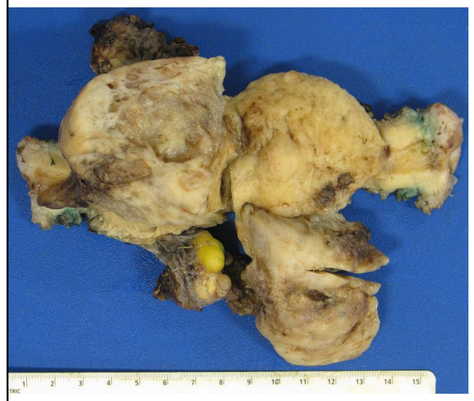

Figure 2.

Gross Description:

A uterus and cervix with attached bilateral fallopian tubes and ovaries, weighing 173.2g, and measuring 7.5 cm superior-inferior, 5cm cornu-cornu, 7.5 cm anterior-posterior.

An 8.5 x 6.5 x 2.6 cm tan-white to tan-pink, partially cystic, polypoid mass occupying the entire endometrial cavity and endocervical canal. It is attached to the anterior and posterior endometrial cavity, however it is predominantly free-floating.

Upon sectioning, the polypoid mass appears confined to the endometrial surface and does not grossly involve the underlying myometrium. The cut surface is pale-tan, soft, and diffusely cystic, containing colorless fluid and gelatinous material.

Microscopic Findings:

Microscopic Description and Summary:

H&E staining showed tumor cells in the bilateral fallopian tubes (predominantly at the fimbriated end) and bilateral ovaries. The cecal nodule was comprised of fibrous tissue involved by invasive tumor.

The tumors cells displayed papillary growth and multiple foci of invasion within the fallopian tubes, ovaries, and the cecal nodule.

The endometrium exhibited tubal metaplasia and glandular crowding. No evidence of malignancy was identified within the polyp.

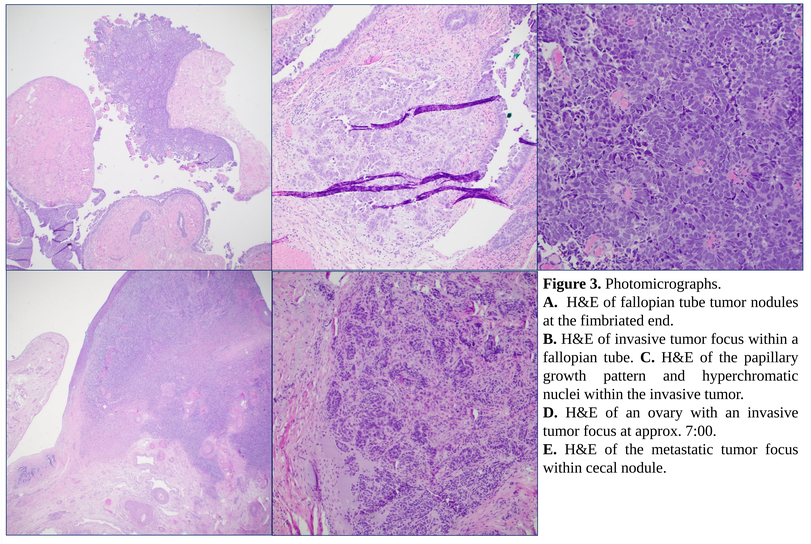

Figure 3. Photomicrographs.
A. H&E of fallopian tube tumor nodules at the fimbriated end.
B. H&E of invasive tumor focus within a fallopian tube. **C.** H&E of the papillary growth pattern and hyperchromatic nuclei within the invasive tumor.
D. H&E of an ovary with an invasive tumor focus at approx. 7:00.
E. H&E of the metastatic tumor focus within cecal nodule.

Diagnosis: High grade serous carcinoma of fallopian tubes

Immunohistochemistry:

IHC analysis was especially important in this case, in order to determine the origin of the cecal nodule. Two of the most useful stains to differentiate between gynecologic and gastrointestinal tumors are cytokeratin 7 and 20. This cecal nodule stained positive for Ck7 and negative for Ck20, consistent with carcinoma of the female genital tract. The opposite staining pattern would have supported a determination of a colorectal carcinoma.[5] This confirms that the nodule was a metastasis of the fallopian tube carcinoma.

Carcinoma IHC Staining		
	Colorectal	Gynecologic
Ck7	-	+
Ck20	+	-

Figure 4. Carcinoma IHC

Discussion:

Serous carcinoma of the fallopian tube is primarily seen among women in their 6th-7th decade.[3] Symptoms can include bleeding discharge, pelvic pain, and/or a pelvic mass.[3] A rare but pathognomonic presentation is known as "Hydrops Tubae Profluens", consisting of a pelvic mass, profuse watery discharge, and pelvic pain that disappears upon removal of the mass. Imaging can reveal a dilated tube or mimic other pelvis disease.[6]

The prognosis of serous carcinoma of the fallopian tube is dependent on the extent of spread (Figure 5). It is rarely diagnosed before surgical intervention and often invasive at the time of diagnosis due to its non-specific symptoms.[3] As a result of the anatomic location of the fallopian tubes, metastasis is commonly seen through peritoneal seeding.

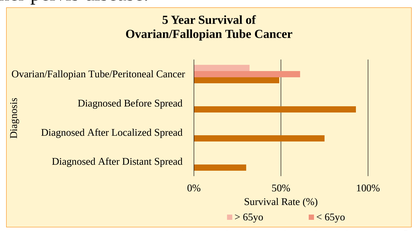

Figure 5. Five-year survival rate of patients based on diagnosis.[2]

Primary serous carcinoma of the fallopian tube is historically considered rare, accounting for less that 1% of female genital tract cancer. However, the true incidence has been underestimated, as primary fallopian tube carcinoma can be mistaken for the histologically identical epithelial ovarian carcinoma. Some evidence of this oversight includes that the failure to remove fallopian tubes with an oophorectomy has resulted in residual "ovarian" cancer.[7]

Criteria to Determine Origin Within The Fallopian Tube
a. Main tumor is within the tube, and arises from the endosalpinx
b. Histologically resembles the mucosal epithelium of the tube (often papillary pattern)
c. If there is involvement of wall, benign and malignant epithelium are well-demarcated
d. Ovaries & endometrium are normal or contain less tumor than in the tube

Figure 6. Criteria used to determine carcinoma with a fallopian tube origin (must display at least one)[7]

Conclusion:

The post menopausal bleeding that this patient was experiencing could be attributed to one of the many pathologies identified, which included the large endometrial polyp or the extensive carcinoma. Serous carcinomas, which account for about half of fallopian tube carcinomas, are often identified incidentally. They can present as a markedly dilated tube, however, even this high grade and high stage carcinoma was grossly unremarkable. This case exemplifies the need for adequate sampling by a Pathologists' Assistant (PA), who are trained to analyze and sample each part of a specimen, even those presumed normal. It is essential that PAs continue to follow their grossing guidelines, and not become distracted by the largest pathology or limit their approach to only the pre-operative diagnosis.

References:

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