NYU Langone Health

DEPARTMENT OF PATHOLOGY

Case of the Week

Gastrointestinal Pathology: Colonic Adenocarcinoma, Metastatic high-grade carcinoma

Prepared by: Christopher Schwartz, DO (PGY-1 resident) and Qinghu Ren, MD.

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History

The patient is an 84-year old Caucasian female who was incidentally found to have a right-sided colon mass and peritoneal nodules on a screening CT scan for possible diverticulitis. She presents to NYU Langone for hemicolectomy. The past surgical history is notable for a recent total abdominal hysterectomy in 2015.

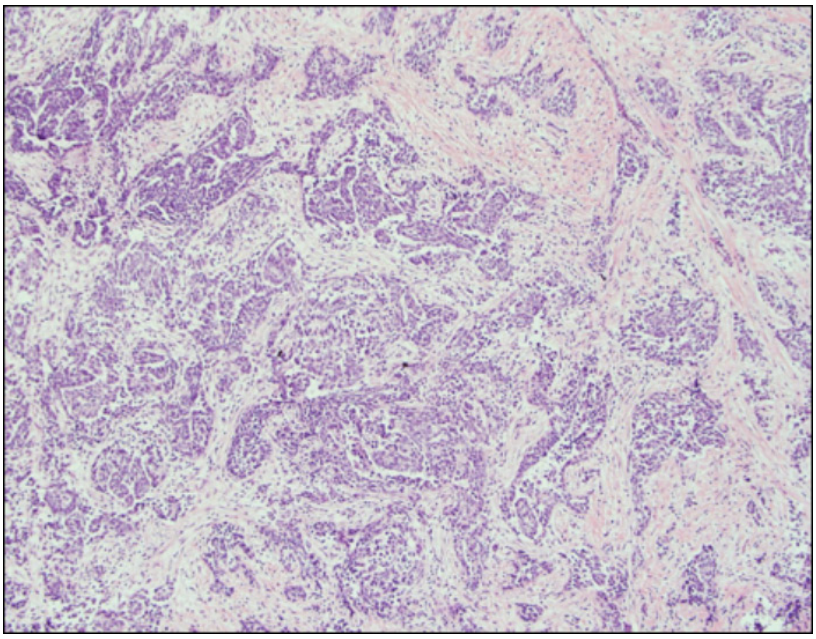

Figure 1: Peritoneal Nodule Frozen Section Infiltrative glands with vaguely papillary architecture (H&E, 200X magnification).

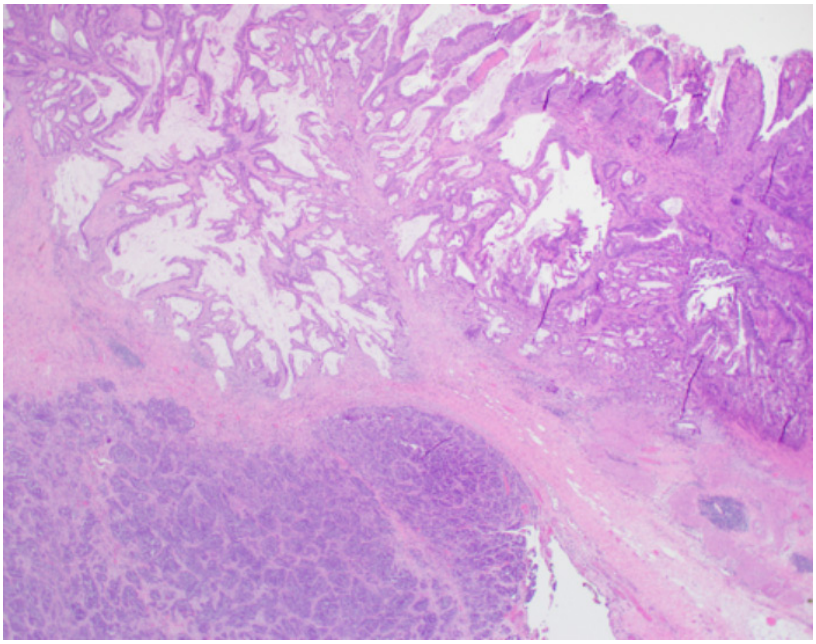

Figure 2: Colon Mass The resection specimen shows two distinct morphologic components. The surface component has invasive medium to large sized glands with focal extravasated mucin. The serosal component shows a complex papilloglandular and nested pattern (H&E, 100X magnification).

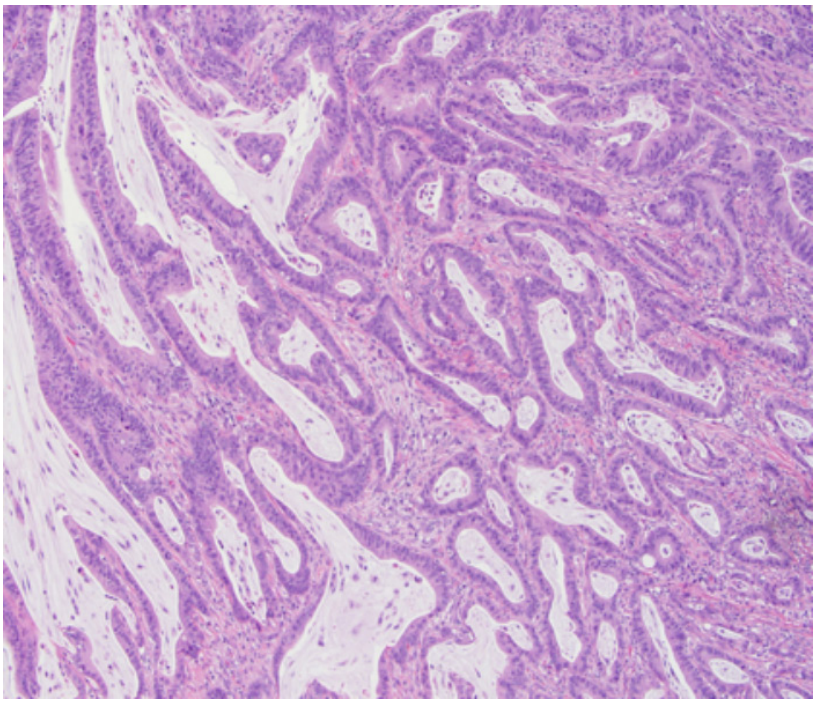

Figure 3: The surface component shows a proliferation of variably sized glands with associated desmoplastic response (H&E, 400X magnification).

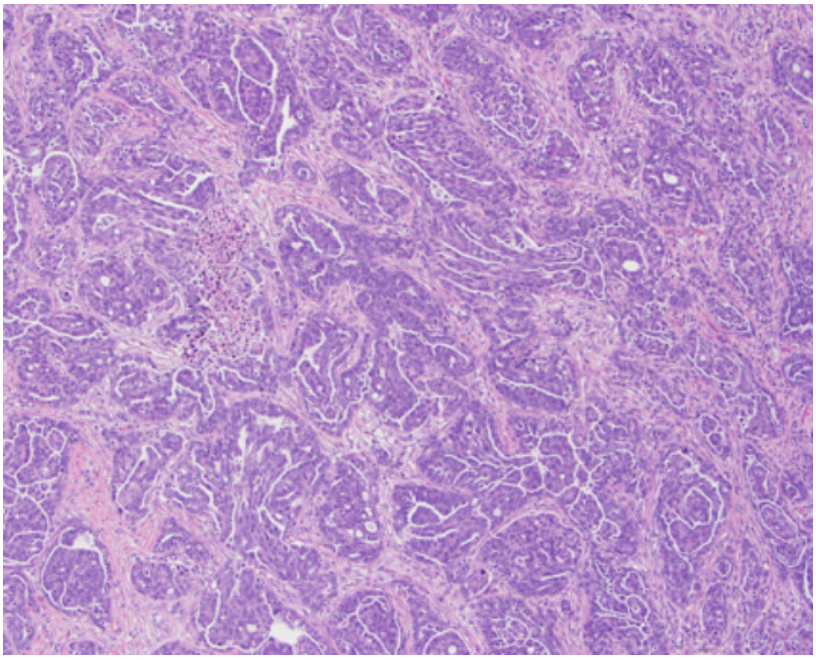

Figure 4: The serosal component shows nests and complex papillae with pleomorphic tumor cells and abundant mitoses (H&E, 400X magnification).

Immunohistochemical Studies

The surface epithelial tumor was strongly positive for CDX2 and CK20. The serosal tumor was positive for PAX8 and CK7.

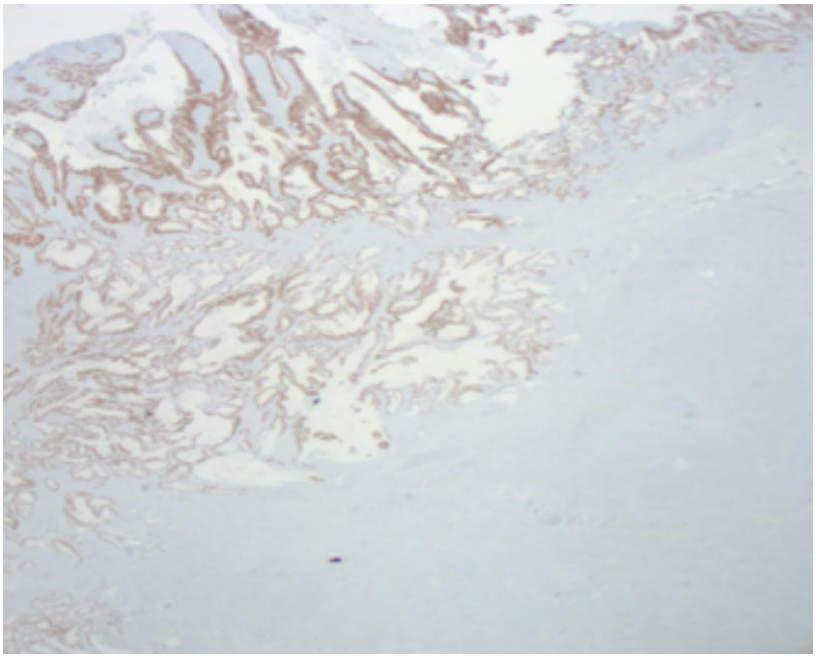

Figure 5: CDX2 (IHC, 40X magnification).

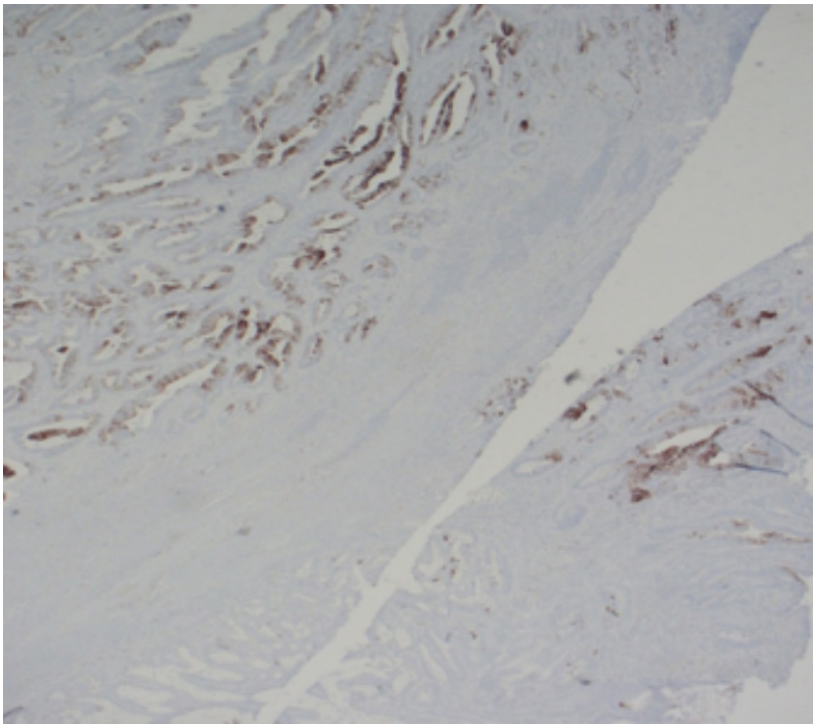

Figure 6: CK20 (IHC, 200X magnification).

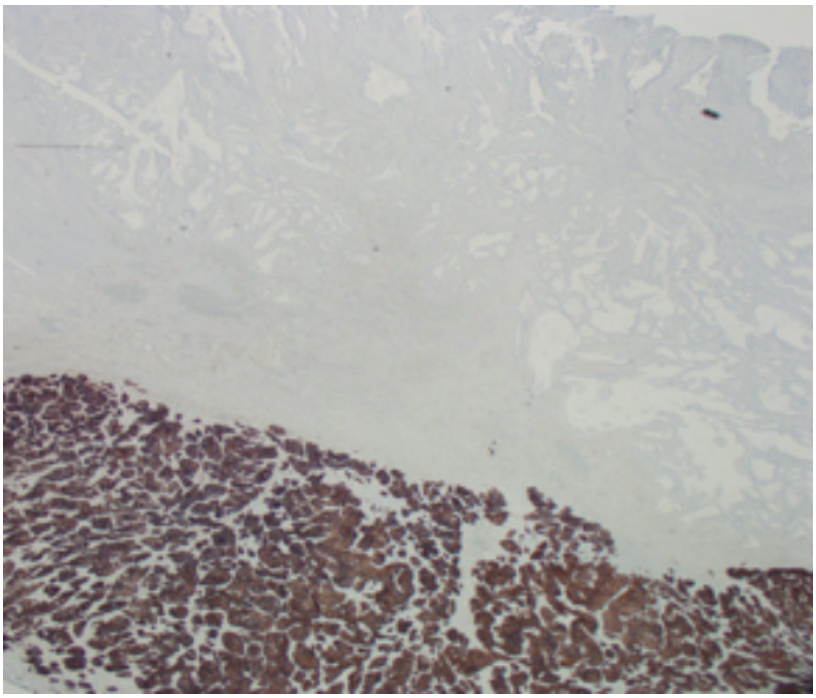

Figure 7: CK7 (IHC, 40X magnification).

Diagnosis

Tumor 1: Invasive moderately differentiated colonic adenocarcinoma with mucinous features, marked intratumoral lymphocyte and crohn's like response

Tumor 2: Metastatic high-grade carcinoma, consistent with fallopian tube/ovarian origin

Discussion

The diagnosis of colonic adenocarcinoma on frozen section can be challenging given the morphologic overlap with ovarian and endometriod carcinomas (1, 2). In this case, the patient had a recent history of a total abdominal hysterectomy and a colon mass on CT-scan. The resection specimen showed two synchronous components that were able to be distinguished by immunohistochemical analysis. In general, colorectal carcinomas are CK7-/CK20+ and endometrial/ovarian are CK7+/CK20-, as typified by this case. Additionally, CDX2 is virtually diagnostic of colorectal carcinoma (over 90% of tumors) and negative of tumors from the female gynecologic tract (3).

The additional features of this case suggest a genetic basis for susceptibility to neoplasms of these distinct organ systems, as seen in aberrations of microsatellite instability. The colonic neoplasm showed features suggestive of Lynch syndrome (LS), with pronounced intratumoral lymphocytes, Crohn's like lymphocytic response and right-sided location (4). Patients with LS are have a 10% lifetime risk of developing endometriod or clear cell carcinoma of the ovary (5).

Further immunohistochemical studies for DNA mismatch repair proteins showed a loss of PMS-2 expression and retention of MLH-1, MSH-2 and MSH-6 (Table 1). These findings suggest a germline mutation of PMS2, compatible with Lynch syndrome. The patient declined further genetic work-up or consultation.

Table 1: DNA Mismatch Repair Immunohistochemistry

Mismatch Repair Gene	
MLH1	**Retained**
MSH2	**Retained**
MSH6	**Retained**
PMS2	**Lost**

References

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3. RW Werling, H Yaziji, CE Bacchi, AM Gown: CDX2, a highly sensitive and specific marker of adenocarcinomas of intestinal origin: An immunohistochemical survey of 476 primary and metastatic carcinomas. Am J Surg Pathol. 27:303-310 2003

4. MA Jenkins, S Hayashi, AM O'Shea, et al.: Pathology features in Bethesda guidelines predict colorectal cancer microsatellite instability: A population-based study. Gastroenterology. 133:48-56 2007

5. Nakonechny QB, Gilks CB. Ovarian Cancer in Hereditary Cancer Susceptibility Syndromes. Surg Pathol Clin. 9(2):189-99 2016